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DICTIONARY OF CIVIL ENGINEERING

JEAN-PAUL KURTZ



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English–French

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PREFACE

I am pleased to present a work which marks a milestone in the history of public works and, more precisely, in that of permanent structures—a comprehensive dictionary of Civil Engineering terms.

Since the beginning of time, Man has always tried to find a means to clear the obstacles which nature erected to displace him. With the first tree trunk thrown across a river, man sought to improve the crossing structure. After the invention of the wheel, and to satisfy his thirst for conquest (Roman ways), and comfort (aqueducts), man built bridges that became a preremptory necessity to move quickly.

Thus, Man started to build wooden and masonry works. With the passing centuries, the builders became masters in the art of building masonry works. Then came the Industrial Revolution and the advent of the steel (1864), which was closely followed by the invention of the reinforced concrete (1855).

The need for railways and improving the road network inspired great works of crossing such as viaducts and tunnels. The boom of the railway network and the development of the car required the construction of an increasing number of new structures. This phenomenon continues today with hundreds of structures built each year throughout the world.

Today, a multitude of technicians in various trade associations are involved in the sphere of influence in Civil Engineering and know how difficult it is to speak the same true language. Also, as techniques evolve, new terms appear and further complicate the language. It thus proved essential to index and codify the various technical terms and for this reason I undertook the compilation of this dictionary.

Jean-Paul Kurtz

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AASHTO
Various
American Association of State Highway and Transportation Officials.

ABACUS
Abaque
Architecture
A parallelepiped crowning a column, a pilaster or a capital. When this crowning is decorated with moldings, it is called *raised table.* **See Figure1**

ABIETO-
Abiéto-
Materials
A prefix indicating abietic-acid-based products, the principal component of rosin. Several abietic resins are used in the paint industry:
- **abietoformophenolic resins** *(les résines abiétoformophénoliques)*;
- **abietoalkyd resins** *(les résines abiétoglycérophtaliques)*;
- **abietomaleic resins** *(les résines abiétomaléiques).*

ABILITY
Capacité
Strength of Materials
The intrinsic characteristic of a material to respond to external stresses (e.g., absorption ability, deformation ability).

ABILITY BENDING TEST
Essai d'aptitude au pliage
Metallography
A test to check the ability of steel to undergo bending stresses without significant degradations of its internal structure.
A test bar positioned on two parallel supports is bent by a round punch pressed in the centre of the bar. No cracks must appear either on the edge or convex faces of the fold in the bar.

ABLATION
Ablation
Geomorphology
1. Loss of mineral matter of a rock due to erosion.
2. The eroding of a river bed due to the combined abrasive action of water and waterborne materials in it.

ABNORMAL COLORING
Coloration anormale
Defects (Building Materials)
A color modification in wood that indicates a change of its chemical composition and, thus of its properties. This defect can make the wood unsuitable for some uses. Syn. with ABNORMAL TINTING

ABNORMAL CONTACTS
Contacts anormaux
Defects (Civil Engineering Structure)
In suspension or guy bridges, parasitic contacts between the mechanically independent parts that are due to a bad design or bad adjustment of the suspension. These contacts can occur between cables or distinct layers or with a part of the structure, such as: abutment, deck, parapet, etc.

ABNORMAL PERMANENT SAG
Flèche permanente anormale
Defects (Construction)
The abnormal sag of a portion or a complete span in the absence or presence of any accidental overload on the entire work. The abnormal sag can be stable or evolutionary and can result from:
- a geometrical error during construction;
- an increase of the permanent load, or a diminishing of the bearing capacity of the structure;
- an accidental loading on a portion of the structure.

ABNORMAL TINTING
Coloration anormale
Defects (Building Materials)
Syn. with ABNORMAL COLORING

ABNORMAL TWIST *(or* WARP) OF A SUSPENSION BRIDGE DECK
Dévers anormal d'un tablier de pont suspendu
Defects (Civil Engineering Structure)
The abnormal slope of the cross section of the deck that can be due to the:
- differential deformation between two layers of cables;
- slipping of the cable suspension.

ABNORMAL WARP OF A CABLE LAYER
Dévers anormal d'une nappe
Defects (Construction of P.C.)
A defect in suspension bridges in which some cables are, relative to others, lower than their theoretical position resulting for a horizontal layer, in an apparent warp. Usually, this defect results from a:
- partial or total destressing of one or more cables;
- differential creep between the cables due to their different ages and constitution.

ABORTIVE HEAD (of rivet)
Tête avortée
Defects (Metal Construction)
The second head of a rivet that has been incompletely formed because the horizontal base was not in contact with the metal sheet. **See Figure 2**

ABRADE
Egréser; Abraser
Masonry
Syn. with GRIND (THE STONE)

***ABRAMS'* SLUMP TEST**
Essai d'affaissement au cône d'*Abrams*
Test of Materials (Concrete)
A test carried out on concreting building sites to check the rheology of the fresh concrete and occasionally, of mortar. It consists in measuring the subsidence of a truncated cone of fresh concrete after demolding. Syn. with SLUMP TEST

ABRASIMETER
Abrasimètre
Equipment for Measure and Control
An instrument for measuring material resistance to abrasion.

ABRASIN
Abrasin
Building Materials
A tree from which a drying oil is drawn, used in the preparation of mastic to varnish wood and to make some oil varnishes. Syn. with TUNG TREE

ABRASION
Abrasion
Defects
1. A wearing phenomenon that generates a loss of metal mass due to mechanical action of an external body.

2. The deterioration of stones or bricks due to matter removal on the surface by solid bodies carried by water or air. Abrasion can be superficial or deep.

ABRASION RESISTANCE
Résistance à l'abrasion
Building Materials
The resistance in a material that opposes surface wearing generated by the action, intentional or not, of another material or fluid.

ABRASION RESISTANCE TEST
Essai *Deval*
Test of Materials (Building Materials)
Syn. with *DEVAL* TEST

ABRASIVE
Abrasif
Materials
A relatively hard product used to sharpen, machine-finish or polish materials that are softer than it. Also used for scouring under pressure metal surfaces for painting or metallizing later.
Abrasives can be:
- **natural** *(les abrasifs naturels),* such as diamond, corundum, emery, quartz sand, sandstone and pumice stone;
- **artificial** *(les abrasifs artificiels),* such as silicon carbide, synthetic diamond, artificial corundum, boron carbide and artificial aluminum oxide.

Syn. with ABRADANT; GRIT

ABRASIVE WHEEL
Meule
Equipment and Tools
Syn. with GRINDSTONE; GRINDWHEEL

ABSCESS
Abcès
Defects (Building Materials)
An excrescence of the wood due to affluence of sap and, sometimes, insect stings.

ABSENCE OF BEARING DEVICE
Absence de dispositif d'appui
Defects (Construction)
A design defect which allows a deck or floor to rest directly on masonry or concrete.

ABSENCE OF BOND
Absence d'élément d'appareil
Defects (Construction)
A cavity or gap in parts of a structure or masonry. (Example: absence of an archstone in a stringcourse; appearance of a cavity in an abutment following undermining).

ABSENCE OF PLAY AT THE BUTTS
Absence de jeu aux abouts
Defects (Metal Construction)
A defect of metal decks in which the deck cannot be bent (out of shape) or expand freely to their ends. Results from insufficient free space between end and obstacle, due to bad design (insufficient space at the beginning), the presence of foreign bodies in an initially sufficient space, bearing displacement, etc.

ABSOLUTE DENSITY
Masse spécifique absolue
Geotechnics
The specific volume of the particles of a portion of ground that is assumed to be without voids; it is called γ_s.

ABSOLUTE POROSITY OF STONE
Porosité absolue d'une pierre
Building Materials
The ratio of the volume of the voids to the total apparent volume of the stone, the void including the volume occupied by both imbibition and hygrometric water (excluding combination water).

ABSOLUTE SOIL COMPACTNESS
Compacité absolue d'un sol
Geotechnics
Measurement of the average soil particle density.

ABSORBED (SOIL) WATER
Eau absorbée
Geohydrology
Thin fluid film (< 0.1 m) intermediate between interstitial water and combined water surrounding solid grains of the ground by molecular attraction.

ABSORBENT
Hydrophile
Building Materials
Of a material that likes water.

ABSORPTION COEFFICIENT OF BRICK
Coefficient d'absorption d'eau d'une brique
Test of Materials (Building Materials)
Syn. with ABSORPTION RATE

ABSORPTION RATE
Coefficient d'absorption d'eau d'une brique ; Coefficient de capillarité
Test of Materials (Building Materials)
1. The ratio calculated from a formula using the mass of water absorbed after immersion, the area of the immersed face and the time of immersion. (Note that the absorption rate by capillary rise is completely different from the porosity index.) Syn. with ABSORPTION COEFFICIENT OF BRICK
2. Syn. with CAPILLARY FACTOR

ABSORPTIVE POWER
Absorptivité
Building Materials
Syn. with ABSORPTIVITY

ABSORPTIVITY
Absortivité
Building Materials
The imbibition ability of some bodies. Syn. with ABSORPTIVE POWER

ABUT
Abuter
Construction
To join or place exactly side by side two parts. Syn. with SCARF

ABUTMENT
Culée; Boutée
Construction
The end bearing of a deck, a vault, a beam or an arch.
Abutments are highly important parts of a bridge and must be studied carefully, since their morphologies quite different.. A bridge can comprise arches, vaults, or decks, and the abutment supports these structures and connects the bridge to the natural rock by supporting generally speaking, the earth pressure. In the case of arches or vaults, the abutment supports the pressure of these structures. Abutments can be built of masonry, concrete, reinforced concrete, possibly prestressed concrete, and even in curtains of sheet piles. Abutments comprise generally a front wall and lateral walls called wing walls *or* return walls *according to their location.* Syn. with ABUTMENT WALL **See Figure 3 to 5**

ABUTMENT
Pied; Piédroit
Construction
1. A vertical construction that supports a vault.
2. A vertical or slightly sloping wall of a pier or an abutment of: tunnel, underground passage, subway.

ABUTMENT PIER
Arc-boutant
Construction
A half-arch-shaped pillar for staying a wall or a vault in order to reinforce it. Syn. with ARCHED BUTTRESS; FLYING BUTTRESS

ABUTMENT PIER
Pile-culée
Construction
1. A pier placed between two unequal arches or between a masonry arch and a metal span.
2. In a viaduct with equal arches, a pier that shows an allowance compared with the others (one on four or five) and that is butressed on the lateral part. This type of construction limits the destruction of the work in case an arch breaks. **See Figure 6**
3. A construction intended to resist a strongly inclined force.

ABUTMENT WALL
Culée
Construction
Syn. with ABUTMENT (first entry)

ABYSSINIAN WELL
Puits abyssinien
Foundation
The ancestor of the wellpoint. A pointed tube with regularly spaced perforations, through which water gets in the tube, is driven into the ground. Water is then extracted from it by pumping.

ACACIA
Acacia
Building Materials
A leafy tree which is either:

- **true acacia** *(l'acacia véritable),* which gives hard wood which can be used in carpentry; or
- **false acacia *or* Robinia** *(le faux acacia ou Robinier),* which gives greenish yellow wood of good quality, hard and elastic, and splits easily in a green state and is not subject to vermiculation.

Acacia has a density from 0.61 and 0.72. It consumes much water. It is planted in unstable slopes to retain soil and to absorb surplus water.

ACCELERATING ADMIXTURE
Accélérateur de prise
Hydraulic Binders
Syn. with ACCELERATOR; SETTING AGENT

ACCELERATOR
Activeur; Accélérateur de prise; Durcisseur
Materials; Hydraulic Binders; Polymers
1. Substance mixed with a catalyst and added to concrete, cement, etc. to speed up its setting time.
2. Syn. with ACCELERATING ADMIXTURE ; SETTING AGENT
3. Syn. with POLYMERIZING AGENT

ACCELEROMETER
Accéléromètre
Equipment for Measure and Control
A recording device to measure acceleration and shocks and vibrations generated by shot-firings. This device converts mechanical motion into an electrical signal that is proportional to the acceleration.

ACCENT
Rechampir
Painting
1. To apply paint on a dry film, with no risk of moistening or bleeding.
2. To apply a second paint coat on one that is already dry but of different color so as to set off the tone and to develop certain parts or details. The connection of both tones must be linearly perfect and must be in the full substrate (plane or curve surface) or in an internal angle. Tone connection on a salient angle is not considered accenting.

ACCEPTANCE
Réception
Civil Engineering Structure
Written indication by which the owner accepts a building or structure, thus agreeing that all design specifications have been met. Acceptance is:
- **provisional** *(la réception provisoire),* i.e., a preliminary examination of the work is conducted and all repairs and defects for which the contractor is obliged to perform are listed; or
- **final** *(la réception définitive),* i.e., the official report established between all parties involved, stating that repairs noted during provisional acceptance were carried out and the final payment can be made.

ACCEPTANCE TEST
Essai ou épreuve de réception; Essai de recette ou contrôle de qualité
Materials Test
1. A test to check conformity between design specifications and the performance of the structure, to determine its acceptability.
2. Syn. with QUALITY CONTROL

ACCESS PLATFORM WITH TRUCK ELEVATING PLATFORM
Plate-forme élévatrice
Equipment and Tools
Syn. with ELEVATING PLATFORM

ACCESS RAMP
Rampe d'accès
Constructions Nomenclature
A sloping way giving access to a structure, a quay or from one level to another.

ACCESS VIADUCT
Viaduc d'accès
Engineering Structure
Series of arches which replace an embankment near a work crossing a main river. Also called a *bridge.*

ACCOMMODATION
Accommodation
Strength of Materials
The stabilization of the remanent elongation of a metal after a number of loading and unloading

cycles in tension beyond the yield point.

ACCOMMODATION LIMIT
Limite d'accommodation
Strength of Materials
The limit of the load beyond which accommodation is no longer observed.

ACCOST
Accoster
Construction
To put two parts in contact.

ACCOSTING FORCE
Effort d'accostage
Metal Construction
The necessary force for accosting two not planished metal sheets, tightened by high-tension bolts. The accosting force reduces the tightening force theoretically needed from the torque wrench.

ACCRETION
Lais; Atterrissement; Accoulin
Hydrology; Geohydrology; Sanitary Engineering and Drainage
1. The alluvial deposit from waterways or the sea.
2. Syn. with DRIFT; SETTLINGS
3. A mixture of earth and water poured in marshes or ponds to fill or dry them. Syn. with EARTH SUSPENSION

ACCRETION THROUGH ALLUVIUM
Accrue
Geohydrology
Syn. with INCREASING

ACCUMULATING
Accumulation
Geohydrology
A deposit of alluvial loose material produced by natural erosion through:
- *wind* (wind accumulating),
- *water* (fluvial or fluviatile accumulating),
- *a volcanic eruption.*

Syn. with ACCUMULATION

ACCUMULATION
Accumulation
Geohydrology
Syn. with ACCUMULATING

ACETONE
Acétone
Materials
A volatile and flammable colorless liquid, with an ethereal odor and is often used as a solvent.

ACID
Acide
Materials
A hydrogenated compound capable of releasing hydrogen ions (H+). When combined with a base it produces *salt* and water. Two types of acids are important:
- **chlorendic acid** *(l'acide chlorendique),* used, together with the corresponding anhydride for making fire-resistant polyester and epoxy resins manufacture and fungicides;
- **phosphoric acid** *(l'acide phosphorique),* which is an oxygenated compound of pentavalent phosphorus, which is used in reactive primary paints.

ACID CEMENT
Ciment acide
Hydraulic Binders
A product whose hydraulicity index is unity 1, such as aluminous cement, which see.

ACID CLEANING
Dérochage
Metallurgy
Scouring metal parts by immersion in an acid bath. Syn. with STRIPPING

ACID ROCK
Roche acide
Geology
An endogenous material containing more than 65% silica (for example, granite) and with a pH lower than 7.

ACID SOIL
Sol acide
Geology
A soil whose pH is lower than 6.5.

ACID-RESISTANT PAINT
Peinture antiacide
Painting
Syn. with ANTIACID PAINT

ACLINAL RIVER
Aclinal
Hydrology
A river that flows in the opposite direction of the dip of geological strata.

ACOUSTIC DETECTOR
Détecteur acoustique
Equipment for Measure and Control
Syn. with SONIC DETECTOR

ACROTERIUM
Acrotère
Construction
A masonry wall located above an entablature to conceal a roof or a terrace. Syn. with CORNICE.
See Figure 7

ACRYLIC
Acrylique
Polymers
The general designation of a polymer or copolymer family of acrylic or methacrylic acids and their by-products.

ACRYLIC RESIN
Résine acrylique
Polymers
A macromolecular synthesis product in the form of:
- gel (water infiltration blocking; these products are composed of resin, catalyst, and accelerating agent); the proportion of setting agent allows to regulate the setting rate on site;
- products related to the polyesters family but with better chemical resistance.

Syn. with METHYL METHACRYLATE

***ACTIMUR*® PROCESS**
***Actimur*®**
Civil Engineering Structure
A support method that involves a solid fill mass supported by a curtain of sections, the latter being anchored by several beds of passive tie rods which are arranged by successive installations alone the rise of embankment and are articulated on sheet piles by bolted stirrup. The sheet piles are laid out in a trench 1 m deep and are shored while a waiting installation of tie rods and embankment.

ACTION
Action
Strength of materials
Forces and torques from loads (permanent loads, service loads, climatic loads, etc.) and distorsions (thermohygroscopic effects, etc.) on a structure. There are several types of action:
- **accidental** *(actions accidentelles)* are due to earthquakes, impacts, etc.;
- **cyclic** *(actions cycliques)* are due to temperature variations;
- **intermittent** *(actions intermittentes)* are due to climatic loads, services loads, and nonpermanent loads applied during construction.

***ACTISOL* ® PROCESS**
***Actisol* ®**
Materials
A bentonite-cement grout in which activated ashes are blended and is used as an injection to create tight curtains, seal tie rods in the ground, etc. It perfectly withstands aggressive waters.

ACTIVATED MORTAR
Mortier activé
Building Materials
Syn. with COLGROUT; COLLOIDAL GROUT; COLLOIDAL MORTAR

ACTIVATION
Activation
Materials
Addition of starting products to a binder, in restricted quantities, in order to improve the binder tackiness beside a certain category of aggregates.

ACTIVE FINES
Fines actives
Building Materials
Products with colloidal properties, i.e., whose surface properties, either due to their small dimension, or their electric charge, are dominant compared with the volume.

ACTIVE REINFORCEMENT
Armature active
Construction of R.C. and P.C.
A reinforcement subjected to a preliminary stress to allow it to influence the behavior of the structure in which it is set.

ACTIVITY COEFFICIENT OF A FILLER
Coefficient d'activité d'un filler
Test of Materials (Building Materials)
The ratio between quantities of a reference filler (Helfo chalky filler in the French area Pas-de-Calais) and of a considered filler, that make fall the sand equivalent (S.E.) of a product 0.1/5 mm, S.E. 100, in the same proportion.

ADAPTATION
Adaptation
Strength of Materials
The redistribution of stresses in a solid subject to actions which cause the yield point of the solid to be exceeded. Such stress redistribution can, in statically indeterminate system, modify bearing reactions. In all cases, the structure is permanently deformed.

ADAPTER
Bague
Construction
Syn. with COLLAR

ADD
Enter; Rapporter
Construction; Works
1. To join two pieces end to end by means of notches made at the extremities of pieces. Syn. with GRAFT
2. Syn. with BUILD UP

ADDITION
Ajout
Materials
Material that is mixed either in factory or on site, into the original basic composition to product the mixture needed for the application.

ADDITIONAL FLANGE
Semelle additionnelle
Metal Construction
A stack of flat irons assembled by rivets, bolts or welding in the taut or compressed zones of a metal compound girder. **See Figure 8**

ADDITIONAL LOAD
Surcharge
Strength of Materials
A load that can affect a structure in addition to designed loads and which must be factored into the design (actions of temperature, shrinkage, traffic, effects of wind, snow, etc.). Syn. with EXCESS LOAD; OVERLOAD

ADDITIVE
Adjuvant; Additif
Painting: Polymers; Hydraulic Binders
1. A product mixed in a paint binder to improve its manufacture, its longevity, and its appicability. Syn. with ADJUNCTING
2. A substance added in slight quantity to a formulated organic binder to enhance its characteristics for an application. Example are : fluxing agents or thinners, plasticizers, internal plasticizers, and stabilizers. (The function of additives in organic binders is quite different from that of admixtures for concrete. Thus, the expected effects also differ). Syn. with ADJUNCTING; ADMIXTURE
3. Syn. with ADMIXTURE

ADDITIVES
Produits d'additions
Hydraulic Binders
A material mixed with cement during its manufacture. We can distinguish:
- **siliceous *or* chalky products** *(les produits calcaires ou siliceux),* insoluble, mainly acting by their physical properties (kieselguhr, bentonite, etc.) and which, when mixed in slight proportion, used, for example, to facilitate grinding.
- **soluble salts** *(les sels solubles),* such as: chloride, sulfate, etc. or products mixed in slight proportion to improve certain characteristics of cement such as, setting rates, hardening, etc.

ADDUCT
Adduct; Oligomère
Polymers
Syn. with OLIGOMER.

ADHEROMETER
Adhéromètre
Equipment for Measure and Control
An instrument that measures adhesion of a paint film to its substrate.

ADHESION
Adhérence
Adhesives; Welding; Strength of Materials
1. The connection between two surfaces in close contact by an adhesive.

2. Strength of attraction between a coating or recharging and its support, determined by measurement of the effort, by unit of area, necessary to separate them.
3. Condition in which the surfaces of two solids are held together and relative displacement of these solids along their surfaces is opposed.

ADHESION TEST
Essai d'adhérence; Essai de Quadrillage
Test of Materials
1. A test carried out after metallizing in order to check the adhesion of the coating on its background.
With an ad hoc tracing tool, one makes five parallel incisions 3 mm apart in the coating. Then you'll trace five other incisions 3 mm apart and perpendicular to the first five, using sufficient pressure on the tracing tool so that it entirely severs the coating and reaches the parent metal after a minimum number of knocks. No separation must occur in the squares of the quadrilateral thus formed.
2. A test for checking the adhesion of a shotcrete covering by traction on a metal disk stuck on the concrete and carved beforehand by a circular chase to a certain depth. **See Figure 9**

- **adhesion test utilizing module differences and materiaal thermal dilation coefficient** *(Essai d'adhérence faisant intervenir les différences de module et de coefficient de dilatation thermique des matériaux):* this test is for mortars with a single binder containing a polymer, mixed mortar cement-polymers, or other mortars intended for concrete finishing. The finishing mortar is applied to a thickness of 1 cm, with or without primary bond on a hardened concrete slab of dimensions 40 x 40 x 10 cm. The concrete can be dry brushed or wet brushed. After 48 h in the case of polymer mortars, or 28 days for mortars containing cement, the slabs are subjected to 100 thermal cycles (3 h to -10°C, 2 h to + 60°C) and six direct tensile tests (type thin tightness screed). Adhesion is considered satisfying when the concrete ruptures.
- **adhesion test on a hollow prismatic test specimen** *(Essai d'adhérence sur éprouvette prismatique évidée):* this test is for mortars with a single binder containing a polymer, mixed mortar cement-polymers, and other mortars intended for concrete finishing. The test consists in reconstituting with finishing mortar a prismatic test specimen 10 x 10 x 40 cm with a hollowed part, along one of the side faces, 1 cm deep and 20 cm long. 28 days after finishing, the centered flexural strength of the test specimen is measured, the smoothed part having in taut fiber. Several types of rupture may arise:
  - breaking without separation in the mortar or breaking in the concrete for higher or equal strength to those of the test specimen; in these two cases the behavior of the finishing mortar is considered satisfactory;
  - breaking of the concrete with separation of finishing for lower or equal strength with that of the test specimen; the behavior of the finishing mortar is considered unsatisfactory.
- **adhesion test of materials in films and sheets** *(Essai d'adhérence de matériaux en feuilles et en films):* a test for tackiness of the material in films or sheets on steel or concrete supports. It is carried out in the laboratory on test specimens and on the building site to construction material. The test consists in measuring with a dynamometer the force necessary for breaking the adhesion on the support. The effort necessary to wrench perpendicularly from the film (or sheet) a metal tip is recorded on a high precision pressure gauge.

3. Syn. with COATING ADHESION TEST

ADHESION TEST OF REINFORCEMENTS TO BITUMINOUS MASS
Essai d'adhérence des armatures à la masse bitumineuse
Test of Materials (Tightness)
A test carried out on a waterproofing membrane as follows: three test specimens of 10 x 20 cm are taken from the membrane and are laid out in distilled water at 50°C. Samples are examined after 24, 48 and 72 h. Maybe you'll note the absence of adhesion of the reinforcements to the bituminous mass. The reinforcements adhere and be perfectly coated with the bituminous binder.

ADHESIVE
Adhésif
Adhesives
A paste or powder that can be wetted consisting of a binder, fillers and admixtures for holding materials together. There are three important adhesive families:
1. Adhesives of vegetable origin;

2. Adhesives of animal origin;
3. Synthetic adhesives (only used in civil engineering structures). The principal adhesives used in civil engineering are the following:

- **adhesives with a polyvinyl base and copolymers of polyvinyl acetate** *(les adhésifs à base polyvinylique et copolymères de l'acétate de polyvinyle):* nonreactive synthetic materials, represented by thermoplastic polymers at slightly high softening temperature (70°C) which have excellent adhesion but which have a low water-resistance;
- **polyacrylic, polymethacrylic adhesives, and copolymers** *(les adhésifs polyacryliques, polyméthacryliques et copolymères),* nonreactive synthetic materials presented in dispersion in water; they are acrylic glues;
- **polydiene costyrene adhesives** *(les adhésifs polydiènes co-styrènes),* nonreactive synthetic materials which are copolymers having elastomer properties at room temperature but which behave like thermoplastic polymers above a certain temperature;
- **polychloroprene *or* polychlorobutadiene adhesives** *(les adhésifs polychloroprènes ou polychlorobutadiènes),* nonreactive synthetic materials, the best known of which is neoprene, the first synthtic rubber; polychloroprene glues are always in solution, in the form of liquid adhesives or glue-putty, and are compatible with phenol resins;
- **acrylonitrile-copolymer-based adhesives** *(les adhésifs à base de copolymères de l'acrylonitrile):* materials which are mostly copolymers with butadiene, usually as solutions in chlorinated, aromatic or ketonic solvents or esters or in aqueous dispersions; they are characterized by good resistance to a chemical atmosphere;
- **polyisoprene-based adhesives** *(les adhésifs à base de polyisoprène),* nonreactive synthetic materials. The natural latex of hevea consists of a polyisoprene emulsion. However, a similar elastomer can be synthesized. They are used for self-adhesive tapes, in particular;
- **adhesives with base of aldehydic precondensates, aminoplasts, or phenoplasts** *(les adhésifs à base de précondensats aldéhiques, aminoplastes ou phénoplastes):* reactive synthetic materials, which are glues in the form of thick liquids to be mixed at the time of use with a hardener whose active constituent is formalin. They are mainly used for wood joining;
- **polyurethane-based adhesives** *(les adhésifs à base polyuréthane):* very reactive, fast-setting synthetic materials used for joining insulating materials and certain plastics. These products are highly water-resistant;
- **epoxy-based adhesives** *(les adhésifs à base époxydique):* reactive synthetic materials always appearing as two components: the resin, which includes the epoxy functions, and the hardener, with reactive functions. After the two are mixed, cross-linking occurs;
- **reactive adhesives with base of monoacrylic and monoetheric esters** *(les adhésifs réactifs à base d'esters monoacryliques et monoétheriques):* reactive synthetic materials used especially for closing thin joints because their polymerization is delayed by the presence of oxygen;
- **reactive adhesives with base diacrylic esters, and anaerobie adhesives** *(les adhésifs réactifs à base d'esters diacryliques, adhésifs anaérobies):* reactive synthetic materials used in particular, for gluing thinner joints, or glass to glass or metal on glass;
- **cyanoacrylic ester-based adhesives** *(les adhésifs à base d'esters cyanoacryliques):* reactive synthetic materials which usually include an activator and are generally used for adhering thinner joints; moisture favors polymerization speed;
- **silicone-based adhesives** *(les adhésifs à base de silicone):* reactive synthetic materials which need water, have great flexibility, great elasticity even at low temperatures, and an excellent resistance to aging and attack of many chemicals.

ADHESIVE
Colle
Adhesives
Syn. with GLUE

ADHESIVE PASTE
Pâte adhésive
Materials
A product used to repair concrete structures. It is a two-part mixture and does not have a hydraulic binder. The two parts usually include a liquid for the agglomerate (resin or group of resins) and a powder for the reactive, the charge consisting of fine sand.

ADJUST
Caler
Construction
Syn. with WEDGE

ADJUSTING CLIP
Crapaud
Construction
A lateral wedging system opposing to prevent the rails of lifting tackles or railway tracks from moving. Syn. of SLEEPER CLIP

ADJUSTMENT
Réglage
Civil Engineering Structure
Final positioning of a frame or its parts.

ADJUSTMENT
Ajustement
Topography
A simplified way to obtain from a topographic skeleton map the homogeneous determination points of a survey without using compensation by lesser squares. Syn. with FITTING

ADJUSTMENT DEFECT OF AN ANCHORAGE *or* FASTENER
Défaut de réglage d'un ancrage ou d'une attache
Defects
In suspension bridges, the poor distribution of the tension between the various fixings of an anchorage, that produces an offset of the forces at the level of the anchorage or fastener. It can occur through:
- a set in one of the anchor rods (or one of the stirrups);
- an alignment defect between joined parts.

ADMIXTURE
Additif
Polymers
Syn. with ADDITIVE

ADMIXTURE BEAM SCALE
Bascule à adjuvants
Equipment for Measure and Control
A weighing device in a concrete mixing plant, integrated with the measuring unit responsible for proportioning the different components in aconcrete mix. Such weighing devices have a precision of several grams. Syn. with ADMIXTURE WEIGHER

ADMIXTURE EFFECTS
Effet des adjuvants
Construction of R.C. and P.C.
Syn. with ADMIXTURE REACTIONS

ADMIXTURE REACTIONS
Effet des adjuvants
Construction of R.C. and P.C.
An aggravating phenomenon caused by the thrust of fresh concrete on formworks. Some admixtures, such as those of melamine resins or pulverized fly ashes, induce hydrostatic thrusts regardless of the thickness of the concreted piece, the speed of concreting, or the height of the cast-in-place concrete. Also called ADMIXTURE EFFECTS

ADMIXTURE WEIGHTER
Bascule à adjuvants
Equipment for Measure and Control
Syn. with ADMIXTURE BEAM SCALE

ADMIXTURED CONCRETE
Béton adjuvanté
Building Materials
Concrete that contains an admixture.
Example: any concrete incorporating a water repellent is called *water-repellent concrete;* any concrete incorporating an accelerating admixture is called *accelerated concrete,* etc.

ADSORPTION
Adsorption
Materials
A physicochemical phenomenon characterized by the property that the pulverulent or porous solids retain on their surface the molecules of the gaseous or liquid phases which are in contact with them. The solid is known as the *adsorbent,* and the gas or liquid is the *adsorbate.*

ADVANCE
Cheminer
Construction
Slow movement of a machine or part. Syn. with CREEP; TRUDGE

AERATED CEMENT GROUT
Coulis aéré
Materials
A grout prepared in two phases, liquid and gaseous. In the gaseous phase, air is introduced during mixing, and the volume of grout sent from the plant corresponds to the volume set in place. Aerated cement grout is lighter than normal grout, because air replaces some of the cement and water. Aerated cement grouts are filler grouts.

AERATED CONCRETE
Béton gaz; Béton aéré
Building Materials
Syn. with AEROCRETE ; AIR-ENTRAINED CONCRETE ; GAS CONCRETE; POROUS CONCRETE

AERATED MORTAR
Mortier aéré
Building Materials
A mixture obtained by high turbulence brewing of cement, sand, and water. High-turbulence brewing creates numerous small air bubbles. This mortar is much lighter than a mainline mortar and can be used in mechanical applications or as an injection for filling voids.

AERIAL
Aérien
Hydraulic Binders
Describing a lime or mortar that sets by desiccation and hardens by carbonation. Syn. with AIR

AERIAL BUCKET
Benne téléphérique
Handling
A container transporting materials by an overhead cableway. Syn. with CARRIER

AERIAL CONCRETE
Béton aérien
Building Materials
A material whose binder is a nonhydraulic lime.

***AEROCEM*® SYSTEM**
Aerocem
Masonry
A mechanical pointing process in which mortar prepared in a mixer with a vertical axis is carried in a pressure pot with a distribution pipe connected to a gun, itself supplied with a complementary air shaft.

AEROCRETE
Béton gaz
Building Materials
Syn. with AERATED CONCRETE ; AIR-ENTRAINED CONCRETE. GAS CONCRETE; POROUS CONCRETE

AEROMAGNETISM
Aéromagnétisme
Geophysics
A way of investigation and geophysical recognition of the deep layers which gives a sketch of the general shapes of the explored subsoil from the magnetic platform, mostly comparable to the substratum of the sedimentary series.

AEROMETER
Aéromètre
Equipment for Measure and Control
1. An instrument for measuring the quantity of air entrained in fresh concrete.
2. An instrument for measuring the concentration of a liquid or the density of a solution and functioning according to the principle of floating bodies. There are three kinds:
- **constant-bulk air entrainment meter** (*l'aéromètre à volume constant);*
- **constant-weight air entrainment meter** (*l'aéromètre à poids constant)*;
- ***Baumé* air entrainment meter** *(l'aéromètre Baumé).*

Syn. with AIR ENTRAINMENT METER

AEROSEPARATOR
Aéroclasseur
Equipment and Tools
An apparatus used for classifying aggregates. The separation is carried out in a gaseous medium through differentiation of grain displacement. For classifying sands going into concrete, a centrifugal aeroseparator is used.

AEROSOL
Aérosol
Materials
A gaseous suspension of the finest particles of a liquid or solution.

AEROTRIANGULATION
Aérotriangulation
Topography
A photographic triangulation method for determining coordinates of points of the pattern necessary to the metric measure of a photographic cover.

AFRICAN MAHOGANY
Okoumé
Building Materials
Syn. with GABOON MAHOGANY; OKOUME

AGE
Vieillir
Building Materials
When building materials, steels in particular, to lose their mechanical characteristics by natural alteration.

AGGLOMERATED WOOD
Bois aggloméré
Building Materials
A material composed of wood particles glued together and then pressed.

AGGRADATION
Aggradation
Hydrology
An accumulation of sediments due to fluvial streamings and flows, which breeds profiles known as *regularized.*

AGGREGATE
Agrégat
Building Materials; Metallurgy
1. The entire inert constituents in the proportion of certain mortars or concrete.
2. A microscopic constituent of chemically heterogeneous steel.

AGGREGATE
Granulat
Building Materials
1. A granular substance from a set of solid elements between 0 and 100 mm approximately; these elements undergo a preparation (sifting, crushing, etc.) and are used in civil engineering and public works for making hydraulic concrete and pavement (roadway) layers.
2. All the inert noncohesive constituents that, agglomerated by a binder, constitutes the skeleton of the mortar and concrete. It is a granular material of a natural or artificial source.
An aggregate is indicated by two numbers representing the smallest and largest dimensions of its grains (for example: 5/25). The aggregates are classified according to their origin (natural or artificial), their density (heavy or light), and their size. To obtain good regularity of the grain-size composition of concrete, the mineral skeleton is made up in the concrete mixing plant from three sand fractions, which are usually
- *fine aggregates*: 0.4 mm (sieve), or sands,
- *medium aggregates*: from 4 to 20 mm, or gravel,
- *large aggregates*: from 20 to 40 mm, or pebbles.

We can classify aggregates as
- **standard** *(les granulats courants)*: natural products, either rolled by water and with rounded grains, or crushed and with angular grains, not having undergone transformation different from mechanical (sifting, crushing, washing). In this category are
  - *round aggregates (les granulats dit roulés),* obtained by sifting and washing the alluvial materials, which usually give rounded shapes,
  - *crushed aggregates (les granulats concassés),* obtained by crushing eruptive or sedimentary rocks, which usually give angular forms,
  - *mixed aggregates (les granulats mixtes),* round crushed aggregates that are made up of aggregates of rounded form and the others of angular forms;
- **natural light or manufactured** *(les granulats légers naturels ou fabriqués)*: based on mineral matter (pumice, pozzolana, clays and expanded shales, fly ash, expanded polystyrene, etc.) used for certain constructions;
- **heavy** *(les granulats lourds)*: used for certain categories of concrete, among which are scraps, iron pellets, magnetite, barite;
- **vegetable** *(les granulats végétaux)*: constituted by wooden fibers or shavings agglomerated with cement and compressed.

AGGREGATE *d/D*
Granulat *d/D*
Building Materials
A grain that satisfies the following conditions (*d* being the smallest dimension and *D* the largest):
- the retained material on the sieve of mesh *D* lies between

-1 and 15% if $D > 1.56d$,
-1 and 20% if $D \leq 1.56d$;
- the undersized material in the sieve of mesh D lies between
-1 and 15% if $D > 1.56d$,
-1 and 20% if $D \leq 1.56d$;
- the retained material on the sieve of mesh $1.56D$ is null;
- the undersized material in the sieve of mesh $0.63d$ is < 3%; however for $D \leq 5$ mm this limit is 5%;

(The *d/D* term is reserved for such aggregates as *d,* under the conditions defined previously, i.e., equal or greater than 0.5 mm. For the contrary case, the aggregate is called *aggregate O/D*.)

AGGREGATE POROSITY
Porosité d'un granulat
Building Materials
The ratio of the volume of void space within grains to the absolute volume of these grains. Porosity is determined by measuring the quantity of water absorbed by a sample before drying until constant weight is attained. The sample is then subjected to a vacuum saturation; this quantity of water is the absolute volume of the dry sample.

AGGREGATE PROPERTIES
Propriétés des granulats
Building Materials
All of the physical, physicochemical, and chemical qualities of the aggregates in mortars and concrete proportions (source and nature of the rocks, impurities, shape, porosity, etc.)

AGGREGATE RACK FOR SEVERAL TANKS
Classeur à bacs multiples
Equipment and Tools
A device enabling hydraulic classification of aggregates.

AGGRESSIVE WATERS
Eaux agressives
Defects (Building Materials)
Waters that may bring about chemical reactions with susceptible mediums, such as steels. Aggressive waters can be divided into two categories:
- **mud-laden waters** (calcareous, sulfated water, seawater, etc.);
- **pure waters.**

AGGRESSIVENESS
Agressivité
Materials
The corrosive capacity of some liquids or atmospheres.

AGING
Vieillissement
Metallurgy; Materials; Painting
1. General property of stable systems whose mechanical, chemical, etc. characteristics, evolve with time.
2. The variation according to time, at room temperature or during slight heating, of the properties of a metal having undergone preliminary processing such as quenching and/or cold hammering. Aging is:
- **natural *or* spontaneous** *(naturel* ou *spontané)* if it occurs at room temperature and without intervention of other factors (it is sometimes improperly called *spontaneous temper*);
- **artificial** *(artificiel* ou *accéléré)* if it is hastened by heating at moderate temperature, by refrigeration, temperature oscillations (inside a gap which may or not may include room temperature), by mechanical action, or any other combination of these means. Its objective is to quickly obtain modifications of properties which would have occurred spontaneously at a room temperature but only after a longer time. Bluing (improperly called *blue annealing*) is sometimes used to accelerate artificial aging.

3. Progressive degeneration of a paint film, due to exposure to atmospheric, chemical and physicochemical aggressive agents.

AGING OF GROUND BY DEFORMATION
Vieillissement d'un sol par déformation
Geology
A modification of the mechanical characteristics to a volume of ground, relative to shearing, brought about by varying the volume.

AGING RESISTANCE TEST OF PAINT
Essai de résistance au vieillissement d'une peinture
Test of Materials (Painting)
A test that consists in determining the duration of a paint film over time relative to the various forms of aggression it is likely to be subjected. Test specimens are subjected to a succession of

various atmospheres constituting a cycle of reference (rain → cold → wet heat → ultraviolet), usually four to eight cycles, until the coating deteriorates; basically:
- loss of brightness;
- peeling (blistering and scaling);
- variation of dye;
- dusting.

This test is always supplemented by the wrench strength test to check the adhesion of the coating on its substrate. This value is then compared with that of a witness test specimen. The loss of adhesion is generaly 10 to 15 bar.

AGITATING TRUCK
Camion-malaxeur; Toupie à béton
Equipment and Tools
Syn. with TRANSIT MIXER TRUCK; TRUCK MIXER

AGITATOR
Agitateur
Equipment and Tools
A device to brew, stir, mix, or homogenize liquid or pasty mixtures. Syn. with MIXER; MIXING PADDLES; STIRRER

AGREEMENT CARD
Fiche d'agrément
Building Materials
A regulation document giving the characteristics of products specified in the contract (steels for reinforcement, steel prestressing cable, for example).

AIR
Aérien
Hydraulic Binders
Syn. with AERIAL

AIR BRICK
Brique crue
Building Materials
Syn. with GREEN BRICK; HAND-FORMED BRICK

AIR BUBBLE
Bulle
Defects
A small noticeable cavity on paint coatings or on concrete facings. Syn. with VESICULAR

AIR CAVITY
Soufflure
Defects
Syn. with BLISTER; GAS CAVITY; BLOWHOLE; HONEYCOMB

AIR COMPRESSOR
Compresseur
Equipment and Tools
Syn. with COMPRESSOR

AIR CONDUIT
Canar
Equipment and Tools
A large pipe of thin metal sheet or fireproof and waterproof cloth, from 40 to 60 cm in diameter, for ventilating dead end structures (example: underground work). Syn. with AIR PIPE

AIR CUSHION
Coussin d'air
Equipment and Tools
A mechanical device that uses trapped air to prevent motion. Air is trapped in a plastic toroidal envelope fixed on an aluminum plate and placed between the load and the ground. The compressed air in the envelope is forced to the bottom; when the pressure is great enough, the air escapes to the ground which allows of the cushion and the load to float on the air. Syn. with AIR SKATES; CUSHION

AIR ENTRAINMENT METER
Aéromètre
Equipment for Measure and Control
Syn. with AEROMETER

AIR GUARD
Garde d'air
Construction
The clearence, usually at least 20 cm, between the top of a vehicle and the intrados of the tunnel or bridge. **See Figure 10**

AIR LEVEL
Niveau à bulle d'air
Equipment for Measure and Control
Syn. with SPIRIT LEVEL

AIR LOCK
Sas à air; Ecluse à sas
Foundation
The chamber of a pneumatic caisson, capable of being hermetically sealed, that allows workers and materials to pass between places of different pressures.
Syn. with MAN-LOCK; MATERIALS LOCK

AIR PIPE
Canar
Equipment and Tools
Syn. with AIR CONDUIT

AIR SEASONED TIMBER
Bois séché à l'air
Building Materials
Syn. with AIR-DRIED TIMBER

AIR SET
Eventement
Hydraulic Binders
The hardening of bagged cement when it is stored in wet atmosphere. Syn. with WAREHOUSE SET

AIR-SET
Prise à l'air
Hydraulic Binders
To allow a hydraulic or air-cured binder to harden under normal atmospheric pressure.

AIR SHAFT
Puits d'aération
Construction
Syn. with VENTILATION SHAFT

AIR SKATES
Coussin d'air
Equipment and Tools
Syn. with AIR CUSHION; CUSHION

AIR SUPPLY
Aérage
Work
Syn. with VENTILATION

AIR-DRIED TIMBER
Bois séché à l'air
Building Materials
Wood with a humidity rate of approximately 15% when it is dried in open air under temperate climates for a sufficient time. Syn. with AIR SEASONED TIMBER

AIR-DRY
Commercialement sec
Building Materials
Syn. with DRY COMMERCIALY

AIR-ENTRAINED CONCRETE
Béton aéré
Building Materials
Concrete containing a small proportion of air bubbles produced by incorporating special products, such as resins. The concrete is more easily worked and has better frost resistance.
Syn. with AERATED CONCRETE

AIR-ENTRAINING AGENT
Entraîneur d'air
Materials
An admixture that forms air bubbles in concrete or mortar. Air-entraining agents increase the plasticity of the concrete as well as the frost strength after hardening, improve tightness, and retard excessive drying in summer and segregation during transportation. Their main disavantage is that they reduce the strength of the mortar or concrete.

AIR-ENTRAPPED CONCRETE
Béton à air occlus; Béton à occlusion d'air
Building Materials
A product with a small proportion of air (4 to 6% in volume) through addition of air-entraining agents or special cements. This occlusion of air increases the concrete's frost resistance.

AIR-FLUSH DRILLING
Forage à l'air
Work
Drilling practice identical to rotary drilling except that drilling mud is replaced by air. Used for example, when the permeability of the ground is too high, which results in significant loss of drilling mud. Syn. with PNEUMATIC DRILL

AIR-HARDENING LIME
Chaux aérienne
Building Materials
A natural product which comes from the calcination of limestones containing inert foreign

matters. Baking produces the quick lime, which is extinguished by contact with water. The reaction of extinction is strongly exothermic and causes a swelling that reduces the lime into powder. Air-hardening limes only harden by carbonation in air. There are several types of air-hardening limes:

- **fat lime *or* common lime *or* hydrated lime** *(la chaux grasse):* lime which abounds or an air-hardening lime obtained by calcination of pure limestones. Its hydraulicity index is 0 to 0.10, and the quantity of clay contained in the limestone is 0 to 5%;
- **lean quicklime** *(la chaux maigre):* an air-hardening lime that is not abundant and which is produced from limestones containing sand or clays in small quantities. Syn. with HIGH-CALCIUM LIME; NONHYDRAULIC LIME;

***AIRLESS*™ SPRAYING**
***Airless*™; Pulvérisation airless**
Painting
Syn. with *AIRLESS* ™SYSTEM

***AIRLESS*™ SYSTEM**
***Airless*™; Pulvérisation airless**
Painting
Painting with an atomizer squirt gun that pulverizes the paint to a strong pressure (50 up to 200 bars) on a substrate. Syn. with *AIRLESS*™ SPRAYING

AIR-LIFT PUMP
Emulseur
Equipment and Tools
A metal pipe of diameter between 150 and 300 mm that encloses a pipe of diameter 20 to 60 mm. The pump is suspended from the boom of a crane.
The insufflation of compressed air in the inner pipe, approximately 30 cm above the base of a vertical tube filled with a liquid, produces a release of bubbles that increase and dilate as the pressure decreases. The mixture (water + sediments + air) thus emulsified has a density weaker than that of the ambient liquid and is subjected to an upward force, producing at the base of the tubing strong suction of the sediment loaded liquid.
The air-lift pump is mainly used:

- *to clean sewage or loose materials (sludge, sand, and pebbles) out of cased piles, cofferdams or vibrodriven piles;*
- *drilling into water after setting up an inlet filter, its function is to eliminate fines and to clean the wall of a drilling so as to obtain maximal water flow without risk of clogging;*
- *a sounding tube of piles whose base has been cored or perforated to improve water clearness before a television camera is passed through, to clean sediment or mud out of a cavity before it is injected.* **See Figure 11**

***AIROX* CONCRETE**
Béton *Airox*
Building Materials
Materials whose aggregates are made of *Airox* (diatomaceous earth and expanded shale).

AIR-PLACED CONCRETE
Béton projeté
Building Materials
Syn. with PNEUMATICALLY PLACED CONCRETE; SHOTCRETE; SPRAYED CONCRETE

AIR-PLACING MACHINE
Machine à projeter
Equipment and Tools
Syn. with CEMENT CEMENT CONCRETE GUNITE MACHINE; CONCRETE GUN; CONCRETE PLACING GUN; MORTAR GUN

AIRPLANE MAPPING
Photogrammétrie
Topography
Syn. with PHOTOGRAMMETRY; PHOTOGRAPHIC SURVEYING

ALABASTER
Albâtre
Mineralogy
A homogeneous gypsum, of a milky white amorphous appearance that consists of a microcrystalline aggregate deprived of an interstitial phase and inclusions.

ALBA
Albe
Building Materials
A conifer with soft white wood.

ALBIAN
Albien
Geology
A formation of the Mesozoic Era and Cretaceous system.

ALBURNUM
Aubier; Aubour
Nomenclature of Materials
Syn. with SAPWOOD

ALDEHYDOPHENOLIC RESIN
Résine aldéhydophénolique
Polymers
A synthetic product obtained through polycondensation of phenols (or mixtures of phenols) and of aldehydes (or mixtures of aldehydes).

ALDER
Aune ou **Aulne**
Building Materials
A tree whose wood is used for building on watery sites, since water does not harm it.

***ALEP* BRECCIA**
Brèche d'*Alep*
Building Materials
Turkish marble.

ALERTING DEVICE
Dispositif alerte
Equipment for Measure and Control
An indicator enabling confirmation of the stability of terrains or showing the existence of incompatible movement with the security of circulation. This device releases as soon as the displacement, in comparison with a permanent mark, from a point located in an unstable zone, exceeds a value determined by advance. We can distinguish: horns to breaking wire ordering the alert by electrical relay, displacement sensors, optical systems, etc.

ALETTE
Alette
Construction
Part located on both sides of the pilaster of a balustrade.

ALIDADE
Alidade
Topography
Syn. with AZIMUTH READING DEVICE; SIGHT RULE

ALIGNING
Enlignement; Alignement
Masonry; Topography
1. Laying end to end quarry stones, bricks, etc.
2. Syn. with ALIGNMENT; LINING

ALIGNMENT
Alignement
Topography
1. Demarcation of the wayside properties of a road or street.
2. Location of points on the same line. For achieving alignments, optic instruments, taut wires, laser beam are used.
Syn. with ALIGNING; LINING

ALITE
Alite
Hydraulic Binders
A tricalcium silicate, it is a component of Portland cement, which has most hydraulic properties of the cement.

ALKALI REACTION
Alcali réaction
Defects (Construction of R.C. and P.C.)
Syn. with ALKALI-AGGREGATE REACTION

ALKALI-AGGREGATE REACTION
Réaction alcali-granulats
Defects (Construction of R.C. and P.C.)
A chemical reaction in mortar or concrete between alkalis of Portland cement or others sources and some constituents of the aggregates. The reaction can be limited, producing a weakening or expansion, of the concrete. It may even destroy the entire work.
The reaction depends on several factors: petrographic nature, accessibility of minerals to the aggressive solutions, and especially, any existing deterioration of the rock. The alkali reactions are chemical reactions between certain forms of silica or silicate, which may be present in the aggregates, and the alkalis of the concrete. Three conditions must be met:
- *the presence of reactive silica in the aggregates,*
- *a high content of alkaline in the interstitial solution of the concrete,*

a wet environment.
The alkali silica reaction and the alkali silicate reaction are distinct.
A third form of alkali reaction is the alkali carbonate reaction. This phenomenon called the reaction of dedolomitization, *is completely different from the alkali reaction in a strict sense. This reaction leads to the decomposition of dolomite (contained in certain limestones), double calcium carbonate and magnesium in the presence of* $Ca(OH)_2$ *(calcium hydroxide) and of KOH (potassium hydroxide) with the formation of calcite* $CaCO_3$ *and brucite* $Mg(OH)_2$*, stable and insoluble minerals.*
In real terms for a concrete structure, these phenomena result in:
cracking (hairline cracking of various widths) over time,
pustules or craters,
movements and deformations,
colorings or discolorations,
In the alkali-carbonate reaction, expansion is due to the formation of ettringite, with the presence of clay, the formation of alkaline silicate gel.
Syn. with CONCRETE CANCER

ALKALINE EARTH
Terre alcaline
Geology
Ground containing predominantly alkaline elements, such as baryta, lime, magnesia, and strontia.

ALKALINE ROCK
Roche alcaline
Geology
An endogenous material containing more than 10% soda and potash, which leads to the existence of special minerals.

ALKALINITY
Alcalinité
Hydrology
Property of having alkaline salts (for example: alkaline water). Syn. with BASICITY

ALKYD
Alkyde
Painting and Polymers
A resin in the manufacture of certain paints. This resin is produced by the reaction of a polyalcohol with a mixing of a polyacid and a fatty monoacide.

ALKYD RESIN
Résine alkyde
Polymers
A synthetic product of polycondensation between polyacids or mixtures of polyacids and polyalcohols or mixtures of polyalcohol: a paint thinner-soluble medium.

ALLIGATORING
Peau de crocodile *ou* de Crapaud; Crocodilage
Defects (Painting)
A type of initial defect appearing as small deep cracks, but appreciably broader than hairline cracks and drawing polygonal contours relatively even. Alligatoring results from applying a coat of paint on one before it is completely dry. Syn. with CRAWLING; CROCODILING.

ALL-IN MATERIAL
Tout-venant
Building Materials
Syn. with QUARRY-RUN; RAW AGGREGATE

ALLOPHANE
Allophane
Geology
A silico aluminous sedimentary rock of detrital origin, related to the clay family.

ALLOWABLE STRESS
Contrainte admissible
Strength of Materials
The maximal conventional value of stress to which a construction element may be subjected. Syn. with PERMISSIBLE STRESS

ALLOWANCE
Surépaisseur; Rabais
Work; Contract
1. Excess thickness. Syn. with BULGES
2. Syn. with REDUCTION

ALLOWANCE FOR TARE CURVE
Courbe de tarage
Hydrology
Any graphic change in the rate of flow of a waterway according to the measured water

height (the ordinate), and the corresponding rate of flow (abscissa.)

ALLOY
Alliage
Metallurgy
A metal obtained by fusing two or more metals to improve their properties. Binary alloys contain two metals, ternary alloys three, etc.
- **ferrous alloys** *(les alliages ferreux)*: metal products in which the average content of iron, expressed as a percentage, is higher than that of any other alloy;
- **nonferrous alloys** *(les alliages non ferreux)*: products based on aluminum, zinc or, magnesium and copper and nickel alloys.

Syn. with ALLOYING; BLENDING

ALLOY STEEL
Acier allié; Aciers spéciaux
Metallurgy
1. A ferrous product which contains an alloying element different from carbon for modifying its qualities.
2. Syn. with SPECIAL STEELS

ALLOYING
Alliage
Metallurgy
Syn. with BLENDING

ALLUVIAL
Alluvial
Hydrogeomorphology
Describing alluvia ot that which results from alluviation.

ALLUVIAL BANK
Levée alluviale
Geohydrology
Syn. with ALLUVIAL LEVEE

ALLUVIAL DEPOSITS
Baissier; Alluvion
Hydrology; Geomorphology
1. In rivers, accidental settlings that hinder navigation, by reducing the depth of water.
2. Syn. with ALLUVIUM; FLUVIAL SEDIMENT; OUTWASH

ALLUVIAL LEVEE
Levée alluviale
Geohydrology
A small hillock of alluvial material accumulated along the banks of a river bed. Syn. with ALLUVIAL BANK

ALLUVIAL SHEETWATER DOMAIN
Domaine des nappes alluviales
Hydrology
Groundwater tables located on both sides of a waterway.

ALLUVIAL SOIL
Sol alluvial
Geology
A soil, usually on recent alluvia, consisting of sediments of fluviatile or wind origin.

ALLUVIATION
Alluvionnement
Geomorphology
The result of an alluvium. Syn. with SILTING UP

ALLUVIUM
Alluvion; Accoulin
Geomorphology; Building Materials
1. Material deposited by wind, running water, or ice. Syn. with ALLUVUIAL DEPOSITS; FLUVIAL SEDIMENT; OUTWASH
2. Alluvia with which some bricks are manufactured.

ALPINE FINISH
Enduit tyrolien; Mouchetis; Crépi tyrolien
Masonry
Syn. with ROUGHCAST; ROUGH RENDERING;TYROLEAN FINISH

ALTERATION
Alteration
Defects (Construction of P.C. and R..C.)
Change in the texture of a work, such as hairline cracks, variations de porosity, specific surface, etc., resulting from mechanical, physical, or chemical causes. In masonry, the major or superficial erosion due mainly to atmospheric agents (e.g., stains, pustules, scaling, blooms, crusts, peeling) and often lead to a loss thickness. Syn. with DETERIORATION

ALTERNATING BENDING TEST
Essai de pliage alterné
Test of Materials (Metallurgy)
A metal wire is bent and unbent repeatelly until its breaks. The number of alternations determines the ductility of the wire.

ALTERNATING SHEET PILE DRIVING
Battage en touches de piano
Foundation and Earthwork
A practice of driving sheet piles in panel. This panel consists of several sheet piles interlocked to keep them straight and aligned. They are driven alternately, but no to the same depth. At completion of driving they himself all stand approximately at the same level.

ALTIMETRIC POINT
Point altimétrique
Topography
A numerical expression of the altitude (absolute or relative) of a chosen point as a planimetric point.

ALUMINUM
Aluminium
Metallurgy
A metal extracted from bauxite.

ALUMINUM-COATED STEEL SHEET
Tôle d'acier aluminiée
Metallurgy
A material obtained by immersing a steel sheet in a melted aluminum bath.

ALUMINUM COATING
Aluminiage
Metallurgy
Syn. with ALUMINIZING

ALUMINIZING
Aluminiage
Metallurgy
Process of covering steel with an aluminum film, either hot for galvanization or with a metallizing torch. Syn. with ALUMINUM COATING

ALUMINOUS CEMENT
Ciment fondu; Ciment alumineux
Hydraulic Binders
A hydraulic binder made from aluminous and chalky materials by fusion or clinkerization, followed by a fine grinding. The most common are manufactured from bauxite and limestone and contain about 40% alumina, about 40% calcium oxide and lesser quantities of iron and silica oxide. These materials harden rapidly and are quite strong. Syn. with HIGH ALUMINA CEMENT

ALUMINOUS CONCRETE
Béton fondu
Building Materials
Any ordinary concrete whose binder is aluminous cement. During its set, this concrete shows a distinctive exothermic hydration which enables it to be used at low temperatures. It also has excellent resistance to sulfated waters.

ALUNDON
Alundum
Materials
A crystallized aluminate, used as abrasive, produced by fusion of bauxite in an electric furnace.

ALVEOLAR *or* CELLULAR CONCRETE
Béton cellulaire *ou* alvéolaire
Building Materials
A light material in which large air bubbles occupy a large volume.

ALVEOLAR GEOTEXTILE
Géotextile à structure alvéolaire
Materials
A rug formed of hexagonal cells set up on slopes to prevent erosion.

ALVEOLAR WEATHERING
Erosion alvéolaire
Defects (Masonry)
Damage to quarry stones in the form of superficial removal of material accompanied by many regularly distributed cavities. Significant evaporation of water from the masonry causes fast disintegration.

ALVEOLIZATION
Alvéolisation
Geology and Masonry
A nonhomogeneous disintegration of stone into powder. Cavities or furrows parallel to the beds of the material, particularly in wet zones are formed. The mortar in the joints can also be affected.

ALWETRON ™ SYSTEM
***Alwetron*™**
Equipment for Measure and Control
An instrument for tensile testing at a constant speed of bituminous binders (elasticity test).

AMBAR SLUSHPIT
Fosse à boue
Foundation
A reservoir in which drilling mud from a hole, a diaphragm wall, etc., is poured. The mud is recycled (cleared of the sediments that it carries) and reused.

AMERICAN CAISSON
Caisson
Foundation
Syn. with BOX CAISSON; STRANDED CAISSON

AMERICAN PROJECTION
Projection américaine
Drawing
The representation of views contrary to the European projection.

AMINOPLAST
Aminoplaste
Polymers
An umbrella for a synthetic thermosetting resin of some hardness, ability to be isolated, and resulting from the condensation of amines or amides (urea) with formaldehyde.

AMINOPLAST RESIN
Résine aminoplaste
Polymers
A synthetic product, usually resulting from polycondensation between, on the one hand, amides or mixtures of amides and/or amines or mixtures of amines and, on the other hand, aldehydes or mixtures of aldehydes.

AMORPHOUS COAT
Couche amorphe
Metallurgy
The superficial layer of a metal piece altered during machining.

AMORTIZEMENT
Amortissement
Construction; Architecture
1. The sloping top of a butress or projecting pier.
2. The side of a building element (for example a wall bracket, a corbel, etc.) perpendicular to a molding (of an entablature for example) brutally breaking up the latter's continuity. Syn. with BREAKING. **See Figure 12**

AMPHIBOLES
Amphiboles
Mineralogy
Silicates of iron or lime, aluminum, sodium, etc., and magnesium, frequent in plutonic and metamorphic rocks.

AMPHIBOLITE
Amphibolite
Geology
A metamorphic rock of which the various varieties are represented by crystalline schists, rich in amphibole and that contain basic feldspar, mica, and optionally, quartz.

AMPHIPHILIC
Amphiphile
Materials
Having a strong affinity for water.

AMPHOTERIC
Amphotère
Materials
Having properties of both acids and bases.

AMYGDALOIDAL ZECHSTEIN DOLOMITE
Cargneule
Geology
A cavernous dolomite, often ferruginous and clayey, formed in the Alps. Cavities are due to the dissolution of limestone or anhydrite islets. Syn. with BLASENSCHIEFER; VACUOLAR DOLOMITE LIMESTONE

ANALLATISM
Anallatisme
Topography
Ability of stadimeters and tachometers to give direct read-out of the distance from the center of the instrument to the leveling rod.

ANALYSIS OF HARDENED CONCRETE
Analyse du béton durci
Test of Materials (Construction of R.C. and P.C.)
Complete procedure to determine the structural proportions of a given concrete.

ANALYTIC DESIGN
Calcul analytique
Strength of Materials
A design to find maximum stress in a section of beam, all of whose elements are known, and that is subjected to an external force of known position and intensity.

ANAMESITE
Anamésite
Geology
A dolerite with minerals smaller than 1 mm. Syn. with MICROGABBRO

ANAPHORESIS
Anaphorèse
Materials
Migration of colloidal particles in suspension in a liquid, under the influence of an electrical field, toward the anode (Migration toward the cathode is called *cataphoresis.*)

ANCHOR
Ancre; Ancrer
Building Materials; Civil Engineering Structure
1. A steel piece in the shape of S, T, X, Y, usually exposed (but that can be embedded in masonry), in which center of which is a bolted tie rod and which secures a vault, a return wall, etc. Syn. with CRAMP IRON; S-ANCHOR; T-ANCHOR; TIE, etc. **See Figure 13, 13a**
2. Syn. with BRACE; STAY; TIE

ANCHOR
Moufler
Work
To consolidate a wall with steel bars.

ANCHOR BLOCK DISPLACEMENT
Déplacement de massif d'ancrage
Defects (Civil Engineering Structure)
A defect in suspension bridges in which the anchor block is displaced due to traction exerted by beam cables. It can be stabilised or evolutionary.

ANCHOR BLOCK BREAKING
Fracture de massif d'ancrage
Defects
In cable bridges, breaking the anchor block completely after cables have been tensioned.

ANCHOR BOLT
Boulon d'ancrage
Equipment
A bolt with a rectangular head embedded in concrete or masonry with the threads opposed to hold a structure or machinery in place. Syn. with ANCHOR ROD; TIE BOLT

ANCHOR *or* ROCK BOLT
Boulon d'ancrage
Materials
A supporting steel rod several yards long anchored in the rock (or masonry) at its extremity or throughout its length after insertion into a drilled hole. **See Figure 14**
Types:
- **anchor bolts** *(les boulons à ancrage ponctuel),* extend to the bottom of the hole by a slot-and-wedge device or an expansion shell. A metal plate or a block is then secured by tightening a nut;
- **cement bolts *or* split bolts *or* stabilizer bolts** *(les boulons à ancrage réparti),* are fastened in the hole by glue (conditioned resin) with a hardener (the hardener is mixed when the bolt is rotated. It is inserted in the hole), or cement milk injected into the hole. These bolts are tightened by screwing with a distribution plate between the nut and the wall or the rock;
- **split-set bolts** *(les boulons fendus),* are hollow rods split along a generatrix. Sunk by force in holes of slightly smaller diameter than that of the rod, these bolts are held by friction on the walls of the hole.

ANCHOR RING
Organeau
Construction
Syn. with MOORING RING

ANCHOR ROD
Tirant d'ancrage; Tige d'ancrage; Boulon d'ancrage
Building Materials; Equipment
1. A metal reinforcement of bars, wires, strands, or tubes, placed in a vertical, horizontal, or inclined hole in masonry or the ground.
Anchorings are known as *distributed* when they are embedded over the entire length; they are fixed, either with resin or mortar or cement grout. Anchorings are known as *limited* when

they are only connected in the ground over a limited length (anchoring to expansion).
In terms of function tie rods can be:
- **active *or* prestressed** (le tirant actif ou précontraint),
- **passive *or* not prestressed** *(le tirant passif ou non précontraint).*

In terms of its useful life, tie rods are:
- **provisional** (le tirant provisoire),
- **definitive** *(le tirant deftnitif).*

Their field of application is vast; they are generally used:
- to maintain the stability of large timbered diggings, but using, in the place of struts, sheeting piles, mainline or prefabricated diaphragm walls, and many other supporting devices. Tie rods are, in this case, generally temporary;
- to help stabilize a structure.

Tie rods have three distinct parts:
- length of sealing, which is the anchorage zone of the ground, called the *bulb of anchoring;*
- free length,
- head, which maintains the connection between the ground and the work and enables possible tensioning of reinforcement.

Syn. with LAND TIE; TENSION BAR; TIE ROD
2. An anchorage tie rod consisting of a steel bar in tension.
3. Syn. with ANCHOR BOLT; TIE BOLT

ANCHOR SHOE
Patin
Equipment and Tools
Coating in the shape of a truncated cone, set at the base of each standard of a scaffolding, using mortar or plaster to seal them in place.

ANCHOR TIE
Tirant à ancre
Building Materials
An element of flat iron forming a U-bolt, in which a square iron anchor is inserted.

ANCHOR TIE BAR
Crayon
Equipment and Tools
A solid round bar, or sometimes shaped, sunk in the ground as an anchorage point.

ANCHORAGE
Fusible; Epinglage
Construction; Masonry
1. Syn. with FUSE
2. Syn. with NEEDLING

ANCHORAGE
Ancrage
Construction of P.C.; Construction; Foundation and Masonry
1. In the prestressed concrete, a device to keep taut a cable and transmit the prestressing force to the concrete.
There are two types of anchorages:
- *active,* in which the anchorage heads are outside the concrete;
- *passive,* in which short cables emerge only at one end, which is directly anchored in concrete; this anchorage is particularly used in statically indeterminate beams. A the end of the cable is a fixed anchoring; at the other end is a mobile anchoring which is used for tensioning. Syn. with BRACING. **See Figure 15**

2. Syn. with FIXING
3. Syn. with ANCHORING.

ANCHORAGE BLOCK
Massif
Construction
Syn. with FOUNDATION; THRUST BLOCK; etc.

ANCHORAGE CHAMBER
Chambre d'ancrage
Construction
Small chamber, often buried, in which the carrying or standing cables of some suspension bridges are anchored. In certain cases, the anchorage chamber has an annular gallery in which cables are fastened. **See Figure 16**

ANCHORAGE CONE
Cône d'ancrage
Construction
Syn. with CONE GRIP

ANCHORAGE MORTAR
Mortier d'ancrage
Building Materials
A quick-setting product used for sealing bearing plates, rag bolts, ties, etc.

ANCHORAGE OF STEEL PRESTRESSING CABLE
Ancrage de câble de précontrainte
Construction of P.C.
A device for transmitting to a structure the stresses, mainly compression, that would be exerted on the steel prestressing cables.
The most widespread anchorage, the Freyssinet, consists of a bearing base comprising a female cone, in which the cable is jammed and a male cone surrounded by an isolating wire. Locking is carried out with a special device with jacks that ensures correct tensioning of the wire and pushes back the male cone until locking occurs. In Coyne tie rods, the wire heads, which are previously spread out and fastened, are embedded in a concrete base poured in a steel mold. Tensioning is done with jacks and holds. **See Figure 35**

ANCHORAGE OF SUSPENSION BRIDGE CABLE
Ancrage de câble de pont suspendu
Construction
The fastener of a cable or guy to an anchor in a block or in the ground.

ANCHORAGE SHAFT
Puits d'ancrage ou d'amarrage
Construction
A structure in which suspension bridge cables are moored. (Suspension bridge cables can be anchored in anchor blocks or shafts according to the configuration of the banks and the nature of the ground.)

ANCHORAGE TIE BAR
Tirant d'ancrage
Construction
In a suspension bridge, the tie rod used to anchor into concrete, a solid mass, or the ground.

ANCHORED BRACKET
Briquet
Construction
In suspension bridges, a short bracket of steel or cast iron embedded in pylon masonry. It anchor the cable called a *vertical guy rope.* **See Figure 17**

ANCHORING
Ancrage; Scellement
Foundation; Masonry; Work
1. The length of penetration into the strong stratum (for example: a pile). **See Figure 18**
2. A device containing mostly a high-bond reinforcement and placed in a drilled hole, which is then stuffed with mortar or injected. Anchoring can be either a means of strengthening or a normal construction device.
3. To fasten a part, generally subjected to a tensile force, to a massive block or the ground. Syn. with ANCHORAGE. **See Figure 19**
4. The length of an effectively sealed part. Syn. with END

ANCHORING BOTTOM
Culot de câble *ou* d'ancrage
Construction
Syn. with CABLE BOTTOM.

ANCHORING CONE BOLT
Boulon à cône d'ancrage
Materials
A special bolt used for ground anchorages. The anchorage hole is drilled slightly smaller than the diameter of the bolt head. A crown of six movable wedges on the bolt is pushed backward when the bolt is inserted into the hole. Rotating the bolt opens the wedges and tightens them against the walls of the hole.

ANCHORING LENGTH
Longueur d'ancrage
Construction
A zone particularly for tie rods (bars or cables), whether prestressed or not, or permanent or temporary, which is sealed to the surrounding ground. It consists of three main parts:
- the *anchorage zone to the ground,* in which the cables or bars transmit the forces to the ground through sealing with cement grout;
- the *unsupported length,* in which the tension is constant since there is no contact (or friction) with the ground;
- the *head of the tie rod* designed for tensioning followed by locking.

The length of the anchorage zone depends on friction with the ground, but one compensates for that by choosing the tie rod according to the type of ground (low friction for clayey ground, average for sandy ground, strong for rock). The

anchorage length is usually 3 to 8 m, the free part being covered with a simple mortar or protective coating from corrosion (reinforced tie rod), or injected (prestressed tie rod). The allowable stress can be up to 40 metric tons. The reinforcement can be a bar or steel prestressing cable. Drilling is done in percussion or in rotation (diameter between 50 and 120 mm). Tie rods are used for stabilizing vertical enclosures (diaphragm walls, Berliner walls, etc.)

ANCHORING WIRE
Hauban
Equipment and Tools
A metal or textile rope designed to ensure the position of an apparatus or a structural element (shear legs, crane, mast, etc.) Syn. with WIND BRACE

ANCON
Ancon
Construction
Syn. with CONSOLE

ANDESITE
Andésite
Geology
A volcanic extrusive rock of very fine crystalline composition, usually black or gray.

***ANDREASEN* PRACTICE**
Méthode *Andréasen*
Test of Materials
A technique for analyzing the fines of an aggregate sample by sedimentation.
Fines perfectly deflocculated and dispersed are suspended in a liquid. Periodically, as from time zero, samplings are made at a constant level. The liquid is evaporated and the material is weighed.

ANELASTIC
Anélastique
Strength of Materials
Of a body endowed with the property of nonelasticity.

AN FO
Nitrate-fuel
Explosives
An explosive of fuel-oil nitrate and ammonium, used for demolition of masonry.

ANGLE
Cornière
Building Materials
Syn. with ANGLE BAR; ANGLE CORNER. ANGLE IRON; ANGLE SECTION

ANGLE BAR
Cornière
Building Materials
Syn. with ANGLE; ANGLE IRON; ANGLE SECTION

ANGLE BEAD
Cornette
Construction
Syn. with CORNER ANGLE; CORNER BEAD; CORNER GUARD

ANGLE BRACE
Contre-fiche; Aisselier
Carpentry
1. A structural element that connects the king post to the principal rafter to ease the load on it. Syn. with CORNER BRACE. **See Figure 20**
2. A timber piece fixed across the inside of an angle in a framework to stiffen and strengthen it. Syn. with ANGLE TIE

ANGLE BRACKET
Equerre
Construction
Syn. with CORNER PLATE

ANGLE CLOSER
Clausoir
Masonry
A cut brick used to close de bond at the corner of a wall. Syn. with CLOSER

ANGLE CORNER
Cornière
Building Materials
Syn. with ANGLE; ANGLE BAR; ANGLE IRON; ANGLE SECTION

ANGLE IRON
Cornière
Building Materials
Syn. with ANGLE BAR; ANGLE IRON; ANGLE SECTION

ANGLE OF NATURAL SLOPE
Angle de talus naturel
Geotechnics
The maximum angle φ at which material (e.g., an embankment *AE* will lie without sliding (i.e., from gravity) with the horizontal. *Ax.* This angle varies according to the considered grounds. Syn. with ANGLE OF REPOSE; LANDSLIDE ANGLE. **See Figure 21**

ANGLE OF REPOSE
Angle de talus naturel
Geotechnics
Syn. with ANGLE OF NATURAL SLOPE; LANDSLIDE ANGLE

ANGLE PEAK
Compas
Carpentry
Syn. with COMPASS

ANGLE SECTION
Cornière
Building Materials
A metal section having the profile of an L in square or skew obtained by steel rolling. Each element of the L is called a *leg.* There are four types of angle sections in each of the two categories, L in square or L in skew:
- **equal-leg angles** *(les cornières à ailes égales),*
- **unequal-leg angles** *(les cornières à ailes inégales),*
- **equal-leg square angles** *(les cornières équerres à ailes égales),*
- **unequal-leg angle squares** *(les cornières équerres à ailes inégales).*

Edges of the legs of angle sections can be rounded or sharp. Syn. with ANGLE; ANGLE BAR; ANGLE IRON

ANGLE TIE
Gousset; Aisselier
Metal Construction; Carpentry
1. Syn. with BRACKET;CORNER PLATE; GUSSET PLATE
2. Syn. with ANGLE BRACE

ANGLE VICE *or* DEFECT
Défaut d'angle
Defects (Welding)
A poor weld joint where the weld does not reach the bottom of the dihedral angle formed by the two pieces being welded. (The strength of the assembly is not decreased appreciably unless the joint is unusually significant.) **See Figure 22**

ANGLEDOZER
Bouteur biais
Equipment and Tools
A bulldozer with its blade angled so as to push the earth to one side.

ANGULAR AGGREGATE
Concassé
Building Materials
Syn. with CRUSHED STONE

ANGULAR DISTORTION
Déformation angulaire
Defects (Welding)
A skewing of the desired shape of a welded design due accidental displacement, gap between pieces, etc.

ANGULARITY
Angularité
Buildings Materials
The geometrical characteristic of aggregates concerning the sharpness of corners and edges which allow materials to have a sufficient angle of friction.

ANGULOMETER
Angulomètre
Equipment for Measure and Control
An instrument that measures the flow coefficient of sand when making concrete.

ANHYDRIDE
Anhydride
Materials
An oxygenated binary compound that forms an acid by hydration (carbonic anhydride, sulfur dioxide, etc.).

ANHYDRITE
Anhydrite
Geology
A sulfated sedimentary rock, anhydrous calcium sulfate. It represents gypsum without its water of crystallisation and is generally white and hard. Structures on ground containing a significant amount of anhydrite can experience problems as

gypsum's volume can increase as much as 60% by hydration.

ANHYDRIZATION
Anhydrisation
Materials
The transformation in anhydride.

ANHYDROUS
Anhydre
Materials and Building Materials
Syn. with OVEN-DRIED

ANIMAL LIFE
Faune
Geology
Syn. with FAUNA

ANISIAN
Anisien
Geology
A formation of the Mesozoic era of the Triassic system.

ANISOTROPIC
Anisotrope
Buildings Materials
Describing a material whose physical, mechanical properties, etc., are not all the same in each directions (example: wood, rocks, etc.).

ANNEALING
Recuit; Traitement de recuit
Metallurgy
Heating metal to a high temperature, but below its melting point, and then cooling it slowly in oil to relieve internal stresses and improve ductility and decreasing its hardness.

- **annealing of homogenization** *(le recuit d'homogeneisation),* achieved at high temperature to soften or eliminate heterogeneities of chemical composition due to segregation;
- **annealing of softening *or* smoothing annealing** *(le recuit d'adoucissement),* to decrease the hardness of metal;
- **spheroidization annealing *or* spherodizing** *(le recuit de sphéroïdisation (globulisation)),* to spheroidize precipitated carbides;
- **annealing of regeneration *or* of structural refining** *(le recuit de régénération ou d'affinage structural),* to refine or standardize the grain of steel.

Syn. with SOFTEN; TEMPERING

ANNUAL RING
Cerne
Building Materials
Each visible concentric ring on the cross section of a tree, formed by annual shoots and allows the age of the tree to be determined. Syn. with GROWTH RING; YEAR RING

ANNUAL SURVEY
Visite annuelle
Civil Engineering Structure
A visual examination of work, possibly supplemented by a few levelings, carried out yearly before a more detailed inspection is done, usually every five years.

ANNULAR PASSAGE
Passage annulaire
Earthwork
In tunnels, galleries, etc., the space between the earth wall and the supporting structure.

ANNULUS
Espace annulaire
Work
Space between the internal wall of a drilled hole and the external wall of drilling rods or the external wall of a tubing.

ANODIC OXIDATION
Oxydation anodique
Metallurgy
An electrolytic coating process of metals and alloys with oxide, particularly for aluminum, under the name *anodizing.* Syn. with ANODIZATION; ANODIZING

ANODIC PASSIVATION
Passivation anodique
Metallurgy
A technique to keep the corrosion rate greatly slowed down. It is performed, preferably, on surfaces where an oxide layer is easily formed, such as stainless steel, (i.e. steels containing chromium).

ANODIZATION
Anodisation
Metallurgy
Syn. with ANODIC OXIDATION; ANODIZING

ANODIZING
Anodisation
Metallurgy
Syn. with ANODIZING; ANODIC OXIDATION

ANSI
American National Standards Institute
Various
Organization which represents the United States in the ISO (International Organization for Standardization).

***ANSTETT* TEST**
Essai *Anstett*
Test of Materials (Hydraulic Binders)
A test on cements to determine their ability to withstand attacks of sulfated waters.
This test consists in making a brick slip of plastic paste with the binder under study. The brick slip is allowed dry and harden for a week. It is then ground finely and blended with pulverized plaster of 50% weight of the slip. A new brick slip is then made of this homogenized mixture and exposed to an atmosphere saturated with humidity. After some days, the cement binder under attack begins to swell and crack. Only aluminous cements ***present*** *no sensitive alteration.)*

ANTA
Ante
Construction
A pillar inserted in a wall and overhanging on the main plane of the latter.

ANTHROPIC
Anthropique
Geomorphology
Of a terrain feature formed by humans (alluviation in the swirl zone of a barrage for example).

ANTIACID CEMENT
Ciment anti-acide
Building Materials
A material that resists the action of acids. It is a quartz powder-based mastic, mixed with a solution of sodium silicate or synthetic resin-based products.

ANTIACID PAINT
Peinture antiacide
Painting
A product that protects a substrate from acid. Syn. with ACID-RESISTANT PAINT

ANTIBASE PAINT
Peinture antibase
Painting
A product that protects a substrate from a base.

ANTICAPILLARY
Anticapillaire
Civil Engineering
Of a pavement (roadway) layer that stops capillary rise of water from the ground or underlying layers.

ANTICLINE
Anticlinal
Geology
A fold in which beds are convex upward.

ANTICONTAMINANT FABRIC
Tissus anticontaminant
Sanitary Engineering and Drainage
A geotextile set up above drains, draining pipes, etc., to prevent their being clogged by ground fines. Syn. with ANTIPOLLUTING FABRIC

ANTICORROSIVE DEPOSIT
Dépôt de protection
Metallurgy
A coating deposited on metal to protect it from corrosion and wear.

ANTICORROSIVE PAINT
Peinture anti-corrosion
Painting
A product with a corrosion-resistant pigment (e.g., lead chromate, zinc chromate) used as a primer coat on metal to protect it against corrosion.

ANTICORROSIVE QUALITIES
Pouvoir anti-corrosif
Metallurgy
An assessment under standard conditions, of the ability of a metal to resist the corrosive action of a fluid, especially aqueous liquids.

ANTIDUSTING AGENT
Produit antifarinage
Painting
Product mixed in paint to avoid or retard the dusting. Syn. with DUST PROOFER

ANTIFILM AGENT
Agent antipeau
Painting
An admixture mixed in paint to slow down or prevent skin formation on product surfaces in air. Syn. with ANTISKINNING AGENT

ANTIFOAMING AGENT
Antimousse
Hydraulic Binders and Painting
1. An admixture mixed with concrete or mortar during manufacturing to prevent the concrete or mortar from having too much air.
2. A chemical additive in some varnishes and paints that inhibits the formation of bubbles by reducing surface tension and thus prevents or releases foamings.

ANTIFOULING PAINT
Peinture antisalissure
Painting
A paint used on ship's bottoms that prevents marine organisms (seaweed, molluscs, etc.) from attaching themeselves. The most common are the balanes *(balanus).*

ANTIFREEZE
Antigel
Hydraulic Binders
A frost-proofing admixture that acts as a catalyst and to render the concrete rapidly insensitive to frost by hoarding the available water in set and by reserving microscopic occluded air bubbles where the residual water can freeze without leading to cracking.
- **bivalent antifreeze** (*l'antigel bivalent)* unites qualities of antifreezes and frost-preventing agents;
- **trivalent antifreeze** *(l'antigel trivalent)* is used during cold-weather concreting (-5°C and -10°C) and has three functions:
  - antifreeze that favors set and hardening,
  - fluidifier that enables reduction of the quantity of mixing water without harming its workability,
  - air-entraining agent that improves concrete ventilation. Syn. with ANTI-FROST AGENT; FROSTPROOFING AGENT

ANTI-FROST AGENT
Antigel
Hydraulic Binders
Syn. with ANTIFREEZE; FROSTPROOFING AGENT

ANTIFUNGUS AGENT
Anticryptogamique
Materials
Syn. with FUNGICIDE

ANTIHEAVING BRIDGE-SUPPORT APPARATUS
Appareil d'appui antisoulèvement
Construction
A device that enables a tensile reaction, to be transmitted.

ANTIMONIAL LEAD
Plomb antimonié
Metallurgy
An alloy of lead containing 4 to 5% antimony. It was much used for sealing the bridge-support apparatuses of certain steelworks.

ANTIMONY ELECTRODE
Electrode d'antimoine
Equipment for Measure and Control
An electrode which enables the pH of some solutions to be determined.

ANTIMOSS
Antimousse
Hydraulic Binders
1. An admixture in mortar or concrete during manufacture that prevents moss and other bryophytes from taking root on the concrete surface.
2. A product applied by brush or pulverization after the concrete hardens and that head off the proliferation of mosses, lichens, etc., to its surface.

ANTIOSCILLATORY
Antiballant
Handling
Describing decreasing pendular oscillations of loads handled by a lifting gear.

ANTIOXIDANT
Antioxydant
Painting
An agent in oils and fat paints that slows the drying power and aging of the film, thus increasing its durability.

ANTIPOLLUTING
Anticontaminant
Sanitary Engineering and Drainage
Describing a filter that prevents pollution of collectors, drain pipes, etc.

ANTIPOLLUTING FABRIC
Tissus anticontaminant
Sanitary Engineering and Drainage
Syn. with ANTICONTAMINANT FABRIC

ANTIRUST PAINT
Peinture antirouille
Painting
See RUST PREVENTIVE AGENT. Syn. with RUST-INHIBITING PAINT

ANTIRUSTING
Antirouille
Materials
Syn. with RUSTPREVENTING; RUSTPROOF

ANTISEGREGATION AGENT
Antiflottation
Painting
An agent in a paint containing several colors of pigments that, when the paint is applied avoids the irregular distribution of pigments due to their segregation, either to the surface or in the mass of the film.

ANTISKINNING AGENT
Agent antipeau
Painting
Syn. with ANTIFILM AGENT

ANTITHIXOTROPY
Antithixotropie
Rheology
The property of a fluidifier to resist a jelly-like state at rest.

APERTURE
Ouverture; Regard de visite; Logement
Metallography; Construction
1. Operation through erosion and expansion of the elements of image, to determine the grading of a material structure
2. Syn. with INSPECTION HOLE; MAN HOLE
3. Syn. with CASE

APHANITE
Aphanite
Geology
A rock whose minerals are not visible to the naked eye.

APLITE
Aplite
Geology
A fine-grained white granitic rock containing mostly quartz and feldspar, which is the only mineral in it visible to the naked eye.

APPARENT DENSITY
Densité apparente
Building Materials and Geotechnics
1. The ratio of the mass of a product to the mass of a quantity of water that, at 4° C, occupies a volume equal to the apparent volume of the product.
2. The weight of a material contained in the unit of volume of ground.
Syn. with APPARENT SPECIFIC GRAVITY

APPARENT GAP OF A CRACK
Ouverture apparente d'une fissure
Defects
The distance measured between the two apparent lips of a crack. **See Figure 23**

APPARENT POROSITY
Porosité ouverte
Building Materials
The ratio of the volume of the open pores to the apparent volume of the product expressed as a percentage.

APPARENT SET OF A PILE
Fiche apparente d'un pieu
Foundation
The length of the part of a built-in pile in hard ground.

APPARENT SPECIFIC GRAVITY
Densité apparente
Building Materials and Geotechnics
Syn. with APPARENT DENSITY

APPARENT SPECIFIC GRAVITY OF THE SOLID PART
Densité apparente de la partie solide
Building Materials
The ratio of the mass of a product to the mass of a quantity of water that, at 4°C, occupies a volume equal to the apparent volume of the solid part of the product.

APPEAL BORING
Forage d'appel
Sanitary Engineering and Drainage
A device for drilling through rock in soil of high water content that will drain the water and prevent fines from entering the boring.

APPLICATION TEST OF PAINT ON CEMENT SUBSTRATE
Essai pratique d'application de peinture sur support ciment
Test of Materials (Painting)
Applying the proposed paint system on test specimens of cement mortar representating the actual substrate. Manufacturers specifications are followed, including:
- directions for application;
- drying conditions and recovery time;
- product quantities or thickness of each coat.

APPLYING JOINT
Eclissage
Works
Syn. with FISHJOINT; FISHPLATING

APPROACH SPAN
Travée d'approche
Construction
The extreme span of an overpass crossing a cut in a sloped wall. The approach span located on the right side of the slope increases the visibility and, when the ground allows eliminates construction of an abutment by using a shallow simplified foundation. **See Figure 24**

APPROVED
Agréé
Building Materials
A product or material accepted for building.

APTIAN
Aptien
Geology
A stage of the Mesozoic era of the Cretaceous system.

AQUA REGIA
Eau régale
Materials
A mixture of nitric acid and hydrochloric acid; it dissolves the "royal metals", gold and platinum.

AQUAREACTIVITY
Aquaréactivité
Materials
The property of some materials (resins, etc.) to react to water.

AQUEDUCT
Aqueduc; Pont-aqueduc; Cloaque
Civil Engineering Structure
1. A masonry work (concrete, bricks, or quarry stones) with an opening less than 1.50 m for carrying run off water. Aqueducts can be circular, ovoid, rectangular (box culvert), or arched. They are often established through embankments. If and when the vault is replaced by a slab, the work is called *box culvert.*
Originally, an aqueduct was the supply water for cities; it was elevated or buried. Currently, the term aqueduct is overwhelmingly reserved for a buried work permitting natural waters (rivulet for example) to pass through an embankment. However, operational elevation aqueducts still remain, particularly in Rome.
2. A work weak section, built within a masonry pier, for channeling and draining off water coming from the chimney there.
Syn. with CULVERT; WATER DUCT
3. Syn. with BRIDGE AQUEDUCT
4. An underground vaulted conduit used for drainage (e.g., a sewer). Syn. with CLOACA

AQUEDUCT INSPECTION HOLE
Puisard d'aqueduc; Puits d'aqueduc
Construction
A chamber or access hole fitted out in the vault of an underground work of great length (aqueduct, generally speaking), to allow access to the work for inspection, cleaning, or repair. A work can have several inspection holes. Syn. with WELL OF AQUEDUCT

AQUICLUDE ROCK
Roche poreuse mais imperméable
Geology
A clayey material in which water is fixed by adsorption in tiny pores and circulation is practically null.

AQUIFER
Aquifère; Couche aquifère
Geohydrology
A physicochemical complex of two indissociable phases: solid (or reservoir rock) and water. Syn. with GROUNDWATER RESERVOIR; WATER BEARING

AQUIFEROUS ROCK
Roche poreuse perméable en petit
Geology
Material that allows water circulation through many capillary vessels. It can be an unconsolidated material, such as: sands, gravels, etc., or a coherent material having many cracks or significant porosity.

AQUIFEROUS SYSTEM
Réseau aquifère
Geohydrology
A system of underground waters coming from a karst.

AQUIFUGE ROCK
Roche non poreuse perméable en grand
Geology
A compact material (granites, limestones, gneiss, etc.) in which water can penetrates through cracks, joints, etc. Certain rocks (example: gypsum) undergo initial splitting through dissolving

AQUITANIAN
Aquitanien
Geology
Lower Miocene or uppermost Oligocène.

ARC CUTTING
Coupage à l'arc
*Metal Construction*A process of cutting metal using temperature generated by an electric arc, with or without the use of a gas jet.

ARC SHAKE
Roulure
Defects (Building Materials)
Syn. with RING SHAKE

ARC STRIKE
Coup d'arc
Defects (Welding)
Syn. with STRAY FLASH

ARCADE
Arcade
Construction
A line of arches raised on columns or piers that can be free-standing or attached to a wall and that are extremely stable. Syn. with ARCHWAY

ARCATURE
Arcature
Construction
Syn. with BLIND ARCADE

ARCH
Arc
Construction
1. The curve that describes a vault. The following are types:

- **flat arch** *(l'arc déprimé):* a surbased vault similar to a basket-handle arch but differs in its central part that is horizontal and equal to less that three fifths of the chord; Syn. with DIMINISHED ARCH
- **extradosed vault in arch** *(l'arc ou voûte extradossé en arc):* extrados is similar to that of the bottom face, without being parallel; **See Figure 25**
- **extradosed vault in coping (of bridge)** *(l'arc ou voûte extradossé en chape):* extrados of a vault consisting of two symmetrical inclined lines intersecting at the midpoint of the summit; **See Figure 26**

- **extradosed parallel arch (of vault)** *(l'arc ou voûte extradossé parallèlement):* each arch stone is of equal length, so the intrados and extrados are concentric curves; i.e., of constant thickness;
- **extradosed horizontal arch** *(l'arc ou voûte extradossé horizontallement):* the extrados is a horizontal line. Also called *extradossed level;*
- **ogee arch** *(l'arc en ogive ou aigu):* slightly used in structures there are three varieties:
  - *three-pointed arch or equilateral arch (l'arc en tiers-point),* in which the summit and the centers form an equilateral triangle,
  - *lancet ogee (l 'ogive à lancette),* formed by two arches which have their centers are in outside springings,
  - *drop ogee or surbased ogee (l'ogive surbaissée),* in which radii of the arches are contained inside of the springings;
- **semicircular arch** (*l'arc en plein cintre):* the intrados is a semicircle;
- **simple arch** *(l'arc simple):* archstones are connected to surrounding courses without extrados;
- **bowstring** (*l'arc sous-tendu);* **See Figure 27**
- **surbased *or* depressed arch** *(l'arc surbaissé):* the rise is less than half of its opening; the center is below the springings. **See Figure 28**
- **raised *or* stilted arch** *(l'arc surhaussé, exhaussé ou surmonté):* the rise is greater than its opening.

2. A concave construction that surmounts an opening.

3. In arch dams, a fictitious horizontal element used for structural calculation.

4. In a masonry bridge, structure formed of arch stones whose internal faces constitute the intrados.

5. A structure of concrete (reinforced or not, prestressed) metal (beams assembled or not), or stones, bricks or quarry stones that permits crossing a large breach by means of a curve.

An arch is the primary structure supporting a bridge, curved at its top and bearing the load on its support.

Generally speaking, an arch is narrower than a vault. Arches can be built of metal, concrete, reinforced concrete or prestressed concrete. They can be restrained or have one, two, or three articulations. They can have upper, intermediate, or lower decks. Bowstring beam bridges or arched bridges with tensional members do not exert forces on their supports; the thrust of the arch is absorbed by tensional members.

Three types are:

- **cellular arch** *(l'arc cellulaire):* a reinforced concrete work in which the deck merges with the arch; the deck consists of only one caisson (or two parallel caissons) occupying the volume between the intrados and the pavement (roadway);
- **upper-deck arch** (*l'arc à tablier supérieur ou arc en-dessous):* the deck is supported by posts or transverse shells which lean on the arch, or, more rarely, by longitudinal shells forming a solid tympanum; **See Figure 29**
- **bottom-deck arch** (*l'arc à tablier inférieur ou arc au-dessus ou intermédiaire):* the deck is suspended entirely or partly on the arch. **See Figures 30 and 31**

ARCH
Arche
Construction

1. A curved construction of masonry, reinforced or prestressed concrete, metal, or wood, resting on piers or abutments, and covered by a filling or backfill, deck, or beams. The arch supports a pavement (roadway), a railway track, or a river (the arch consists of the vault and of the empty space which it crosses).

Arches include the

- **end arch** *(l'arche avant-terre):* each of the two arches of a bridge which rests on an abutment (bridge with several arches, viaduct);
- **skew arch** *(l'arche biaise):* consists of a vault covering an oblique passage and requires a special bonding;
- **intermediate arch** *(l'arche intermédiaire):* consisting of a vault located between the central arch and the end arches;
- **main arch** *(l'arche maîtresse):* the vault of a bridge of several arches which has the greatest opening;
- **edging *or* land arch** *(l'arche de rive):* a curved construction of the end spans;
- **marine *or* navigation arch** *(l'arche marinière):* construction that ensures river circulation.

2. An arch-shaped vault.

ARCH
Arquer
Construction
Syn. with BEND; CAMBER; CURVE

ARCH
Arc
Strength of Materials
A prismatic part whose medium fiber is a curved line, usually circular or parabolic, and whose bearings have invariable positions. The arch is more or less taut according to whether its curve is more or less marked. Arches are designed to transmit to their supports, under the action of their weight and overloads, reactions to the inclined component of force (horizontal component and vertical components). This component is called *arch thrust* and tends to do to move away the bearings.
There are four principal types of arches:
- **fixed *or* built-in with fixed ends** *(l'arc encastré aux appuis),* which is statically indeterminate; it is connected rigidly to its supports. **See Figure 32**
- **hinged** *(l'arc á une articulation),* which is statically indeterminate; it is connected rigidly to its supports and is articulated in key by a hinge;
- **two-hinged** *(l'arc à deux articulations),* which is statically indeterminate; it rests on its supports by means of a hinge bearing located, as a rule, at each end of the arch. **See Figure 33**

For metal bridges, this category is subdivided into:
- *spandrel arches (arcs à tympan),* in which the main deck beams constitute the top chord of the arch, two flanges being joined by lattices,
- *arches without spandrel (arcs sans tympan),* which are independent of the deck they bear. They have solid web and mostly constant thickness or a lattice and variable thickness,
- *very stilted arches (arcs très surhaussés),* which are always lattices with solid panels on the springings (the thickness at the key is lower since the arch is more flattened);
- **three-hinged** *(l'arc à trois articulations),* which is isostatic; it has, in addition, a third articulation halfway into the arch, known as a *key hinge*. **See Figures 34-36**

ARCH BUTTRESS
Cul d'arc-boutant
Construction
The buttress of a vault. Syn. with CUL D'ARC-BOUTANT

ARCH DAM
Barrage-voûte
Civil Engineering Structure
A curved structure, (the convex face is on the retaining side) where the thrust of water is maximal at the banks (arch effect). It can be built of masonry or concrete.

ARCH MOLDING
Voussure
Construction
The shape on the string courses of some masonry bridges extending from the key to the springings. Arch molding ornaments generally are used only on bridges with basket-handle arches or in surbased vaults.

ARCH OF HEWN STONE
Voûte en pierre de taille et en moellons
Construction
Syn. with ASHLAR MASONRY ARCH

ARCH OF VAULT
Arceau
Construction
1. A cradle-shaped vault.
2. The arched part of a vault (at least one fourth circle).
3. A small arch, one weakly developed.

ARCH PILLAR
Jambage
Construction
Syn. with JAMB

ARCH RIB
Nervure; Nervure d'arche
Construction
1. The projecting part of masonry such as an arch appearing overhanging the intrados of a vault and which forms the frame that supports the panels of a vault (jack arches).
2. A reinforcement of a vault projecting on the intrados (not to be confused with the transverse

arch, which is an original construction, whereas the arch of vault is added later).

ARCHED
Arciforme
Construction
Shaped or formed in an arch.

ARCHED BUTTRESS
Arc-boutant
Construction
Syn. with ABUTMENT PIER; FLYING BUTTRESS

ARCHED CULVERT
Ponceau
Civil Engineering Structure
Syn. with CULVERT

ARCHED FALSEWORK
Cintre
Temporary Constructions
Syn. with CENTERING

ARCHED GIRDER
Poutre en arc
Construction
A curved element that functions as a truss.

ARCH(ED) GIRDER
Poutre courbe
Strength of Materials
Sy**m**etrical arch with two articulations comprising two consoles restrained on the arch and simply supported on the abutments. The system consists of an arch articulated at the springings, chord *2a* and rise *f (distance CO),* on which two beams, *DB* and *D' B'* in sections *D* and *D'* of abscissas *c* and *-c* are restrained; these beams are simply supported on the abutments in *B* and *B'* of abcissas *b* and *–b (-c* and *–d* are situated at the left side of the axis). The unit is sy**m**etric about the vertical of the arch key. The coordinate axes are the axis of symetry of the work and the horizontal axis of the arch bearings. The reactions of the bearings, under vertical loads, are defined by:
the thrust *Q* of the arch,
vertical components *S* and *S'* of the bearing reactions of the arch,
vertical reactions *R* and *R'* of the simple bearings of the beams in *B* and *B'* It is a system three times hyperstatic. **See Figure 37**

***ARCHER-ROGER* BLOCK™**
Bloc *Archer-Roger*
Building Materials
An artificial stone consisting of a cement blockwork that can be homogeneous, but, is usually formed of various products, which can be cement, sand, or ground materials. The slip or cover is chosen stone bonded by white cement. This slip (about 2 cm thick) gives to facings and edges their aspect, hardness, and color. Blocks are massive elements, hollow elements, or in elements of form bearing molding.

ARCHIMEDEAN SCREW CONVEYOR
Vis d'Archimède
Equipment and Tools
A helix installed in an inclined chute which, when rotated, supplies pulverulent materials, mortar, or concrete to a higher elevation.

ARCHING
Voussure; Arc-boutement
Construction; Geotechnics
1. Intrados of a vault. Syn. with CURVE (of arch)
2. Secondary balances which exist or which are forming in a solid mass which oppose its bending (out of shape).

ARCHITECTONIC
Architectonique
Civil Engineering Structure
Describing what conforms to structural engineering or architectural principles.

ARCHITECT'S STATEMENT OF MATERIALS USED AND WORK DONE
Attachement
Contract
A contractual document specifying which parts to demolish work not foreseen at the contract signing, etc. The document is used as a basis for payments. It is initialed by all interested parties thus avoiding disputes when payment is due. Syn. with RECORD; REGISTER

ARCHITECTURAL *or* ARCHITECTONIC CONCRETE
Béton architectonique *ou* architectural
Building Materials
Concrete cast in special forms which when stripped gives a decorative and aesthetic appearence. The concrete can also be cast in ordinary forms and then specially finished (sanded concrete, emery-ground, etc.).
Different types of architectural concrete are:
- **axed** *(le béton bouchardé)* obtained from hardened concrete with a bush hammer to expose the aggregates;
- **brushed** *(le béton brossé),* its appearance is like washed pea gravel with grains that are more dispersed. The brushing is obtained with a metallic brush, or scrubbing brush on freshly poured or slightly hardened concrete;
- **acid-scoured** *(le béton décapé)* obtained on hardened concrete with acidic solutions and followed by immediate washing. The aggregates appearance depends on the duration of the acid action. Syn. with ETCHED CONCRETE;
- **etched** (béton décapé), syn. with ACID-SCOURED CONCRETE
- **scraped** *(le béton gratté),* obtained by scratching the concrete before its hardens completely leaving the aggregates more or less evenly dispersed and deeply exposed;
- **washed *or* washed gravel** *(le béton de gravillons lavés)* is a material with a well-defined grading whose facing is washed before complete hardening of the concrete, producing a gravely surface;
- **emery-ground** *(le béton grésé)* obtained by grinding hardened concrete with a sander equipped with abrasive disks whose grains are coarse or fine, depending on the desired effect. Grinding eliminates the surface laitance so that aggregate grains appear. The final form of the facing depends on grinding fine, grit of dishes, etc. The concrete is finished by washing with clear water and brushing with a soft brush; Syn. with GROUND CONCRETE;
- **washed** *(le béton lavé)* obtained by washing the concrete with water under pressure to dismantle partially the aggregates and thus obtain the desired effect. The washing is carried out on immature concrete and is completed by brushing with a soft brush to eliminate all laitance traces.
- **sand-blasted** (le *béton sablé*), obtained by sanding the concrete with a jet of a sand suspended in a fluid (air or water) under pressure to dismantle partially the aggregates of immature, but sufficiently hardened.

ARCHIVOLT
Archivolte
Construction
An ornamentation of a vault string-course consisting of projecting moldings of varied sections parallel to the intrados. **See Figure 38**

ARCHSTONE
Voussoir
Construction
Syn. with VOUSSOIR

ARCHSTONE CLOSER
Clausoir
Masonry
The last stone bonded at the time of the construction of a vault. Syn. with CLOSER

ARCHWAY
Arcade
Construction
Syn. with ARCADE

ARCING
Amorçage
Welding
The beginning of a weld bead.

AREA
Aire
Topography
Syn. with FLOOR; SURFACE

AREA GUIDE OF COMPACTION
Guide-balayage
Equipmentfor Measure and Control
A monitoring instrument enabling the driver of a compactor to respect the sweeping plan of the section for which it ensures the compacting. Syn. with SWEEPING GUIDE

AREA WITHOUT WATERWAYS
Aréisme
Hydrology
Syn. with AREISM; NONFLOWING AREA

AREISM
Aréisme
Hydrology
A phenomenon characterizing a surface area whose water runoff (streams, rivers, etc.) is nearly zero. Syn. with AREA WITHOUT WATERWAYS; NONFLOWING AREA

ARENA
Sable résiduel
Geology
Syn. with RESIDUAL SAND

ARENACEOUS
Arénacé
Geology
1. Describing a permeable ground due to the porous structure of its materials (sand, in general), or having a sandy texture or the appearance of sand. Syn. with PERMEABLE
2. Describing detrital rocks going into the range of arenites.

ARENITE
Arénite
Building Materials; Geology
1. A material whose grains have sizes between 50 micrometers and 2 mm. Arenites are subdivided into medium and coarse sands, from 2 mm to 200 micrometers, and in fine sands, from 50 to 200 micrometers.
2. Sedimentary rock composed of sand-sized particles irrespective of composition; e.g., sandstone, arkose, calcarenite, etc.

ARENIZATION
Arénisation
Geology
The decomposition of crystalline rocks into a loose sandy material (gore or arenite).

ARGILLITE
Argilite
Geology
A sedimentary rock whose prime constituents are argillaceous minerals without notable bedding. Syn. with BEDDED CLAY; MUDSTONE

ARGOVIAN
Argovien
Geology
A geological formation represented by 30 m of marls and marly limestones ending with schistose sandstone beds with chalky fossils of the Jura of Argovian.

ARIEGITE
Ariégite
Geology
An ultrabasic rock.

ARKOSE
Arkose
Geology
A feldspathic sandstone, mainly composed of quartz and feldspar, and sometimes mica, resulting from cementing of granitic or gneissic rubbish.

ARM
Bras
Equipment and Tools
Large movable part on machines (articulated or telescopic arm, shearing, drill carriage, etc.). Syn. with CRANCK; JIB

ARM PILLAR
Piller à bras; Hague
Construction
In underground quarries, supporting pillar between the roof and sill. In certain circumstences, arm pillars could be real walls, called *pillar*. Syn. with PILLAR

ARMOR
Armure
Nomenclature of Materials
Metal elements fixed on timbers to protect them.

ARMREST
Accotoir; Accoudoir
Architecture
Syn. with BALUSTRADE

***ARNODIN* GIRDER**
Poutre *Arnodin*
Construction
A particular strap beam much used in suspension bridge decks at the beginning of the twentieth century. **See Figure 39**

ARREST POINT
Point d'arrêt
Work
A critical point in a project for which a formal agreement of the project manager, or of an elected organization is necessary before the project can be completed.

***ARRHENIUS'S* LAW**
Loi d'*Arrhénius*
Hydraulic Binders
A principle that treats the rate of the cement hydration according to an exponential expression that is a function of temperature).

ARRIS
Arête
Construction; Materials
Syn. with EDGE; GROIN; QUOIN

ARROW
Fiche
Topography
A small-diameter pointed iron rod with an iron loop formed on one end and used by surveyors to mark ranges of chainage in the ground and, to anchor chains. Syn. with CHAIN PIN. **See Figure 40**

ARTESIAN WATER
Eau artésienne
Geohydrology
Suburface water under a sufficient pressure head such that when the ground is drilled for a well, decompression causes the water in the well to rise above groundwater level. Syn. with ASCENDING WATER

ARTESIAN WELL
Puits artésien
Geohydrology
A borehole producing spontaneous gushing of liquid. It occurs particularly when the roof of an artesian aquifer is drilled.

ARTICULATED LEWIS
Louve articulée
Equipment and Tools
A lifting device resembling pliers in which the gripping force comes from traction of the hoist cable. The lewis is inserted in a dovetail cavity in stone, and the tensile force exerted on the cable separates the two arms.

ARTICULATEDVALVE
Clapet articulé
Equipment and Tools
An obstruction fixed at the bottom of a dip pipe during concreting of drilled piles. It consists of a plate installed on a hinge and kept closed by a hook opening under the weight of the concrete when the pipe is lifted. A plastic joint on the plate ensures a tight fit. Syn. with CLACK VALVE

ARTICULATION
Articulation
Construction; Strength of Materials
1. A transmission system of the stresses between two parts of a beam or between a beam and its bearing, which allows the beam to rotate free about an axis. This beam can only balance perpendicular forces on this axis and in the same plane. It can be formed either by a hinge in the metal beams or by strong shrinkage of the section in concrete beams.
2. In arched masonry bridges, a device made to the joints of bearing and in key which enables vault movements. Syn. with HINGE; JOINT; KNUCKLE. See under BRIDGE-SUPPORT APPARATUS
There are four types:
- **lead hinge** *(l'articulation sur plomb),* fashioned by putting a lead strip in the joint to be articulated (swinging occurs because lead flows and is thinned more on the side where the pressure is strongest and manages to take the exact shape of the angle of the joint);
- **moving hinge *or* rolling contact joint** *(l'articulation roulante),* achieved by direct contact of two arch stones whose contact surfaces are cylinders of revolution, one convex, the other concave and of a larger radius. In the event of a movement of half-vaults, the convex arch stone rolls into the concave arch stone. The arch stones consist of hard stones (granite, porphyry), reinforced concrete elements, or steel blocks;
- **pivot joint *or* pivot hinge** *(l'articulation tournante),* in which two pendulums turn around a steel or cast iron pivot;
- **knuckle joint** *(l'articulation à genou ou à genouillère),* consiting of two steel blocks, one

concave, the other convex, of equal radius, which turn while slipping one into the other (this articulation is similar to that of swing articulation).
3. A joint, axis, etc. by which two or more arms, for example, are driven in comparison with the others. One must distinguish real articulation from pseudoarticulations. Real articulations cannot transmit a bending movement (example: cylindrical or spherical hinges, rollers, equalizers); pseudoarticulations admit a weak movement (example: beams, bars and lattice assemblies, etc.). Syn. with HINGE; JOINT; KNUCKLE. **See Figure 41**

ARTIFICIAL CEMENTING
Injection de sol; Cimentation
Work; Construction and Public Works
1. Syn. with. CEMENTATION; GROUTING; SOIL GROUTING; SOIL INJECTION
2. Syn. with CEMENTING

ARTIFICIAL HYDRAULIC LIME
X.H.A. (Chaux Hydraulique Artificielle)
Hydraulic Binders
A cinder-based hydraulic binder or artificial Portland cement mixed with fillers that are generally calcareous, and whose other elements are selected and processed to give great plasticity, weak fissurability, and average mechanical strength.

ARTIFICIAL LIME
Chaux artificielle
Hydraulic Binders
A product of calcination of limestone and clay. It is manufactured in two ways:
- *simple cooking,* in which suitable proportions of soft limestones or chalks and the clay are mixed by trituration in vertical millstones to a fine paste or gruel. They are then dried in stepped throughs, carved into brick slips, and cooked as natural lime;
- *double cooking,* used when no soft limestones are available to be reducted easily to powder. Hydrated fat lime is then added and the resulting gruel is mixed with clay, puddled, cut in bricks slips, and cooked as before.

ARTIFICIAL MAGNETOTELLURIC
Magnétotellurique artificielle (M.T.A.)
Geophysics
A technique of geophysical prospecting that uses variations of the electrical field to analyze quickly and continuously the moisture content of ground, to detect the possible cracking of rocks, to determine sediment layer, thickness, etc.

ARTIFICIAL PAVING BLOCK
Pavé artificiel
Building Materials
A precast concrete element of predetermined shape to allow it to overlap with others (interlocking paving block).

ARTIFICIAL PORTLAND CEMENT
C.P.A.-CEM (Ciment Portland Artificiel)
Hydraulic Binders
See CEMENT

ARTIFICIAL POZZOLANA
Pouzzolane artificielle
Building Materials
A product of silica, alumina and, iron oxide that undergoes thermal processing to obtain pozzolanic properties (flying ashes, cooked clays, etc.). Pozzolanas, wether natural or artificial, are products with the property of fixing the lime released by the Portland cement cinder by giving insoluble compounds in water. Pozzolanic activity (fixing lime) differs from hydraulic activity (fixing of water) but arrives at the same result (insolubility in water).

ARTIFICIAL RESIN
Résine artificielle
Polymers
Syn. with SYNTHETIC RESIN

ARTIFICIAL SEASONING
Dessiccation artificielle
Building Materials
A process of wood preservation carried out in a steamer where circulating hot-air streams, remove from the wood elements that can be vaporized.

ARTIFICIAL STONE
Pierre artificielle; Pierre factice; Similipierre; Aggloméré
Building Materials
1. A concrete element manufactured with stone fragments. It can be colored and used as ashlars or quarry stones. Artificial stone is also known as

reconstituted stone or *cast stone*. Syn. with VICTORIA STONE
2. A white product of lime or cement mixed with powders of sands or limestones.
3. Prefabricated material imitating stone.
4. Syn. with BLOCKWORK; BREEZE BLOCK; BUILDING BLOCK. CONGLOMERATE BLOCKWORK; CONSTRUCTION BLOCK; PERPEND

ASBESTINE
Amiantin
Building Materials
A product made of asbestos.

ASBESTOS
Amiante
Mineralogy
A natural textile of fibrous texture formed of hydrated calcium silicate and magnesium.

ASBESTOS CEMENT
Amiante-ciment
Building Materials
Cement in which asbestos fibers are mixed in proportion from 10% to 15%.

ASBESTOS-REINFORCED CEMENT
Ciment armé d'amiante
Hydraulic Binders
A synthetic product whose constituents, exclusively of mineral origin, are Portland artificial cement and asbestos in fibers.

AS-BUILT
Récolement
Civil Engineering Structure
The detailed inspection of a structure after its completion to verifiy that all specifications and plans were strictly followed. This inspection is incorporated into an as-built report.

AS-CAST
Brut de coulée
Metallurgy
Describing a metal structure that has not been through thermal or superficial processing after its solidification.

ASCENDING SLOPE
Contre-pente
Hydrology
A slope voluntarily or not achieved to the opposite of the normal flow direction of the water. Syn. with BACKFALL; REVERSE GRADIENT; REVERSE SLOPE

ASCENDINGWATER
Eau ascendante
Geohydrology
Syn. with ARTESIAN WATER

ASCENSUM
Ascensum Mineralogy
A mineral formed by an increase of matter either in a liquid or gaseous state, through pores or interstices of rock.

AS-DUG AGGREGATE
Tout-venant
Building Materials
A material such as it is extracted from the pit, that is to say which did not undergo transformation, treatment or grain-size classification. Syn. with ALL-IN MATERIAL; QUARRY-RUN

AS-FORGED *or* AS-ROLLED
Brut de forge *ou* de laminage
Metallurgy
A part, bar, or metal section leaving the forge or the rolling mill without any other processing.

ASH
Frêne
Building Materials
A leafy tree with very flexible wood of density 0.6 to 1 used in flooring and trim.

ASH
Cendre
Materials
A pulverulent product extremely fine, the residue of combustion in a thermal power station of pulverized coal or lignite.
Among principal varieties of ashes, we note:
- **molten pozzolanic ashes of coal** (la *cendre fondue pouzzolanique de houille),* appearing as glazed black grains from 0.5 to 4 mm in diameter;
- **glazed ash** (la *cendre de foyer),* collected in ashtrays of boilers and that forms kinds of small clinkers whose dimensions can reach 20 to 30 mm;

- **fly ash** (la *cendre volante),* essentially noncombustible refuse carried by smoke. It is collected in electrostatic dust removers located inside chimneys. Dry fly ashes appear as fine powder similar to cement powder;
- **coal fly ash** (la *cendre volante de houille),* the residue of combustion in a thermal power station using pulverized coal, of a deep gray color which contains mostly in vitreous form, silica (approximately 50%), alumina (approximately 30%), and lime and sulfate. Only ash with pozzolanic properties is used in cement factories.
- **hydraulic fly ash** (la *cendre volante hydraulique de lignite),* the residue of combustion in a thermal power station of some pulverized lignites that has a high lime content. It is used as filler in cement grout or with lime in operations of ground stabilization. Generally, this ash is expansive;
- **volcanic ash** (la *cendre volcanique),* a pulverized lava fragment hardened in vitreous form, generally smaller than 4 mm. Its coloring, which can vary greatly, depends on the iron content and the degree of oxidation. Syn. with CLINKER

ASH LIMESTONE
Cendraille
Materials
Mixed remains from cooking calcium carbonate.

ASHEN CONCRETE
Béton de cendrée
Building Materials
A light material composed of weak-density aggregates such as ashes, slag (expanded or not), etc.

ASHLAR
Pierre de taille
Building Materials
A large chalky, granitic or gritty element capable of being cut (volume >1/15 m^3). Course depth is usually 0.25 to 0.30 m and 0.60 m; generally limited to the depth of quarry benches. The facing width is 1.5 to 2 times its height. Stone shapes are determined depending on bonding and facings. Bed faces and side joints are plane, square, and well dressed. Ashlar is classified as a stone of great layer or stone of thin layer, according to its block dimension. Sometimes, parallelepiped ashlars can be distinguished from bond stones requiring a special cut for insertion in a particular bonding (example: an archstone). Syn. with BROADSTONE

ASHLAR BASEMENT
Stéréobate
Construction
A wall base made of ashlars.

ASHLAR PIER UNDER GIRDER
Jambe sous poutre
Construction
A stone pier of ashlars built-in a masonry abutment directly below of each beam bearing of a bridge deck (example: under each beam of a steel deck).

ASHY METAL
Métal cendreux
Metallurgy
A material whose surface is granular and badly polished.

ASPHALT
Asphalte
Geology and Building Materials
1. A porous sedimentary rock, mostly calcareous, naturally impregnated with native tar (more than 20% of the soluble tar weight is carbon disulfide). It is glossy brown odorless when cold but has a strong empyreumatic odor when burned. Asphaltic rock is ground to powder. Heated and compressed hot, this powder reconstitutes a compact mass. Asphalts can be chalky, siliceous, or clayey. Asphalt should not be confused with tar, a similar looking substance made from coal or wood but incompatible with petroleum derivates.
2. A natural asphalt similar to that found on the edges of the *Asphaltite lake.*
3. An asphalt entirely soluble in the usual organic solvents.

ASPHALT
Asphalter; Bitumer *ou* Bituminer
Materials
1. To cover a surface with asphalt.
2. Syn. with TO TAR

ASPHALT CINDER
Clinker
Building Materials
An asphaltic mixture whose main aggregate is composed of cinders or partially vitrified fly ashes.

ASPHALT CONCRETE
Béton d'asphalte
Building Materials
A material whose binder is asphalt and whose main aggregate is thermally dried gravel.

ASPHALT (WATERTIGHT) COPING
Chape en asphalte
Tightness
A supple watertight coating consisting of a first coat of pure asphalt poured hot and a second coat of sanded asphalt poured hot about 2 cm thick.

ASPHALT CUTBACK
Cut-back
Materials
A mixture of bitumen and some solvents used in road surface (pavement) or as a watertight coating.

ASPHALT MACADAM
Bitumacadam
Building Materials
A stony, hard, crushed material, coated with a bituminous binder.

ASPHALT MASTIC
Mastic d'asphalte
Materials
A bituminous material obtained by recasting natural bitumen with crushed asphalt rock. It is a solid joint-sealing compound at standard temperature.

ASPHALT MIXER
Malaxeur d'enrobés
Equipment and Tools
A device which mixes components to produce a bituminous binder. Syn. with MIXER

ASPHALT MORTAR
Mortier d'asphalte
Building Materials
A mixture of fine sand and filler of hot gravels and bitumen laid down hot and then rolled.

ASPHALT SLURRY
Coulis bitumineux
Materials
A mixture of sand and bitumen emulsion spread on a pavement (roadway) as a sealant and protective layer.

ASPHALTENE
Asphaltène
Materials
A material of the tar family, it is quite heavy with a cyclic and aromatic condensed structure. It is usually defined as the fraction of insoluble tar in normal heptane.

ASPHALTIC
Asphaltic; Asphalteux
Materials
Anything containing asphalt.

ASPHALTIC CONCRETE
Béton asphaltique
Building Materials
A material composed of asphalt (binder) and raw aggregates.

ASPHALTIC MORTAR
Mortier asphaltique
Building Materials
A mixture of asphaltic matter and sand.

ASPHALTIC ROCK
Roche asphaltique
Geology
A rock of chalky nature impregnated with bitumen.

ASPHALTIC TAR CONCRETE
Béton de goudron bituminé
Building Materials
A material whose binder is a mixture of tar and bitumen. Syn. with TAR WITH BITUMINOUS CONCRETE

ASPHALTING
Bitumage
Civil Engineering
The application of a bitumen coating. Syn. with TARRING

ASPHALTITE
Asphaltite
Materials
Natural mixture of asphaltic bitumen and insoluble organic matter in carbon disulfide.

ASPHALTWASH
Badigeon
Civil Engineering
A bituminous binder spread on a pavement (roadway).

ASPIC BLADE
Langue d'aspic
Equipment and Tools
A cutting tool whose blade looks morphologically like an adder's tongue.

ASPIRATION
Aspiration
Equipment and Tools
Rise of a liquid or pulverulent matter by vacuum. *For suction pumps, the maximum height of aspiration is theoretically 10.33 m, but practically only 7 to 8 m reache according to the apparatus used.* Syn. with SUCKING UP; SUCTION

ASSEMBLING AT THE JOB SITE
Montage à l'emplacement définitif
Handling
A setting-up process of a bridge deck from which the following practices can be listed:

- **assembling on service floor (beams) or on centerings (arches)** *(le montage sur plancher de service (poutres) ou sur cintres (arcs)),* which involves erecting a temporary structure usually wood, in which the permanent structure is built. Once the latter is completed, the temporary work is dismantled; **See Figure 42**
- **overhanging assembling** *(le montage en porte-à-faux à l'avancement),* see the definition below;
- **suspended** *or* **suspension assembling** *(le montage suspendu),* which involves passing one or more cables above the breach to be crossed. The assembly above the drop is carried out by temporarily hanging the assembled elements at the cables to ensure correct positioning. It is routinely used for suspension bridges. **See Figure 43**

ASSEMBLY
Montage; Assemblage
Construction; Tightness
1. An operation by which two or more elementary parts or subsets are joined. Assembly can be carried out, in a workshop, or at the building site:

- Assembly in a workshop is for elementary or crafted parts to make a transportable subset;
- Assembly at the building site is for the entire construction and lifting maneuvers of the various subsets of the frame manufactured in the workshop. The result is a finished frame, ready for the other trades to do their part in the construction. Syn. with JOINING UP; JOINTING; COUPLING; CONNECTION

2. Assembling tightly and durably in addition the service stresses, strips and layers (or panels) of a built-up waterproofing membrane or geomembrane. The assembly is carried out usually by thermal welding with or without matter contribution, by welding with solvent, or joining or vulcanization with or without matter contribution.

ASSEMBLY BY DIRECT TRANSMISSION
Assemblage par transmission directe
Construction
A process of assembly in which two parts to be assembled are put into contact by attaching a surface between them. Loads applied to one part are transmitted to other one by this surface. Examples are masonries, lengthening joints of timber pieces, etc. It is sometimes necessary to interpose a lead sheet, mortar, a plate of elastomer, etc. between the parts in order to obtain a uniform contacting surface.

ASSEMBLY BY JUXTAPOSITION
Assemblage par juxtaposition
Construction
A process in which parts to be assembled are placed side by side with a complementary material between them to transmit stresses.
Assembly can be:

- **mechanical** *(l'assemblage mécanique),* characterized by use of iron or wooden studs, bolts, nails, drifts, rivets, needles, tendons, etc.;
- **physicochemical** (*l'assemblage physico-chimique),* carried out primarily by welding or

sticking. (Sticking, used in timber frames, is being increasingly used in steel frames.)

ASSEMBLY BY SIMULTANEOUS MOLDING OF STRUCTURAL PARTS
Assemblage par élaboration simultanée des pièces de construction
Construction
Construction practice in which parts are poured concurrently in a mold.
This technique is heavily used in reinforced concrete construction. The result is that two reinforced concrete parts which cross (beam and pole, rib and beam, etc.) occupy the same point in space, since one cannot say that the concrete common to both pieces belongs more to one than to the other. This characteristic is called monolithism. *Cast iron and cast steel are used only for isolated parts of construction (column, truss rod, etc.). When this technique is used for simultaneous assembly a mechanical piece (wheel with spokes, etc.) is used.*

ASSEMBLY MARK
Contremarque
Work
A mark put on each piece to be jointed to facilitate their assembly.

ASSISTING JET
Jet assistant
Works
A quarrying method that uses water (with average pressures) with special tools as a means of cutting.

ASSOCIATED MATERIAL
Matériau associé
Tightness
A layer of organic or mineral matter, woven or knitted, continuous or alveolar, placed above or below the geomembrane, to form a compound geomembrane.

ASTIAN
Astien
Geology
An average formation of the Pliocene system.

ASTM
American Society for Testing Materials
Various
An organization for issuing standard specifications on materials, including metals and alloys.

ASTRAGAL (of column)
Astragale
Architecture
A small molding crowning a column.

ATMOSPHERE
Atmosphere
Painting
A gaseous envelope containing aerosols and dust to which a paint film in ambient air is exposed.

ATTACHMENT BOOK
Carnet d'attachement
Contract
A register in which construction tasks unable to be quantified are certified as being satisfactorily completed. It is signed by the contractors representative and owners representative.

***ATTERBERG* LIMITS**
Limites d'*Atterberg*
Geotechnics
Limits of different ground consistencies conventionally established: liquid state, plastic state, solid state with shrinkage, solid state without shrinkage. Each state has limits which depend on the water content of the ground and which are: liquid limit, plastic limit and shrinkage limit.
Since these states depend on ground consistency they can change greatly limits when the following vary:
- quantity of interstitial water in the pores,
- layer thickness of absorptive water coating the granules.

Atterberg limits give the water content of the ground in a state of transition and are expressed as a percentage weight of dry material: i.e., steam at 105°C until constant weight is achieved.
- **liquid limit *or* limit of liquidity** *(la limite de liquidité (WL)):* the water level at which the ground behaves like a liquid and flows under its own weight or the influence of external loads. Material with a water content higher than the liquid limit exerts hydrostatic pressures because, practically, no longer has cohesion or angle of friction;

- **plastic limit *or* plasticity limit** *(la limite de plasticité (WP)):* the state of a ground that corresponds to passing from a plastic state to a solid state. For a water content lower than the plastic limit, the material, under the influence of external forces, becomes pulverized. The plastic limit is the water content below which it is not possible to roll the ground in a filament of diameter less than 3 mm without it breaking;
- **shrinkage limit** *(la limite de retrait):* the water content below which the material is dried without decreasing its volume;
- **limit of saturation** *(la limite de saturation):* the water content from which water does not permeate in a material and would stream if the ground was inclined.

Syn. with CONSISTENCY LIMITS

ATTRITION (wear)
Usure par attrition
Building Materials
Wear resulting from friction of matter against itself.

AUGER
Tarière; Mèche hélicoïdale
Equipment and Tools
1. Helicoid-shaped tool used to bore wood. It is provided at its end with a gimlet or a cutting point. Syn. with DRILL
2. A drill bit used for drilling in wood and certain relatively soft materials. Syn. with TWIST DRILL

AUGER BORING
Forage à la tarière
Work
Drilling ground with an auger installed on a drilling machine either at the end of the dipper arm of a hydraulic shovel loader or on the bucket. The hole is cleaned periodically by extracting the drilling tool.
Auger boring is done in loose grounds with or without a work tube. The auger is used to create piles, Berliner wall, etc. **See Figure 44**

AUGITITE
Augitite
Geology
A basic acid rock.

AUSCULTATION *or* SOUNDING
Auscultation
Test of Materials (Civil Engineering Structure)
The visual or dynamic examination of a work. The following tests can be performed.
- **dynamic testing** (*l'auscultation dynamique):* a nondestructive test based on the properties of waves propagation in a homogeneous medium. It is particularly used for sounding concrete works, because it allows:
  - evaluation of the elastic and mechanical characteristics of a concrete in place according to the results of a laboratory calibration;
  - evaluation of qualities, particularly homogeneity, and various internal defects of structures.

The principle is as follows: a sound waves transmitter and receiver, primarirly piezoelectric chips, are used. The test can be
- by superficial examination: sounding of the works and recording the echo;
- by sounding in transparency, when it is possible to access to the two facings (of a wall for example) or when transmitters and receivers are placed inside the portion of work to be examined; **See Figure 45**

- **sounding by echo of mechanical impulses** *(l'auscultation par echo d'impulsions mécaniques):* a process of concrete control and particularly of cast-in-place piles. This practice, according to laws which govern propagation and reflection waves in heterogeneous media, consists in:
  - emitting a vibration (at the head of the pile),
  - collecting it after reflection,
  - recording the time between transmission and reception so that, since the propagation velocity is known, the distance traveled by the wave can be calculated;
- **electromagnetic sounding** *(l'auscultation électromagnétique):* enables detection of wire fractures or possible oxidation of the prestressing wires or suspenders of a suspension bridge;
- **gammadensimetric sounding** *(l'auscultation gammadensimétrique)*: determination of the ground density profiles;
- **gammametric sounding** (*l'auscultation gammamétrique):* based on the same principle as transparency dynamic testing but the transmitter emits gamma rays;
- **gammametric sounding in transparency** (*l'auscultation gammamétrique en*

transparence): a control process for cast-in-place piles that allows location of shaft defects, and the evaluation of their importance. It also indicates the stage of homogeneity of the concrete. This practice is based on absorption of gamma radiation by a material;

- **neutron-humidimeter sounding** *(l'auscultation à l'humidimètre à neutrons):* for detecting particularly wet zones (especially in a tunnel) with an apparatus operating on the principle neutron deceleration by hydrogen atoms;
- **hydraulic sounding** *(l'auscultation hydraulique):* water is sent through a channel and under decrease of pressure, a crack or significant cavity can be detected (this practice is used extensively when checking piles);
- **hammer sounding *or* sonic testing** *(l'ausculatation au marteau):* a detection process for surveying masonry (renderings, quarry stones, bricks, etc.) or metal parts (rivets, bolts, etc.) to detect possible damage, such as facing separations, splitting, etc. in masonry and shaken rivets, loosened bolts, etc. in steel construction;
- **impulse radar sounding** *(l'auscultation par radar à impulsions)*: detects possible anomalies in masonry, country rock, work, etc. Its principle of sounding is as follows. An electromagnetic wave of variable frequency is emitted from an impulse generator. The reflections on the interfaces between beds (e.g., sounding country rock of a tunnel) on the walls of ground cavities are recorded on a paper tape; distances are plotted on the abscissa and travel time of the reflected wave on the ordinate;
- **radioisotopes testing** *(l'auscultation aux radio-isotopes)*: a control practice used for carrying out measurements of ground density or the measurements of moisture;
- **sounding by high energy radiography** *(l'auscultation par radiographie à haute énergie)*: a process of concrete control carried out with a betatron, an apparatus capable of producing 6 MV, which enables concrete thickness (in the range of 0.90 m) to be X-rayed;
- **sonic sounding in transparency** (*l'auscultation sonique en transparence*): Allows detection of variations of concrete quality throughout the height of a concrete cast-in-place pile, and location of defects. It consists of:
  - emitting an ultrasonic vibration in a reservation tube full of water,
  - receiving it on the same level, in another water-filled tube, after passage in the concrete of the shaft,
  - measuring the time of travel and amplitude of the oscillations.

  This operation is repeated at a high frequency and increasingly closer levels so that the recording of measurements can be regarded as continuous throughout the height of the shaft. Measurement results are graphed as two curves versus depth:
  - the travel time curve of waves,
  - the amplitude variation curve of received waves.

  Each anomaly detected is characterized by a sudden drop-off in amplitude and an increase in travel time;
- **thermic sounding** *(l'auscultation thermique)*: a sounding practice, using infrared emissions, of masonry, etc, based on thermic differences encountered according to the nature of materials (or gaps) crossed in a construction. Cavities in rock or masonry disturb thermal conductivity. This disturbance results, on the intrados of a vault, for example, in thermic gaps. With a scanner the information is collected line by line, and variations of energy are graphed on sensitized paper.

Syn. with TESTING

AUSTENITE
Austénite
Metallurgy
A chemical homogeneous steel constituent formed by a solution of carbon and iron to the *g* state, which is normally stable above the zone critical temperatures of steel.

AUSTENITIC *or* MARTENSITIC STAINLESS STEEL
Acier inoxydable austénitique ou martensitique à durcissement par précipitation
Metallurgy
A steel that contains molybdenum, copper, aluminum, or niobium. Various thermal processings comprising austenitization, fast cooling, and one or more tempering, allows through carbide precipitation of the named elements (formation of martensite by destabilization of austenite) and particularly of

intermetallic compounds (secondary hardness), strong mechanical characteristics.

AUSTENITIC STEEL
Acier austénitique
Metallurgy
A stainless steel containing chromium (at least 12%), manganese, nickel, etc.

AUSTENOFERRITIC STEEL
Acier austéno-ferritique
Metallurgy
A steel very similar to austenitic steel, but whose composition is so balanced as to contain a certain proportion of ferrite.

AUTOCHTONOUS
Autochtone
Geology
Concerning ground or rock constituents formed or occuring in the place where they were found.

AUTOCLAVE
Autoclave; Autoclaver
Equipment and Tools; Building Materials
1. An enclosure curing concrete with high-pressure steam.
2. Any equipment wood comprising an enclosure subject to vacuum and variable pressures. The principal autoclave processes are distinguished by their use of vacuum and pressure. They are several types of autoclave:
- **full cells,** also called vacuum and pressure, Bréhant-Bethell, etc.;
- **empty cells,** also called Rüping;
- **Lowry;**
- **double-vacuum.**

3. To dry concrete in an autoclave.

AUTOCLAVED CELLULAR CONCRETE
Béton cellulaire autoclavé
Building Materials
Light material composed of cement (or lime), fine siliceous sand, water, soda, and expansive powder (aluminum). The chemical reaction released by the expansive powder confers to the material its cellular structure. After demolding, because the concrete is precast, the material components are placed in an autoclave for 8 h under a pressure of 10 atm and temperature of 180°C. The obtained densities lie between 0.4 and 0.6.

AUTOCLAVING CURING
Autoclavage du béton
Construction of R.C. and P.C.
Syn. with CONCRETE STEAM CURING; HIGH-PRESSURE STEAMCURING

AUTOGENOUS WELDING
Soudage autogène; Soudure autogène
Welding
A fusion welding process using heat with no filler metal to join pieces of the same metal. Syn. of OXYACETYLENE WELDING

AUTOMATED DRILLING
Foration robotisée
Work
A new generation of jumbos (drilling plants) that uses electronics to perform repetitious drilling.
The drilling plant is composed of a carrier, a chassis that supports an arm, a groove, and a drill hammer or rock drill. The arm is enslaved by a computer. This system has the following improvements over mainline jumbos : arms'automation, automatic angular correction and axis translation, guarantee of drilled lenghts, etc.

AUTOMATIC CAPSTAN
Cabestan automatique
Equipment and Tools
A special winch for drilling using drill rods.

AUTOMATIC WELD
Marche automatique
Welding
Welding in which the arc is mechanically moved, but electronic control govern its speed and direction.

AUTOREDUCTION
Autoréduction
Topography
A property of tachymeters which measure horizontal and height distances simultaneously.

AUTUNIAN
Autunien
Geology
A lower formation of the Permian.

AUVERSIAN
Auversien
Geology
In the Parisian basin, a substage of the Bartonian (Auvers and Beauchamp's sand).

AUXILIARY GIRDER
Poutre de rive
Construction
Syn. with EDGE BEAM; END GIRDER

AVALANCHE PROTECTION
Paravalanche
Civil Engineering Structure
Construction primarily of reinforced concrete or masonry gallery for protection from avalanche.

AVASITE
Avasite
Geology
Mixture of clay and limonite.

AVDELOK
Rivelon
Metal Construction
Syn. with HUCKBOLT.

AVEN
Aven
Geology
Syn. with SINK; SWALLET; SWALLOWHOLE

AVERAGE DEPOSIT DEPTH OF A COATING
Epaisseur moyenne de dépôt d'un revêtement
Construction
Theoretical dimension of deposit obtained if the total deposit was distributed evenly on the coated surface.

AWARD OF CONTRACT
Adjudication
Contract
The contract containing all specifications for construction, given upon the owner's acceptance of a (usually lowest) bid. Syn. of TENDER(ING) ACTION

AWL
Broche; Poinçon
Equipment and Tools
Syn. with BROACH; PUNCH

AXHAMMER
Têtu
Equipment and Tools
A heavy hammer used by a quarry worker break or place stones. There are two types :
- **peen** (le têtu à panne) used for soft rock;
- **point** (le têtu à pointe) used for hard stone.

AXLE
Axe
Construction
A cylindrical element joining two parts to produce an articulation.

AXLE
Axe
Foundation
The location of the centers of gravity of the cross section.

AXLE TRUDGING OF BRIDGE-SUPPORT APPARATUS
Cheminement d'axe d'appareil d'appui
Defects (Construction)
A defect characterized by the progressive escape of an axle of a bridge support apparatus axis under normal deck movements. In general, it is a bad alignment of the clevis of the apparatus.

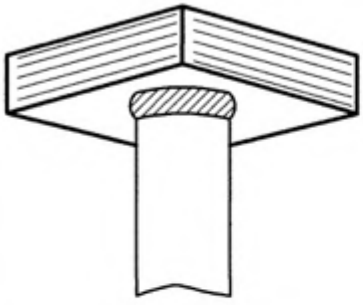
AXONOMETRIC PROJECTION
Projection axonométrique
Drawing and Topography
A form of orthographic projection in a plane, which allows two-dimensioned objects to appear three-dimension.

AZIMUTH READING DEVICE
Alidade
Topography
A wooden or metal ruler, free to rotate one at a point and where one ends is fastened on a topographical graduation or board. By extension, theodolite's moving part. Syn. of ALIDADE; SIGHT RULE

Figures of the letter

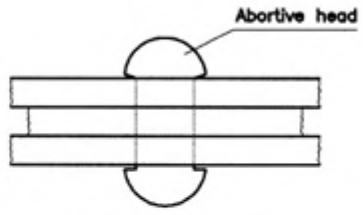


Fig.1



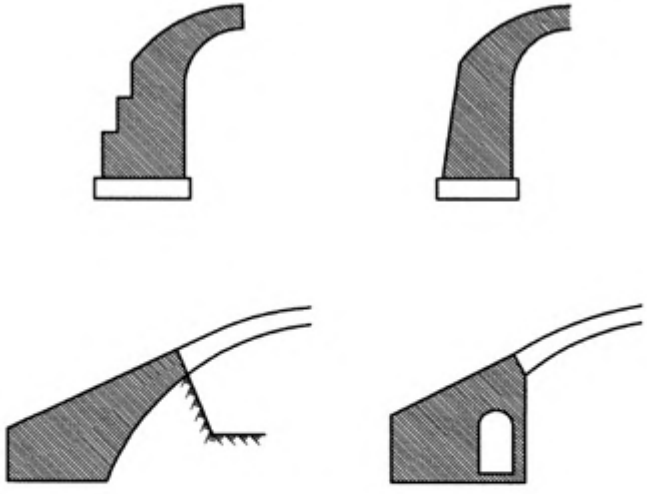
ABACUS

Fig. 2



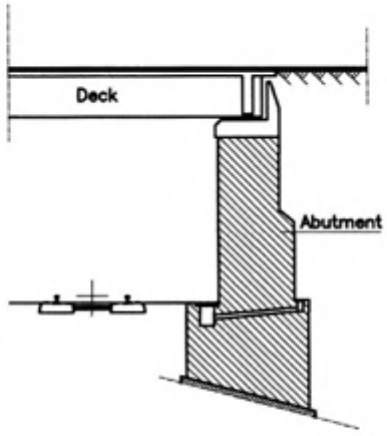
ABORTIVE HEAD

Fig. 3



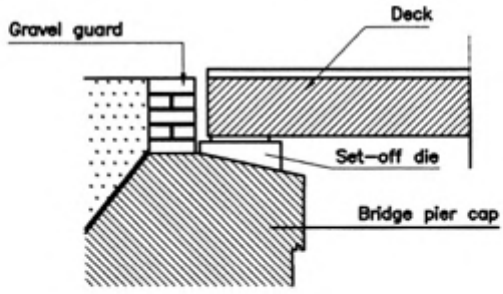
ABUTMENT (various types)

Fig. 4



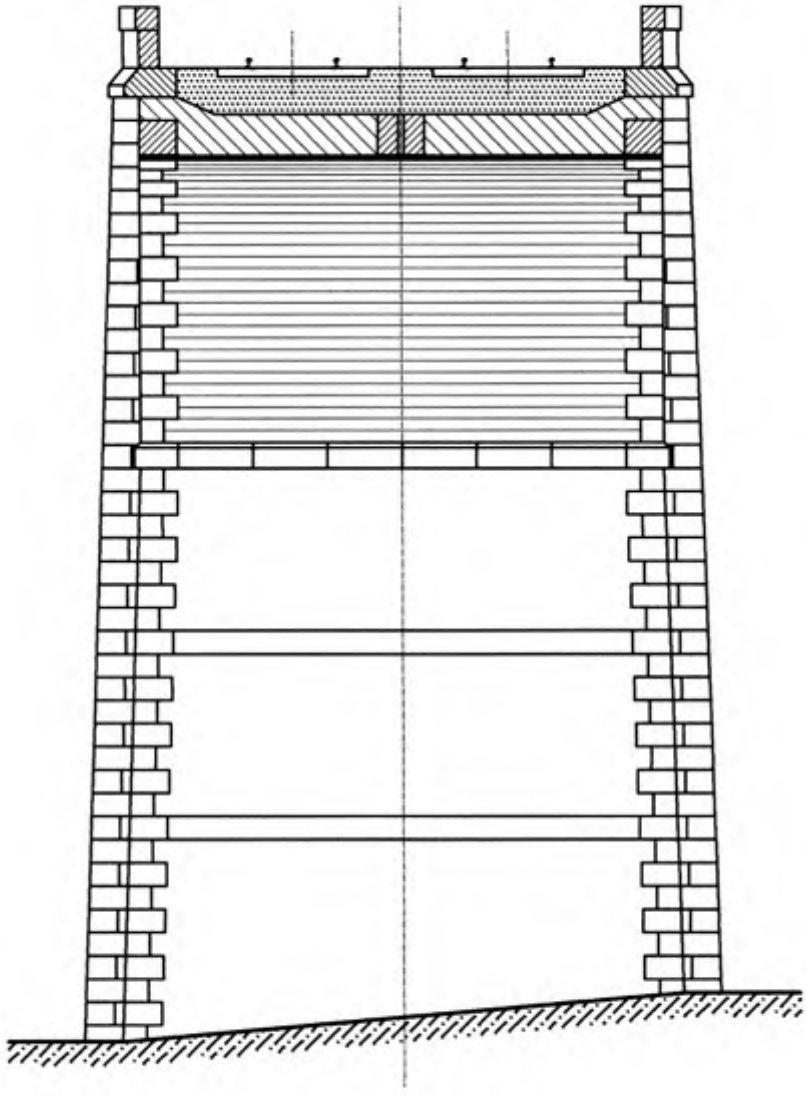
ABUTMENT

Fig. 5



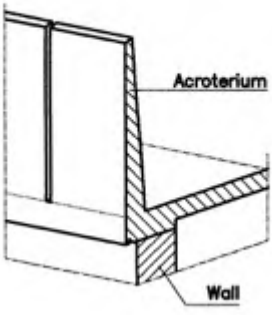
ABUTMENT (Head of –)

Fig. 6



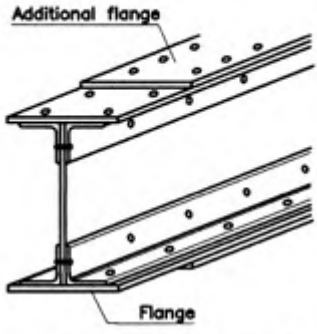
ABUTMENT–PIER

Fig. 7



ACROTERIUM

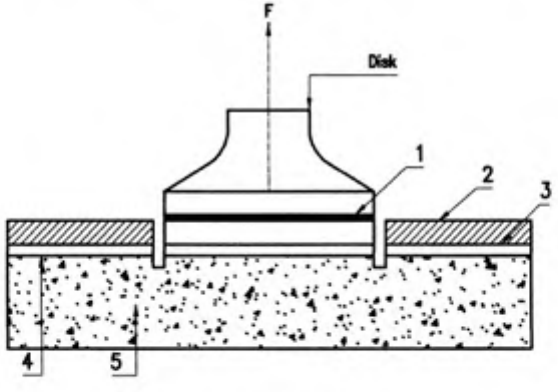
Fig. 8



ADDITIONAL FLANGE

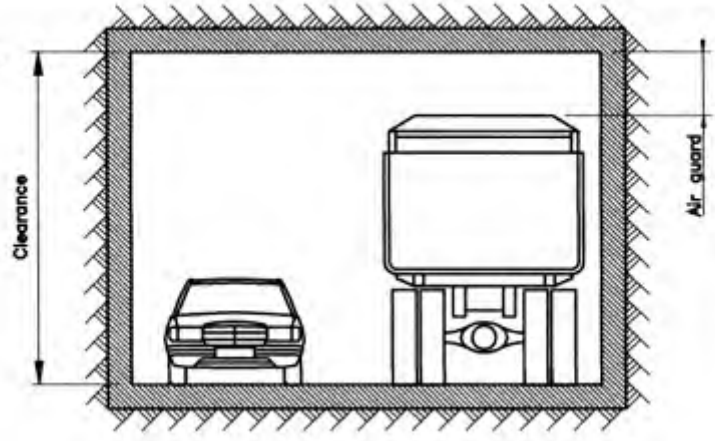
Fig. 9

1.– Sticking of the pastille : test
2.– Material : decohesion
3.– Interface material–support : adhesion
4.– Superficial part of the support (laitance)
5.– Healthy part of the support (concrete)



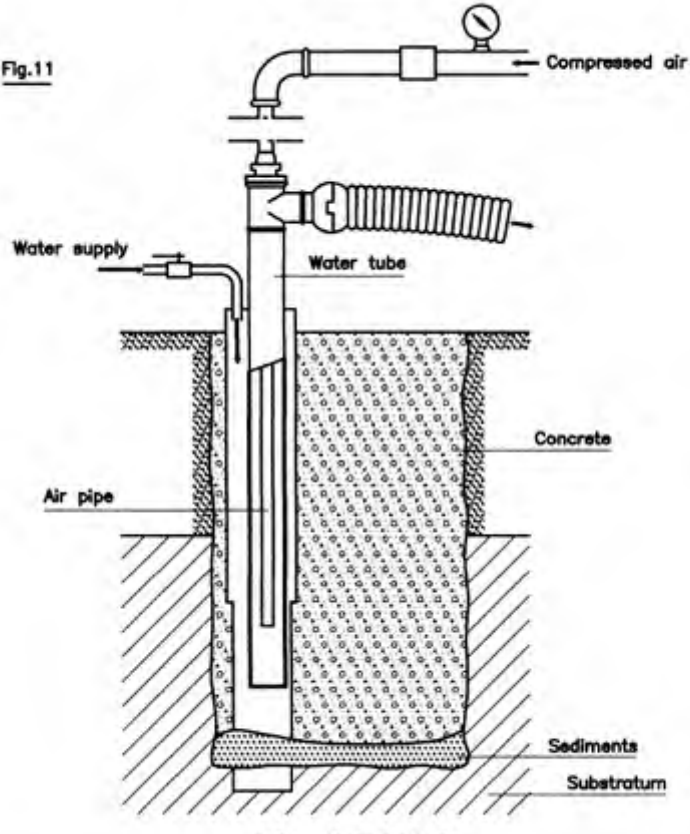
ADHESION TEST

Fig.10



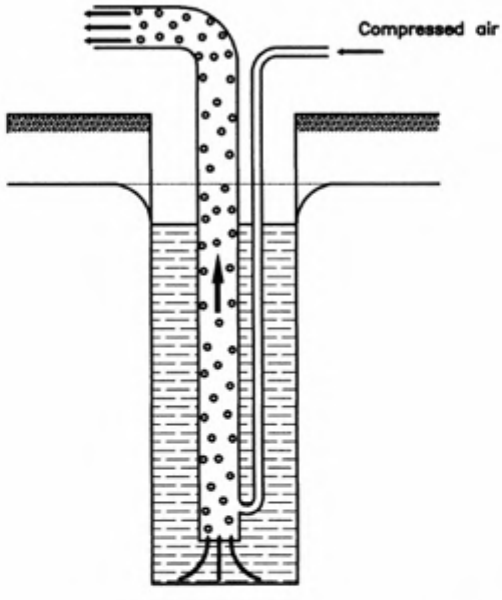
AIR GUARD

Fig.11



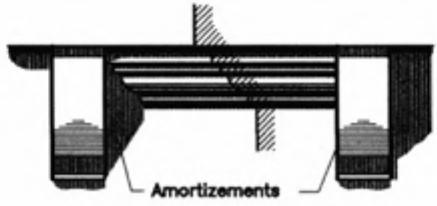
AIR–LIFT PUMP

Fig.11a



AIR–LIFT PUMP (principle of working)

Fig.12



AMORTIZEMENT

Fig.13

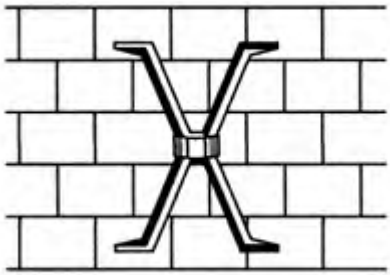
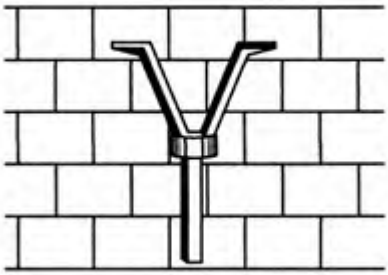
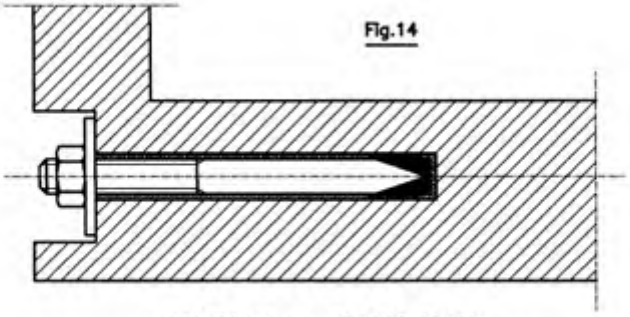


Fig.13a



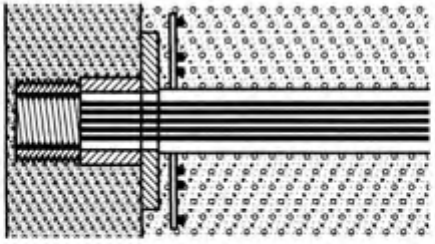
ANCHOR

Fig.14



ANCHOR or ROCK BOLT

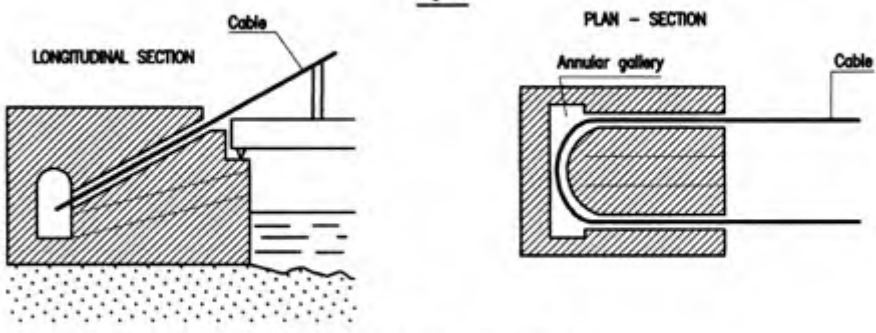
Fig.15



Anchorage of a prestressed cable

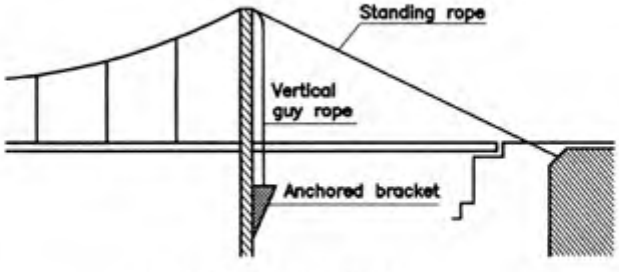
ANCHORAGE

Fig.16



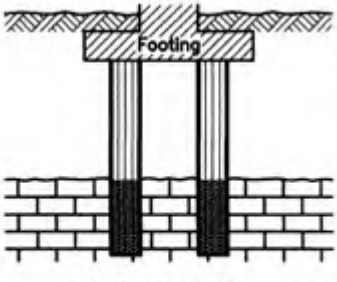
ANCHORAGE CHAMBER

Fig.17



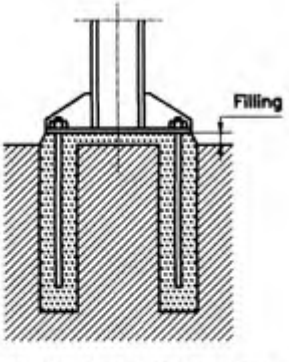
ANCHORED BRACKET

Fig.18



Anchoring of pile

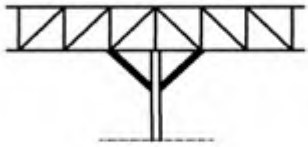
Fig.19



Anchoring of a stanchion base

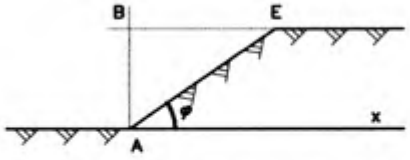
ANCHORING

Fig.20



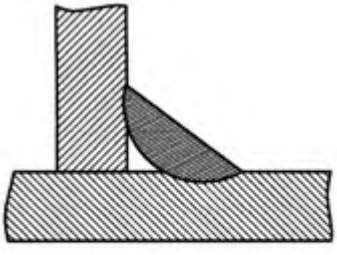
ANGLE BRACE

Fig.21



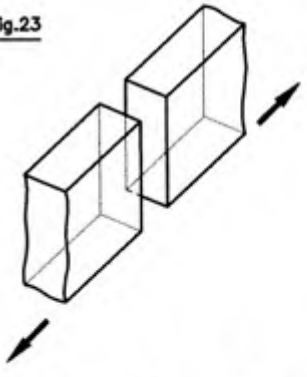
ANGLE OF NATURAL SLOPE

Fig.22



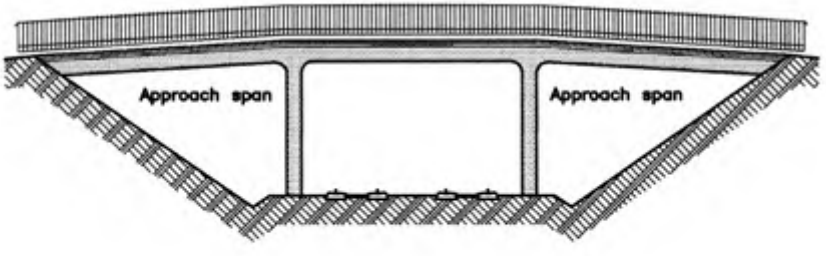
ANGLE VICE

Fig.23



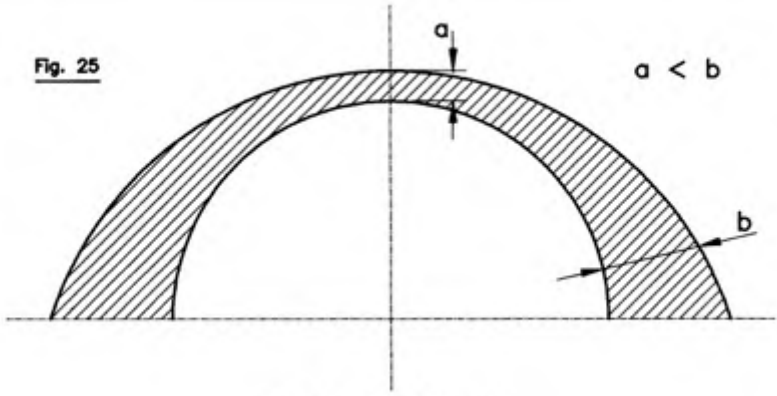
APPARENT GAP OF A CRACK

Fig.24



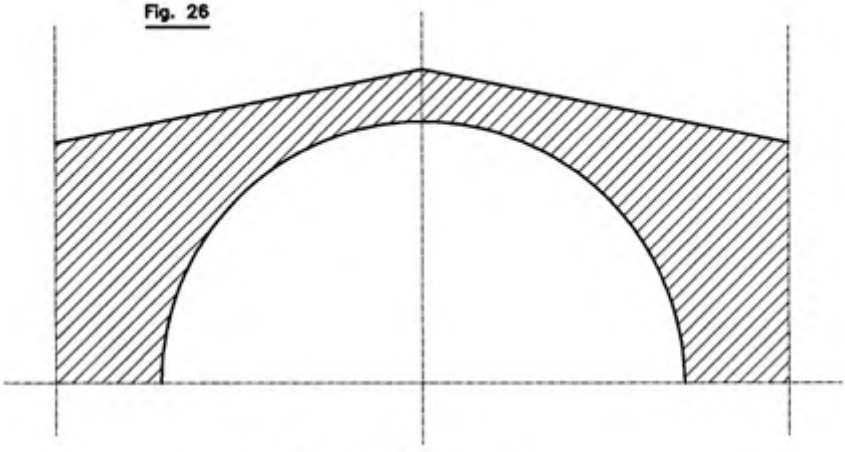
APPROACH SPAN

Fig. 25



Extradosed vault in arch

Fig. 26



Extradosed vault in coping

Fig. 27



Bowstring

ARCH

Fig. 28



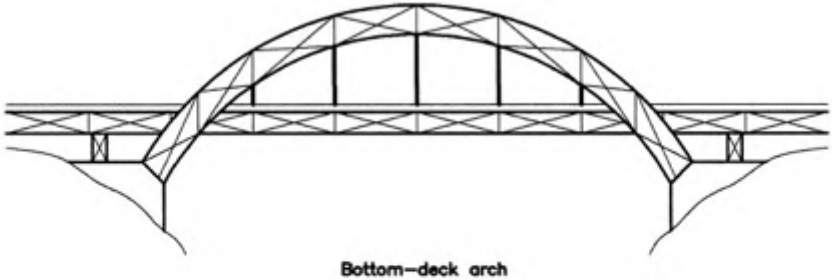
Surbased arch

Fig. 29



Upper–deck arch

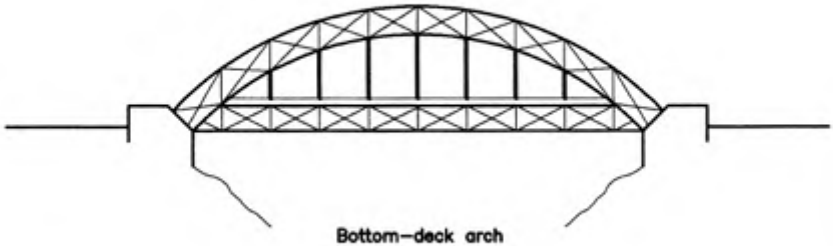
Fig. 30



Bottom–deck arch

ARCH

Fig. 31



Bottom–deck arch

Fig. 32



Fixed arch

Fig. 33



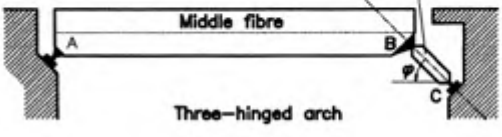
Two–hinged arch

Fig. 34



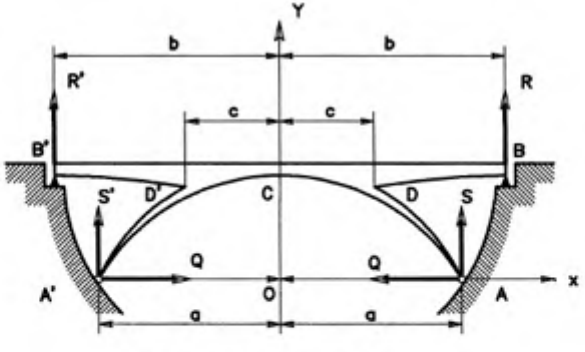
Three–hinged arch

Fig. 35



Three–hinged arch

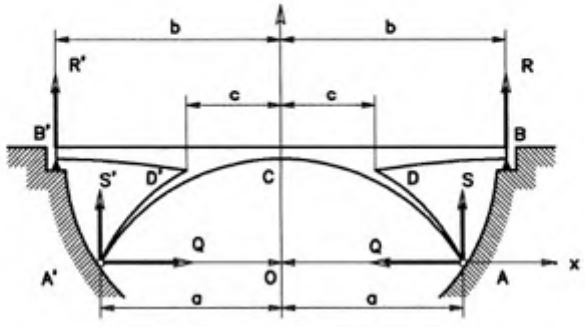
Fig. 36



Three–hinged symmetrical arch

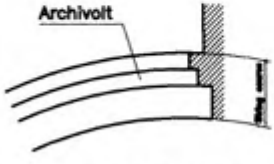
ARCH

Fig.37



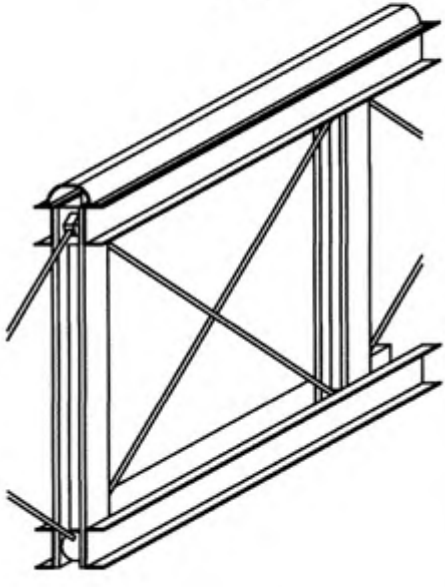
ARCH(ED) GIRDER

Fig. 38



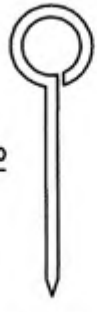
ARCHIVOLT

Fig.39



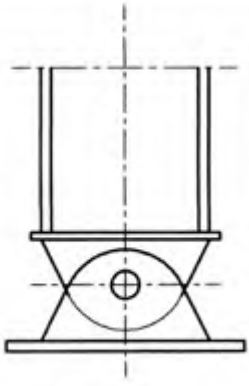
ARNODIN GIRDER

Fig.40



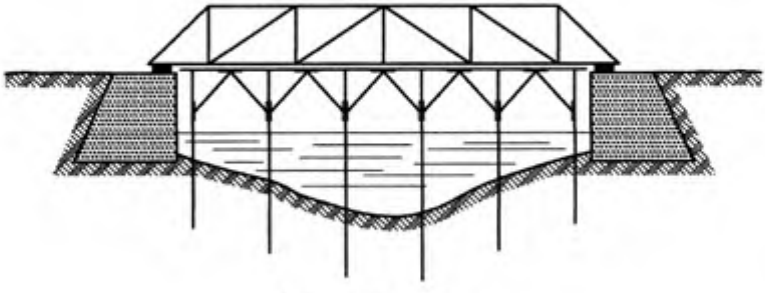
ARROW

Fig. 41



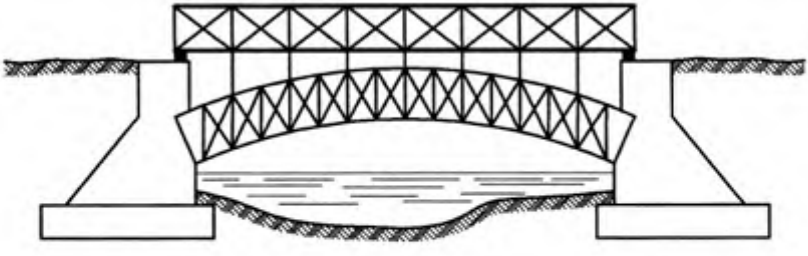
ARTICULATION

Fig.42



Assembly on service floor

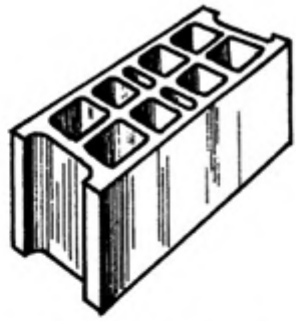
Fig. 43



Carrying up with assembled girder (suspension assembly)

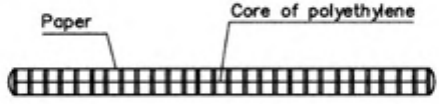
ASSEMBLING AT THE JOB SITE

Fig.44

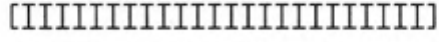


PRECAST CONCRETE BLOCK

Fig.44a



Filter of paper treated with a web in plastic



Filter in polyefine to extrudeed perforated

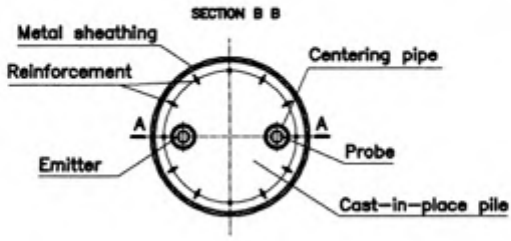


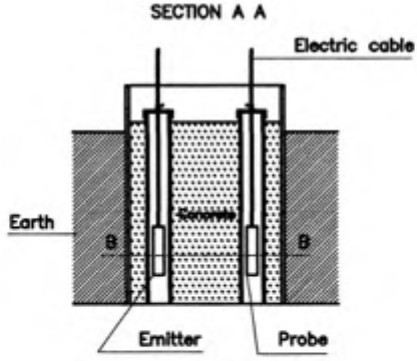
Filter in lashed textile with or without support frame

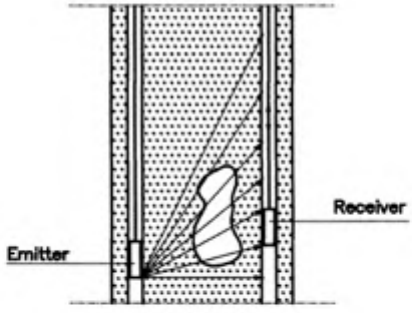
SCHEMATIC SECTION OF SOME TYPES OF SOME PREFABRICATED DRAINS

PREFABRICATED DRAINS

Fig. 45







Defect localization

Dynamic testing

AUSCULTATION



B
B
Metrology
The symbol of *Beaumé* (°Bé = Beaumé degree).

B.R.G.M.
Bureau des Recherches Géologiques et Minières
Geology
Geological and Mining Research Bureau. This organization specializes in the studies and work relating the ground and the basement.

BACK
Extrados; Extradosser
Construction; Work
1. Syn. with EXTRADOS
2. To build extrados (of an arch or a vault).
3. To cut tails of the archstones so as to profile evenly the extrados.
Syn. with MAKE AN EXTRADOS

BACKACTER
Pelle rétrocaveuse mécanique
Equipment and Tools
Syn. with BACKHOE; DIGGER; DRAG SHOVEL; TRENCH HOE

BACK BRIDGE
Baleine
Temporary Construction
A timberwork service bridge erected at the end of the fillings during construction.

BACK FACE
Face arrière *ou* Face de derrière
Nomenclature of Materials
The face of a dressed stone that will be placed against an inside a wall or visible on the rear facing; face opposite the face of facing.

BACK GAUGE
Pas de rivure
Metal Construction
Syn. with PITCH OF RIVETS.

BACK LOADER
Rétro-chargeur
Equipment and Tools
An earthmover or handling plant equipped with a bucket, articulated between two hydraulically driven arms, running above the machine, which can be filled in the front and emptied at the back, without any intervention of the operator. Syn. with OVERHEAD LOADER

BACK NUT
Contre-écrou
Materials
Syn. with LOCK NUT; COUNTER NUT; SAFETY-NUT; CHECK NUT

BACK OF THE VAULT *or* ARCH
Extrados
Construction
Syn. with EXTRADOS

BACK SHIELD
Arrière-bec
Equipment and Tools
The back part of a shield. Syn. with TAIL

BACK SHORE
Contre-fiche
Temporary Constructions
A raking shore that withstands a load or props up a wall. Syn. with INCLINED SHORE; RAKER; RAKING SHORE;; SHORING

BACK SMOOTHER
Lissoir arrière
Equipment and Tools
A flat piece of steel located at the back of a finisher and aimed at making the surface of a slab or a screed.

BACK-BALANCED
En porte-à-faux
Construction
Syn. with OVERHANGING; PROJECTING

BACKBAND
Feuillure
Construction
Syn. with GROOVE. RABBET; REBATE

BACKBREAK
Hors profil
Construction
Syn. with OVERBREAK.

BACKED
Etre extradossé; Extradossée
Construction; Masonry
1. Of a vault or an arch when its extrados is built and regularly dressed and has the same centers as its intrados.
2. Of a vault whose extrados is not rough but where tails of archstones are cut evenly.

BACKFALL
Contre-pente
Hydrology
Syn. with ASCENDING SLOPE; REVERSE GRADIENT; REVERSE SLOPE

BACKFILL
Remblai
Construction
Any earth brought back to erect a platform, raise up the undisturbed soil, fill up an excavation, level a dip of ground. Back fillings are carried out by successive layers. In the great earthworks, each layer is vigorously compacted with a specific equipment: multiwheel rollers or tamping rollers.
Types are:
- **full filling** (*le remblai bien clavé*), which perfectly fills a cavity;
- **consolidated filling** (*le remblai consolidé*), mixed with 5 to 20% of cement or flying ashes, to improve its consistency,
- **linear *or* longitudinal filling** (*le remblai linéaire*), not very wide, compared with its length, mainly used to make road and railway platforms or dikes;
- **large-area fill** (*le remblai de grande étendue*), that sets up a ground, naturally unsuitable to construction, or creates new areas at sea. It is generally thick, but has an important surface area.

Syn. with FILLING IN; FILLING MATERIAL

BACKFILLER
Machine à remblayer ; Remblayeuse
Equipment and Tools
1. A machine especially designed to fill trenches after mainlaying.
2. An earthmoving plant equipped by a scraping bucket supported by a jib, and which is designed to embank the trenches.
Syn. with BACKFILLING MACHINE

BACKFILLING
Remblayage
Earthwork
The blocking up of an excavation, a cavity, etc. by material supply. The two types of fill are:
- **hydraulic** (*le remblayage hydraulique*), which consists in dredging materials of all dimensions in the bed of a river, in carrying these mixed water materials in pipings and in pouring them on the place envisaged of the filling. Deposits of excavated materials are carried out by decantation at the exit of the piping, water turning over to the river by drainings judiciously put up;
- **mechanical** (*le remblayage mécanique*), in which materials are solely conveyed and set up by mechanical means such as bulldozers, power shovels, etc.

Syn. with STOVING

BACKFILLING MACHINE
Remblayeuse
Equipment and Tools
Syn. with BACKFILLER

BACKGROUND
Arrière-plan; Fond; Subjectile
Drawing; Construction; Paining
1. What, in perspective, is furthest away from the eye of the onlooker.
2. A support existing in the state. Syn. with BACKING; BASE
3. Syn. with SUBSTRATE. (The background is called *new* when it is bare, before any application; it is called *old,* when it was once painted.)

BACKGROUND COLORING
Coloration résiduelle de la surface examinée
Welding
The unwanted coloring that remains after an incomplete removal of a surface penetrating colored fluid.

BACKGROUND PREPARATION
Mise en état de recette
Work
Syn. with PREPARATION

BACKHOE
Pelle rétrocaveuse mécanique
Equipment and Tools
An earthmover specially designed for trenching to bury pipes. Syn. with BACKACTER; DIGGER; DRAG SHOVEL; TRENCH HOE

BACKHOE LOADER
Chargeuse-pelleteuse
Equipment and Tools
A self-propelled pneumatic-mounted earthmover equipped in the front of a loading bucket and at the back of a dipper arm equipped with a pull shovel. Syn. with BUCKET LOADER; LOADING SHOVEL

BACKING
Remplage; Fond
Construction
1. Filling the space contained between the two facings of a wall with wastes of bricks or quarry stones mixed with a mortar.
2. Syn. with BACKGROUND; BASE

BACKING
Délardement
Metal Construction; Building Materials
1. The progressive diminution, according to a slope of one fourth the thickness of a sheet metal, a leg or the web of a section to avoid concentrations of stresses by change of thickness.
2. The thinning of a metal part or a wooden piece or the result of sloping action. Syn. with PARING

BACKING (OF WALL)
Renforcement
Work
A complete work intended for allowing a structure to withstand loads of higher intensity than firstly considered. Syn. with REINFORCEMENT; STIFFENING

BACKING BRICK
Grisée
Defects - Damage (Building Materials)
A brick that presents a firing defect, inclusions, cracks, or any other tare that makes it unfit to facing. They are mostly used in filling by builders.

BACKING COAT
Couche de fond; Fonds
Painting
Syn. with FIRST COAT; PRIMING COAT

BACKING STRIP
Latte-support; Latte
Building Materials; Welding
1. Syn. with BATTEN
2. Syn. with (welding) LATH

BACKSETTING WALL
Mur en reculement
Construction
A work built back from the general alignment.

BACKSTEP SHEET-PILE DRIVING
Fonçage ou Battage au pas de pélerin
Foundation
An implementation process in which sheet piles are driven into the ground in pairs and in two phases; the first pair (panel) is sunk to its half-height; then the second comes and levels it. Afterwards, the first one is driven at the wanted level; then the third panel comes and levels the second one, which at its turn comes and levels the first one, and so on for remaining panels.

BACK-TO-BACK PIPE
Tuyau adossé
Construction
A discharge or supply pipe water (or other fluids) fixed on the facing of a wall, a pier, a post.

BACKWARD EROSION
Erosion régressive
Hydrology
Syn. with REGRESSIVE EROSION; UNDERCUTTING

BACTERIUM
Bactérie
Defects (Building Materials)
A unicellular microbe belonging to the vegetable kingdom. Enemy of wood, it reproduces by scissiparity and its proliferation causes fermentations. These lesions occur especially at the foot of trees, hindering their development and making them sometimes unusable. There are several types:
- bacterial tumors;
- mucous flows or wet rot;
- mycotic ring shake;
- star-shake;
- red rot of oak;
- dry rot.

BAD REINFORCEMENT ANGLE
Défaut de raccordement
Defects - Damage (Welding)
An overdeveloped dihedral angle formed by the tangent plane to the parent metal and tangent plane of the deposited metal and passing by the line of connection.

BAD STONE
Pierre cariée
Defects - Damage (Building Materials)
A material made friable by an alteration; rotted stone.

BAD WORKMANSHIP
Malfaçon
Defects
Syn. with DEFECTION WORK

BAILING-UP REMOVAL
Débourrage
Earthwork
Syn. with MATERIAL REMOVAL; TAMPING REMOVAL

BAILING WATER
Epuisement
Sanitary Engineering and Drainage
Syn. with DEWATERING; PUMPING

BAINITE
Bainite
Metallurgy
A metastable constituent of steel formed by the decomposition of austenite in the temperature range where pearlite is formed and where martensite appears. It is made of ferrite grains in which carbon is finely precipitated in carbide form.

BAJOCIAN
Bajocien
Geology
A lower formation of the Dogger which is represented by an oolitic zoogenous or entrochals limestone.

BAKELITE ™
Bakélite
Polymers and Building Materials
Artificial resin obtained by polymerization of the unsaturated aldehyde and phenol. Insoluble in mineral oils.

BAKELIZATION
Bakélisation
Building Materials
Wood impregnation with Bakelite.

BALANCE
Balancer; Balancier
Construction
1. To realize a symmetry in a construction.
2. The top part of a drawbridge, supporting the counterweight. Syn. with EQUALIZING BAR.

BALANCE SECTION
Bielle de béton
Strength of Materials
A fictitious section ensuring the balance of compressive stresses, notably at the right side of the bearings.

BALANCE WEIGHT
Contrepoids
Construction
Syn. with COUNTERWEIGHT

BALANCING
Balancement
Construction
The reduction distribution of the staircase steps width in the straight or curved parts on the side of the banister. Syn. with TURNING

BALANCING COEFFICIENTS
Coefficients de pondération
Strength of Materials
Coefficients applied to the actions in order to take into account the most unfavorable combinations of loads such as external forces or *applied forces* (loads and overloads), the action of temperature variations and possibly the action of earthquakes or the construction method.
It is admitted that the security of a construction is ensured when it has been checked, with the help of designs based on the strength of materials in the elastic phase theories, that the construction would remain stable if it was subjected to most unfavorable combinations of loads and overloads expected in the project and multiplied by balancing coefficients. In stability checking calculations (whole stability as well as strength of elements), one applies these coefficients to the loads, overloads, etc ., combined in the most unfavourable manner, in order to ensure that maximal stresses do not exceed the elasticity limit of the material, considering that second order instability effects may happen.

BALANCING RESERVOIR
Bassin d'accumulation
Hydrology
Artificial pond used to store all collected water, without an outlet nozzle. This type of basin is used when no emptying is possible. Water is evacuated strictly by evaporation and by soil infiltration.

BALK
Madrier
Building Materials
A squared timber piece, mostly of fir tree, of rectangular section whose commonly adopted dimensions are 75 x 200 mm or 75 x 225 mm or 100 x 225 mm. They balks are mainly used in sheetings, propping-up or scaffolding floors. Syn. with BEAM; THICK BOARD; PLANK

BALL BREAKING
Désegrégation en boules
Geomorphology
Crystalline rocks alteration process (granites, diabases, diorites), with spaced joints.

BALL MILL
Broyeur à boulets
Equipment and Tools
A device used in pit sand manufacturing in which bars are replaced by strong steel balls. The fineness obtained is higher than that obtained by a rod mill.

BALL RACE
Chemin de roulement
Handling
Syn. with CONVEYOR LINE; RACEWAY; ROLLERPATH; RUNWAY; TRACK

BALL RACE TRACK
Chemin de ripage sur billes
Handling
A device employed in the installation of a structure using lateral displacement on a track formed by a symmetrical DC rail on which steel balls of 100 mm diameter, which are kept in ball races, evolve.

BALL TEST
Essai à la balle
Test of Construction
A test which consists in propelling a ball through a drain or a piping to detect a possible obstruction or collapse.

BALL TEST IMPACT
Essai à la bille
Construction of R.C. and P.C.
An in situ control of hardened concrete which principle consists in throwing on the concrete surface, using a spring, a ball lodged in a tube. The height of the ball's revival is measured after percussion and the concrete hardness is determined with a chart of reference.

BALLAST
Lest; Ballast
Construction; Building Materials
1. A weight intended for overloading or balancing all or part of a work to avoid butt of decks uprisings for instance. Bascule bridges are notably equipped with ballast.
Ballasts can be:
- **permanent** (*le lest fixe*): usually of concrete, which ensures the major part of balancing;
- **removable *or* sliding ballast** (*le lest amovible*): usually composed of cast iron pigs, which can be modified during the lifetime of the work according to the adjustments brought to the structure and equipment;
- **counterpoise *or* counterbalancing** (*le lest de tarage*): usually composed of cast iron pigs, which enables to compensate for variations in the center of gravity' weight and position noticed in a built work compared to the theoretical values given by designs. If necessary, this ballast is set up after the swinging tests of the structure have been achieved.

2. Syn. with PIT GRAVEL

BALLAST HOLDER
Boite à lest
Construction
1. A compartment located at the end of a metal deck that is intended for receiving the ballast in order to create a counterbalance. This ballast holder equips some metal bridges with continuous beams, which may develop negative reactions on bearing.
2. A compartment intended for receiving the ballast to create a counterbalance in an anchorage or at the end of the deck of some self-anchored suspension bridges. **See Figure 1**
3. A compartment intended for receiving the ballast to create the counterbalance of some movable bridges.

BALLAST PILE
Colonne ballastée
Foundation
A kind of pile or well composed of a shaft of brought materials with studied grading, placed in a drilling and compacted into the ground with a radial vibrator placed at the point of a tube used as a support.

BALLAST RETAINER
Murette garde-ballast *ou* Garde-grève
Construction
Syn. with GRAVEL GUARD

BALLASTED MATTRESS
Matelas lesté
Foundation
A device formed by a very resistant fabric (polypropylene mostly) in which hooks are drowned. These hooks are intended to fix concrete blocks poured directly on the mattress. This device is intended to protect the base of the piles or abutments in watery site. (An alternative of this device consists of a layer of very resistant fabric comprising flanges filled with sand or gravel.)

BALLAST-GUARD LOW WALL
Garde-ballast
Construction
A retaining dwarf wall of masonry established at the end of the railway bridges with a steel deck to separate the railway platform from the deck and to head off the ballast from *running* toward bearings.

BALLASTING
Culasse compensatrice
Construction
In a metal bridge with several spans whose extremes have a shorter span than the surroundings, ballasting of concrete or (cast) iron arranged at the extremities to oppose to the uprising of the ends of the deck. **See Figure 2**

BALLER
Cuillère
Equipment and Tools
A tool fixed at the extremity of a drill, solely used in soft ground. Can be used as a corkscrew by sinking straight down into the ground and by transmitting it a rotary movement by means of an horizontal driving sleeve. Sporadically, the baller, which has been filled with earth, is pulled out, in order to get samples of met grounds. Syn. with SAMPLING SPOON; SOIL SAMPLER

BALLING UP
Bourrage
Foundation
Clogging of the bore bit of a drill by accumulation of cuttings. Syn. with BIT BALLING

BALLMARK
Empreinte
Earthwork
Syn. with BALLPRINT

BALLPRINT
Empreinte
Earthwork
In soil compacting, surface of contact between the cylinder of the road roller and the underlying soil. Syn. with BALLMARK

BALUSTER
Balustre
Construction
A worked small column used as support to the tablet or handrail of the balustrade. Balusters consist of three parts:
- the *base,* generally formed of a square pedestal surmounted by a torus, a scotia, etc.;
- the *shaft,* turned or square, which usually appears as the bulbous form of a gourd and presents by the top a narrow part surmounted of an astragal, and at the bottom, a strongly widened portion;
- the *capital,* made up of a square tablet forming raised table, a quarter of circle, and a fillet. See **Figure 3**

BALUSTRADE
Balustrade; Accotoir; Accoudoir
Construction; Architecture
1. A guardrail rising up to elbow height (1 m approximately), consisting of a succession of balusters crowned by a tablet. A balustrade can be masonry or concrete. It contains:
- the lower part that forms a pedestal or skirt;
- the vertical part, formed either of blind or open-work panels, or of balusters;
- a tablet or handrail that rests on the balusters or panels. Syn. with GUARDRAIL

2. A low enclosure, solid or to open work.
3. Wall appreciably raised up to elbow height. Syn. with ARMREST

BAND
Fretter
Work
Syn. with BIND WITH A RING; HOOP; REINFORCE WITH STEEL HOOPS

BANDED ROCK
Roche rubanée
Geology
A stone having thin and nearby parallel bands of different colors, minerals, and textures.

BANGING THE BRIDGE SUPPORT
Battement d'appui
Defects (Civil Engineering Structure)
Damage affecting certain bridge decks. This phenomenon occurs when the deck does not rest correctly on its bearings and is abruptly applied to it at convoys passing. On the railway bridges this damage is in particular brought about by excessive packing of the track to the immediate surroundings of the work or for road bridges by a slight settlement of bearings. This continuous hammering brings about at the end of a certain time the unsealing of the bearing plates and disorders in masonries.

BANGING THE SLATS
Battement des lattes
Defects (Civil Engineering Structure)
In wooden deck bridges, a defect resulting from the fastening of the slats, due either to a deformation of the boards in the aftermath of the

climatic conditions, or to a bad fastening or rotting of the support or boards.

BANK
Glacis; Accotement; Accolement; Banc
Construction; Civil Engineering; Building Materials
1. A very even and uniform slope (lawn, coating, etc.) depending on the situation. Syn. with GRADIENT; SLOPE
2. Syn. with BENCH; CESS SIDE; ROADSIDE; SHOULDER; SIDE PATH; VERGE
3. Syn. with BENCH; FORM; LAYER

BANK
Levée; Berge
Earthwork; Hydrology
1. Syn. with EMBANKMENT
2. A shore or edge of river, canal, etc., having a raised and steep profile. Syn. with EMBANKMENT; SLOPE

BANKER-MARK
Marque de tâcheron
Masonry
The personal identification mark of the stonecutter, affixed on an ashlar which he cut. Syn. with MASON'S MARK

BANKING
Aile de pavé ou de chaussée
Civil Engineering
Side slopes of a pavement (roadway).

BANK-ON-BANK LANDSLIDE
Glissement banc sur banc
Geomorphology
A movement of ground of an extent and suddenness similar to a collapse and which affects the complete thickness of a reef or ground bench. The slip can be due to the lubrication by water of the interface of two benches, cancelling out a part of the bond strengths (the dip of stratums can be an aggravating factor).

BANQUETTE
Banquette
Geomorphology
The horizontal top part of an escarpment in a zone of regression or within a landslide. Syn. with BERM

BAR
Barre; Barrette; Bar
Construction; Metallurgy; Metrology
1. A long component in a frame or long basic element in a structure.
2. A rectilinear product usually long quite and and basically round, square, rectangular. Syn. with IRON BAR
3. A short metal plate.
4. A unit of pressure (1.013 kgf/cm^2).

BAR BENDER
Ferrailleur; Cintreuse
Building Materials; Equipment and Tools
1. A worker specialized in the shaping and bar setting for reinforced concrete works. Syn. with IRON FIGHTER; STEEL BENDER; STEEL FIXER
2. Syn. with BENDING MACHINE; STEEL BENDER

BAR BENDING
Ferraillage
Building Materials
Syn. with BAR SETTING; STEEL FIXING; (CONCRETE) REINFORCEMENT; IRON FRAMEWORK

BAR CHAIR
Cale à béton ; Espaçateur
Equipment and Tools
Syn. with SPACER; BAR SPACER.

BAR CLAMP
Serre-joint
Equipment and Tools
A builder's tool that keeps the boards of the formworks in their position, etc.

BAR SCREEN
Grille de déplatage
Equipment and Tools
Syn. with NEEDLE ELIMINATION GRIZZLY

BAR SETTING
Ferraillage
Building Materials
All reinforcements going into the composition of a reinforced concrete structure. Syn. with IRON FRAMEWORK; STEEL FIXING; (CONCRETE) REINFORCEMENT; BAR BENDING

BAR SPACER
Cale à béton ; Espaçateur
Equipment and Tools
Syn. with SPACER; BAR CHAIR

BAR TEST
Eprouvette pour essais mécaniques
Test of Materials
Syn. with TEST PIECE

BARB
Barbure; Bavure
Defects (Metallurgy)
Syn. with BURR; SCALE; SMUDGE

BARE
Maigre
Building Materials
Of an element which has insufficient dimensions to fill a space, a void. Syn. with SCANT

BARE STEEL
Acier dénudé
Defects - Damage (Construction of R.C. and P.C.)
A defect characterized by the relatively extended appearance of reinforcements or cable ducts in a reinforced or prestressed concrete structure. This defect can be due to several causes:
- insufficient concrete cover of the reinforcements or prestressing cable ducts,
- mechanical shock,
- corrosion and expansion of steels, etc.

BAREFOOT
Nu-pied
Work
Of a drilling in the ground of which the lower part was not cased.

BARGE
Barge
Handling
A flat-bottomed boat, tractor drawn or pushed, used for river carriage of materials. Syn. with DUMB BARGE

BARING
Déchaussement
Foundation
Syn. with LOOSENING

BARITE
Barytes
Building Materials
Syn. with BARYTES; HEAVY SPAR

BARYTES
Barytes
Building Materials
An opaque heavy aggregate (barium sulfate), showing a lamellar structure. Its average density is 4.5. Barytes is used:
- as drilling mud;
- in paint manufacture
- to manufacture concrete whose density reaches 3.6 and is used in the form of sand (0 to 3 mm), fine gravels (3 to7mm), gravel (7 to15 mm) and stones (15 to 30 mm). Syn. with BARITE; HEAVY SPAR

BARYTES CONCRETE
Béton de barytes
Building Materials
A material, whose main aggregate is barytes, that can have high densities (up to 6) and is used to form screens for protection from ionizing rays, for soundproofing, and heavy rafts.

BARYTINE
Barytine
Building Materials
An opaque heavy aggregate (barium sulfate), more or less white colored, showing a lamellar structure. Its average density is 4.5. Barytine is used to manufacture concrete whose density reaches 3.6 and is used in the form of sand (0 to 3 mm), fine gravels (3 to7 mm), gravel (7 to15 mm) and stones (15 to 30 mm).

BARK POCKET
Entre-écorce
Defects (Building Materials)
Syn. with INGROWN BARK; INTERBARK

***BARLOW* RAIL**
Rail *Barlow*
Construction
A rolled ∩ shaped section of small height having the same use as Zorès irons in the rough masonry of some bridges. **See Figure 4**

BAROID FILTER PRESS
Filtre-presse baroïd
Equipment for Measure and Control
Equipment used to determine the filtrate (interstitial water) and thickness of the cake at the time drilling mud are used.
The equipment is composed of a mud tank installed on a frame of a filtering device as a system to collect and measure the quantity of interstitial water and of a source of pressure. A graduated test tube recovers the filtrate. The test progress for 30 minutes under a constant CO_2 pressure of 7 bars. The interstitial water is given in cm^3; it is the quantity of filtrate recovered at the end of the 30 minutes. The test can be limited to 7.5 minutes, in which case the quantity of interstitial water collected is regarded as half of that measured to 30 minutes. The thickness of the cake is measured using a reglet, after dismantling of the cell and elimination of superficial gel by washing with the water jet.

BAROID SAND CONTENT SET
Elutriomètre
Equipment for Measure and Control
A graduated glass burette with a conical bottom intended for measuring the sand content of a drilling mud during its recycling. One draws for instance $100\ cm^3$ of mud that one sifts through a $80\ \mu m$ sieve. Screenings are collected and placed in the burette. One washes by a light stream of water until the water contained in the burette becomes perfectly clear. The volume of sand remaining on the bottom is measured in centimeters cube by direct reading, from where the content in sand remains in percentage.

BAROID WEIGHTING MACHINE
Balance baroïd
Equipment for Measure and Control
An instrument used to measure the density of the drilling muds. It is about a genuine Roman balance including a cylindrical cupola whose volume is constant and a beam directly graduated in density. Having filled up the cupola with mud, the beam is balanced by moving the cursor, from which the direct reading of the density.

BAROSTAT
Barostat
Equipment for Measure and Control
In the mechanics of fluids, an equipment being designed to keep a pressure at a constant value.

BARRAGE
Barrage
Civil Engineering Structure
A construction forming a retaining wall, generally established in a river to create a pondage and in which the thrust is normal to the wall. Generally speaking, the purpose of a barrage is, either to regularize the flow of the river which it intercepts, or to use the driving force of the water.
One calls *permanent barrage,* the one of which no part is movable; *sluice weir,* the one established by means of juxtaposed sluices; *girders barrage,* the one made of horizontal wooden pieces (beams), engaging into vertical grooves; *needles weir,* a movable barrage able to be erased entirely in time of flood and made of light vertical wooden pieces (needles) which rest on a sill fitted out in a foundation raft. Among the main types of barrage we can distinguish:
- **buttress dam** (*le barrage à contreforts*), formed by a shell strengthened by a system of buttresses; it can be built of masonry or concrete;
- **earth-fill dam** (*le barrage en remblai*), carried out with materials often taken near its construction. Its shape and composition depend on the quality of the materials taken;
- **rock-fill dam** (*le barrage en enrochements*), generally made of a tight ground newel covered with ordinary materials themselves covered by ripraps. This type of barrage takes on a trapezoidal shape and presents a cross section of a quite considerable thickness;
- **homogeneous earth-fill dam** (*le barrage en terre homogène de section transversale trapézoïdale),* built with tight materials (example: compacted clay);
- **heterogeneous earth-fill dam** (*le barrage en terre hétérogène ou à zones),* carried out when one does not have impermeable grounds in sufficient quantity and whose ground then constitutes an impermeable, vertical, or tilted central newel, contained between the bearing blocks (downstream) or protection (upstream) called *fills* and consisting of very diverse materials (generally speaking, sandy and rocky grounds). Filters are interposed between the newel and the fills to avoid the migration of the ground in the latter. The downstream filter collects moreover the water which can percolate through the newel. The materials are very

carefully compacted to reduce the spaces, to improve the mechanical qualities of the materials and to avoid deformations of the work. This type of barrage is very sensitive to erosion by the water.
Syn. with DAM; WEIR

***BARRE DE SAINT-VENANT* HYPOTHESIS**
Hypothèse de *Barré de Saint- Venant*
Strength of Materials
An assumption according to which normal stresses in all cross sections of a horizontal beam bent in pure bending are proportional to their vertical distance to the neutral axis passing in the center of gravity of the section.

BARRED GUARDRAIL
Barreaudage
Construction
All rails constituting a guardrail and, very generally, any type of protection at a drop in the ground. Syn. with BARS

BARREL
Buser; Buse
Civil Engineering Structure
1. To implement ducts. Syn. with TO PIPE
2. Syn. with CHANNEL TUBE; DUCT; PIPE CULVERT

BARREL (of the vault)
Corps de voûte
Construction
The masonry part of a vault between the intrados and the extrados.

BARREL BAND
Frette
Construction
Syn. with COLLAR; FERRULE

BARREL DEFORMATION
Déformation en tonneau
Defects (Metallurgy)
A bulged shape obtained through the compression of a metal bloom after a forgeability test.

BARREL SHELL
Coque
Construction
Syn. with COQUE SKIN; HULL

BARREL SQUARE
Beauveau
Equipment for Measure and Control
A square with mobile branches, used by stonecutters to check their work.

BARREL VAULT
Canonnière
Construction
A cradle vault whose opening is larger at one of its extremities than at the other; one also says *vault in canon.*

BARRETTE
Barrette
Foundation
Syn. with SUPPORTING-WALL UNIT.

BARRETTE PILE
Pieu-barrette
Foundation
See SUPPORTING-WALL UNIT.

BARRICADE OF PILES
Estacade
Construction
Syn. with PIER (on piles); PILING

BARRIER PILLAR
Investison
Earthwork
In underground earthwork, the volume of ground that must remain stable not to bring about damage on the surface installations. The protective break includes the barrier pillar and all sublaying grounds to the surface and is all the more widened since the boring is deeper, by means of the angle of influence. Syn. with INVESTISON; PROTECTIVE BREAK. **See Figure 5**

BARROW
Brouetter
Handling
To move materials with a wheelbarrow.

BARROWFUL
Brouettée
Handling
Amount of materials that a wheelbarrow can hold.

BARS
Barreaudage
Construction
Syn. with BARRED GUARDRAIL

BARTONIAN
Bartonien
Geology
Formation of the upper Eocene contained between the Lutetian and Theludian (saccharoid gypsum, sands of Beauchamp, calcareous marl, limestones of Saint-Ouen and Champigny).

BARYE
Barye
Metrology
Stress and pressure unit of the CGS system, corresponding to 0.1 Pascal.

BASALT
Basalte
Geology
A rock of deep origin released in a molten state at around 1200°C and crystallized into a mixture of plagioclase and pyroxenes. It is a compact gray-black rock little used in construction.

BASALTINE
Basaltine
Building Materials
Reconstituted stone of crushed basalt and a binder.

BASALTIC
Basaltique
Geology
Formed from basalt; relative to basalt.

BASCULE
Bascule
Construction
Sought overhang to bear above an empty space a part of balcony, etc.

BASCULE
Pousser, tirer au vide
Defects - Damage (Construction)
To lose its perpendicularity, when speaking about the verticality of a wall. Syn. with TO OVERTURN

BASCULE METAL BEARING
Appareil d'appui métallique à balancier
Construction
A device of connection and transmission of the actions that is used for great loads and important displacements. It is formed by two equalizers, one or several rollers, a bearing plate for movable bearing. For fixed bridge support apparatus, rollers are replaced by a hinge. **See Figures 44 and 46**

BASE
Culot; Couche de base; Couche de roulement; Base
Earthwork; Civil Engineering; Polymers
1. A solid mass of earth remaining at the bottom of the drift on the face during the works of heading of a tunnel by the timbered gallery method.
2. Concerning a pavement (roadway), the part that is in contact with the wheels of the vehicles. Syn. with BASE COURSE; SUBBASE; SURFACING
3. An epoxydic resin not hardened. (The combination base + hardener gives the epoxydic binder or epoxy system.)

BASE
Embase; Embase; Fond; Soubassement
Construction
1. The intermediate lower pan located between the shaft and the sole plate of a pier.
2. The widened part located at the lower extremity of a pole, enabling it to take bearing on its support while distributing forces on a greater surface in order to limit the punching effects. Syn. with FOOT
3. The lower part of a work.
4. Syn. with BACKGROUND; BACKING
5. Syn. with FOUNDATION; WALL BASE

BASE COURSE
Binder
Civil Engineering
The substratum of a road surface, as opposite to the topping, used as an elastic plug between this layer and the foundation.

BASE COURSE
Couche de base; Couche de roulement
Civil Engineering
Syn. with BASE; SURFACING; SUB BASE.

BASE COURSE OF SURFACING
Couche de liaison; Binder
Civil Engineering
Concerning a pavement (roadway), the bottom part in contact with the base course. Syn. with BINDER; BINDING COURSE

BASE DIE
Dé d'amortissement
Construction
Concrete or stone parallelepipedal element placed at the base of the pitch of wing walls. **See Figure 6**

BASE GUSSET
Nervure
Metal Construction
Syn. with STIFFENING RIB

BASE LEVEL
Niveau de base
Hydrology
The lowest point reached by any form of streaming or plan below which a river cannot erode its bed any more.

BASE LINE
Ligne d'opération
Topography
A continuation of poles determining a straight line which must be used as a basis for a mapping.

BASE PLATE
Plaque d'assise
Construction
A quadrangular steel or cast iron piece for distributing on a bearing of masonry the vertical load which is transmitted to it by a beam or a post, either directly, or by means of a bridge-support apparatus (hinge, rolls, etc.) according to the adopted system (restraint, semirestraint, fixed or mobile articulation, etc). Syn. with SOLE PLATE; WALL PLATE. **See Figure 7**

BASIC CEMENT
Ciment basique
Hydraulic Binders
A binder whose hydraulicity index is lower than 0.50; Portland cement for instance.

BASIC ROCK
Roche basique
Geology
A crystalline material poor in silica (< 52%) and in calcium but rich in sodium and potassium.

BASIC STEEL
Acier de base
Metallurgy
A nonalloyed ferrous product for which no regulation related to any specific use is required.

BASICITY
Basicité; Alcalinité
Mineralogy; Hydrology
1. The characteristic of a mineral rich in bases, in other words in alkaline elements: calcium, potassium, sodium, etc.
2. Syn. with ALKALINITY

BASIDIOMYCETES DRY ROT
Basidiomycètes
Building Materials
Mushrooms comprising certain lignivorous species which cause decay and rot in wood (except for soft rot).

BASIN
Bassin
Sanitary Engineering and Drainage
A pit that collects water.

BASIS
Base
Construction
Syn. with FOOT

BASKET
Nacelle; Panier; Panier de cimentation
Equipment and Tools
1. A platform girdled by railings fixed at the end of a telescopic articulated arm, the whole assembled on a wagon or truck chassis. The basket hold two or three people either inspecting or maintaining the work. Baskets equip tunnel survey trucks, elevating platform (inspection), etc.
2. A conical fabric screen used in the cementing of a drilling column. The injected grout percolates through the perforations made in the side walls, whereas the low part is tight,

preventing cement grout going down below of its exit point.

BASKET HANDLE
Anse de panier
Metal Construction; Construction
1. The circular tip of an additional flange of metal beam. **See Figure 8**
2. Arch or vault with continuous curved line formed by a certain number of arcs of circle that have, two by two, the same tangent in each point of join (radius of circle arcs go by growing since springings up to the key). Syn. with THREE-CENTERED CURVE. **See Figure 9**

BASKET WORK
Clayonnage
Work
Syn. with WATTLE WORK

BASTARD ASHLAR
Libage
Building Materials
A large stone of good quality used after a simple roughing-out with the hammer and a coarse cut with the punch. It is used in zones highly solicited in compression or exposed to the shock (foundation, bearing of pillar, coin stones, etc).

BASTARD MATERIAL
Matériau bâtard
Building Materials
A delivered product which does not correspond to the samples. Syn. with BASTARD PRODUCT

BASTARD PRODUCT
Matériau bâtard
Building Materials
Syn. with BASTARD MATERIAL

BAT
Briqueton; Demi-brique
Building Materials
A half brick. Syn. with BRICKBAT

BATCH
Broyée; Gâchée
Building Materials
1. The quantity of mortar mixed at one time by a mixer.
2. The quantity of mortar or concrete prepared in a concrete mixer, a mortar box, a mixer, or on the ground. Syn. with MIX

BATCH
Charge
Building Materials; Materials; Painting
1. The concrete ingredients that are batched and ready for mixing.
2. The volume of concrete carried by a truck mixer.
3. A chemical specie or mixture of mineral, vegetable or animal nature, used to increase the mass of a product without that modifying the peculiar qualities, or on the contrary to endow it with new properties.
4. A mineral powder, insoluble in suspension mediums, but not conferring to the latter any opacity, neither an active role in the paint.

BATCH NUMBER
Numéro de lot
Welding
The numerical, alphabetical, or alphanumeric locating of a weld metal supply, identifying a batch and allows to know the entire operations which led to its production.

BATCH OF CONCRETE
Lot de béton
Building Materials
The totality of the concrete in place subject to the same sanction of check. It is thus a batch of use constituted by the totality of the concrete placed in a part of a work.

BATCHER
Doseur
Equipment for Measure and Control
A device designed for measuring the bulk or the weight of the different concrete ingredients going into the proportions of concrete before their introduction into the mixing tank. Syn. with DOSING EQUIPMENT

BATCHING
Gâchage; Dosage d'un constituant d'un béton, d'un mortier
Building Materials
1. Combining various constituents of mortar or concrete to obtain a homogeneous product.

2. The absolute bulk of this concrete ingredient in the batch, related to the sum of absolute bulks of all concrete ingredients of the batch. Syn. with VOLUME BATCHING

BATH
Bain
Welding
A preparation constituted by liquid penetrating products in which are immersed the welded parts to be examined during a sweating inspection.

BATHOLITH
Batholite
Geology
A dome-shaped solid mass of rocks, of deep origin, present in country rocks.

BATHONIAN
Bathonien
Geology
The upper formation of the Dogger.

BATTEN
Planchéier; Latter
Work
1. To build a floor with boards. Syn. with PLANK OVER
2. Syn. with LATH

BATTEN
Basting *or* Bastaing; Couvre-joint
Construction
1. Square wooden pieces the most common sections of which are: 55 x 155 mm and 65 x 185 mm. Syn. with STRIP
2. Syn. with BEAD; BUTT STRAP; CAPPING STRIP; COVER PLATE; COVER STRAP; FILLER; JOINT COVER; TRIM

BATTEN
Tasseau; Liteau
Building Materials
1. A squared wooden piece of weak section (between 18 and 30 mm on side), used to part between them stored materials, to stall, etc. Syn. with CLEAT
2. Syn. with LATH.

(flooring) BATTEN
Plat-bord
Temporary Constructions
A scaffolding board.

BATTEN (DISH)
Barrette; Bretelle
Metal Construction
Element of a lattice truss that connects perpendicularly to two neighboring parallel sections in order to join them. Syn. STAY (DISH)

BATTEN PLATE
Traverse de liaison
Construction
A metal element placed perpendicularly to the chords of certain beams or poles and ensuring in places the spacing and the integral union of these chords. Syn. with STAY PLATE

BATTENBOARD
Latté
Building Materials
Syn. with BLOCKBOARD; COREBOARD; STAVED LUMBER CORE

BATTER
Fruit; Recoupement; Talus
Construction
1. The negative angle made by the facing of a wall or a pier compared with the vertical. The high point standing back compared with the base. (The opposite is called *counter batter*). Syn. with RAKE. **See Figures 10 and 10a**
2. The reduction of the thickness of a wall by removing materials or suppressing surplus pans (lips, etc).
3. The facing of a wall set up with batter.

BATTER
Fruit; Pente
Nomenclature of Materials; Topography
1. The side inclination of the flanges of some hot-rolled sections.
2. Syn. with RAKE

BATTER (of vault, etc.)
Clavage
Civil Engineering Structure
The batter of springer, flat arch, or vault.

BATTER BOARD
Fiche; Broche
Equipment and Tools; Masonry
1. A small blade of iron that is driven into the joints to tighten the lines. Syn. with STAKE
2. Syn. with LINE SUPPORT

BATTER FACE
Talus
Construction
The facing of a work showing an important batter (ant. overhang).

BATTER LEVEL
Niveau de pente; Clinomètre
Equipment for Measure and Control; Topography
1. Syn. with SLOPE LEVEL
2. An instrument for measuring the slope of a terrain, the dip of a layer. Syn. with CLINOMETER

BATTER PEG
Piquet
Topography
An element of wood sharpened into a point partly sunk into the ground in order to serve as landmark. Syn. with STAKE; MARKER

BATTER WALL
Mur à fruit
Construction
A construction whose thickness varies in a continuous way from the base to the top; the section is trapezoidal. **See Figures 11 and 11a.**

***BAUMANN* TEST**
Essai *Baumann*
Metallography
A macrographic test that consists in visually checking the quality of some steels with a practice developed by Baumann.

***BAUME* CONTENT**
Degré *Baumé*
Metrology
A measurement that characterizes the density and the concentration of some liquid solutions, particularly acids.

***BAUME* HYDROMETER**
Aéromètre *Baumé*
Equipment for Measure and Control
A measuring device used to check the density of liquid bodies. It is composed of a mechanism made of a float and ballasted with mercury or lead and that, when it is balanced, lets a fine vertical rod emerge.

BAUXITE
Bauxite
Geology
A coherent rock whose varieties have different structures, of a typical red color when they contain iron oxide Fe_2O_3 (otherwise white). Bauxites are poor in silica and rich in alumina.

BAY
Culasse
Construction
The portion of an arch bridge contained between a pier and an abutment.

BAYONET
Baïonnette
Construction
Syn. with LENGTHENING A POST.

BEAD
Perle; Couvre-joint
Defects (Metallurgy); Construction
1. A globular defect affecting a piece of foundry.
2. Syn. with BATTEN; BUTT STRAP; CAPPING STRIP; COVER PLATE; COVER STRAP; FILLER; JOINT COVER; TRIM

BEADED CHANNEL
C
Metal Construction
Syn. with C-SHAPED BAR IRON

BEAK MOLDING
Bec-de-corbin
Architecture
A projecting molding in a quarter round shape.

BEAM
Poutre; Madrier
Construction; Strength of Materials; Building Materials
1. A structural component mainly working in bending through the agency of vertical forces and that transmits to the bearing points the loads that are applied to it.

A beam is a lengthened and horizontal support made of metal, wood, reinforced or prestressed concrete and whose section has been studied for a good bending strength. Beams are mainly subjected to bending moments and shearing forces. Simple beams are made up of only one piece, of a section calculated to withstand the strains that aim at making them bending. When the strains become too strong, reinforced beams or compound beams are then used. Beams rest:

- either on a bearing with restraint (cantilever) or are restrained at both ends (exceptional);
- either in cantilever and are then presented as continuous beams to which have been added a number of extra articulations in order to free oneself of the consequences of the difference in level of the supports;
- either on two free bearings, free and restrained; they are independent or isostatic beams. These beams work on the positive bending moment in middle of span and with simple shearing force on bearing;
- either on several bearings (beam in continuity); they are continuous or hyperstatic beams. This type of beam bears on one hand a positive bending moment much weaker than an independent beam; but, on the other hand, when on bearing, it bears an important negative bending moment as well as the shearing force.

Syn. with GIRDER

2. A solid generated by a plane surface called *narrow section* or *normal section* of the beam whose center of gravity follows a curve called *medium fiber* and which moves while remaining normal to the curve. If the medium fiber is warped, the beam is known as *warped;* if the *medium fiber* is plane, the beam is known as *plane;* if the medium fiber is a straight line, the beam is known as *straight.* Most of the beams are straight, horizontal, and subject to vertical loads. The strength of materials, in a restricted view of the definition, is basically constituted by the theory of beams resting on the three following fundamental principles: the Saint-Venant principle, the Navier Bernoulli principle, and Hooke's law.

3. Syn. with BALK; THICK BOARD; PLANK

BEAM HANGER
Etrier
Construction
A U-shaped metal part used to support a beam or that may be used as articulation.

BEAM STAY
Buton
Construction
A beam or strip of a raft taking up the thrust of the piers at their bases. Syn. with PART OF FOUNDATION RAFT

BEAM WITH NARROW FLANGE
Poutrelle à ailes étroites
Building Materials
An iron and steel product whose width of the flanges is lower or equal to 0.66 times the nominal height of the section and less than 300 mm.

BEAM-AND-SLAB FLOOR
Hourdis nervuré
Construction Term
A reinforced concrete slab equipped with prismatic elements, called *webs,* linked to the top slab and projecting it and whose role is to constitute a T-beam by association with the top slab. Generally, the web is of a rectangular section and placed under the top slab. **See Figure 12**

BEAMING
Poutraison
Handling
The setting up of a beam. Syn. with GIRDERING

BEAMS
Poutraison
Construction
A set of beams, main or others (transverse girders, stringers, etc.) bearing the cover or connecting the beams between them (distance pieces). Syn. with GIRDERAGE; GIRDERS

BEARER
Porteur
Construction
Syn. with CARRIER; LOAD BEARING

BEARING
Corps mort; Appareil d'appui; Appui
Construction; Strength of Materials
1. Concerning small timber works, sole replacing the abutment distributing the loads transmitted by the beams. Syn. with DEAD MAN.
2. Syn. with BRIDGE-SUPPORT APPARATUS; SUPPORTING DEVICE
3. Every element capable to produce reactions likely to balance the outside forces system.
Various types of bearing are used in civil engineering; they are characterized by the number of degrees of displacement liberty that they allow and by number of necessary components to determine their reaction. In the case of a plane structure, loaded in its plan, the number of these components is one for single bearing, two for hinge, three for fixed bearing.

BEARING BALANCE
Balancier
Construction
A cast steel piece making up some bridge-support apparatuses.
Two models essentially are available:
- the **upper bearing balance** (*le balancier supérieur*), which is fastened to the deck,
- the **bottom bearing balance** (*le balancier inférieur*), articulated on the upper bearing balance, which transmits the loads to the rolls, knees or the hinge.

BEARING BAR
Carillon
Masonry
A small square iron sunk to force through a masonry, ensuring the loading of the frames of a bressummer at the time of an underpinning.

BEARING BLOCK
Sabot
Construction
A thick cast iron or cast steel piece mostly used as bearing or distribution element. **See Figure 13**

BEARING BRACE
Montant d'about; Montant d'appui
Metal Construction
1. In a metal beam, the end upright located directly below of the bearing.
2. The vertical upright equipping a metal beam and which is placed directly below of the bearing axis.

BEARING CAPACITY
Portance
Geotechnics
Syn. with GROUND CARRYING CAPACITY

BEARING DEVICE
Dispositif d'appui
Temporary Constructions
Set of additional elements used to make tunnel formworks and which are intended for taking again the vertical and horizontal forces due to the weight of the formwork and the fresh concrete pressures.
It is *necessary to distinguish the particular case in which a complete ring is concreted in only one phase from the other cases (rings not closed or rings concreted in several phases). In the first case, a circular formwork whose bearings are carried out by anchor tie bars fixed to the ground is used. In the other cases, the positioning of the formwork is generally carried out with bearings on jacks and anchoring drifts that are fixed on a preliminary phase of concreting, this one being or not integrated into the final coating. In small galleries, the effects due to horizontal thrusts can be taken up by staying.*

BEARING DIE
Dé d'appui
Construction
A parallelepipedal or trapezoidal element placed on the bridge pier caps and that receives the bearing plates. **See Figure 14**

BEARING DISK
Grain d'appui
Construction
A squared or plane hard steel part with a bulged face that allows to ensure the centering of an articulated bridge bearing and the specific transmission of loads of this bearing. **See Figure 15**

BEARING DISTANCE
Portée
Construction
Syn. with BRIDGE SPAN; SPAN; SPAN WIDTH

BEARING LINE
Ligne d'appui
Construction
A straight line passing through the center of gravity of the different bearings laid out on the same bearing and relating to the same oblique cross section of deck. Syn. with SUPPORT LINE

BEARING OF ELASTIC LIMIT
Palier de limite élastique
Metallography
The nearly horizontal portion of the tensile curve of certain alloys (in particular soft steel or annealings), reflecting a lengthening with the nearly constant load and which is shown on the metal by *Piobert-Lüder* lines (vermiculation).

BEARING PAD
Coussinet
Construction
Syn. with COUSSINET; PIER CAP

BEARING PLATE
Plaque d'appui
Construction
A steel part fixed on the pier cap or the transverse head beam of a work and on which moves rolls (or segments) of a bridge-support apparatus.

BEARING REACTIONS
Réactions d'appui
Strength of Materials
Connection forces (or torque) developed by bearings of a structure equal and opposed to the resultant of the vertical or inclined loads (or to the resultant moment) transmitted from a part of the structure to this bearing. The bearing reactions have the effect of balancing the applied loads.

BEARING STRESS
Taux de travail
Foundation
Allowable working load per square centimeter of a foundation.

BEARING UNIT OF SPAN
Travure
Construction
Set of load-bearing elements constituting a bridge span.

BEARING UNITS *or* ELEMENTS
Eléments d'appui
Construction
Constructive arrangements designed to transmit bearing reactions of bearing units to the strong bases. Bearing elements are made up of abutments, piers, pilings, and foundations. Their particular function is to absorb differences of level between the communication routes and the ground. Some of them are used to separate the portion of the line supported by the work from the portion of line located on the undisturbed soil or on an embankment.

BEARING WALL
Mur porteur
Construction
Syn. with LOAD-BEARING WALL

BEARING WEDGE
Orgueil
Equipment and Tools
A setting block used as bearing point to a lever. **See Figure 16**

BEAT
Damer
Earthwork
Syn. with PUN; RAM; ROLL; TAMP

BED
Banc; Lit; Assise; Niveau; Horizon; Couche; Gisement; Gîte
Geology
1. The relatively hard layer of earth from approximately 5 cm to 1 m thick, dating from a defined period, which can be followed on a certain distance and which can be used as mark for exploitation.
2. In a sedimentary formation, the thinner layer in a lithological classification. Syn. with LAYER
3. Syn. with STRATUM
4. Syn. with DEPOSIT; LAYER; VEIN

BED
Berceau; Enrocher; Sceller
Earthwork; Foundation and HydraulicWork; Work
1. Layer of fine materials or concrete (or dots of concrete support) laid out on the bottom of a trench, intended for receiving a piping.
2. To proceed to the riprap of a bridge pier, a cofferdam, banks of a river, etc. Syn. with PITCH
3. Syn. with PLUG; FASTEN; FIX IN

BED
Forme; Lit
Construction; Building Materials
1. General term indicating horizontal complementary works made of various materials (sand, concrete, clinker, etc.), whose thicknesses can vary from one point to another and which are intended for receiving a screed or a tightness coating. Two kinds of beds can be distinguished:
- **slope beds** (*les formes de pente*), of variable thickness, intended for favoring water flow on the works; they receive a tightness directly applied and its protection;
- **levellings *or* screeds** (*les ravoirages*).

2. A layer made with an unspecified material, e.g. a sand bed, mortar bed, stone courses bed, etc.
3. The natural separation of the various benches of chalky rocks due to the phenomena of sedimentation and that reflects the marks of stratification. The bed is either horizontal or oblique.
4. Syn. with COURSE (OF MASONRY)
Syn. with LAYER

BED
Lit
Masonry
The top and bottom horizontal surfaces of a masonry course of stones, bricks, or concrete blocks. There are several types of beds:
- the **rough face** (*le lit brut*), the surface of a quarry stone which has not been cleaned;
- the **bed face** *or* **bedding** (*le lit de dessous ou de pose*): in regard to stones, the face that is set on an already bonded stone;
- the **top face** (*le lit de dessus*) which, in a stone, is the face opposite the bedding;
- the **face bed** (*le lit en parement*), the last bed which has not been covered by another course of stones (or bricks);
- the **bed face** *or* **bedding** (*le lit de pose*);
- the **radiating** *or* **rayonnant face** *(le lit rayonnant),* referring to the skew part of an archstone on which rests another archstone.

Syn. with FACE. **See Figure 17**

BED (A BRICK, A STONE)
Asseoir
Masonry
To position a bond element (quarry stone, brick, etc.), in the construction of a masonry wall, by striking its top face with a mallet in order to level it and make it adhere to the mortar bed or joint bed.

BED ARCH
Arc de radier
Construction
An arc-shaped wall set up in front of a bridge pier to protect it from possible shocks.

BED COURSE REINFORCEMENT
Renforcement des couches d'assise
Civil Engineering
The increase of the bed course thickness of a roadway by adding material.

BED CUTTING
Taille d'un lit
Masonry
The dressing of the faces of a stone bed or course (top and/or bottom horizontal faces of a stone).

BED JOINT
Joint délit; Joint de lit
Masonry
1. A masonry bonding on which rests the stone or brick of the upper course.
2. A horizontal or inclined joint that separates two courses of masonry. These joints are all in the same plane. Syn. with COURSE JOINT

BED LINE
Ligne de lit
Masonry
The horizontal straight line formed by stone or brick courses, as opposed to the vertical joint line. Syn. with LAYER LINE. **See Figure 18**

BED LOAD
Débit solide
Hydrology
All solid elements that a waterway is likely to carry: sands, gravel, pebbles, or blocks. (It is interesting to know this bed load that is susceptible to cause the erosion of piles or abutments).

BED OF AN ABUTMENT
Abloc
Foundation
The concrete foundation of a bridge abutment. Syn. with FOUNDATION PIER

BED SURFACE
Surface de lit
Masonry
The horizontal pointed face, as opposed to the surface of joint, which is vertical.

BEDDED AGAINST THE GRAIN EDGE
Pierre en délit
Masonry
A quarry stone or ashlar implemented in a construction such that its natural bedding vertically appears compared to the compression strains. Syn. with BEDDED STONE; FACE BEDDED

BEDDED CLAY
Argilite
Geology
Syn. with ARGILLITE; MUDSTONE

BEDDED STONE
Pierre posée sur son lit; Pierre en délit; Passe
Masonry; Nomenclature of Materials
1. A stone implemented so that its base is one of its quarry faces.
2. Syn. with BEDDED AGAINST THE GRAIN EDGE; FACE BEDDED
3. A stone cut up in the direction of its quarry face.

BEDDING
Litage; Enrochement
Geology; Foundation
1. The presence of beds in a sedimentary formation. Syn. with BEDDING PLANE
2. Syn. with ENROCKMENT; PITCHING; RIPRAP; ROCKFILL

BEDDING CLEAVAGE
Litage
Geology
Secondary stratification inside a bench.

BEDDING PLANE
Litage; Lit de carrière
Geology; Building Materials
1. Syn. with BEDDING
2. Syn. with BEDDING PLANE

BEDDING ROD
Canne à scellement
Materials
Syn. with FIXING ROD; SETTING ROD

BEDDING STONE
Moellon de plat
Masonry
A stone of which bed is dressed and on which it rests

BEDOULIAN
Bédoulien
Geology
A substage of the Aptian of the Cretaceous system.

BEECH
Hêtre
Building Materials
A broad-leaved tree of temperate forests. Its density is 0.6 to 0.75. It is classified, from a hardness viewpoint, as half-hard. It is a tightened grain wood of pale color and is seldom used in construction, except for coarse formworks, laggings, etc.

BEECHWOOD MALLET
Mailloche
Equipment and Tools
Syn. with DRIVING MALLET

BEETLE
Masse; Maillet
Equipment and Tools
1. A large wooden mallet used as a striking tool.
2. Syn. with MALLET; MAUL; WOODEN HAMMER;

BEGINNING
Amorce; Amorçage
Masonry; Work
1. Syn. with TOOTHER.
2. The beginning of the boring of a hole. Syn. with PRIMING

BEHEADED RIVER
Rivière décapitée
Hydrology
A waterway whose headwaters have been diverted by a capture.

BEHEADING
Capture
Hydrology
Syn. with CAPTURE; RIVER CAPTURE; STREAM CAPTURE

BELITE
Bélite
Hydraulic Binders
A bicalcium silicate containing small quantities of magnesia or alumina; it is one of the principal components of the cinders of artificial Portland cement.

BELL
Tulipe
Nomenclature of Materials
The special shape inside certain anchorage cable bases.

BELL-BOTTOMED
Patte d'éléphant
Construction
Describes the widened base of a reinforced concrete post. **See Figure 19**

BELLED PILE
Pieu à bulbe
Foundation
A pile with a widened base.

BELLING BUCKET
Benne à lames extensibles
Equipment and Tools
A tool used to create a widened base at the bottom of a boring being drilled. It is a base widening bit (or under reamer) with a height limited to the progressive widening of the shaft of the pile in the shape of a bell. The tool includes one or two knives articulated at the head or the base; it is operated by a kelly. Knives are serrated to facilitate cutting the ground as the tool rotates.

BELLING TOOL
Aléseur
Equipment and Tools
A special tool (with blades or rolls) used to extend wells or regularize their walls.

BELLY
Panse
Construction
The bulged part of a baluster.

BELLY OUT
Pousser au dehors
Defects (Masonry)
Syn. with RUIN

BELT CONVEYOR
Convoyeur à bande ou à courroie; Tapis transporteur
Equipment and Tools
1. A conveyor made up of an endless rubber cloth and widened V-shaped, supported by rolls and driven by drums. This type of conveyor is notably used in sandpits to carry sand from its extraction area until its stocking area.
2. A rubber strip to continuous motion used to carry materials or loads.

BELT TELECONVEYOR
Télétransporteur à bande
Equipment and Tools
A belt conveyor of materials (excavated materials, etc.) without premise on the ground. It is acted of a combination between the cablecar and the belt conveyor (there are neither rollers nor pylons).
The teleconveyor is made up ofan EPDM rubber band whose each edge is suspended to a steel wire rope. The chord length ranges from 30 to 400 mfollowing the bandwidth. Loaded once, the belt passes between two support rollers and gripping which brings about a nearer of its edges. The helping weight of load, it then takes the shape of a gutter more or less closed which protects the carried product. Capacity: 36 to 3600 metric tons per hour.

BENCH
Berme; Dalle
Earthwork; Geology
1. A narrow passage that, to avoid Crumblings, parts a traffic trench, a ditch, etc., from the excavated materials that are the result of its digging. Syn. with BERM; STEP; TERRACE
2. The part of a rocky bench delimited by cracks or joints.

BENCH
Redent; Accotement; Banquette; Banc
Construction; Temporary Constructions; Building Materials
1. A step performed in a ground to abrupt slope, to sit there an embankment and prevent its slip. Syn. with GRADUATED BANK
2. Syn. with BANK; CESS SIDE; ROADSIDE; SHOULDER; SIDE PATH; VERGE
3. A step fitted out in the wall of an excavation, allowing the provisional deposit of the earths extracted below. Syn. with FORM
4. Syn. with BANK; FORM; LAYER

BENCH MARK
Borne-repère
Topography
An element of any matter and form, embedded or sealed, which is used to determine a level, to mark out a spot, etc.

BENCH VISE
Servante
Equipment and Tools
Syn. with PROP; SUPPORT.

BENCHING MARK
Repérage de nivellement
Topography
The determination on the site or from its vicinity of a reference mark attached, if possible, with the general leveling of France or, with a well-located point which one will establish if necessary. This location is intended for being of use as control point for all operations of leveling relating with the site.

BEND
Arquer; Ferrailler; Noeud
Construction; Building Materials; Equipment and Tools
1. Syn. with ARCH; CAMBER; CURVE
2. To fashion reinforcements for a reinforced concrete work.
3. Syn. with HITCH

BEND DOG
Griffe à couder
Equipment and Tools
Syn. with BENDER

BEND OF A TREE TRUNK
Courbure du tronc
Building Materials
A natural deformation of a trunk of tree whose causes can be the wind, the proximity of an obstacle, etc. This particularity is exploited (researched) within the context of inherent frame constructions.

BENDER
Griffe à couder
Equipment and Tools
A bar bender's tool for bending concrete reinforcement bars of a small diameter. Syn. with BEND DOG

BENDING
Pliage; Cintrage; Bandage; Flexion
Metallurgy; Work; Construction; Strength of Materials
1. The way of working of thin metallurgical products, by turning down of a part toward the other according to a given angle. This task is performed by hand, or with a folding machine. Syn. with FOLDING
2. The bended shaping of sheet metals, bars, wood, etc.
3. All arch stones, including the key, forming a centering in place.
4. Syn. with FLEXION

BENDING FAILURE TEST
Essai de rupture par flexion (appelé également : Essai de traction par flexion)
Test of Materials
Syn. with TENSILE BENDING TEST

BENDING MACHINE
Cintreuse
Equipment and Tools
Syn. with BAR BENDER; ROD BENDING MACHINE; STEEL BENDER; TUBE BENDING MACHINE

BENDING STRENGTH
Résistance à la flexion
Building Materials
The conventional stress reflecting to the breaking of a material subjected to a bending test. Syn. with FLEXURAL STRENGTH

BENDING STRESS
Effort de flexion
Strength of Materials
All stresses applied on a cross section of a beam on which act vertical forces, placed in a vertical symmetry plan. Syn. with FLEXURAL STRESS

BENDING TEST
Essai de flexion; Essai de pliage
Test of Materials
1. A test that allows to measure the endurance strength or staying power of the materials to the strains of plane or rotary section. This study relates to the deformation of a test specimen that is either embedded at an end and endures at the other a transverse progressive strain, or posed on two extreme supports and undergoes in the centre an increasing strain. These strains can be static or dynamic, wavy or alternated. Syn. with FLEXURAL STRENGTH TEST
2. A test carried out on metallurgical products, consisting in folding a cylindrical or prismatic test bar so that the axes of the two branches remain in the same plane. The folding can take place up to the two branches are brought to parallelism, either to block, or on shim, or also up to one of the two branches of the test bar makes with the prolongation of the other a given angle. After bending, one seeks on the external face deformed by extension, possible tears appeared in the metal. The test is carried out in two times, generally with the hydraulic press. In the first place, the test bar is cranked in the shape of V, then the two branches of the V are closed one on the other, either completely (bending to block), or placing between the two branches a shim of fixed thickness.

BENDING THE RAFT
Déformation en parapluie du radier
Defects (Civil Engineering Structure)
A dislocation with uprising of the raft concerning notably the tunnels and that can be due to a swelling of the country rock, high-side pressures, a weakening or plasticization of the ground under the sidewalls.

BENT OF STEEL (COLUMN)
Palée
Construction
A continuation of metal stanchions joined between them by horizontal beams and diagonal wind braces. This unit forms a plan of high rigidity and is likely to be of use as bearing not only to the vertical loads but also to the horizontal or oblique stresses acting parallel to its plane. **See Figure 20**

BENT SHEETING
Tôle cintrée
Metal Construction
In the former metal works, cover formed by sheet metal parts welded on the top flanges of the (central) girders. On this sheet metal are welded folded flat irons on which is also welded a grid of reinforcements for reinforced concrete. Any concrete filling then forms a reinforced concrete slab for which the taut reinforcement is made up by the bent sheet.

BENT STEEL SHEETING
Tôle pliée
Metal Construction
In the former metal works, cover formed by sheet parts with grooves or stiffeners covering the framework of the bridge. These sheets are also filled with concrete. **See figures 21 and 21a**

BENTONE™
Bentone™
Materials
A thickening agent that appears as a powder and that is used as gelling or thickening agent to head off the sedimentation of the pigments, fillers, and other particles in suspension in solvents or binders.

BENTONITE
Bentonite
Materials
Finest-grained clays (80% are less than a micrometer), where some are able water- inflated (10 to 30 times their initial volume) being surrounded by a water sheath rigidly absorbed, hallmark the solvatation phenomenon. Most effective are those that are purely alkaline; they

flocculate (negative colloids) at the touch of ferric hydrates and of red or yellow sands (rust is a positive colloid). Owing to its thixotropic properties, the bentonite is used as drilling mud (piles, diaphragm walls, etc). Syn. with BENTONITE MUD

BENTONITE CONCRETE
Béton à la bentonite
Building Materials
A material in which a slight proportion of bentonite is added. The aim of this addition is to improve the workability and the frost resistance of the concrete.

BENTONITE MUD
Bentonite
Materials
Syn. with BENTONITE

BENTWOOD
Bois cintré
Building Materials
A material bent by shaping while it got plastic under heat and humidity (or by any other process), then by cooling and drying, with or without a particular finish.

BERLIN WALL.
Berlinoise; Blindage berlinois
Earthwork; Temporary Constructions
Syn. with BERLINER SHEETING

BERLINER SHEETING
Berlinoise; Blindage berlinois
Earthwork; Temporary Construction
A sheeting method that dates of the creation of the Berlin's subway and that consists in setting up vertically into the ground, either inside drillings or by driving, along the perimeter of the future excavation, sections mostly metal spaced of few meters from each other (from 2 to 4 m), then to excavate by sheeting as they advanced the walls by means of plates (concrete, sheeters, etc.) taking bearing on the flanges of the sections. Syn. with BERLIN WALL

BERM
Risberme; Berme; Banquette
Construction; Civil Engineering; Earthwork; Geomorphology
1. A protection built at the base of a pile, an abutment, a jetty, or any construction in watery site to struggle from underwashings.
2. A horizontal step reigning throughout the length of an earth fill dam.
3. In hydraulic work, gap contained between the contiguous piles and the cofferdam.
4. A passage fitted out between a levee and the edge of a canal or a ditch. Syn. with TERRACE
5. Syn. with BENCH; STEP; TERRACE
6. Syn..of BANQUETTE

***BERNOULLI-NAVIER* HYPOTHESIS**
Hypothèse de *Navier* et de *Bernoulli*
Strength of Materials
An assumption according to which cross section of a prismatic part always remains plane, identical to itself, and normal to the horizontal axis. This assumption, of most contestable, can be concretized in the case of prismatic parts by a stacking of currency pieces perforated in their center (medium fiber).

BERRIASIAN
Berriasien
Geology
A substage of the Valanginian.

BERTH
Souille
Earthwork
A running lengthways excavation carried out under water by dredging to be of use as base to a construction (example: riprap at the periphery of a pile, base of immersed caissons, etc.).

***BESSEMER* STEEL**
Acier *Bessemer*
Metallurgy
A product elaborated in the Bessemer converter.

***BÊTA* SYSTEM**
Procédé *Bêta*
Building Materials
A restoration method of the timber structures that consists after elimination of the worm-eaten or rotted parts, in putting into place the structure, glass fiber bars and in reconstituting the whole with an epoxydic resin concrete.

BETATRON
Bétatron
Equipment for Measure and Control
High-energy radiography equipment used in particular to monitor concrete works. The principle consists of an emission of electrons by means of a gun, accelerated by a high-energy magnetic field. Electrons are ejected and come bombarding a transmitter that produces X radiation. This apparatus enables moreover to check the strands of steel prestressing cables, in particular under important thickness of concrete.

***BÉTHELL*™ SYSTEM**
Procédé *Béthell*
Building Materials
A wood treatment method by injection and impregnation of creosote in autoclave.

BEVEL
Biseau; Chanfrein
Building Materials
1. A slantwise shaping.
2. The felling of the angle of a stone block forming a skew molding in the inclined plan. Syn. with CHAMFER; SLANT

BEVEL
Taluter; Ebiseler
Work
1. To cut at an oblique angle; to bevel a part.
2. To cut a stone, a wooden piece on the bias.

BEVEL
Biseau; Délarder
Construction; Building Materials
1. The sloping plane of a cornice or a plinth allowing the water to flow out. Syn. with CHAMFER; SLANT
2. To reduce the thickness or to chamfer a course, a slab, etc., to facilitate the implementation of it or its passage in a narrow space. Syn. with SLOPE

BEVEL
Pente, Chanfrein; Retraite
Nomenclature of Materials
Syn. with CHAMFER

BEVEL ANGLE
Angle de chanfrein
Welding
Acute arris of the chamfered edge of an element and a plane perpendicular to the surface of this element.

BEVEL OFF
Dégraisser
Carpentry
Syn. with TRIM THE EDGES

BEVEL SHOULDER
Embrèvement
Construction
The partial connection of two elements by conjugated shapes. Example: between walls or between sidewall and wing wall. Syn. with GAIN

BEVEL SQUARE
Chanterelle; Fausse équerre
Equipment for Measure and Control
A carpenter's square with a movable blade for setting out angle. This tool is also used by joiners, and bricklayers. Syn. with CHANTERELLE; SLIDING SQUARE

BEVELED SIDING
Bardage à clin
Construction TermA cladding carried out using boards placed in horizontal rows; those of a row partly cover those with the row immediately below. Syn. with LAP SIDING

BEVEL-EDGED PLANK
Tavillon.
Nomenclature of Materials
A board sawn in bevel.

BEVELING
Equerrage; Zone délardée; Délardage
Work; Metal Construction
1. The strengthening or jointing of wooden pieces with metal squares.
2. Syn. with SLOPING

BIAXIAL BUCKLING
Flambement biaxial
Strength of Materials
A buckling occurring with displacement of the central part of the compressed bar compared with the theoretical perpendicular axis of inertia *xx* and *yy*.

BICABLE
Bicâble
Handling
An aerial conveyor of separated cables where one ensures the traction and the other carries the load (carriers, etc.).

BICOMPONENT
Bicomposant
Materials
An organic binder of two constituents to be mixed at the time of the implementation. One-part hardening by the moisture of the air go into the category of two-part. Syn. with TWO-PART

BICONICAL
Bicône
Equipment and Tools
A conical-shaped bore bit equipped with two toothed wheels.

BIDIM™
Bidim
Materials
A nonwoven textile used in drainage that shows the appearance of tablecloths of different grammages. These tablecloths, made up of continuous polyester fibers, are obtained by the direct tailing process with coating pell-mell and later consolidation by lashing. This processing intermingles fibers, giving a good tensile strength in all directions and an important thickness. The bidim are used as antipolluting rugs in drainage.

BINARY CEMENT GROUT
Coulis binaire
Materials
A simple grout into which bentonite is added.

BINARY CONCRETE
Béton binaire
Building Materials
Syn. with TWO-COMPONENT CONCRETE

BINARY STEEL
Acier binaire
Metallurgy
An iron and steel product in which one of element is in higher dosage than that indicated for primary steels.

BIND
Frette; Ligaturer; Lier
Construction; Construction of R.C. and P.C.; Work
1. A device that heads off the transverse extension of a part. In the case of a cable: wire or soft steel wire rolled in contiguous single turns around the cable is used.
2. Syn. with TIE
3. To join by bonding or by a binder. Syn. with TIE; BOND

BIND WITH A RING
Fretter
Work
To strengthen, consolidate, with a hoop. Syn. with BAND; HOOP; REINFORCE WITH STEEL HOOPS

BIND WITH IRON
Ferrer
Masonry
To strengthen masonry with hold down shakles.

BINDER
Liant; Frette; Couche de liaison; Binder
Building Materials; Painting; Civil Engineering
1. A product having the property to be able to link for a long time, bonding matters of identical or different natures, mostly solids.
There are several types of binders:
- **air-cured** *(le liant aérien),* whose setting or hardening is due to air exposure, generally by the action of carbon dioxide;
- **hydraulic** *(le liant hydraulique),* a mineral powder mainly formed by silicates and aluminates of calcium, forming a paste with water setting and hardening gradually, even safe from the air, in particular under water (cements are hydraulic binders);
- **bituminous** *(le liant hydrocarboné),* a material containing bitumen or tar;
- **organic** *(le liant organique),* a material made up of organic macromolecules (pertaining to organic chemistry). We can distinguish one-parts (example: oil bitumen, tar and bray coal, thermoplastic polymers) from double parts;
- **formulated organic** *(le liant organique formulé*), a family of constituents of binders made up of monomers, oligomers, admixtures, and batches.

2. The centerpiece of a paint, generally formed by organic macromolecules that ensures the bonding of the paint on the support, the cohesion of the product and resistance to atmospheric agents. It is a non-volatile, filmogenous substance, thus remaining on the support after drying and partially forming the dry film on which it endows its properties. A binder can only be made up of siccative oils or mixed with certain natural or artificial resins. It also can only be made up of a synthetic resin or in combination with other synthetic or natural resins.
Syn. with BINDING AGENT
3. Syn. with HOOP BAR; HOOP RING
4. Syn. with BASE-COURSE OF SURFACING; BINDING COURSE

BINDER BAR
Cadre; Etrier
Construction of R. C and P. C.
1. A quadrilateral-shaped transverse reinforcement intended for receiving the running lengthways bars of the bar setting with a minimum of four bars. Binder bars are distributed (by design) to resist shearing forces. Syn. with BINDING. **See Figure 22**
2. Syn. with BINDING; LINK; SECONDARY REINFORCEMENT; STIRRUP; TIE

BINDER REACTIVITY TEST
Essai de réactivité d'un liant
Test of Materials (Polymers)
A test that allows to determine the pot life of a polymer according to the curve time/temperature set at the time of the test.

BINDING
Etrier; Cadre; Frettage; Liaisonnement; Liaison
Construction of R.C. and P.C.; Work
1. A metal reinforcement going into the composition of the bar setting of a reinforced concrete structure (beam, slab, etc.) and that connects main bars between themselves. The stirrup prevents the slipping of concrete layers on each other (resistance to shearing stress). Syn. with BINDER BAR; LINK; SECONDARY REINFORCEMENT; STIRRUP; TIE. **See Figures 24 and 24a**
2. Syn. with BINDER BAR.
3. Syn. with HELICAL REINFORCEMENT; HOOP REINFORCEMENT; HOOPING
4. Syn. with CONNECTION; COUPLING; JOINING; LIAISON; LINKING BOND

BINDING AGENT
Liant
Building Materials; Painting
Syn. with BINDER

BINDING CAPACITY
Pouvoir agglomérant
Civil Engineering
Syn. with BINDING POWER

BINDING CLIP
Etrier
Equipment and Tools
A U-shaped bent part, often of flat iron, enabling subjection of a part to another. Syn. with CLEVIS

BINDING COURSE
Couche de liaison; Binder
Civil Engineering
Syn. with BASE COURSE OF SURFACING; BINDER

BINDING HOOP
Frette
Construction
A steel frame ensuring the hooping of a part.

BINDING PIECE
Binding piece
Foundation
Syn. with TRANSVERSE PLANK

BINDING POWER
Pouvoir agglomérant
Civil Engineering
The ability for spontaneous cementing of certain materials. (This quality is especially required to increase the stability of certain embankments.)
Syn. with BINDING CAPACITY

BINDING WIRE
Ligature
Construction of R.C. and P.C.
Syn. with TIE; TYING WIRE; WIRE TIE

***BINGHAM'S* PRACTICE**
Formule de *Bingham*
Rheology
The law on the flow of bodies having exceeded the plasticity threshold.

BINGHAMIAN FLUID
Fluide binghamien
Materials
A fluid both viscousity and cohesive.

BIOLITH
Biolite
Geology
Any biogenic limestone.

BIOLOGICAL REINFORCING
Consolidation biologique
Work
A process that consists in preserving grounds from erosion, notably the slope of embankments and open cut, by planting (iris, acacias, etc.) or by seedling (example: alfalfa). These plantings dry and form a spongy layer retaining the streaming water and nailing the ground.

BIOPOLYMER
Biopolymère
Polymers
A polymer of biological origin used to manufacture drilling muds, paints, adhesives, etc.

BIRD SCREEN
Grillage aviaire
Construction
The setting out of wire mesh placed in front of an access inside a building, that prevents the birds from penetrating there (opening; bull's eye; drainage channel, etc).

BIRD'S MOUTH
Chevronner
Building Materials
Implementing rafters of a centering, a roof covering, etc.

BIREFRINGENCE
Biréfringence
Strength of Materials
The property of some materials to provide not one but two refracted rays when they are exposed to a luminous source. The birefringence due to the anisotropy brought about in some materials by outside actions enables the analysis of the stress field through photoelasticimetry. The axis of birefringence, in a point, are directed following the main directions of stresses in this point. Syn. with DOUBLE REFRACTION

BIT
Morceau; Foret
Building Materials; Equipment and Tools
1. An element detached from a block of stone that must be dressed to provide a quarry stone.
2. Syn. with DRILL

BIT BALLING
Bourrage du trépan
Foundation
Syn. with BALLING UP

BIT HOOK
Caracole à trépan; Caracole
Equipment and Tools
1. A tool used by drillers to recover a bore bit lost in the bottom of a drilling.
2. Syn. with BORE EXTRACTING

BIT WEIGHT
Poids au trépan
Work
A compressive force applied on a bore bit by drill collars, stabilizers, and lower rods of the stand of drill pipe. Syn. with WEIGHT ON THE BIT

BITCH
Hatée
Equipment and Tools
A cranked and counter cranked metal bar with a right angle.

BITE
Mordre
Work
To pickle with acid. Syn. with PICKLE

BITUMASTIC
Mastic bitumineux
Materials
A bitumen-based pasty product with addition of mineral matter.

BITUMEN
Bitume
Materials
All natural organic products rich in carbon and hydrogen, poor in volatile products. In this category we can distinguish petroleum gases, crude oils (oil), mineral waxes, asphalts, and asphaltites. One adds there analogous products obtained by retorting of natural organic matters (bituminous schists).
The bitumen appears as a viscous liquid or as a mastic or plastic solid; it is one of the first all thermoplastic materials.
The main types of bitumen are:
- **artificial bitumen** (*le bitume artificiel*): material made of tar of coal, rosin, and lime;
- **petroleum asphalt** (*le bitume de pétrole*): the residue from distillation of asphaltic oils;
- **asphaltic bitumen** (*le bitume asphaltique*): natural material mixed with clay or sand;
- **smooth asphalt** (*le bitume coulé*): mixture of sand, bituminous mastic, and other bituminous matters, likely to become fluid under the heat and that can to be poured in thin layers.
- **cutback asphalt made with petroleum distillate** (*le bitume fluidifié*): paving (-grade) asphalt of category 80/100 into which are added products coming from the distillation of oil;
- **lubricating oil distillate** (*le bitume fluxé*): paving (-grade) asphalt into which is mixed oils of coal tar. These flux oils can be very different in viscosity, temperature of distillation, and division;
- **polymer-modified bitumen** (*le bitume modifié aux polymères*): mostly results from the pure bitumen combination with polymers endowing at this product a best consistency and a greatest elasticity;
- **natural asphalt** or **native asphalt** (*le bitume naturel*): constituted by heavy hydrocarbons and is mostly considered as a residue of former oil deposits of which most light elements have been eliminated over time. Generally bitumen is found mixed with small quantities of foreign matter particularly with clay and silica (example: Trinidad's asphalt);
- **refined asphalt** (*le bitume raffiné*): a product stemming from the purification, by melting and decantation, of the natural asphalt, if necessary mixed of tar of schist and in any rate cleared of the greater quantity of earthly matter that it contains;
- **hard asphalt** (*le bitume solide ou semi-solide*): a mixture of soluble native hydrocarbons in the sulfide of carbon (containing sulfured, oxygenated, or nitrogenous derivatives and possessing an agglomerating or adhesive power) and mixed or not with foreign matter: water, mineral substances, or organic wastes.

BITUMEN ELASTICITY MEASUREMENT
Mesure d'élasticité des bitumes
Test of Materials
Monitoring achieved by tensile test to constant speed with the Alwetron gauge. (This test also applies to coatings of other nature.)

BITUMEN GRAVEL
Grave-bitume
Building Materials
Syn. with EMULSION GRAVEL

BITUMINIFEROUS
Bituminifère
Materials
Said of product provide bitumen: bituminiferous rock, schist, limestones.

BITUMINITE
Bituminite
Materials
A range of asphalt.

BITUMINIZED
Bitumé ou Bituminé
Materials
Said of what is coated with bitumen.

BITUMINIZED FELT
Feutre bitumé
Tightness
Felt of fiberglass or asbestos coated bitumen, used as waterproofing membrane and that appears under two aspects: bituminized felt impregnated and mineral-surfaced bitumen felt.

BITUMINOUS
Bitumineux
Materials
Is said of what contains bitumen or that possesses its characteristics.

BITUMINOUS COATED MATERIAL
Enrobé
Materials
Syn. with BITUMINOUS MIXTURE

BITUMINOUS CONCRETE
Béton hydrocarboné ; Béton bitumineux
Building Materials
A material whose binder is bitumen, tar, etc.

BITUMINOUS EMULSION
Emulsion
Civil Engineering
A product constituted by bitumen droplets in suspension in water, but not mixed with it owing to the presence of a soap.

BITUMINOUS MASTIC
Mastic hydrocarboné
Materials
A product of filler coating with a bituminous binder.

BITUMINOUS MIXTURE
Enrobé
Materials
A material made up of aggregates and fillers coated with bitumen, tar or asphalt. Bituminous mixtures are used to create pavements or tightness counter copings. They are generally manufactured in a plant and delivered ready for use. They can be either cold (-mixed) bituminous mixtures or hot (-mixed) bituminous mixtures that are delivered in special trucks. Syn. with BITUMINOUS COATED MATERIAL

BITUMINOUS PRODUCT
Produit bitumineux
Materials and Painting
A matter of natural or artificial origin used pure or mixed.
Bituminous products used for rustproof paints are natural bitumen or artificial bitumen: coal-tar pitch or petroleum pitch. These products are soluble in oils and hydrocarbons but insoluble into water and alcohols. Bituminous paints dry to cold by evaporation of the solvents and have an excellent efficiency to protect steel in humid underground atmospheres or in seawater. Currently, one combines the coal-tar pitch with epoxy resins or polyisocyanate. The film thus obtained has qualities of bitumen and mechanical advantages of epoxy resin or polyisocyanate (hardness, flexibility, adhesion, heat resistant, and to hydrocarbons).

BITUMINOUS RUNOUT
Coulure de produit bitumineux
Defects - Damage (Building Materials)
Defect consisting of bituminous protection products which drain or flow in reaction according to the temperature.

BITUMINOUS TAR
Goudron de houille; Coaltar
Materials
Syn. with COAL TAR

BLACK
Noir
Painting
A term given to the surface colors which reply the next conditions appreciably:
o Colors must be practically achromatic for chosen conventional source, namely it corresponds to them none appreciable dominant,
:: Their Y luminous luminance is always close enough to zero.

BLACK BOLT
Boulon brut
Materials
A bolt assembled without washer and that is used only to position temporarily pieces during assembly.

BLACK COAL
Houille
Geology
Syn. with COAL

BLACK DIAMOND
Carbonado; Diamant
Geology and Materials
Syn. with CARBON; CARBONADO

BLACK IRON PLATE
Tôle noire
Metallurgy
A rough-laminated product, still covered with oxides.

BLACKJACK
Blende
Materials
Syn. with BLEND

BLACK OILS
Produits noirs
Materials
A range of hydrocarbon materials of a liquid, viscous, soft, or solid-looking according to temperature, mostly used in civil engineering, technical road and sealing. There are several types of black oils:
- tars,
- bitumen,
- pitch,
- asphalt.

In sealing, black oils are used to protect wood, metal surfaces, buried masonries (pollard or reconstituted coal tars - bituminous paints), waterproofing of roofs (tarred impregnated, surfaced or self-protected felts), in hot or cold-laid mixture.

BLACK PEBBLE
Biset
Building Materials
A blackish colored pebble.

BLACK PLATE
Fer noir
Metallurgy
A flat product of mild steel not allied of a thickness lower than 0.50 mm, delivered in leaves or in bobbins and whose surface is apt to support tinning, varnishing, and painting.

BLACK POWDER
Poudre noire
Explosives
A mixture of potassium nitrate, sulfur and charcoal making up certain explosives. Syn. with BLASTING POWDER

BLACK SPOT
Noircissure
Defects - Damage (Building Materials)
The deterioration of wood, paintwork, etc., characterized by black stains. Syn. with SMUDGE

BLACKENING
Noircissement
Defects (Painting)
The color deterioration of a paintwork characterized by a reduction in Y luminance possibly combined with a displacement of the color point toward the achromatic point.
Blackening can be the result of:
- *a degradation of the pigment throughout the ambient environment (blackening of the paint films containing plumbiferous pigments in contact with the ambient environment containing sulfured derivatives); or*
- *a superficial deposit of stains (organic soots); or*
- *a biological fouling; or*
- *a rise of the bituminous bottom layers through the trim coat of different natures.*

BLADE
Lame; Couperet
Equipment and Tools
1. The rib equipping a bore bit which carries a cutting edge enabling it to attack the ground.
2. A sledgehammer with a cutting edge at each end.

***BLAINE* FINENESS**
Finesse *Blaine*
Hydraulic Binders
See FINENESS MODULUS

***BLAINE* SPECIFIC SURFACE**
Surface spécifique *Blaine*
Hydraulic Binders
The value that characterizes the grinding fineness of a cement. See BLAINE MODULUS

BLANK WALL
Mur orbe; Mur plein
Construction
Syn. with BLIND WALL SOLID WALL

BLASENSCHIEFER
Cargneule
Geology
Syn. with AMYGDALOIDAL ZECHSTEIN DOLOMITE; VACUOLAR DOLOMITE LIMESTONE

BLAST
Explosion; Coup de mine; Mine; Buquer
Explosives
1. The result from firing explosives. Two types of explosions are available: deflagration and detonation. In the two cases, the explosion gives place at a rise in temperature and a compression of gases, which are afterward rapidly liberated; it is the literally mechanical effect of the explosion: the blast. The detonation takes place in a far briefer time than the deflagration (1,000 to 10,000 shorter time) and pressures to which it gives place are considerably higher. Syn. with BURSTING; EXPLOSION
2. Detonation of an explosive in a blasthole; the blasthole itself. Syn. with SHOT
3. The explosive charge placed in a hole for working.
4. To fire an explosive.

BLAST BOTTOM
Culot
Explosives
The bottom of a blast hole that subsists after the explosion.

BLAST CHAMBER
Chambre ou Fourneau de mine
Explosives
An excavation larger than a blasthole into which one makes blast a great quantity of explosives with a view of an important effect.

BLAST CLEANING
Grenaillage; Décalaminage
Work; *Metallurgy*
1. The scouring of old painting, rust, etc. that consists in throwing abrasive grains of steel, cast iron, or corundum. The propulsion is done with the compressed air, or with turbines. Syn. with SHOT-BLASTING
2. Syn. with CARBON REMOVAL; DECARBONATION; DECARBONIZING; DESCALING

BEAD BLASTING
Bilier
Materials
To clean a surface by pressurized throwing of steel or glass balls.

BLASTHOLE
Trou de mine
Explosives
A drilling into which is placed an explosive charge. Syn. with SHOT HOLE

BLASTER
Boutefeu
Explosives
Syn. with BLASTING TECHNICIAN

BLAST-FURNACE CEMENT
C.H.F.-CEM (Ciment de Haut Fourneau)
Hydraulic Binders
A product that contains 60% to 75% slag, the rest being the cinder with possibility of the filler in the limit of 3% of the totality of constituents. This cement is suitable for humid medium and possesses an excellent quality facing to the aggressive waters.

BLAST-FURNACE SLAG FOR CEMENT WORKS
Laitier pour cimenterie
Materials
A granulated hardened product obtained by sudden immersion of scoria into water (scoria are products resulting from the iron ores processing in the blast furnace). The slag is afterward mixed with cinder, and cements having a good resistance to the aggressive water such the C.L.K. are obtained. To be used in cement works, the slag must have hydraulic properties.

BLASTING
Minage; Sautage; Soufflage
Explosives; Earthwork; Defects
1. All operations permitting explosive demolition.
2. The disintegration of a ground or a rock, by an explosive. Syn. with SHOOTING; SHOT FIRING
3. Damage in reinforced concrete structures characterized by a detachment of the concrete by pieces following the layout of the reinforcements; blasting is brought about by oxidation and expanding of the reinforcements.

BLASTING BOX
Exploseur
Explosives
Syn. with EXPLODER

BLASTING BY EXPLOSIVES
Abattage à l'explosif
Building Materials; Earthwork
A controlled destruction process of rocky massifs in order to extract some broken-up rock and/or to carry out an excavation according to a given geometry. Syn. with MINING BY BLASTING

BLASTING BY LONG HORIZONTAL HOLES
Abattage par longs trous horizontaux
Building Materials; Earthwork
A cutting down process of the rock in a quarry by the method of the empty chamber or chamber-shop in which horizontal slivers are pulled down by long holes drilled from chimneys.

BLASTING BY LONG VERTICAL HOLES
Abattage par longs trous verticaux
Building Materials; Earthwork
A cutting down of the rock in a quarry by the method of the empty chamber or chamber-shop in which vertical slices are pulled down by long holes from a level of head.

BLASTING CAP
Amorce; Amorce détonante; Détonateur
Explosives
Syn. with DETONATOR; DETONATOR CHARGE; FUSE; PRIMER

BLASTING PLAN
Plan *ou* Schéma de tir
Explosives
All preparations taken to obtain a given flight and which is defined by the number, position, incline, diameter, length, charge, and order of firing of the blastholes.

BLASTING POWDER
Poudre noire
Explosives
Syn. with BLACK POWDER

BLASTING TECHNICIAN
Boutefeu
Explosives
A person appointed for shooting explosives. Syn. with BLASTER

BLEACH
Blanchir
Building Materials
To trim or remove the most salient harshness's of a wooden piece, a metal part, etc.

BLEACHING
Désoxydation; Blanchiment
Metallurgy; Materials
1. The suppression of the oxide that covers a metal part by chemical or mechanical ways. Syn. with DEOXIDATION
2. The action of bleaching a piece by clearing it of all its harshness's. Syn. with BLOOMING

BLEED
Ressuer
Building Materials
To go up on the surface, speaking of the water contained in a mortar, a concrete. To reject internal water.

BLEEDING
Remontée; Ressuage
Construction of R.C. and P.C.
The appearance of a film of water or laitance on the surface of a slab or a concrete or mortar screed after troweling or vibration. The vibration, closing between them the various grains of the components of concrete, brings about the expulsion of a part of water that occupies the empties. Water, having lower density than the other components, goes up on the surface. Syn. with BLEED-THROUGH; SWEATING; WATER GAIN

BLEEDING CANALS
Canaux de ressuage
Defects (Construction of R.C. and P.C.)
Syn. with BLEEDING GROOVES

BLEEDING GROOVES
Canaux de ressuage
Defects (Construction of R.C. and P.C.)
A defect appearing on the surface of the facing of concrete works characterized by small open furrows, broadly vertical, brought about by bleeding of the concrete. Syn. with BLEEDING CANALS

BLEEDING TEST
Essai d'exsudation
Test of Materials (Building Materials)
A test for characterizing the stability of the grout injection using a glass test tube 25 mm in

diameter and 25 cm high, filled to a graduation contains between 95 and 100. This test tube is recovered so as to avoid any evaporation. Current directives specify that, in these conditions, the quantity of exuded water from the surface of the grout, kept at rest for 3 hours, will not have to be higher than 2% of the volume of the grout. More water will have to be reabsorbed after 24 hours.

BLEED-THROUGH
Remontée; Ressuage; Saignement
Defects (Painting)
1. An alteration of the last paint coat by the appearance of the subjacent coat. Syn. with BLEEDING; STRIKE–THROUGH; SWEATING
2. The appearance on the surface of a paint film of the color of the subjacent layers of different dyes.

BLEMISH
Défaut
Defects (Building Materials; Metallurgy)
Syn. with DEFECT; FLAW; VICE;

BLENDE
Blende
Materials
A natural zinc sufhide which is one of the main ores of this metal. After calcining it is used to manufacture zinc oxide and lithopone to be used in paints. Syn. with BLACKJACK

BLENDED CEMENT
Ciment composé
Hydraulic Binders
Syn. with COMPOSITE CEMENT; COMPOUND CEMENT

BLENDING
Alliage
Metallurgy
Syn. with ALLOY; ALLOYING

BLIGHT
Carie
Defects (Building Materials)
A kind of leprosy that demonstrates on the surface of the overheated wood and of bad quality by the presence of vegetable excrescence.

BLIND ARCADE
Arcature
Construction
The whole of parts of a construction arch-shaped cut. Syn. with ARCATURE

BLIND CUT
Fausse-coupe
Work
A simulated cut concealing a true hidden cut. It is used most often for aesthetic purposes.

BLIND HEAD
Fausse-tête
Construction
The head of a tunnel constructed in the open air that may have been embanked.

BLIND HOLE
Trou borgne
Construction
A drilling that does not pass right through the thickness of a part. **See Figure 25**

BLIND JOINT
Joint recouvert
Construction
Syn. with RECOVERED JOINT

BLIND NUT
Bonnet
Nomenclature of Materials
The head of a nut which is not perforated.

BLIND SHIELD
Bouclier aveugle
Earthwork
A shield advancing with all its pieces closed (in fluid grounds). Syn. with FULL-FACE DIAPHRAGM SHIELD

BLIND WALL
Mur plein; Mur orbe
Construction
A construction not comprising any opening (example: nonaccessible gallery; without means of access). Syn. with BLANK WALL; SOLID WALL

BLIND WINDOW
Fenêtre aveugle
Construction
An opening simulated by its contours but that is filled with masonry.

BLINDING
Colmatage
Geohydrology
An accumulation of fine alluvial material carried by running water and deposited by decantation in zones of calm water. (Not to be confuse with "alluviations" has a more general sense.)

BLINDING CONCRETE
Béton de propreté ou de forme
Building Materials
Any lean concrete intended for use as a bed to receive the concrete of the foundation plates (or rafts) so as to avoid its direct contact with the foundation ground. It must have a crushing strength at least equal to that of the foundation ground. Syn. with MATTRESS; MUDMAT; MUDSILL; OVERSITE CONCRETE; SLOPE CONCRETE. **See Figure 26**

BLISTER
Soufflure; Cloque
Defects
1. A defect affecting weld beads, characterized by small round or lengthened cavities whose wall is smooth and bright and which contain or not inclusions.
Inclusions in a soldering can have various causes:
- *imprisonment of gas in the end contraction pipe, at the time of a resumption of soldering badly carried out: isolated blowhole;*
- *variations of solubility of gases in the deposited metal between the liquid state and solid state, which, emerging at the time of solidification, are likely to give rise at the nests of blowhole or at the isolated blowholes;*
- *chemical reactions inside the molten metal;*
- *water absorption by the coating of the electrodes causing the presence of water vapor in the welding arc.*

Blowholes can start the fatigue cracks by effect of concentration of the stresses.
Inclusions are detected by radiography or ultrasonic sounds. They are corrected before welding by some care determined according to the origin of the defect (drying of the electrodes, choice of dead steel, etc.) or during welding by operative precautions.
Syn. with AIR CAVITY; GAS CAVITY; BLOWHOLE; HONEYCOMB
2. Blisters occur in paint films and plywood surface also.

BLISTERING
Cloquage; Bullage
Defects
1. A defect concerning bricks characterized by a localized superficial uprising of the matter occurred in the process of manufacture.
2. A surface defect affecting especially renderings and screeds and that occurs most often on the impervious rendering (cement-based): the water being unable to evaporate, accretes as salts, which it carries behind the waterproof skin constituted by the rendering and brings about, in a first time, the swelling of this one. Blisters thus produced fissure and gradually burst.
3. A range of alteration of a paintwork characterized by convex deformations of the film, in the form of blisters, correlative to the detachment of one or several coats of the film. According to the external texture and superficial blister distribution, blistering appears as bulbs, blisters, buttons, pustules, etc.
4. A cone-shaped deformation of sheet metals. This defect is often had to a bad distribution of the loads on the metal works with caisson or with big solid web girders. At the time of the work with the blowtorch on sheet metals, such a bending (out of shape) is often due to differential heating causing a thermal shock.
5. A defect damaging a paint film that shows bubbles or pores on its surface. Syn. with BUBBLING

BLOCK
Massif; Carreau; Bloquer; Bloc
Masonry; Building Materials
1. A large masonry block.
2. A stone that has more width to the facing of a wall than the tail in thickness.
3. To build or fill in rubble work; to erect quarry stones or brick walls without aligning them with the line.

4. A concrete element, reinforced or not, used especially to construct abutments, jetties, etc., and work in aquatic site, to places and place of enrockments.

BLOCK
Tas; Quartier de pierre
Equipment and Tools; Nomenclature of Materials
1. A portable small anvil without heel or beak iron.
2. Syn. with QUARTER OF STONE

BLOCK CLUSTER
Amas, champ, chaos de blocs
Geomorphology
The local concentration on the surface of the ground of many blocks of rocks.

BLOCK POLYMER
Polymère séquencé
Polymers
A polymer whose molecules are made up of sequences linearly connected.

BLOCK UP
Murer
Work
To close any opening with masonry.

BLOCKAGE
Embâcle
Hydrology
A hindrance produced in a waterway by any cause (uprooted trees, branches, etc.). Syn. with PACKING

BLOCKBOARD
Latté
Building Materials
Syn. with BATTENBOARD; COREBOARD; STAVED LUMBER CORE

BLOCKING
Blocage hourdé
Masonry
Syn. with HARDCORE; RANDOM; UNCOURSED RUBBLE

BLOCKING UP
Calfeutrage; Murage
Construction; Work
1. The sealing of holes, cracks, or joints with various materials. Syn. with JOINT FILLER; PACKING; SEALING; STOPPING UP
2. The closing up by construction of a wall. Syn. of BRICKING UP; WALLING UP

BLOCKLAYER
Maçon
Masonry
Syn. with BRICKLAYER; MASON; WALLING MASON; STONE MASON; WALLER

BLOCKOUT
Réservation
Construction of R.C. and P.C.
A cavity accommodated in a concrete wall during the pouring and intended being used either for the passage of sheaths for cables, or as cavity of sealing (for railings for example on a wing or return wall). This former comes true with a formwork or more mostly using a block of expanded polystyrene embedded inside the fresh concrete during the pouring. Syn. with BOX OUT; DUCT FORMER

BLOCKWORK
Aggloméré
Building Materials
An artificial stone obtained by batching and hardening a mixing of binder (hydraulic or other) with inert matter; the hardening can be done cold or by firing. Among the various types of blockworks used, we can distinguish:
- **clay block** (*l'aggloméré d'argile*), a clay-based building material which includes brick, cobwork, rammed clay, and cofferdam clay;
- **concrete block** (full or hollow) (*l'aggloméré de béton (plein ou creux)*), parallelepipedal-shaped block of agglomerated matter, resulting from the set and hardening without firing of the mixing from a hydraulic binder and inert materials (sand, gravel, crushed natural stone, blast-furnace slag). They are mostly laid on a mortar bed. Syn. with ARTIFICIAL STONE; BUILDING BLOCK; BREEZE-BLOCK ; CONGLOMERATE BLOCKWORK; CONSTRUCTION BLOCK; PERPEND

BLONDIN
Blondin
Handling
Syn. with CABLEWAY; ELEVATED CABLEWAY CRANE; FUNICULAR CRANE; OVERHEAD CABLEWAY

BLONDIN CONCRETING.
Bétonnage au blondin
Construction of R.C. and P.C..
Syn. with CABLEWAY CONCRETING

BLOOM
Efflorescence
Defects (Masonry and Construction of R.C. and P.C.)
The crystallization of soluble salt, sometimes appears on the surface of masonry.
These salts are found in solution in the water that impregnates stones. Water laden with water-soluble salts proceeds from the heart of masonry to its surfaces where the water evaporates and abandons salts that crystallize in deposits of variable consistency and adhesion (not to be confused with saltpeter which origin is different). The resulting blooms transform into white or light-colored plates. The responsible salts are usually sulfates, chlorides, carbonates, and nitrates. Syn. with EFFLORESCENCE

BLOOMING
Blanchiment
Materials
Syn. with BLEACHING

BLOOMING COLLAR
Collier d'épanouissement
Construction
All of parts around cables in a beam or in a ring which enable their blooming for their individual anchorage. **See Figure 27**

BLOSSOM
Affleurement
Geology
Syn. with OUTCROP

BLOTTING
Absorption
Test of Materials (Welding)
The aspiration of penetrating fluid by capillary action, due to the effect of a revealing product, since the discontinuity of surface.

BLOW
Renard
Foundation
The bypass by percolation of water under a sheetpiles curtain, an earthfill dam, or a cofferdam; it emerges more or less violently in an excavation bottom such as a hydrodynamic uprising with more or less important water flow. Syn. with PIPING. **See Figure 28**

BLOWHOLE
Soufflure. Bullage
Defects
1. An air space included in the mass of a cast material.
2. A cavity produced during the solidification of metal by evolved gas, which in failing to escape is held in pockets.
3. In concrete construction, formation of bubbles, surface voids.

BLOWING OUT
Soufflage
Work
Blowing of compressed air into a drilling before injection in order to evacuate the washing water that could be there.

BLOWING UP
Affouillement
Defects (Foundation)
Syn. with SCOURING; UNDERMINING; UNDER WASHING; WASHING AWAY

BLOWOUT PREVENTER
Obturateur
Equipment and Tools
Syn. with CLOSING DEVICE; OBTURATOR; SHUTTER; STOPPER

BLOW'S CONDITION
Condition de renard
Foundation
The maximum buried length of a screen to avoid that a localized removal of the ground does not turn into blow. Syn. with PIPING CONDITION

BLUE ALGA
Algue bleue; Cyanophycée
Masonry; Defects (Building Materials)
A parasitic plant of the stone from which one distinguishes two categories: one proliferating in

a dry and luminous environment evidenced by black or gray colonies often accompanied by froths or lichens; the second develops in a humid and dark environment has thick colored coatings, sometimes gelatinous.
Syn. with CYANOBACTERIA

BLUE CRACK TEST
Cassure au bleu
Metallography
A macrographic method to put in evidence inclusion lines into steels. It is a visual examination of the obtained breakage on a steel pancake, heated to about 400°C, taken in the rolled product to be controlled.

BLUE FUNGUS
Bleuissement
Defects (Building Materials)
Syn. with BLUE STAIN; SAP STAIN

BLUE STAIN
Bleuissement
Defects - Damage (Building Materials)
A coloring varying from blue to black, of variable intensity and depth, caused by mushrooms in the sapwood of some woods; it does not lead to any important change of mechanical properties and susceptible to increase the impregnability. Wood attacked by a blue stain is called *bluish.* Syn. with BLUE FUNGUS; SAP STAIN

BLUNT CONE TIMBER
Bonde de charpente
Carpentry
A long piece of wood ending in a cone-shaped truncation.

BLUNTED MOLDING
Coin émoussé
Architecture
A molding with canted angles.

BLUSHING
Opalescence laiteuse
Defects (Painting)
A range of deterioration of a paint film that presents a milky aspect. This defect is due to:
- an application of the product at a too low temperature,
- an application in the presence of a too humid atmosphere,
- an incompatibility with the substrate or earlier coat.

BOARD
Planche; Barder; Panneau
Building Materials; Construction
1. A piece provided by the cutting up of the wood of an important length compared with the other definite dimensions:
- of **oak**: it ranges from 41 to 47 mm thickness for 21-cm width;
- of **fir:** 27, 34, and 41 mm thickness for 22 and 23- cm width;
- of **poplar:** it varies between 23 to 34 mm thickness for 24- cm width;
- for *scaffolding,* in fir tree, picea, and larch, the boards are 40 mm thick for 20.5 -cm width;
- **of fir tree, picea, larch, Scottish fir:** a Lorraine board is 26 to 35 mm thick for 30.5-cm width.

Syn. with PLANK
2. To cover a wall with boarding.
3. Syn. with PANEL

BOARDING
Palissade de chantier; Garnissage; Couchis
Temporary Constructions
1. A paling formed by more or less butt-jointed boards intended for limiting access to a building site.
2. In an underground earthwork, set of timber pieces that are placed between the supporting and the ground to be hold. The purpose of this arrangement is to ensure a better contact between the ground and the supporting. Syn. with SHEATHING
3. In an earthwork support, set of close (or not) timbers, horizontally arranged in order to distribute the loads on the props.

BOARDING
Bardage; Planchéiage
Construction
1. A defense structure of boards arranged around a permanent structure, a bridge pier (one also says *partition*).
2. A partial or total coating formed of boards or plywood of the part in elevation of a construction.

Syn. with SHEETING; WEATHER BOARDING
3. A floor built with boards. Syn. with PLANKING; FLOORING

BOARDING FOOTPATH
Banquette
Temporary Constructions
A decking carried out of boards resting on the putlogs and constituting a horizontal scaffolding implemented in the excavations when the depth of these is significant.

BOARDING SUPPORT
Rideau
Construction
A set constituted by suspenders, bars and all other elements in the endorsement of the deck of a suspension bridge.

BOAST
Ebauche
Masonry
The first fashioning given to an ashlar.

BOASTER
Ebauchoir
Equipment and Tools
Syn. with ROUGHING CHISEL

BOAT BOTTOM
Fond de bateau
Civil Engineering
In embankments, captive sheet of water between an impermeable bed (clay, etc.) constituting the background and a permeable bed through of which waters infiltrate. The boat bottom is processed with herringbone drainage, subhorizontal drains, or by injection of sand-laden cement grout.

BOATING
Boursouflement
Geomorphology
The swelling of the ground caused by an important slipping that can be transformed into blister with the time, going if the phenomenon lasts.

BOB
Plomb
Equipment for Measure and Control
Syn. with PLUMB; PLUMMET

BODY
Corps
Geomorphology
The central part of a landslide covering the breaking surface.

BOIL
Renard solide
Foundation
Appearence identical to the normal blow, but in which water is replaced by soil (clay, sand, etc.).

BOILER PLANT
Générateur de vapeur
Equipment and Tools
Syn. with STEAM GENERATOR

BOILING
Boulance
Geology
A phenomenon of decohesion that intervenes all times one produces a strong enough rising water stream inside a fine sand mass. For each kind of sand, there exists a pressure drop by unit of course above which the sand is emulsioning.

BOLOMETER
Bolomètre
Equipment for Measure and Control
Equipment used to analyse materials; it is a thermal detector whose electrical resistance changes when it receives incident radiation. There are several types of bolometer: the thermistor bolometer, the supra bolometer driver, the carbon bolometer, and the bolometer to germanium.

BOLSTER
Ciseau; Echaupre; Corbeau; Racinal
Equipment and Tools; Construction; Carpentry
1. A stonecutter's tool resembling at the burin but having a single bevel. This bevel can be straight (fillet bolster) or round [bolster to slot (for lewis)]. Flat chisel (or to pad or to mallet) is used to modify the harshness left by the punch, the gradine, or the granulating hammer, by carvings more or less neared. Syn. with DROVE; STONE CHISEL
2. Broad-faced steel bricklayer' chisel for cutting bricks.

3. Syn. with BRACKET; CORBEL
4. A prop or wooden bearing part supporting other parts.

BOLT
Boulon; Cheville; Bluter
Materials; Equipment and Tools
1. An organ of joining constituted by a circular section part having a prismatic or round head and a smooth shank prolonged by a threaded part (the shank can also be threaded throughout its length); parts to be joined are bored by holes into which passes the bolt. A hexagonal nut bored by a tapped hole enables tightening.
Two models essentially are available:
- **normal screw bolts** (*les boulons à filetage normal*), whose assembly is such that a part of the thread is inside the hole, what increases the diametral compression directly below of the part on the side of the washer and the nut;
- **small screw bolts** (*les boulons à filetage réduit*), sometimes called *full bodies,* whose thread ends in the thickness of the washer.

2. Syn. with PEG; PIN; STUD
3. To pass a pulverulent matter to the sieve.

BOLT CLIPPER
Coupe-boulon
Equipment and Tools
Syn. with BOLT CROPPERS

BOLT CROPPERS
Coupe-boulon
Equipment and Tools
A tool for cutting bolts which is actually just large shears. Syn. with BOLT CLIPPER

BOLTED RIB
Nervure boulonnée
Construction
A reinforcement in return and peripheral of the butts of a prestressed concrete segment that enables the bolted joint of the segments between them, thus strengthening the gluing.

BOLTER
Bluteau
Equipment and Tools
An instrument used to bolt various ground matters that one wants to sieve.

BOLTING
Boulonnage
Metal Construction
The joining operation of parts with bolts.

BOLTING CHEST
Bluterie
Nomenclature of Materials
The set of fines which are passed through the meshes of the bolter.

BOLTMAKING
Boulonnerie
Metal Construction
The set of bolts of a structure. This term is sometimes used to point to all of the bolts of a joining or a structure part. Syn. with FASTENER

BOND
Appareil; Frette; Lier
Buildings Materials; Work
1. Specimen of ashlar. Ashlars are classified such as their size into three great families: small, medium, or large bond. Their visible facing range from 0.40 m height to 0.70 m width to 0.15 m on 0.25 m. Syn. with HEIGHT
2. In a collared elastomer bearing, a steel plate limiting the plane deformation of the adjacent elastomer folias.
3. Syn. with BIND; TIE

BOND
Appareiller; Limousiner; Enlier; Liaison; Liaisonner
Masonry
1. To execute by advances the drawings that give the forms and dimensions of the stones used to construct the work. Syn. with TO PREPARE
2. To build a rubble wall. Syn. with TO RUBBLE
3. To insert quarry stones or bricks of a masonry of such a nature that join them are placed longways on and others widthways on, so as to alternate the pointings in the thickness of the wall. Syn. with ENGAGE
4. The mortar of pointing. Syn. with BONDING
5. Syn. with GROUT; JOINT; LINK; POINT

BOND JOINT
Refend
Masonry
A linear profile of a triangular or square section carried out on a rendering to feign the courses.

BOND LENGTH
Longueur d'adhérence
Construction of R.C. and P.C.
The length of the concrete zone solicited by the action of the bonding forces that are opposed to the slipping of the reinforcements or cables along their axis compared with the concrete that coats them. Syn. with GRIP LENGTH

BOND MARK
Marque d'appareil
Masonry
A number assigned to an ashlar following the arranged sketching, to locate its site in the construction.

BOND STRENGTH
Force d'adhérence
Adhesives
The necessary force for breaking the joining of two surfaces carried out with the help of an adhesive.

BONDED STONE
Pierre appareillée
Masonry
A stone having his six faces dressed.

BONDER
Lancis; Boutisse; Pierre parpaigne
Masonry
1. A header or perpend (stone) bonded in a masonry work to ensure a good bond of the facing with the body of masonry.
2. Syn. with BONDSTONE; PERPEND; THROUGH STONE

BONDER LAYING
Pose en boutisse
Masonry
Syn. with BONDER SETTING

BONDER SETTING
Pose en boutisse
Masonry
A stone or brick whose largest dimension lies laid in the thicknessways of the wall. Syn. with BONDER LAYING

BONDERIZATION
Bondérisation
Metallurgy
A process of metal surface protection from the rust which is obtained by the application of a phosphoric caustic solution, which makes a superficial iron phosphate film. By extension: all phosphating or pulverization process. Syn. with BONDERIZING

BONDERIZE
Bondériser
Metallurgy
To apply the processing of bonderization.

BONDERIZING
Bondérisation
Metallurgy
Syn. with BONDERIZATION

BONDING
Appareillage; Hourdage; Liaison; Accrochage
Masonry; Painting
1. The arrangement of the set of stones (ashlars, quarry stones, etc.) or bricks in masonry work. In vault, the main types of bonding that we meet are:

- **straight arch bonding** (*l'appareillage par arcs droits*), brickwork or stonework used to construct skew vaults and which consists in forming the vault by joining right arches forming steps ones on the others. Salient parts can conceivably be carved in order to constitute a smooth facing;
- **helical barrel vault** (*l'appareillage hélicoïdal*), brickwork or stonework used to construct skew vaults. It is the simplest and most used for small dimension vaults. Beds are shown on the development of the vault by parallel straight lines that become helix on the cylinder. All courses have similar thickness;
- **Léveillé bonding (of the vault)** (*l'appareillage Léveillé*), in which quarry stones are bonded horizontally at the base up to 30° of the horizontal (as for a straight vault) and then bonded as in a helical vault;
- **orthogonal bonding (of the vault)** (*l'appareillage orthogonal parallèle*), brickwork or stonework used to construct vaults. In this system, courses are perpendicular with heads at the key and bend progressively to become parallel at the springings;

- **flat roller bonding (of the vault)** (*l'appareillage par rouleau unique),* of vault of brickwork; it consists in building on centering a forefront of bricks with a step of a half-brick then, on the same centering or after the decenters, a second rank of toothered bricks on the first. This type of construction is notably used when the thickness of the vault does not exceed a length equal to two bricks;
- **multiple roller bonding (of the vault)** (*l'appareillage par rouleaux multiples*), for a brickwork vault made as following way. A first roller which thickness is equal to the thickness of one brick is built on centering. Then after the decenters it is used as support to the construction of a second roller, and so on. Successive rollers can become interdependent ones to the others by introducing toothings. This type of construction is used for vaults of strong thickness;
- **archstone bonding** (*l'appareillage par voussoirs*), brickwork that consists in building the vault throughout its thickness by parallel courses of arch stones formed by piling up bricks and whose top beds are cutting normally to the intrados (system little used in France);
- **bonding of the vaults with a weak skew** (*l'appareillage des voûtes à faible biais),* brickwork or stonework presenting a bonding arrangement of a straight vault. The process consists in drawing beds following the generatrixes whose discontinuous joints of head archstones are parallel to the plan of head; the others discontinuous joints being carved according to cross sections. Sometimes, we have adopted a bonding of archstone beds that is perpendicular with the plan of head, the other archstones being laid like in the previous bonding.

Syn. with PREPARATION

2. The linking of materials with mortar; one says *to make a bonding.*

3. Syn. with BOND

4. The joining of two successive paint films or simply of a film on its subjectile.

BONDING ADMIXTURE
Produit d'accrochage
Masonry
A matter mostly thermoplastic emulsions based (copolymers and terpolymers vinylic, styrene butadiene, acrylic resins, etc.) whose one whitewashes a support needed to receive a rendering to facilitate and increase the adhesion of it.

BONDING AGENT
Produit de reprise
Materials
A matter applied on hardened concrete improving the adhesion of the fresh concrete brought back in the case of a construction joint for instance.

BONDING GROUT
Couche d'accrochage ou Gobetis
Masonry
Syn. with DASH-BOND COAT; RENDERING COAT; ROUGHCAST(ING)

BONDING INJECTION
Injection de liaison
Work
An operation for ensuring the continuity between a former masonry and a new masonry. It is similar in nature to the internal injection.

BONDING LENGTH
Recouvrement
Construction of R.C. and P.C.
A zone delimited by the overlapping of two reinforcements of a bar setting thus ensuring the mechanical linear continuity, and in which are transmitted the strains.

BONDSTONE
Parpaing
Masonry
Syn. with PARPEND STONE; PERPEND; THROUGH STONE

BONDSTONE KEY
Clausoir
Masonry
A small tile or header closing a course of masonry.

BONE BLACK
Noir d'ivoire
Painting
Syn. with IVORY BLACK

BONING
Bornoyer
Topography
To position poles that limit lines of a foundation. Syn. with MARK OUT THE BOUNDARY; MARK THE FOUNDATION MARKER

BONING PEG
Cale
Masonry
Syn. with DOWEL; WOOD BLOCK

BOOM
Flèche de grue; Volée ; Elinde; Membrure
Equipment and Tools; Metal Construction
1. The linchpin of a crane, mostly adjustable, telescopic or not, at the end of which is fixed one (or more) pulley(s) on which passes the handling cable of the loads. Syn. with CRANE JIB
2. Syn. with BUCKET ELEVATOR BOOM
3. Syn. with CHORD; FLANGE.

BOOMER
Boumeur; Chariot de foration
Equipment for Measure and Control; Equipment and Tools
1. A transmitter used for seismic trials in aquatic sites.
2. Syn. with WAGON-DRILL

BOOMLESS DERRICK
Chèvre
Equipment and Tools
Syn. with HORSE ; LIFTING JACK; SHEAR LEGS; TRACK LIFTING JACK

BORAX
Borax
Welding
Borate of sodium used during brazing.

BORDER
Bourrelet
Geomorphology
Within landslide, the more or less cylindrical excrescence of the ground caused by an underlying compression.

BORE
Aléser; Forer; Lumière
Metal Construction; Foundation; Work; Construction
1. To put a hole at its final diameter. The job is done with a hand reamer, or a boring machine.
2. To redrill a well or a drilling to enlarge its diameter or regularize its walls. Syn. with REAM
3. Syn. with DRILL
4. Syn. with PORT

BORE BIT
Trépan
Equipment and Tools
Syn. with DRILL(ING) BIT; TREPAN

BORE EXTRACTING
Caracole
Equipment and Tools
A hook rod used in instrumentations to attempt recovery of broken rods in a borehole. Syn. with BIT HOOK

BOREHOLE
Trou de sonde; Sondage; Forage
Geology; Work
1. Syn. with TRIAL BORING
2. Syn. with BORING; DRILLING

BOREHOLE DRILLED BY PERCUSSION
Sondage foré par percussion
Geotechnics
A drilling carried out in the ground with a tool which acts by fall effect and by its weight. The disaggregated ground is afterward extracted by clearing out.
Among the primary means used, we can distinguish:
- **probing *or* piercing *or* sounding** (*le sondage à la barre à mine*): a rudimentary soil survey that consists in driving in a jumper bar into the ground with a sledge hammer; this process concerns a slight depth beneath the surface;
- **miser sounding** (*le sondage à la sonde de Palissy*): a process of soil survey concerning only one very low depth of ground (2 to 5 m); it allows to take more or less disturbed samples;
- **drill sounding** (*le sondage à la sondeuse à tige*): a sophisticated process of the method to miser sounding that allows to reach the depths of

about 30 m; this drill allows to take more or less intact samples;

- **Hammergrab bucket trial drilling** (*le sondage à la benne Hammergrab sur foreuse Benoto*): allows to collect undisturbed and representative samples of the ground in place. When one needs to extract from gravelly earth to large grading, in particular under the groundwater table and without breaking the subunits in order to carry out representative grading, one carries out drilling of large diameter (400 to 600 mm) with Hammergrab Benoto skip of type CP 4 or CP 5. These Hammergrab skips appear as heavy cylinders of a large diameter, finished at their base by shells of various forms, tight and very robust, able to dig and appropriate the ground in bottom of hole. The apparatus is equipped with a device to allow automatic closing of the shells after the taking away in bottom of hole, and their opening after the bringing of the bucket on the surface. A tubing can be carried out if necessary.

This process is particularly useful for precise survey of the gravelly material borrow area for backfillings, the study of the realization of excavated materials in fillings, the performance of pumping well, when one has a refusal of the mechanical auger with large diameter or when one lies in the obligation to tube drilling, in particular under the ground watertable;

- **Canadian sounding** (*le sondage canadien*): carried out by driving, with discontinuous clearing out;
- **trial boring by percussion with bore bit** (*le sondage par percussion au trépan*): consists in carrying out a drilling executing a striking repeated in bottom of hole with a special tool, or bore bit, intended for going back up sediments as they are disaggregated by striking of the tool;
- **trial boring by percussion with punch sampler** (*le sondage par percussion au carottier poinçonneur*): consists in carrying out a drilling sinking in bottom of hole a hollow tube able to collect a layer of ground on the height of the tube;
- **trial boring with "doum the hole" hammer drill** (*le sondage au marteau fond de trou*): an improvement of the trial boring to the bore bit in which a drill drives a stand of drill pipe ended by a pneumatic hammer comprising a percussion tool of a medium diameter. The compressed air, starting the hammer in bottom of hole, raises the sediments at the time of its relaxation.

BOREHOLE DRILLED BY ROTATION
Sondage foré par rotation
Geotechnics

A soil survey drilling in which the tool cuts into the ground thanks to a fast rotational movement transmitted by a screwed stand of drill pipes. The cooling and the rising of the sediments are ensured by circulation of a pressurized liquid (mostly water). The tool of attack works with the means of:

- granular metal (exclusively vertical trial boring);
- a tungsten carbide bit (teeth); or
- a diamond bit.

Samples of ground (core samples) are taken depending on their nature, with a simple or double-core drill.

There are several types of trial boring:

- **complete sampler trial boring** (*le sondage par carottage intégral*): geotechnical means of investigation of the grounds that consists in taking the various soil beds in a complete way throughout the depth of the trial bore, so as to examine them *with one's own eyes* and to submit them to the various analyses and useful laboratory tests;
- **double-tube (core) sampler trial boring** (*le sondage au carottier double*): a process in which drilling is carried out by cutting out the ground along a cylinder by rotation of a hollow tube with at its base by a special tool intended for wearing away the ground and which is called a *boring bit.* Sediments resulting from cutting are pulled up to the surface by a fluid (stream of water or special muds);
- **sounding by drilling with a mechanical auger** (*le sondage par forage à la tarière mécanique ou à la chape*): carried out when the grounds to be probed are relatively loose: sludges, clays, alluvia, marls, etc. The auger used is a helical screw of variable diameter from 6 to 30 cm. It allows to penetrate the ground quickly and to progressively go back up the modified samples of ground, therefore allowing very fast surveys in fairly loose grounds.

The drilling grab consists of a hollow tube ended by a short auger. It can open on its side. By screwing the auger into the ground, the ground is introduced into the tube, with a partial

remolding, and can be taken under better conditions than with the auger. The mechanical auger or drilling grab allows pratically no sampling below 20 to 30 m depth;

- **trial boring with mechanical (core) auger** (*le sondage à la tarière mécanique creuse*): a process in which the mainline mechanical auger is replaced by an auger whose core is made up of a tube. There is, at the head of the auger, a special cutting tool connected at its surface by a stand of drill pipe interdependent of the driving piece of the auger. To a given depth, one thus can use the stand of drill pipe to pull the head of cut, which allows the intact sampling with the help of a rotary core drill or stamping core drill by leaving the bottom of drilling clear.
- **trial boring with tricone** (*le sondage au tricône*): a process in which the drilling belongs to the category of fast rotary drillings. The tricone is a tool formed by three toothed wheels laid out on axles of 120°. When rotating, the block of the tool allows the quick disaggregation of the ground. Sediments are brought went up by a stream of water, air, or mud as in the bore bit trial boring;
- **trial boring by turbo drilling** (*le sondage par turbo-forage):* a process using special mud that plugs the walls of the trial boring whilst bringing back up sediments. This system, allowing the removal of the stand of drill pipe and tubing, authorizes the great depths required by special tasks.

BOREHOLE LOG
Coupe de sondage
Geology
Syn. with DRILL LOG

BOREHOLE LOGGING
Diagraphie
Geotechnics
A process which consists in recording in a trial boring, generally of a continuous manner, according to the depth, one or several parameters which characterize the ground (resistance, radioactivity, etc.).
There are several types of borehole logging:

- **electrical logging *or* resistance logging** *(la diagraphie électrique)*: a measuring process of the strength of grounds. Probes used are of various types, but require for most a noncased hole full of water (or mud), thus limiting the possibilities of implementation. These loggings are especially interesting in eruptive site for the study of the variations of alteration and pollution of the massif;
- **sonic logging (or microseismic)** [*la diagraphie sonique (ou microsismique)*]: a process of rocky massifs sounding based on the phenomenon of wave propagation resonant. The measured parameter is the propagation speed of the longitudinal waves in the ground to the vicinity of a trial boring. Two types of probes exist: the usable discontinuous sonic probe in dry holes, the continuous sonic probe usable in holes filled with water or mud. The area of preferential application of this log is the structural study of rocky massifs, the varying sonic speed, for a given rock, following the importance and the density of the discontinuities that affect the massif;
- **nuclear logging** (*la diagraphie nucléaire*): constitutes a continuous profile of absorption or emission parameters of some radiations, obtained by descending some probes in a drilling. These physical measurements can be connected after standardization, to geotechnical magnitudes as the specific gravity or the moisture content. We can distinguish:
  - the *gamma-gamma log* or *nuclear interface log* (*la diagraphie gamma-gamma*), which is based on the distribution phenomena of the gamma radiations emitted by the matter and which enables on to know the specific gravity of the grounds,
  - the *neutron-neutron log* (*la diagraphie neutron-neutron*), which is based on the slowing phenomena by hydrogen of rapid neutrons. The neutron-neutron log enables one to measure the moisture content of materials;
- **instantaneous borehole logging** (*la diagraphie instantanée de forage*), consists in executing the capture and the graphic or numerical recording, of the drilling parameters according to depth, such as the drill feed (speed of penetration of the tool), the reflective percussion which corresponds in proportion to the energy reflected by the tool after each shock), the thrust pressure of the tool, the injection pressure of the fluid of circulation, the measurement of the rotation torque of the drill string, the pressure of hammer feeding, the_speed of rods rotation. The equipment is installed on a hydraulic drilling machine working in rotation

only or in rotary-percussion and enables, following the models, to record from three to eight parameters;

- **radioactivity logging** (*la diagraphie de radioactivité naturelle*): a sounding process of terrain based on the natural ground radioactivity. Its purpose is to realize a continuous recording, on the entire height of a drilling, of the gamma-ray radiation emitted by the different natural radioactive elements included in the rock; it is meant to enable by the comparison of the recording curves of several trial borings the correlation of successively crossed levels.

Syn. with LOGGING

BOREHOLE SAMPLE
Carotte
Civil Engineering Structure; Geotechnics
Syn. with CORE ; CORE SAMPLE; DRILL CORE

BORER
Alésoir; Perce; Tarière; Fleuret
Equipment and Tools
1. A tool used in steel construction to surface the walls of a hole and to give it its final diameter. Syn. with REAMER
2. The generic name of the tools used to make holes. Syn. with DRILL; PUNCH
3. A helical drill used to drill and bore in rotation, like an Archimedes' screw.
There are several types of borers:

- **head auger** (*la tarière de tête*), used to drill horizontally or vertically. It is especially conceived for loose grounds;
- **lengthening auger** (*la tarière rallonge*), used to lengthen the head drill or twisted auger. During horizontal drillings the cuttings are simultanuously and continuously evacuated in the progress of the drilling and continuous way; **See Figure 29**
- **twisted auger with point of drilling** *(la tarière torsadée avec pointe de forage),* used to drill in hard ground or hard layers of gravel;
- **bucket** (*la tarière à godet*), made up of a cylindrical bucket with at its base a flat or bulging lid. This lid, provided or not with a point-shaped pilot tool, presents an opening, according to a variable radius or diameter. The opening is provided with cutting blades or interchangeable teeth. This tool is used to bore piles. By pressure and rotation, the teeth cut the ground which is stored in the bucket which is then resurfaced and emptied by opening the hinge-mounted lid. There are articulated buckets, with automatic opening or valves;
- **continuous auger** (*la tarière continue*), used to make bored piles and cast in the ground and formed by a single continuous tool which is used successively for drilling and concreting. The tool is a helical auger whose blades are rolled up around a hollow tube. Its dimensions (diameter and length) correspond to the pile to be made; the length can be increased during the perforation by addition of helical elements. **See Figure 29a.**

4. A tool constituted by a metal rod fixed to a pneumatic, electrical, hydraulic, or thermal engine drill disintegrating the rock by percussion of a cutting edge.
The borer is ended to one of its ends by a drill steel shank, on which the piston of a hammer drill knock, and to the other by a cutting edge, which attacks the terrain by percussion. The impact of the cutting edge is modified before each knock by a light rotation of the tool. The borer can be solid or hollow. In this last case, it has to be bored by a canal along its axis to enable the air or water injection intended for cooling the cutting edge and mostly for evacuating the cuttings. The borer can be cast in one piece or with a removable cutting edge (added or screwed). Syn. with DRILL STEEL; JUMPER BAR; MASONRY DRILL

BORER BAR
Chante-perce
Equipment and Tools
A steel bar, sharpened at one end, used by the Norman and Breton quarry workers to drill blocks of granite.

BORESCOPE
Endoscope
Equipment for Measure and Control
Syn. with ENDOSCOPE; FIBERSCOPE

BORING
Alésage; Forage
Earthwork; Metallurgy; Metal Construction; Foundation; Work
1. A hollow part of revolution (cylindrical or conical).

2. An operation of machining performed in a workshop or on a building site. Thanks to the use of a tool (usually a reamer), it enables one to make a hole of a defined diameter, with a tiny tolerance, rigorously aligned through thickness's of steel, punched or bored beforehand. Boring is also used to eliminate cold-drawn zones resulting from punching. Syn. with CYLINDER BORE ; REAMING

3. A ground boring process that breaks up into two categories:

- **large section borehole** (*les forages de grande section*), namely the wells and possibly the trenches;
- **small section bore hole** (*les forages de petite section*), which are subdivided two classes. The first ones are done with the casual means of earthwork and allow both the direct observation of pierced grounds and with the sampling. Seconds are carried out with special perforation machines that bring back up to the surface the intact or not disturbed samples of pierced grounds.

4. Syn. with BOREHOLE; DRILLING

BORING MACHINE
Machine foreuse; Perforatrice; Foreuse
Equipment and Tools

1. A machine used to make a hole, therefore to extract the ground to the site of the planned gallery. The system of ground extraction is formed by a drilling head which carries tools which cut into the ground. The drilling head is carried by the body of the machine, itself related to the system of propulsion and leaning of the machine. A progression guide is necessary to make the machine follow a specific path. A service unit ensures the supply of necessary energy to the machine. The drilling machines are often equipped with a mucking out device and supporting system of the gallery.

2. Syn. with DRILLING MACHINE

BORING WINCH
Treuil de forage
Equipment and Tools
A device that allows the trepan to return up.

BORROW AREA
Chambre d'emprunt; Emprunt
Earthwork

1. A borrow area of materials (earth, sand, gravel, etc.) located out of the ascendencies of the site. Since materials cannot be borrowed on the job site due to their bad qualities or their nonexistence. Borrow areas are used to fulfil excavations, or to create embankments.

2. The taking of materials (by excavation or other means) made outside of the premises of the site and that is intended for creating an embankment, constructing a road, etc. Syn. with BORROW PIT

BORROW PIT
Emprunt
Earthwork
Syn. with BORROW AREA

BOSS
Bossage; Bosse
Masonry

1. The facing of quarry stone or ashlar worked with a more or less salient (compared to edges) boss.

Bosses differ from sunk drafts because of their greatest protrusion and especially by more researched (complex) forms. Among the most ordinary bosses are :

- **V-channel stonework *or* chamfered rustication** (*le bossage à anglets*), whose steps are chamfered in such a way that chamfers of two consecutive bosses make a V-channel;
- **rounded rustication** (*le bossage arrondi*), which is a way of cutting with rounded edges and whose rough surface is sometimes surrounded by a carving;
- **cavetto rustication** (*le bossage à cavet*), whose protrusion is ended by a cavetto contained between two fillets; **see Figure 30;**
- **chamfered rustication** (*le bossage à chanfrein*), in which edges are chamfered and do not join the contiguous boss but are separated by a small canal; **see Figure 30a;**
- **diamond shaped work *or* diamond rustication** (*le bossage en pointe de diamant*), whose facing is carved in a pyramidal form; **see Figure 30b;**
- **resurfaced and repointed stonework** (*le bossage ravalé*), with table in hollow and profiles;
- **rustic work *or* rustication** (*le bossage rustique*), whose facing is rough but sometimes surrounded by a carving;

▪ **vermiculated stonework** (*le bossage vermiculé*), whose facing is designed to remind galleries dug by the worms.
2. A small bulge left by builders overhanging on a wall to point to that it is not measured.

BOSS BLOCK
Carreau de bossage
Building Materials
A stone cut in rustication with sunk draft, composing a sidewall or a quoin.

BOSS KEYSTONE
Clef à bossage
Construction
A key that forms a uniform overhang on the main plane of the archivolt or the flat arch.

BOSSE
Bossé
Building Materials
A tree of the rain forests which provides a pale pink wood. Its density is between 0.55 and 0.65.

***BOSTIK* TESTER**
***Bostik* tester**
Assaying Equipment
Equipment used to test the fatigue of mastics.

BOTCH
Loup
Defects
A defect in a construction. Syn. with DEFECT; FAULT; MISTAKE

BOTT CHISEL
Langue de carpe
Equipment and Tools
A burin whose cutting edge, seen of face, is concave. Syn. with HEWING CHISEL

BOTTOM
Assiette
Construction
The surface which occupies a pavement (roadway) or a railway track including additional parts (shoulders, ditches, embankment and cutting slopes). Syn. with LAYING OUT (OF RAILWAY LINE); ROADBED

BOTTOM END
Extrémité inférieure; Pouce
Geomorphology
In a landslide, the downhill zone of the movement of terrain or end of the border. Syn. with THUMB

BOTTOM FACE
Douelle; Intrados
Construction
The outside or inside facing of an archstone. All internal faces constitutes the intrados of the arch or the vault, the whole of outside faces the extrados. Syn. with INTRADOS; SOFFIT; INNER FACE

BOTTOM HOLE CHARGE
Charge de fond
Explosives
The portion of explosives at the bottom of a blasthole.

BOTTOM OUTLET
Vidange de fond
Construction
Syn. with DEWATERING CONDUIT

BOTTOM SCRAPER
Gratte-fond
Equipment and Tools
A builder's tool that allows to reach in the hollowed parts of a masonry work in order to carry out a task there. It is a long rod provided of a head being able to take on the shape of various tools.

BOTTOM-OPENING SKIP
Benne à béton à fond ouvrant
Equipment and Tools
A material shaped like a truncated cone with opening bottom, used on the building sites to carry the concrete from its location of manufacture or arrival to the building site until its site of implementation. The drop-bottom bucket is usually handled with a crane, a cableway, etc. Syn. with DROP-BOTTOM BUCKET

BOTTOM STEP
Marche de départ
Construction
The first stair of a staircase. Syn. with STARTING STEP

***BOUCHERIE* PROCESS**
Procédé *Boucherie*
Building Materials
A preservation method of the round woods freshly cut down and not barked. The method consist in applying a water-soluble preservative under simple hydrostatic pressure by their lower end, in order to move their sap.

BOULDER CLAY
Argile à blocaux
Geology
A clay mixed with sand, gravels? and blocks of glacial origin.

***BOULTON* PROCESS**
Procédé *Boulton*
Building Materials
A preliminary treatment for an undried wood (or partially dried), in a bid to its pressurized processing, which consists in heating it under vacuum into a tar-oil-based preservative.

BOUNDARY LAYER
Surface de discontinuité
Geology; Materials
The plan separating two layers by intermediary from a foreign matter or of which the intimate connection is not ensured.

BOUNDARY MARK
Borne
Topography
An element of stone, metal, or concrete that delimits a property. Syn. with BOUNDARY STONE

BOUNDARY STONE
Borne
Topography
Syn. with BOUNDARY MARK

BOVIDUCT
Boviduc
Civil Engineering Structure
An underpass generally built under a thoroughfare (motorway, railway) allowing cattle to go from one side to the other without mishap (it would be especially the situation of pasture lands cut in two parcels by a motorway crossing it).

BOWING
Cambrure; Cambre
Nomenclature of Materials
Syn. with CAMBER

BOWSTRING
Arc sous-tendu; Bow-string
Construction; Civil Engineering Structure
1. An arch provided with a continuous part, called *tensional member* (or *tie beam*), joining the springings. **See Figure 31**
2. A bridge usually composed of two beams (also called *bowstrings*) with a bottom deck. Each beam is made of an arch-shaped top boom and a bottom tensional member (generally incorporated in the deck) joined at their ends and united by suspenders (called *needles* under certain circumstances).
Top booms of bowstring bridges work such as arches; but horizontal stresses that these arches would exert on their bearings are absorbed only by the tensional members if they are not incorporated in the deck, or by the tensional members and the rest of the deck in the contrary case. Following the chosen transverse morphology, tensional members are more or less differentiated from the rest of the lower frame of the bridge. The bowstring bridge only exerts vertical actions on these bearings. The bowstring structure gives the opportunity to build structures that do not push on their bearings and that leave clearer the clearance of the underway with a thin thickness between the bolster and the way that is supported. **See Figures 31 and 31a**

BOWSTRING GIRDER
Poutre bow-string
Construction
A set constituted by two beams joined with their ends, made jointly liable by suspenders (needles), and resting on the abutments through the channel of two intermediary simple bearings. One of the beams, compressed, is the *arch* of the bowstring; the other, taut (mostly slightly curved), is the *tensional member* of the bowstring.

BOX ABUTMENT
Culée boîte
Construction
A box-shaped construction applying on the subgrade the same load as the adjacent embankment.

BOX BEAM
Poutre à caisson
Construction
Syn. with BOX GIRDER; DOUBLE-WEBBED BEAM; HOLLOW-WEB GIRDER

BOX CAISSON
Caisson
Foundation
A metal or reinforced concrete structure comprising one or several internal cells, used to create foundations in little coherent or immersed grounds.
The box caisson is notably used to found engineering works underwater; it is made up of a rigid cylinder or parallelepiped, formerly of wood, but currently of steel or reinforced concrete, that one fails on its final site or that one sinks vertically by mechanical cutting in an aquiferous or little coherent terrain. The caisson going down by its peculiar weight, increased, if necessary, of a ballasting.
The box caisson can be opened on its top part (slight infiltrations of water) or closed (aquatic site). In the latter case, the air is compressed in the working chamber. The access to the working chamber takes by the passage in a chimney then in an air lock.
The caisson can constitute the foundation after filling in of concrete but it is most often built on the bank, then floated and failed directly on the bottom or into an artificial berth.
There are several types of box caisson:
- **cylinder open box** (*le caisson à alvéoles en béton armé*), made up of a structure comprising several circular wells. The extraction of excavated materials inside each cell is achieved with the grab. When the box caisson has arrived at its definitive position, cells are filled in with concrete and a connection footing of reinforced concrete is poured on the entire box caisson; **See Figure 32**
- **floating caisson with bottom** (*le caisson avec fond*), made up of a tight wooden or metal structure, resting on piles and intended for receiving, in immersed site, the base of the construction;
- **floating bottomless caisson *or* open caisson** (*le caisson sans fond*), which in excavations in an aquatic site, is made up of a wooden or metal impervious enclosure, prepared in advance, that one comes to fail on the anticipated site;
- **pneumatic caisson *or* compressed-air caisson** (*le caisson à air comprimé*), used for foundations in aquatic site and whose principle is the following: a metal box caisson or working chamber open at the bottom was ran onto on the bed of the river. The water was driven out of the box caisson by the compressed air. The box caisson is gone down up to the sought-after terrain by extraction of the excavated materials. The masonry rises as and when and one ends by filling in the caisson itself;
- **waterproofing caisson** (*le caisson étanche*), which is used to create foundations in an aquatic site; it is made up of a wooden frame-forming an enclosure, covered with butt-jointed boards protected by a tight coating (clay, etc.). The base is protected by enrockments. **See Figure 32a**

Syn. with AMERICAN CAISSON; STRANDED CAISSON

BOX CULVERT
Dalot
Civil Engineering Structure
Aqueduct of a rectangular cross section constituted by two vertical dwarf walls or sidewalls on which rest a slab or a serie of slabs placed side by side. It can be simple or double. Former box culverts are often recovered by small slabs (or slabs) of stone. Syn. with WATER CHANNEL; WATER DUCT; SCUPPER. **See Figure 33**

BOX GIRDER
Poutre à caisson
Construction
A tubular element, formed by four walls, of an assembly of webs and top slabs (webs and top and bottom flanges), walls being plane and joined at the angles.
Two models essentially are available:
- **monocaisson beam** (*la poutre monocaisson ou à caisson simple*);
- **multicellular box girder** (*la poutre à caisson multicellulaire*).

Syn. with BOX BEAM; DOUBLE-WEBBED BEAM; HOLLOW-WEB GIRDER

BOX GIRDER DECK
Tablier à poutres caissons
Construction
A structure constituted by a deck strengthened at its intrados by one or several boxes. Three models are essentially available:
- **box girder deck of prestressed concrete** (le tablier à poutre caisson en béton précontraint);
- **metal box-girder deck (orthotropic plate)** (*le tablier à poutre caisson en métal (dalle orthotrope)*);
- **deck with box-girder of a mixed framework (top concrete slab of reinforced concrete)** [*le tablier à poutre caisson en ossature mixte* (*hourdis supérieur en béton armé)*]. **See Figures 34 to 34d**

BOX OUT
Réservation
Construction of R.C. and P.C.
Syn. with BLOCKOUT; DUCT FORMER

BRACE
Moise; Moiser; Etrésillon; Bretelle; Etrésillonner
Temporary Constructions
1. In a sheeting of excavation in trench, timber piece forming connection between the trench braces or stays to stiffen them and to keep up their spacing. Syn. with STRING PIECE
2. To erect braces in a sheeting, well, or scaffolding.
3. Syn. with (CROSS) SHORE; STRUT.
4. To keep up with braces; to put in place braces. Syn. with SHORE (ACROSS); STRUT

BRACE
Contre-fiche; Ente
Construction
1. The diagonal of a truss girder (very little common speaking about of a bridge beam).
2. A slanted element intended for transmitting the stresses from a piece or part of a piece often in cantilever to a piece of greater importance.
3. A strut overhanging the main plane of a wall. Syn. with STRUT
4. To erect wind-braces.
5. Syn. with CORNER BRACE; PROP; STAY; STRUT

BRACE
Lien; Bracon; Ancrer; Croisillon
Carpentry; Civil Engineering Structure; Metal Construction
1. A small corner brace obliquely connecting the king post and the ridge with intent to relieve the strain on the latter. Syn. with TIE
2. Syn. with RAKER; STAY.
3. To carry out an anchorage. Syn. with ANCHOR; STAY; TIE
4. Syn. with CROSS-PIN; SPIDER

BRACING
Entretoisement; Ancrage
Construction; Construction of R.C. and P.C.
1. The consolidation, strengthening, rigidification, with distance pieces.
2. All connection elements (distance pieces, cross braces) connecting the main elements of a structure.
3. Syn. with ANCHORAGE

BRACING
Cadrage; Barre; Raidisseur; Haubanage
Temporary Constructions; Metal Construction; Work
1. Syn. with TIMBER SET
2. Syn. with TRUSS MEMBER; WEB MEMBER
3. Syn. with STIFFENER
4. Syn. with GUYING; STAYING

BRACING HANGER
Suspente auxiliaire
Construction
The cross bracing formed by cables arranged crosswise between the suspenders whose the purpose is to stiffen the cables of some suspension bridges. **See Figure 122** under SUSPENDER.

BRACKET
Potence; Equerre; Gousset
Carpentry; Building Materials; Metal Construction
1. An assembly of framework intended for relieving a beam of a great span and which is made up of a post on that are obliquely joined the braces connected with a corbel course. Syn. with POST BRACKET
2. Syn. with SQUARE

3. Syn. with ANGLE TIE; CORNER PLATE; GUSSET PLATE

BRACKET
Fourchette
Metrology
Defined limits between which lies a chemical, physical, mathematical measurement (example: the extreme values of the proportions of the different concrete ingredients; lower and higher values of the breaking stresses of a determined material; etc.).

BRACKET
Mouchoir; Bielle; Console; Corbeau; Collier d'attache
Construction
1. A small flat fixed on three or four sides. In certain works with an orthotropic slab, a bracket is brought back between the longitudinal ribs, the sheet metal of decking and the top boom of the transverse girders when these two last are distinct.
2. A slender piece articulated at its two ends, likely to transmit normal forces, so compression that tension (example: rod of bearing machine, rod of drawbridge).
3. In a drawbridge, element connecting the flight with the cantilever voussoir.
4. An organ overhanging a wall, intended for carrying a load. **See Figure 35**
5. Syn. with BOLSTER; CORBEL
6. Syn. with CABLE COLLAR

BRAD PUNCH
Chasse-pointe
Equipment and Tools
Syn. with NAIL PUNCH; NAIL SET; SHARP POINTED BIT

BRAIN
Cerveau
Construction
The region of the vault of a work adjoining the key.

BRANCH
Piquer; Rameau
Work; *Sanitary Engineering and Drainage*
1. To connect a pipe or a conduit to another pipe or conduit.

2. The secondary branch of a drainage system being connected to the main drain. The branch constitutes one of the ramifications of a herringbone drainage.

BRANCH OF ARCHSTONE
Branche de voussoir
Construction
The fork of an archstone of two adjacent vaults.

BRANCH OF A RIVER
Défluent
Hydrology
The new branch of a waterway, resulting from the division of the main course.

BRANCHING CRACK
Fissure ramifiée
Defects (Welding)
All cracks affecting a weld bead or its immediate surroundings, connected between them, and appearing in the form of branching.

BRASHNESS
Fragilité
Strength ofMaterials
Syn. with BRITTLENESS; FRAGILITY; FRAILTY; SHORTNESS

BRASS
Laiton
Metallurgy
An alloy of copper and zinc.

BRASS PLATING
Laitonnage
Metallurgy
A deposit by electrolysis of a thin coat of brass on a metal.

BRAZILIAN TEST
Essai brésilien; Essai par fendage
Test of Materials (Construction of R.C. and P.C.)
A concrete test, also called *splitting test,* that is made by diametral compression on a cylinder test. Syn. with POINT-LOAD STRENGTH TEST; SPLITTING TEST

BREACH
Brèche
Civil Engineering Structure.
Syn. with BREAK; GAP

BREAK
Brèche
Civil Engineering Structure
1. An artificial or natural opening in a wall.
2. An opening or breakage made by fragments of matter removed.
Syn. with BREACH; GAP

BREAK
Brisure; Décrochement; Se fracturer
Construction; Defects
1. The change of direction concerning a bar in any system of construction. Syn. with CHANGING DIRECTION
2. The break of level of a course made by uneven ground, a join of construction or a decorative part.
3. Damage characterized by a severe discontinuity of an edge, a surface, etc.
4. Syn. with FRACTURE

BREAK
Cassure
Petrography
A break of rock or stone that can affect various facies following the nature of the rock.
For building stones we can categorize as follows:
- **angular break** (la *cassure anguleuse*), which shows sharp angles due to the presence of small internal strands;
- **clayed break** (la *cassure argiloïde*), resembling fine clay;
- **vaulted break** (la *cassure arrondie*), which resembles at plane break but is vaulted and, sometimes shell-bulged;
- **convex break** (la *cassure bombée en coquille*), a round break having the form of a valve of false clam;
- **battered break** (la *cassure bossuée*), which presents small softened harshness, without well net angles;
- **waxy break** (la *cassure cireuse*), which resembles the break of bees wax;
- **conchoidal break** (la *cassure conchoïdale*), whichpresents curved surfaces resembling the outside forms of shells;
- **conoid break** (la *cassure conoïde*), which presents a break in small cone whose summit is directed to the inside; it is the case of flints, for instance;
- **crystalline break** (la *cassure cristalline*), which presents a series of shining grains;
- **indentured break** (la *cassure dentelée*), which is a rocky break that presents many small teeth spaced regularly;
- **scaly break** (la *cassure écailleuse*), which presents smaller scales than in the comminuted break, but always translucent or clearer than the bottom of the rock (often found with splinters in the same stone);
- **eczemateous break** (la *cassure eczémateuse*), which presents small round grains more or less irregular and to half drowned and forming that and there small concentrations of all forms;
- **comminuted break** (la *cassure esquilleuse*), which presents kinds of splinters in set back them on others and that detach with more or less facility such as small slivers of wood or bone;
- **fanned break** (la *cassure éventaillée*), whose break resembles a fan such as in Comblanchian stone, for instance;
- **foliated break** (la *cassure feuilletée*), a schistose break in which the fragments are very thin; it is a real fissile break, but of more consequent dimensions;
- **glandular break** (la *cassure glandulaire*), which presents the harshnesses resembling an acorn;
- **globular break** (la *cassure globuleuse*), which presents small regular globules, often isolated and almost drowned in the mass, a lot less large than the noduly break where, on the other hand, they are spherical only accidentally;
- **step break** (la *cassure en gradins*), which without being truly schistose, presents many false beds that accuse by breaking the rock and by forming degrees such as steps of a staircase;
- **granulous break** (la *cassure granuleuse*), which presents irregular grains larger than in the gritty break and that, well-embedded, do not grate;
- **granular break** (la *cassure grenue*), which presents very distinct grains, sensitive to the touch, thin or thin enough;
- **gritty break** (la *cassure gréseuse*), identical to the granular break, but giving the sensation of a grater;
- **lamellar break** (la *cassure lamellaire*), which presents a break in small folias;
- **fissile break** (la *cassure lamelleuse*), which presents a break in folias of a certain thickness such as the slate, for instance;

- **laminar break** (la *cassure laminaire*), an expression used for crystallizations that one there meets if the crystals cleave under the shock of the hammer on a relatively large surface and in number as on mica, for instance;
- **woody break** (la *cassure ligneuse*), which resembles wooden grains;
- **smooth break** (la *cassure lisse*), which presents an almost smooth and polished surface, not shining such as Souppes's stone, for instance;
- **glazed break** (la *cassure lustrée*), which presents the sparkle, polishe, and beautiful shining such as Normandy's sandstone, for instance;
- **mamillated break** (la *cassure mamelonnée*), which resembles the hilly break, but with small summits instead of round roofs;
- **hilly break** (la *cassure montueuse*), a type of tectiform break, but with round and irregular summits;
- **noduly break** (la *cassure noduleuse*), which presents grains more or less round, larger than in the granulous break, well-embedded, but with a large base and without many protrusions;
- **undulating break** (la *cassure onduleuse*), which is identical to the hilly break, under a small nodule;
- **plane break** (la *cassure plane*), which constitutes a geometrical plan regular enough such as, for instance, the Raon-l'Étape trap;
- **flat (*or* plane) break** (la *cassure plate*), which is identical to the plane break but contains several successive planes that are not aligned in a general arrangement drawing and tend to form a round surface;
- **pleated break** (la *cassure plissée*), which one meets (rarely) practically only in lava;
- **uneven break** (la *cassure raboteuse*), which presents small irregular harshnesses, hard and sensitive to the touch;
- **gullyed break** (la *cassure ravinée*), which is always hilly, but with furrows at the bottom of the roundnesses;
- **resinous break** (la *cassure résineuse*), which, as its name indicates, has the aspect of resin;
- **wrinkled break** (la *cassure ridée*), which is identical to the undulating break but under a smaller modulus (the conchoid break is often wrinkled);
- **rocky (*or* stony) break** (la *cassure rocailleuse*), which is at once wrinkled, hilly, angular, and tectiform, but under a small modulates and with abrupt changes;
- **rugged (*or* rough) break** (la *cassure rugueuse*), which presents ruggednesss in ridge in all directions and in irregular lines;
- **downfall form break** (la *cassure ruiniforme*), which is a very rare facies and that appears in the form of ruins, diversion of the rocky break, showing the courses, moldings in springing, fragments of capital; found most often in the conchiferous stones;
- **saccharoidal break** (la *cassure saccharoïde*), which resembles breakage of lump sugar;
- **schistose break** (la *cassure schisteuse*), where we can distinguish a well net stratification where one observes stepped fragments of parallel and regular thicknesses;
- **sparry break** (la *cassure spathique*), whose break shows grains with plane geometrical faces of spath;
- **stalactiform break** (la *cassure stalactiforme*), said of sutures and splits carpeted by tiny stalactites;
- **striated break** (la *cassure striée*), which presents running lengthways and parallel small furrows that one meets notably in basalts;
- **tabular break** (la *cassure tabulaire*), a schistose break in which meet real tablets projecting alternating with thin folias;
- **tectiform break** (la *cassure tectiforme*), a roof-shaped break, such as the Château-Landon stone;
- **plain break** (la *cassure unie*), which is dull and not granular;
- **hilly (*or* undulating) break** (la *cassure vallonnée*), which resembles the hilly break but that presents in more of thalweg lines having a precise direction;
- **vermiculated break** (la *cassure vermiculée*), which presents a surface pierced by vermicules.

Syn. with CRACK

BREAK
Jarret
Defects
A defect affecting the curve-shaped part of a construction that brings about an irregularity in the outline.

BREAK JOINT
Joint de rupture
Construction
Syn. with MOVEMENT JOINT

BREAKAWAY FORM (underform, etc.)
Couche de désolidarisation
Construction
The intermediate layer arranged between the work and the support and intended to dissociate the bed, the screed, or the slab (from transition) from the support, so as to minimize the effects of differential dimensional variations and deformations. Syn. with DAMPCOURSE

BREAKAWAY SEDIMENTARY COVER
Couverture
Tectonics
One of the two types of tectonics that characterizes a sedimentary cover loosened at the base and thus capable of autonomous fold.

BREAKDOWN
Claquage
Work
An incident which can occur at the time of artificial cementing work.

BREAKER
Tombeur
Work
A semiskilled worker specializing in the demolition of concrete or masonry. Syn. with DEMOLISHER; DEMOLITION WORKER

BREAKING
Rupture; Recoupement
Strength of Materials; Civil Engineering Structure; Masonry
1. The moment in which a homogeneous part splits up into several elements due to stresses. The rupture corresponds to the absolute limit of resistance. Syn. with FAILURE; RUPTURE
2. An anomaly of the structure which can lead to the ruin of a work, it can initially results from misalignments followed by appearances of cracks, fractures, dislocations and even partial or total collapses when the disorder evolves. Breaking is characterized, at least locally, by the irreversible separation of a continuous medium in two parts, on both sides from a geometrical surface *S*. In metal we can distinguish the brittle fractures (no appreciable plastic deformations during the phase of propagation) and ductile ruptures (with important plastic deformations of the structure). **See Figure 36**
3. The cut of a rendering in order to limit an existing rendering which is contiguous to it.

BREAKING
Amortissement; Jarreté; Fracture
Work and Materials; Architecture; Defects
1. The dissipation of energy of a vibratory system This energy is either lost by transmission beyond the system through certain mechanisms of radiation or dissipated by friction inside the system. Syn. with DISPERSION
2. Syn. with AMORTIZEMENT
3. The defect of a stone or brick facing which brings about sinuosities (outline presenting an alternation of convexity and concavity).
4. Syn. with FRACTURE

BREAKING AWAY
Abattage en carrière
Building Materials and Earthwork
Syn. with QUARRYING

BREAKING CURVE
Courbe de rupture
Geotechnics
Sudden bending of dips curve at the moment when the ground yields during a ground test with table. This curve is diagrammatic on the graphic representation of the sinkings that are noted as they progressed with the loading of the table. At the beginning of the test, the sinkings are appreciably proportional to the loads; then, at a certain moment, the ground yields, the curve curves downward: this point is called the *failure point.*

BREAKING DOWN
Débit
Geomorphology
A way a rock is fragmented due to climatic conditions.

BREAKING LOAD
Force de rupture
Test of Materials
The maximal strength that can bear a test specimen in a tensile test behaved up to the breaking. It is expressed in newtons or in its multiples and submultiples.

BREAKING MECHANICS
Mécanique de la rupture
Strength of Materials
The part of the science of materials mainly relating to problems posed by the behavior metal

known as *fragile,* such as structural steels. It aims quantifying the risk of sudden rupture incurred in steel construction, by calculating a critical defect dimension likely to start the rupture under a certain stress, or critical stress likely to give rise to a rupture in front of a defect of one size.

BREAKING OF SEAL OF THE BEARING DEVICE
Descellement de dispositif d'appui
Defects (Masonry)
The failure of the sealing of the bearing piece interdependent of the masonry under the effect of the banging of the bearing system.

BREAKING OPEN
Coup de sabre
Defects - Damage (Masonry)
1. A defect in a brickwork or stonework characterized by a fracture produced when several pointings superpose or do not superpose sufficiently. This damage can occur in the facing as well as in the thickness of the masonry itself.
2. A wide skew crack occurring in masonry.

BREAKING POINT
Point de rupture
Geotechnics
In the soil surveys with the table and on the graph of dip reading, point from which the curve abruptly curves downward.

BREAKING ROCK
Roche avec joints
Earthwork
Speaking about tunnel heading with explosives and following shooting, rock which contains joints and faults. Its blocks and joints are so tightened and mixed up that the vertical walls do not require any side supporting; on the other hand, spalling can still occur.

BREAKING *or* SLIP SURFACE
Surface de rupture *ou* de glissement
Geomorphology
In a landslide, surface separating the slipped mass from the ground in place.

BREAKING STRAIN
Tension de rupture
Strength of Materials
Syn. with BREAKING STRESS

BREAKING STRESS
Tension de rupture
Strength of Materials
The load likely to determine the breaking of an elementary fiber. The coefficient of breaking stress is determined on a test specimen. Syn. with BREAKING STRAIN

BREAKING SYSTEM
Dispositif de rupture
Metal Construction
In a metal bridge, box fitted in the structure of the work in which to place explosives (generally between two bearings), and that is intended in case of need, to destroy a span of the work.

BREAKING TEST BY COMPRESSION
Essai de rupture par compression
Tests of Materials (Hydraulic Binders)
A test that allows to know the compressive strength of hydraulic binders and grouts and that consists in trying in compression the two half-cylinder tests resulting from the breaking bending test.

BREAKING-DOWN DISK
Disque de rupture
Equipment and Tools
In hydraulics-pneumatics, equipment for limiting the pressure of a fluid at a predetermined value and functioning by the tearing of a standardized element under the action of the excess of pressure.

BREAKING-DOWN FACIES
Faciès de rupture
Metallography
All morphological characteristics of a crushed specimen that have to do with its metal properties and the conditions of its stress.

BREAKNESS
Brisance
Explosives
A more or less important ability of an explosive to break resistant materials.

BREAKOFF TESTER™
Break-off
Assaying Equipment
A monitoring portable plan of the concrete compressive strength on the site.
For recently poured concrete, the measuring implies that a small plastic cylinder has been set at the surface of the structure. This small cylinder is filled with concrete during filling the formworks and it can be easily removed. A core whose basis is always locked to the structure is thus provided. This core can be broken by applying a side pressure at its top with a hydraulic device. This force applied laterally creates a tensile/bending stress. The breaking strength is recorded with a manometer and the strength of the concrete can be read straight on site with a curve. This equipment is notably useful to determine when releasing formworks or to monitor the performance of some former concrete.

BREAK-PRESSURE TANK
Caisse dissipatrice d'énergie
Hydrology
A parallelepiped work located at the base of a water slope down of a filling or a slope, at the bottom whose are laid enrockments. The aim of this work is to brake the speed of waters on their arrival at the base of the slope or embankment.

BREAKWATER
Digue fluviale
Hydraulic Work
A barrage that guides water in order to protect the banks of a river from the action of water. Syn. with EMBANKMENT; FLOOD BANK

BREAST
Front d'abattage
Earthwork
The vertical face of a trench into which is performed a cutting building pit. Syn. with WORKING; WORKING FACE

BREAST WALL
Parapet
Construction
Syn. with PARAPET; RAILING

BREASTING OF THE FACE
Bouclier
Temporary Construction
Syn. with SHIELD

BREASTSUMMER
Poitrail
Temporary Construction
Syn. with BRESSUMER

BRECCIA
Brèche
Geology
A sedimentary rock of detrital origin, formed by large irregular stone fragments embedded in a gritty or chalky cement.

BRECCIA ACCUMULATION
Brèche
Geomorphology
A crumbled or angular stone heap.

BREEZE BLOCK
Aggloméré
Building Materials
Syn. with ARTIFICIAL STONE; BLOCKWORK; BUILDING BLOCK; CONGLOMERATE BLOCKWORK; CONSTRUCTION BLOCK; PERPEND

BRESSUMER
Poitrail
Temporary Constructions
A metal beam often made up of two or more stayed sections and used to support or relieve a part of a construction during the execution of underpinning work. Syn with BREASTSUMMER

BRESSUMER OF RAILS or OF JOISTS
Poitrail en rails ou en poutrelles
Temporary Construction
A temporary railway bridge on which the track is supported under the sleepers by a variable number of rails or universal beams interlocked by ties or distance pieces and wooden shims. The sleepers are also interlocked with the bressumer to avoid the movement of the track **on** the horizontal, transverse and vertical plan. This device is mostly used to cross breaches of slight opening or under points and crossing switch

gear; it rests on temporary bearings. **Syn.** with RAILS *(or* UNIVERSAL BEAM) BRESSUMER. **See Figure 37**

BRICK
Brique; Briqueter
Building Materials; Masonry
1. A manufactured building material in the shape of a right-angled parallelepiped with currently standardized dimensions.
It is a clay-based material. Bricks are manufactured, either by straight packing of earth excavated_by hand or power press, or by mixing and stretching with a drawing plate. After drying in tunnel furnaces, the product piled in recrossed beds is fired at a more or less high temperature. The bricks obtained are porous or not according to whether they were fired at a relatively moderated temperature or began vitrify.
The different types of bricks are:
- **squint brick** *(la brique d'argile)* is manufactured with mixed clay, hand-cast or cast in a machine and fired in a brick kiln;
- **slag brick** (*la brique de laitier*) is made up of fat lime (or cement) and lightly-moistened granulated slag processed together through a grinding mixer. The product is afterward molded by a press where it undergoes a compression from 2.5 to 3 MPa. This brick is gray-white and has a quite_coarse grain to distinguish it from common brick;
- **silica-calcareous brick *or* calcium-silicate brick *or* sand-lime brick** (*la brique silico-calcaire*) is manufactured in a mixer in which siliceous sand is mixed with hydrated fat lime; the mixing is then compressed in a press and processed through an autoclave.

2. To erect a structure with bricks.

BRICK AXE
Martelet
Equipment and Tools
A bricklayer's hammer provided with a squared head at one end, widened or not, and with a cutting edge at the other. Syn. with BRICKLAYER'S HAMMER. **See Figure 38**

BRICK COPING
Cordon de briques
Construction
A course of bricks standing out on the main plane of a wall or to the same main plane but of a different bonding from the rest of the masonry. Syn. with CORDON

BRICK FACING
Parement de briques
Construction
A pointed and left visibly surface of brickwork, well planes, showing horizontal and vertical pointings perfectly even and symmetrical.

BRICK LINING
Maçonnage
Masonry
Syn. with BRICKLAYING

BRICK PARTITION
Galandage
Masonry
Any masonry in which bricks are laid edgewise the ones beside the others. Syn. with BRICK-ON-EDGE WALL

BRICK PAVING
Echelle de briques
Construction
A pavement of flat or edgewise laid mortared bricks.

BRICK SLIP
Briquette
Building Materials
A small brick whose sizes are not standardized.

BRICK *or* STONE WALLING
Muraillement
Construction
A masonry intended to support or cover a wall. (Generally, the stone (or brick) walling is only a superficial protection of a slope intended to protect it from bad weather; this covering mostly consists of a quarry stone mask, pointed or not.)

BRICK TROWEL
Briqueteuse
Equipment and Tools
A tool used by masons for picking up and spreading mortar. Its blade is triangular and flat, and its handle is offset.

BRICK UP
Maçonner une construction
Masonry
Syn. with WALL UP

BRICKBAT
Briqueton; Demi-brique
Building Materials
Syn. with BAT

BRICKFIELD
Briqueterie
Building Materials
A plant where bricks are manufactured. Syn. with BRICKYARD

BRICKLAYER
Briqueteur; Maçon
Masonry
A worker specializing in erecting brickworks. Syn. with BLOCKLAYER; MASON; STONE MASON; WALLING MASON; WALLER

BRICKLAYER'S HAMMER
Martelet; Pointerolle
Equipment and Tools
1. Syn. with BRICK AXE
2. A relatively light hammer endowed with a squared head and a point, used by stonecutters. It is mostly used for splitting stone blocks. (When it is not equipped with a handle, the bricklayer's hammer is used to refine what is done with the axhammer.)

BRICKLAYING
Briquetage; Maçonnage
Masonry
1. Any masonry of bricks. Syn. with BRICKWORK
2. Syn. with BRICK LINING; BUILDING; MASON'S WORK

BRICK-ON-EDGE WALL
Galandage
Masonry
Syn. with BRICK PARTITION

BRICKWORK
Briquetage
Masonry
1. Syn. with BRICKLAYING
2. Facing in imitation brickwork. Syn. with IMITATION BRICKWORK

BRICKWORK ARCH
Voûte en briques
Construction
A construction carried out by successive courses and whose most commonly used bondings are those by sole roll, by multiple rolls, by archstones. (The construction of brickwork vaults was used to achieve vaults of small and medium chord).

BRICKYARD
Briqueterie
Building Materials
Syn. with BRICKFIELD

BRIDGE
Pont
Civil Engineering Structure
A crossing work built over a communication route (road, railway, river) or a natural obstacle (watercourse, sound, valley, etc.) and allowing people, vehicles, animals, etc., to go easily from a point to another.
According to the nature of the way carried, the bridge is called *road bridge, railway bridge, or canal bridge.* When the work gets over a breach at a great height and is made up of many spans, it is called a *viaduct.* When the work is only used by pedestrians (in the case of an overpass), it is called a *footbridge.* There are two main categories of bridges: definitive bridges and temporary bridges.
Main types of bridges:
- **wooden bridge** (*le pont en bois*), though much used in the past, almost does not exist anymore today, apart from some Third World countries. Their morphology was almost identical to that of the old metal bridges with straight beams or arches. They are sometimes built for temporary use; **See Figure 39**
- **cast iron bridge** *(le pont en fonte),* a fastly disappearing work nowadays which was usually made up of two lateral cast iron beams stayed with the help of tubes crossed by a dowel screw. It was used to cross slightly opened breaches as a road bridge as well as a railway bridge; **See Figure 39a**
- **stone *or* brick masonry bridge** (*le pont en maçonnerie de pierres ou en briques*), whose morphology in vault or arch induces in the stones (or bricks), or in their pointings, compressions enabling them to resist. There are still many

operational, particularly, in railroads, but due to their high cost no more are being built. The work is made up of one or more arches or vaults resting on sidewalls, abutments, and/or piers or piles; **See Figure 39b; 39c and 39d**

- **metal bridge** (*le pont métallique*), formerly built of iron or cast iron and, for about one century, of steel. (Some recent works were made of aluminum alloy). In this large family of metal bridges, we can distinguish: bridges with beams, bridges with caissons, great portal bridges, arch bridges of steel, suspension bridges, cable-stayed bridges, movable bridges;
- **reinforced concrete bridge** (*le pont en béton armé*), which appeared at the end of the nineteenth century and was built by association of concrete and steel bars. We can distinguish: girder bridges with continuous spans (statically indeterminate) or independent (isostatic) spans, with cantilever (bowstring), slab bridges, arch bridges;
- **prestressed concrete bridge** (*le pont en béton précontraint*), which appeared in the middle of the twenthieth century and is made of an association of taut cables or wires and concrete. We can distinguish: girder bridges, arch bridges, with portal, segments, slabs, cable-stayed;
- **steel and concrete composite bridge** (*le pont mixte acier-béton*), formed by a metal frame supporting a reinforced concrete slab.

BRIDGE AQUEDUCT
Pont-aqueduc
Civil Engineering Structure
A bridge which gets over a natural or artificial obstacle and which is intended for supplying in water (of feeding or irrigation) a city or an agricultural region. Syn. with AQUEDUCT

BRIDGE BEARING
Appui de pont
Construction
Syn. with BRIDGE SUPPORT

BRIDGE BENT
Palée
Construction
The intermediate support of a deck constituted by posts generally joined on the head by a pier cap and/or cross member. Dimensions of these posts are relatively weak (generally 60 x 80 cm). Bridge bents are of wood, metal, or reinforced concrete. **See Figure 40**

BRIDGE CENTER LINE
Axe d'un pont
Construction
The fictitious line that corresponds to the axis of the way supported by the work. When this axis made with that of the crossed way an angle different from 90°, one has an *oblique or skew bridge*. Conversely there is a *straight bridge*.

BRIDGE COVERING
Platelage
Construction
A cover element of small thickness of a roadway bridge that receives the service loads perpendicularly from its plane and transmits them to the girderage. The bridge covering locution is used to express an idea of lightness and sometimes of discontinuity. Syn. with DECKING

BRIDGE CRANE
Pont-grue
Civil Engineering Structure
Syn. with GANTRY CRANE

BRIDGE DECK
Tablier
Construction
Syn. with BRIDGE PLATFORM; DECK; PLATFORM

BRIDGE EQUIPMENT
Equipement de pont
Construction
A device for ensuring the life duration of a work and the security of the users (guard rail, roadway joint, etc.).

BRIDGE LAUNCHING
Lancement d'un pont
Handling
The putting into place by launching of the whole or part of a bridge deck.

BRIDGE LAYOUT IN PLANE
Disposition en plan
Civil Engineering Structure
The plane orientation of the bridge center line compared with the axis of the obstacle gotten over. Following this orientation, bridges are

classified as straight bridges, skew bridges, and curve bridges.

BRIDGE PIER CAP
Sommier
Construction
In the encased girder decks, of reinforced concrete, etc., transverse beam made of reinforced concrete or elements of ashlar set on the top of an abutment, on which pick up bearings of the deck. Bridge pier caps ensure the transmission and distribution of the loads of the deck to the foundations through the channel of abutments. Syn. with PIER CAP; BRIDGE CAP

BRIDGE PLATFORM
Tablier
Construction
The part of a bridge formed by an appreciably horizontal (or with a slight slope) structure which endures traffic (road, railway, and sometimes river). The deck rests on the abutments and/or piers through the channel of pier caps of ashlar, granite, or reinforced concrete, supporting fixed or movable bridge-support apparatus, elastomer or steel bearing plates.
A deck is cast solid or basically constituted by beams, (central) girders, and distance pieces. It appears:
- assembled with rivets, high-strength friction grip bolts, or by welding in the case of bridges with steel decks;
- as the result of a pouring and forming a set, in the case of bridges made of reinforced concrete; or
- assembled by special steel wire ropes, taut inside cable ducts in the case of prestressed concrete bridges.

Decks are differentiated according to their structure; we can distinguish:
- **reinforced and prestressed concrete decks** (*les tabliers en B.A. et les tabliers en B.P.*) and among them:
  - *reinforced concrete deck with solid slab* (*le tablier en B.A. à dalle pleine*), structure with solid reinforced concrete slab (without openings), **See Figure 41**
  - *hollow or elegy reinforced concrete slab* (*le tablier à dalle B.A., élégie ou évidée*), structure with reinforced concrete slab including elegies. This type of slab is also frequent in the prestressed concrete bridges, **See Figure 41a**
  - *reinforced concrete deck with a ribbed slab or with multiple girders (le tablier en B.A. à hourdis nervuré ou à poutres multiples),* formed by reinforced concrete slab reinforced at its intrados by several running lengthways beams interdependent of the concrete slab. We can distinguish the decks with straight beams and decks with heel beams, **See Figures 41b; 41d and 41e**
  - *deck with reinforced or prestressed concrete caisson (le tablier à caisson en B.A. ou en B.P.),* made up by a top concrete slab connected to a bottom concrete slab by straight or inclined webs, also of concrete; **See Figures 41f to 41j**
- **metal floorings supporting a slab of reinforced concrete** *(les tabliers métalliques supportant une dalle en B.A.),* and among them **See Figures 41k to 41m**
  - *deck with beams under roadway (le tablier à poutres sous chaussée),* which comprises two or more stayed metal universal beams. Distance pieces are connected between them by jack arches or by a concrete slab resting on an embossed sheet metal, or also by a reinforced concrete slab,
  - the *deck with beams by under (railway bridge)* [*le tablier à poutres par dessous (Pra)*], mixed structure iron-concrete with participating slab or not, made up of:
    - a metal framework of two or more beams (with solid web or lattice) generally stayed and braced,
    - a slab of reinforced concrete covering the metal frame,
  - *deck with lateral beams with reduced space* [*le tablier à poutres latérales avec écartement réduit (P.Ra)*], mixed structure iron-concrete with a nonparticipating slab. There are two primary types. (1) constituted by a metal framework formed by two lateral beams connected by transverse girders (universal beams mostly) more or less brought closer according to whether they are entirely encased or whether they support the reinforced concrete slab, and a reinforced concrete slab, encasing or covering the transverse girders. (2) essentially constituted by a metal framework in the shape of a small trough with inclined webs, stiffened transversely by stiffeners used as transverse girders. The interior of this small trough is protected from oxidation by a concrete shaft lining,
  - *deck with lateral beams with space and lower track* [*le tablier à poutres latérales avec*

écartement normal et voie inférieure (P.Ra)], mixed structure iron-concrete with nonparticipating slab from which two primary types essentially are available: first consists of a metal framework constituted by two lateral beams, lower transverse girders, and frequently of (central) girders. Lateral beams can have solid webs or lattice, constant height or camelback; the slab of reinforced concrete caps the transverse girders and possibly the (central) girders when the latter exist. The second is constituted by a metal framework made up of two lateral beams with solid web provided with transverse girders coated with a reinforced concrete slab,

- *compound deck for road bridge* (*le tablier mixte pour pont-route*), practice of construction in which only is used the type of deck with beams by under with a top slab of reinforced concrete participating to the resistance;

- **metal floorings or decks** (*les tabliers métalliques*) and among them:

- *grill-shaped metal floor* (*railway bridge only*) *[le tablier métallique en forme de grille (Pra uniquement)],* whose load-bearing elements are connected by a system of orthogonal beams forming a kind of grid, some of whose elements support the rail directly, or through the channel of sleepers or running lengthways sleepers. It is the mainline type of the works with high beams, transverse girders, and (central) girders (case of the majority of the metal bridges with beams),

- *metal deck with lateral beams (Railway bridge) [Le tablier métallique à poutres latérales (P.Ra)],* basically constituted by two beams made interdependent by transverse girders. The beams can be with solid web or lattice and the decks to installation with direct track laying or on ballast, **(See Figure 41o)**

- *metal deck with beam under rail* (*le tablier métallique à poutre sous rail*), for which the framework consists of a main beam under each stretch of rail, beams connected by distance pieces. The running lengthways sleepers or sleepers rest on the top flange of the beams,

- *metal deck with twin girders (railway bridge)* [*le tablier métallique à poutres jumelles (PRa)*], called formerly standard with small troughs, which is formed by metal beams with solid web on either side of each rail, made interdependent two by two by short distance pieces that supports the rails by the agency:

- by transverse small blocks, or

- by metal bearing plates (poses of direct laying).

Beams are either universal beams or constituted by sheet metal, universals or sections assembled by welding or riveting. The two internal beams are strongly braced to resist horizontal stresses,

- *metal deck with jack arches* (*le tablier métallique à voûtains*), bridge with beams whose space between distance pieces is filled by facing arches made of brickwork (or concrete) resting on the bottom flange of the distance pieces. A running lengthways tie rod connects the distance pieces sometimes in order to better stiffen them and perfect their strength to the thorough facing arches,

- *metal deck with sheet metals (le tablier métallique à tôle),* bridge with beams from which empty space between the various elements is filled using folded, embossed, bent, or curved plane sheet metal, generally covered by a concrete filling;

- **encased girders deck** *(le tablier à poutrelles enrobées),* constituted by metal universal beams encased in concrete. An upper bar setting (set above the universal beams) and low (coming through the web of the universal beams in their low part) ensure the connection between concrete and universal beams and distribute loads on them. Bracing the sections is done by round irons passing from places through the web of these sections in its high part and keeping the spacing of these. In the former decks the universal beams were either fully encased or in contact with the concrete at the face level of their bottom flange. Currently, the bottom flange of the universal beams is apparent: the concrete of encasing is poured on a formwork constituted by asbestos cement plates setting on the top of bottom flange of the universal beams;

- **encased rails deck** *(le tablier à rails enrobés),* formed by rails encased in concrete and carried out according to the same principle as the encased girders deck. The rails are either fully encased or in contact with the concrete on the level of the underside flanges of the rails. (These decks were used for very weak spans and are not currently built, although many remain operational.)

Syn. with BRIDGE DECK; DECK; PLATFORM

BRIDGE SPAN
Portée; Ouverture
Construction
1. Syn. with BEARING DISTANCE; SPAN; SPAN WIDTH
2. Syn. with CLEAR SPAN; OPENING

BRIDGE SUPPORT
Appui de pont
Construction
An element of a structure which allows to transfer on the subgrade the actions coming from the deck: pier, abutment, or abutment pier.
The supports can be:
- **fixed** (*encastrés*), namely linked in an invariable way with the foundation; **See Figure 42**
- **movable** (*mobiles*) following a direction of the plan. The reaction is then perpendicular to this direction;
- **articulated** (*articulés*) around a normal component with the plan of figure. The reaction passes then by axis of the articulation; **See Figure 43**
- **movable and articulated** (*mobiles et articulés*) the position and direction of the force are established; it is the case of a body that leans in a point of a plane without friction.

Syn. with BRIDGE BEARING

BRIDGE TEST
Epreuve des ouvrages
Civil Engineering Structure
Syn. with BUILDING TEST

BRIDGE TRACING
Tracé d'un pont
Construction
The geometrical morphology of a bridge: it can be straight, oblique, or curved.

BRIDGE TROUGH
Caisson de pont
Construction
A metal, R.C., or P.C. tubular structure, made up by sloped or vertical outside webs connected by a bottom slab deck and a top slab deck. Usually, these beams form the bridge deck.

BRIDGE UNDER RAILS
Pont sous rails
Civil Engineering Structure
A bridge that allows at the tracks of two different lines to cross in different plans.

BRIDGE-SUPPORT APPARATUS
Appareil d'appui
Construction
A device to connect the load-bearing structure of a work (main beams, arches, etc.) and elements of bearing (abutments, piers, etc.) allowing also linear deformations of the structure. Its constitution depends on the nature, either vertical or horizontal, and magnitude of the stresses transmitted to the bearing by the load-bearing structure. Bearings are laid on abutments in bridges with independent span. They are laid on abutments and on the intermediate piers in bridges with interdependent, continuous or discontinuous spans.
Among the bridge-support apparatus we can distinguish:
- **fixed bridge-support apparatus** (*les appareils d'appui fixes*), whose role is to fix on a bearing a point of the load-bearing structure in order to avoid its traversing as the effect of horizontal strains. They do not allow transfer but they allow rotations; **See Figures 44, 45 and 46.**
- **moving bridge-support apparatus** (*les appareils d'appui mobiles*), whose role is to allow length variations of the deck due to the temperature and possibly due to the creep for bridges of reinforced concrete and of prestressed concrete. They can be unidirectional or multidirectional; **See Figures 47 and 48.**
- **composite bridge-support apparatus** (*les appuis mixtes*), which allows rotational motion and transfer and that are made up of elements of elastomer (laminate or not);
- **hinges** *(les articulations),* whose role is to turn a variable direction strain brought by the load-bearing element on the bearing into two strains in which one is normal and the other parallel with the surface of the bearing.

Syn. with BEARING; SUPPORTING DEVICE

BRIDGING
Pontage
Tightness; Handling
1. An operation that consists in posing a reinforced device, adherent or not, of fitting

width, at the right of cracks and which is intended for distributing the stresses in watertight coatings.
2. Syn. with TEMPORARY BRIDGE BUILDING

BRIDGING PIECE
Entretoise; Pièce de pont
Construction
Syn. with CROSS BEAM; DISTANCE PIECE; TRANSVERSE GIRDER; JOIST

BRIGHT
Laver
Works
Syn. with MAKE FLUSH

BRIGHT PICKLING
Ravivage
Metallurgy
The scouring of a metal surface before electrodeposition.

BRIGHT WIRE
Fil clair
Metallurgy
An ungalvanized wire. Wire drawing gives it a smooth aspect, hence its name.

BRIGHTEN
Aviver; Blanchir
Building Materials
Syn. with REVIVE

BRIGHTENING UP
Epanouissement
Construction
A construction built in slope, erected on the banks of a waterway at the surroundings of a bridge, and whose base is covered by enrockments. Brightening up directs the flow of the water while protecting abutments.

***BRILLANT* PERMEAMETER**
Perméamètre *Brillant*
Equipment for Measure and Control
An apparatus for measuring quickly the specific permeability of alluvial soil; it brings about the sudden lowering of the water level in a drilling, then records its rise automatically.
This apparatus allows, in an autonomous way, a quick Lefranc test into a cased exploratory drilling to be performed. The principle is as follows: a bell suspended at a cable is placed in balance of flotation into a drilling; then it is brutally drawn upward by a fall from a counterbalance, thus lowering the water level in the drilling. The bell -- again in flotation – going back up to the static level and its speed of rise is recorded on a paper tape, allowing the immediate calculation of the local permeability at the test pocket level. **See Figure 49**

BRINE
Saumure
Materials
A freezing liquid formed by a mixing of water and calcium chloride, used for freezing soils.

***BRINELL* APPARATUS**
Brinell
Equipment for Measure and Control
An apparatus for metal hardness test.

***BRINELL* HARDNESS NUMBER**
Brinell
Metallography
A figure characterizing the hardness of metals according to the depth of the track left by a marble in the metal under test.

***BRINELL* HARDNESS TEST**
Essai *Brinell*
Metallography
A common standard method of measuring the hardness of (cast) iron and structural steel materials not having undergone heat treatment yet as well as soft metal materials. This test consists in imprinting a hard marble of diameter D in the metal without any shock with a determined load F. Then, the diameter d of the track left on the surface after removal of the load is measured by a special microscope, and the Brinell hardness value is read from a chart or calculated.

BRITTLE FRACTURE
Rupture fragile
Metal Construction
A relatively rare phenomenon of sudden breakage, catastrophic, being propagated in the metal at about one tenth speed of sound. So that a brittle fracture occurs, it is necessary that simultaneously the following occur:

- the presence of a sharp reentrant angle or severe notch, due to a bad design of form or mostly to a defect of welding;
- the existence of a uniaxial real stress of minimal tension;
- the use of steel with a slight resistance to the notch at the temperature of service, strength represented by an insufficient impact strength KCV at a more or less low temperature.

BRITTLE IRON
Fer aigre
Metallurgy
A metal breaking when cold, hard to file off, but welding well. Syn. with HARD IRON

BRITTLENESS
Chauffure; Friabilité; Fragilité
Defects; Strength of Materials
1. A defect of steel having undergone an excess of heat.
2. The loss of suppleness, tackiness, and cohesion of a paint film.
3. Syn. with FRAGILITY; FRAILTY; SHORTNESS; BRASHNESS

BROACH
Poinçon; Broche
Equipment and Tools; Materials
1. A chisel whose cutting edge is replaced by a point, used by stonecutters to shape the facing of the stones. Syn. with AWL; PUNCH
2. A wooden or steel peg. Syn. with DRIFT

BROACH CHANNELING
Terrassement à la broche *ou* Brochage
Earthwork
Syn. with BROACHING; LINE DRILLING

BROACHING
Terrassement à la broche *ou* Brochage
Earthwork
A cutting process in rocky ground in which it is possible to use explosives provided that the rock surrounding the excavation, as well as the block to be pulled, are not affected by the explosions. The process consists in drilling a line of tangent holes according to the profile to be cut out. According to the spacing of drillings, two alternatives are available. The first consists in creating the excavation carving with a chisel called *broach* the rock which remains between the holes after drilling and making fall the block using wedges. This method is used when the distance separating drillings is lower than 10 cm. When the distance separating drillings is higher than 10 cm, the second alternative is used. The process consists in carrying out cutting and placing into the drillings light explosive charges which will be fired according to an established shot-firing pattern. Syn. with BROACH CHANNELING; LINE DRILLING

BROADSCOOP
Marre
Equipment and Tools
A broad curved spade.

BROADSIDE
Bordée
Building Materials
The part of a rockbank pulled down by mines.

BROADSTONE
Pierre de taille
Building Materials
Syn. with ASHLAR

BROKEN ASHLAR
Mosaïque moderne
Masonry
Syn. with RANDOM (RANGE) ASHLAR; RANDOM (RANGE) WORK

BROKEN BOND
Déharpe
Masonry
Syn. with IRREGULAR BOND; RAKE BACK

BROKEN BRICK
Briquaillon; Cassons
Building Materials
1. Off-cut of brick mixed with mortar used in masonry to fill a gap.
2. Remains of bricks coming from their cut.

BROKEN STONE
Pierre cassée; Caillasse; Pierraille
Building Materials
1. All rock fragments resulting from crushing.
2. Syn. with GRAVELLY MARL; HARD SILICEOUS BED; HARDCORE; LOOSE STONES

BROKEN STONES
Pierraille
Building Materials
In a sand quarry, all elements higher than the particle size norms fixed for sands.

BROKEN-STONE PAVING
Rudération
Civil Engineering
A paving in pebbles or in small stones.

BRONZE FINISH
Mordorage
Defects (Painting)
Syn. with POLYCHROMATIC LECONGING

BRONZING
Bronzage
Defects (Painting)
Syn. with BROWNING

BROTHERS
Elingue
Equipment and Tools
Syn. with SLING

BROWN COAL
Lignite
Geology
A carbonaceous sedimentary rock which often contains fossilized wood remains. Syn. with LIGNITE

BROWN STAIN
Tache brune
Defects (Masonry)
A superficial defect affecting the stones which is shown by appearance of brownish zones on the facings. These stains occur under the double influence of a humid medium and organic matter (humic) preexists in the stone or some cements.

BROWNED
Rissolé
Defects
Of an object, a piece yellowed by heat of a certain intensity.

BROWNING
Bronzage
Defects (Painting)
A color deterioration of a paint film due to dusting and caused by light distribution. Syn. with BRONZING

BROWNSTONE PIT
Grésière; Gresserie
Building Materials
Syn. with FREESTONE PIT; SANDSTONE PIT

BRUISE
Egruger
Building Materials
To reduce a rock into small gravels or powder.

BRUSH
Goupillon; Brosse
Equipment and Tools
1. A round painter's brush, equipped with a cylindrical handle, used to clean old paintworks. Syn. with KNOT BRUSH
2. A tool used for painting. The most usual brushes are the ¼-inch brush, the ½-inch brush, the 1-inch brush, and the flat brush.

BRUSH MARKS
Traînées
Defects (Painting)
Ranges of initial defects characterized by anomalies of the color and/or aspect of the film, which appear in the wake of the brush.

BRUSHABILITY
Brossabilité
Painting
The ability of a paint to be applied with a paint brush onto a substrate and that is evaluated by its easiness of application as well as by the more or less noticeable forming of grooves and runnings.

BRUSHING
Brossage
Painting
The removal of oxides (rust, smithsonite) or dirty marks before painting and that is made with pneumatic or hand-driven tools (rotary brushes, etc.). Syn. with POWER BRUSHING

BUBBLING
Bullage
Defects (Painting)
Syn. with BLISTERING

BUCKET
Godet; Baquet; Auge
Equipment and Tools; Construction
1. A scoop of various shapes and sizes equipping a number of handling and earthmoving plants such as dragline excavators, dredgers, mechanical shovels, mechanical diggers, shovels, etc. Syn. with DIPPER; DREDGE BUCKET; SCOOP
2. A wooden receptacle used for carrying mortar.
3. The curved surface located at the foot of a spillway dam conceived to deviate water horizontally.
4. A curve of transition between the overflow side and the foundation raft of a barrage.

BUCKET CHAIN
Noria
Equipment and Tools
Syn. with BUCKET CONVEYOR; CHAINPUMP

BUCKET CONCRETING
Bétonnage à la benne
Construction of R.C. and P.C.
A working process of the concrete in aquatic site when the height of the water is higher than 0.80 m. The process consists in going up the concrete onto the bottom of the waterway by means of a tight bucket hanging on a winch or at the jib of a crane. Buckets are then opened by a diver, emptied of their contents smoothly (in order to avoid washing out), then came back up on the surface.

BUCKET CONVEYOR
Noria
Equipment and Tools
Syn. with BUCKET CHAIN; CHAIN PUMP

BUCKET ELEVATOR BOOM
Elinde
Equipment and Tools
The articulated arm used as guide for the passage of the bucket chain of a mechanical digger or a dredger. Syn. with (DIGGING) BOOM

BUCKET FOR DRILLING WORK
Benne de carottage
Equipment and Tools
Large core drills used for boring piles.

BUCKET LOADER
Chargeuse-pelleteuse
Equipment and Tools
Syn. with BACKHOE LOADER; LOADING SHOVEL

BUCKET WHEEL
Fraise à tranchée; Roue-pelle; Excavateur rotatif
Equipment and Tools
Syn. with EXCAVATOR; TRENCH EXCAVATOR; TRENCHER

BUCKLE
Flamber
Defects
To be bent (out of shape) or to bend laterally in contour of flame, as the effect of a compression exerted longways on (a beam buckles when its critical buckling force is reached). This verb is used when this defect concerns a mechanical part or vertical architectural element, long and relatively thin.

BUCKLED
Caussiné; Gauche; Gauchi; Déjeté
Defects (Building Materials)
1. Warped after work, speaking about of a wood (of frame notably).
2. Of an element, a piece, imperfectly plane, of a twisted-looking, that underwent a twist strain around its longitudinal axis due to internal stresses (natural) or external (accidental or voluntary).
Is also said of a surface deviated compared with an axis or to its generatrix (sheet metal, plywood, etc.).
3. Syn. with CROOKED; OUT OF TRUE; WARPED.
(Of a timber having been worked before its complete drying and that is warped afterward).

BUCKLED SHEETING
Tôle emboutie
Metal Construction
In the former metal works, element of cover made of a concave sheet jointed by its edges with central girders and transverse girders and which carries the roadway by a concrete filling. Syn. with PRESSED PLATE. **See Figure 50**

BUCKLING
Flambement; Flambage; Déformation; Gauchissement
Strength of Material; Defects
1. A phenomenon affecting the long and thin parts is characterized by a deformation with simple or double curvature. This defect results from combined strain of compression and bending.
The buckling of a construction is characterized by the sudden appearance of a change in form in a different direction from that of the stress forces. The phenomenon of buckling is often associated with the compressive strain and it constitutes one of the criteria of dimensioning of the posts, columns, and compressed bars. Other types of structure associated with other stress types are subject to instability by buckling: side buckling or long beam slopin; high and thin beams solicited by a bending force; buckling or blistering of the plates solicited by strains in their plane; buckling of shells or thin cylinders in compression or torsion; buckling of struts. Syn. with LATERAL FLEXION; WRINKLING;. **See Figure 51**
2. All dimensional variations and distortions due to stresses that concern a solid around a point.
There are several types of buckling:
- **elastic deformation *or* elastic strain** *(la déformation élastique),* in order that the piece resumes its initial dimensions immediately ceases the stress(es);
- **flexural deformation *or* elastic-plastic deformation** *(la déformation élasto-plastique),* noticing especially the bending in which the neighbour zone of the neutral axis does not reach the plastic state, with the result that, after cessation of the strain, the residual stresses remain;
- **instantaneous deformation** *(la déformation instantanée),* in which the deformation reaches its maximal value in a shorter time following the application of an instantaneous load or rapidly variable;
- **plastic deformation *or* plastic flow *or* plastic yield** *(la déformation plastique),* which is a permanent deformation;
- **deformation under stresses *or* stress deformation** *(la déformation sous sollicitations),* in order that is observed a dimensional variation of the piece subjected to the application of a load.

Syn. with DEFORMATION; DISTORTION; STRAIN
3. Syn. with SPRINGING; TWISTING; WARPING

BUCKLING INSTABILITY
Instabilité par flambement
Strength of Materials
A sudden deformation in curve form which can undergo certain elements, like the slender straight columns loaded in compression, when a critical value of the load is reached.

BUGGY
Motobrouette; Brouette motorisée
Equipment and Tools
Syn. with MOTORIZED BARROW; PEDESTRIAN-CONTROLLED DUMPER; POWER BARROW; SELF-PROPELLING WHEEL-BARROW

BUILD
Dresser une construction
Civil Engineering Structure
To construct a work. Syn. with LEVEL UP

BUILD IN HURDLE
Enhayer
Masonry
To build bricks or quarry stones in hurdle.

BUILD TO THE UPSTREAM CURTAIN WALL
Vantiler ou Vantiller
Hydraulic Work
To build the partition forming barrier with balks, battens, planking, and/or concrete slabs on the upstream water side of a cofferdam.

BUILD UP
Rapporter
Work
To complete a construction afterthought by supply of an element. Syn. with TO ADD.

BUILD WITH A LINE
Dresser d'alignement
Masonry
To erect a wall making use of a builder's line.

BUILDER'S JACK
Potence
Equipment and Tools
Syn. with CRANE HOIST

BUILDER'S LEVEL
Niveau à bulle d'air
Equipment for Measure and Control
Syn. with SPIRIT LEVEL; AIR LEVEL

BUILDER'S LINE
Cordeau
Equipment and Tools
Syn. with LINE; STRING LINE

BUILDER'S RUBBISH
Gravois; Gravats
Work
Syn. with RUBBISH; WASTE

BUILDING
Maçonnage
Masonry
Constructing a masonry work.

BUILDING BLOCK
Aggloméré
Buildings Materials
Syn. with ARTIFICIAL STONE; BLOCKWORK; BREEZE BLOCK; CONGLOMERATE BLOCKWORK; CONSTRUCTION BLOCK; PERPEND

BUILDING BRICK
Brique ordinaire
Building Materials
A material whose manufacturer does not guarantee crushing strength but which must show a strength between 1 and 1.25 MPa. Syn. with COMMON BRICK

BUILDING CASE
Coffret de chantier
Equipment and Tools
A small coffer containing all controls of job site electrical equipment.

BUILDING JOINT
Joint de reprise de bétonnage
Construction of R.C. and P.C.
Syn. with CONSTRUCTION JOINT

BUILDING LINE
Alignement d'une construction
Topography
Establishment of the elements of a construction in relation to a reference axis.

BUILDING MARK
Marque de pose
Work
A mark on a structural element to facilitate its setting.

BUILDING PIT
Fouille
Earthwork
Syn. with EXCAVATION

BUILDING PLATFORM (ON PILES)
Estacade
Temporary Construction
A heightened platform, supported by a wooden or metal framework, intended for supporting the construction of a slab (R.C.; E.G., etc.), manufactured nearby its final site and that will be mostly setting by lateral sliding along on its bearings. This method is notably used when one wants to replace an operational deck by another without (too) disturbing the traffic.

BUILDING PLOT
Lot d'ouvrages
Civil Engineering Structure
Syn. with CONTRACT SECTION

BUILDING REPOINTING
Rejointoiement de construction
Masonry
The extraction of the pointing mortar from a few centimeters of depth before its set. This mortar is replaced by a mortar richer in cement with the purpose to protect the body of the pointing.

BUILDING SAND
Sable de construction
Building Materials
A natural or artificial granular material put into concrete and mortar. The standard classifies sands as coarse sand (1.6 to 6.3 mm), medium sand (0.4 to 1.6 mm), fine sand (0.1 to 0.4 mm). Natural sands are round or crushed:

- **round sands** (*les sables roulés*) of alluvial origin which are extracted from river (dredging) or sand quarry;
- **crushed sands** *(les sables concassés)* are obtained by crushing of certain rocks, followed by a sifting.

Generally, building sands are silicocalcareous and characterized by their grading curve, shape, porosity, cleanliness, density, and wear resistance. If one adds water to dry sand, its apparent bulk density decreases. Wet sand inflates: it is the phenomenon of swelling, which is maximum for a certain moisture content.

BUILDING SITE
Chantier
Work
The location of a construction. Syn. with JOB SITE; SITE

BUILDING SITE JOINT
Joint de chantier
Construction
A provisional space reserved in a work or a part of concrete work, intended for absorbing possible movements during construction. This joint is removed at the time the work is finished.

BUILDING STONE
Pierre; Pierre à bâtir
Building Materials
1. An element of natural rock used to construct various works, which must:
- be homogeneous and compact, of sufficient resistance for its use and presenting a good adhesion to mortar,
- be able to resist to bad weather, namely neither frost riven, friable, nor too porous;
- be exempt from the following defects: sand crust, earthy insertion, strand, hair, crack or breakage, ash, soft vein, or pouffe.

2. Every rock which, after have been dressed, can constitute an element of masonry and which is generally classified as chalky stones or siliceous, depending on its reaction to hydrochloric acid:
- **limestones** (*les pierres calcaires*) are natural products extracted from quarries, which are the materials the most used in masonry. Stones offer a large range of texture and quality and can be classified by two methods:
  - standardized classification, which accounts for the following physical characteristics: speed of sound, apparent bulk density, and superficial hardness,
  - bread-and-butter classification, in which the categories of limestones usually recognized are:
    - *oolitic limestones* (*les calcaires oolithiques*), whose breakage shows rounded particles of a slight diameter (< 1 mm),
    - *entrochal limestones* (*les calcaires à entroques*), formed by fossil remains (encrines) of crystallized calcite giving bright particles of few millimeters,
    - *travertines* (*les calcaires lacustres ou travertins*), formed by lacustrian deposits which have a compact texture with vermicular channels,
    - *freshwater limestones* (*les calcaires grossiers à grains plus ou moins gros*), often containing remains of shells,
    - *calcareous tufas* (*les tufs calcaires*), relatively porous stones, light and soft, badly definite are actually travertines of poorer quality,
    - *dolomitic limestones* (*les calcaires dolomitiques*), whose breakage shows small bright dolomite crystals (carbonate of Mg and Ca);
- **siliceous stones** (*les pierres siliceuses*) are natural materials extracted from quarries, from which we can distinguish granites, porphyries, trachytes, basalts, andesites, schists, sandstone, gneiss, flint, and grit stone.

BUILDING SYSTEM
Système de construction
Construction
The construction of a work with materials determined at the time of the study.

BUILDING TEST
Epreuve des ouvrages
Civil Engineering Structure
All tests allowing control of the good design and good carrying out of works by examination of their behavior under normal loads.
To avoid the exceeding design overloads, the work will not be exposed to permanent deformations or crackings that could have be detrimental for its aspect or its conservation. Tests can be:
- **dynamic test** (*l'épreuve dynamique*): operation that consists in making passing on the work

several times and at the different speeds of loaded convoys of a determined weight. One measures then sags with recording instruments (deflectometers, etc.);

▪ **static test** (*l'épreuve statique*): operation that consists to place on the work convoys loaded of a determined weight in most unfavorable places (bearings and middle of span). One measures, with deflectometers, for example, the bearing settlements together with the sag of the work in the middle of span.

Syn. with BRIDGE TEST

BUILDING TIMBER
Bois de charpente
Building Materials
A wood adapted to constructions. Syn. with LUMBER; STRUCTURAL TIMBER

BUILDING-IN
Encastrement
Carpentry
1. A jointing in which a wooden piece without tenon fits into the notch carried out in a larger piece.
2. A notch carried out in a wooden piece so as to lodge there the head of a bolt or a nut so as to surface the wooden face.
Syn. with ENCASED; SCARFING

BUILDING-SITE ELEVATOR
Ascenseur de chantier
Handling
A cable or toothed-rack apparatus to carry equipment, materials, and personnel when the building site is higher or deeper.

BUILDING-UP WELD
Rechargement; Building-up
Welding
Syn. with RECHARGING; SURFACING WELD

BUILT DURABILITY
Durabilité d'un ouvrage
Civil Engineering Structure
The expected or estimated life of a work that is a function of many factors, including conditions of execution at the time of the construction, nature of materials used, exposure to the inclemencies, conditions of service, etc.

BUILT OUT
Hors-d'oeuvre *ou* Hors oeuvre
Construction
A work independent from another; that is outside. Syn. with OUTWORK; PROJECTING

BUILT STONE
Morceau taillé
Building Materials
A stone ready for being implemented. Syn. with DRESSED STONE

BUILT-UP COLUMN
Poteau composé
Construction
A metal element of several joined sections or a web and corner irons strengthened if necessary by flanges. This type of stanchion can be joined by riveting or welding.

BUILT-UP GIRDER
Poutre composée
Construction
Syn. with COMPOUND GIRDER

BUILT-UP ROOFING
Complexe d'étanchéité; Etanchéité multicouche
Tightness
Syn. with WATERTIGHTNESS COMPLEX. See MULTIFILM COPING.

BUILT-UP WELD
Beurrage
Welding
Treatment for a metal part that consists in laying down on its surface several coats of weld metal by welding before being united by welding with another piece.

BULB
Bulbe
Foundation
The bulge at the bottom of a bored pile.

BULB FLAT BAR
Plat à boudin
Metallurgy
A flat bar of great width (between 80 and 430 mm) whose transverse section comprises a bulb. This product is sometimes called *flat with bulb* or *Dutch profile.*

BULB OF EQUAL PRESSURE
Bulbe de pression égale
Foundation
The stress variation in the ground in-depth caused by a load such as a footing. These bulbs are all more significant as the foundation is larger. Syn. with PRESSURE BULB

BULGE
Bombement; Bouffer; Ventre
Civil Engineering Structure; Defects
1. A geometrical anomaly of a work characterized by a convex surface deformation. The bulge can result from thrust or unstable form phenomena. It can exist originally or result from an evolution, and it may have an effect on walls or on the vault (in the case of an arched structure). Syn. with SWELL
2. Syn. with SWELL when one speaks of a rendering or a wall that is bulging.
3. The more or less important deformation of masonry - concave or convex - in the facing or sidewall of a construction.
4. The convex deformation resulting from the thrust or bulging of materials in construction.
See Figure 52

BULGE FORWARD
Forjeter
Construction
To erect projecting out of the alignment of the neighboring constructions. Syn. with JET OUT; PROJECT

BULGED WOOD
Bois tors
Building Materials
Syn. with WOOD WITH CROOKED FIBERS

BULGES
Surépaisseur
Work
Syn. with ALLOWANCE

BULGING
Soufflure
Defects (Masonry)
A localized bulge of a rendering on a wall due to a defect of adhesion.

BULGING WALL
Mur soufflé
Defects (Construction)
A work whose facing is separated compared with the body of masonry and that presents a certain convexity.

BULK
Foisonner
Metal Construction; Earthwork
To increase in volume.

BULK DENSITY
Masse volumique apparente
Building Materials
The compact set of a body per unit of volume (including voids between elements) expressed in kg/m^3.

BULK DENSITY OF A DRY SOIL
Poids volumique du sol sec
Geotechnics
The weight corresponding to the quotient of the weight of solid particles by the total bulk of soil.

BULK DENSITY OF A SOIL
Poids volumique d'un sol
Geotechnics
The weight corresponding to the quotient of the full weight of the soil by its volume.

BULK DENSITY OF SOLID PARTICLES OF A SOIL
Poids volumique des particules solides d'un sol
Geotechnics
The weight corresponding to the quotient of the weight of solid particles by their bulk.

BULKING
Foisonnement
Earthwork
The increase of the apparent bulk of earth after extraction by digging up, excavation with the spade, etc.
Materials constituting the undisturbed soil are indeed compressed on the spot as the effect of their peculiar weight and the intervention of atmospheric agents, notably rain. The performance of the earthworks has for effect to split them and to increase their volume. Syn. with INCREASE IN VOLUME; SWELLING

BULKMETER
Volucompteur
Equipment for Measure and Control
A volumetric measuring device of flow, batching of liquid, equipping some injection plants.

BULLDOG SPEAR
Arrache-tube
Equipment and Tools
Syn. with DRAWER PIPE; PIPE CATCH

BULLDOZER
Bulldozer; Bouteur
Equipment and Tools
Syn. with EARTHMOVER

BULL'S EVE
Oeil-de-boeuf
Metallography
The structure of certain malleable (cast) irons characterized by graphite nodules surrounded by ferrite crystals and separated by areas of perlite.

BUMP
Cassis
Sanitary Engineering and Drainage
Syn. with OPEN GUTTER (ACROSS ROAD)

BUMPER
Heurtoir
Construction
1. The stop of a lock gate.
2. A framework or pedestal bearing a shock absorber buffer and that serves to stop in the limit switch a traveling crane, a mobile tower crane on rails, a gantry crane, etc.

BUND
Merlon
Civil Engineering
The earth half-cone ending or beginning the end of an embankment at the surroundings of a bridge.

(Anchor) BUOY
Corps mort
Construction
Syn. with FIXED MOORING

BURDEN
Ciel
Quarry
The vault of an underground exploitation (quarry) located at a slight depth but of big dimensions. Syn. with ROOF

BURDEN STONE BLOCK
Forme
Building Materials
A large stone block stemming from quarry roofs.

BURIED ABUTMENT
Culée perdue
Construction
Any masonry or concrete abutment sunk in the ground. This type of construction mostly equips vaulted works (surbased vault or basket vault) and never comprises wing walls. Syn. with DEAD ABUTMENT

BURIED BENT
Pile-culée
Construction
The end piling constituted by a gravel guard and a bridge pier cap forming a transverse head beam on buried posts which replace the front wall.

BURIED LENGTH
Fiche d'un poteau de blindage
Temporary Construction
The part of a post restrained in strong ground. The length of set is calculated to guarantee the stability of the sheeting resting on the post as the effect of earth pressure. Syn. with EMBEDDED LENGTH

BURIED PILING
Palée enterrée
Construction
A construction embedded in the ground throughout its height and constituted in the most bread-and-butter of:
- a bearing breastsummer of the deck forming the top transverse head beam of the piling;
- posts (or columns) restrained at the base inside the footing and in head inside the breastsummer;
- a footing.

BURIED TILTING PIER
Contre-béquille
Construction
A buried oblique bearing of a typical work PSBQ (presstressed or reinforced concrete bridge with leg-frame support). **See Figure 53**

BURIED WORKS WITH METAL COVER
Ouvrages enterrés à couverture métallique
Civil Engineering Structure
A category of former structures which one mostly meets on the Parisian subway. These works make the office primarily cover for stations, the cuts or works of connection. They are located at a low depth under the roadways and sidewalks. Their span ranges from 7 to 18 m. Most representatives consist of a network of main beams regularly spaced and resting of share and other on the sidewalls. These beams are made of flats (web and flanges) and of corner irons (connection web-flanges) jointed by rivets. The distance pieces perpendicularly connect them between them and themselves are joined by jack arches in bricks covered with concrete. (The distance pieces also are sections reconstituted by riveting.)

BURIN
Echoppe; Burin
Equipment and Tools
1. A steel tool with an oblique point and rounded handle for carving stone and engraving metal.
2. Syn. with CHISEL; COLD CHISEL; CUTTER

BURL
Ronce
Defects (Building Materials)
Syn. with BURR; CURL

***BURMISTER* TEST**
Essai *Burmister*
Geotechnics
A method of bearing capacity test of soils under a rigid coating in which the ground is supposed to be an elastic semi-indefinite solid. The Burmister test consists in making measurements to determine one or more moduli of soil elasticity.

BURNED IRON
Fer rouverain
Metallurgy
A metal containing sulfur and arsenic that solders hardly, that is brittle to hot, and whose breakage is dull and deepened.
Burned iron is a low-grade to the strong iron; it is subdivided into two grades:

- **soft irons** (*les fers tendres*)*:* foliated texture, very brittle to cold, that only worked to hot;
- **hybrid irons** (*les fers métis*)*:* very fragile, unweldable and practically unusable in steel construction.

Syn. with RED SHORT IRON

BURNING OFF
Brûlage
Metallurgy
A process intended for removing the smithsonite that covers a metal piece. The removal is made by abrupt heating of the carboned surface with an oxyacetylene multibeak blowpipe having an intensive flow. The coat of smithsonite becomes overheated more rapidly than the underlying metal and causes, by difference of expansion, a detaching of the surface oxide. Burning off is also used to remove old paints.

BURNING POINT
Point de combustion
Building Materials
The minimal temperature to which a body must be heated so that it takes fire when it is put in contact with a flame (bituminous binders are subjected to the test of burning point).

BURNISHING
Rétreinte
Metallurgy
A process of metal shaping in which the action of the hammer is exerted in the direction of the preferential dimensional reduction - most frequently from the center of the part toward the periphery - by circular successive passes and to telling blows. It is for the latter reason that the burnishing can be compared with a directed flow of metal without modification of thickness.

BURNT LIME
Chaux vive
Building Materials
Syn. with QUICKLIME

BURNT WOOD
Bois arsin
Building Materials
A material having undergone the aggression of fire.

BURR
Broussin; Ronce; Barbe, Bavure; Barbure
Defects
1. A wood defect due to the disturbed growth of the tree by the existence of a foreign body bringing about a tangle of fibers. Syn. with BURL; CURL
2. Barb remaining on a metal part after drilling, sawing; etc.
3. Syn. with BARB; SCALE; SMUDGE

BURR
Ebarber
Metallurgy
To suppress with a shave hook the smudges, burrs and other useless protrusions of a piece of foundry.

BURSTING
Explosion
Explosives
Syn. with BLAST; EXPLOSION

BURSTING CHARGE
Charge d'explosifs
Explosives
All explosives placed in a blasthole and whose quantity was determined by calculation.

BUSH
Cône réducteur
Materials
A piping piece to be screwed, welded or pasted intended for connecting two pipes of different diameters. Syn. with REDUCER

Boucharder
Equipment and Tools
To work with the granulating hammer. Syn. with GRANULATE

BUSH HAMMER
Boucharde; Rustique; Talot
Equipment and Tools
1. Hammer of quarryman and builders with two squared heads and from 4 to 64 diamond cutters. One hits the facings of stone, of concrete, etc., which were already worked over with pickax. Syn. with GRANULATING HAMMER. **See Figure 54.**
2. A toothed hammer (or comb hammer) whose teeth are very isolated (5 to 6 mm) and which is used for cutting hard stones. **See Figure 55**
3. A stonecutter's tool that is actually a granulating hammer whose heads contain 4 to 16 diamond cutter teeth.

BUSH HAMMERING
Rusticage
Masonry
The nidge of the stone between carvings to make the joint rough and to make mortar adhere more easily.

BUSH HAMMERING OF CONCRETE
Bouchardage du béton
Construction of R. C and P. C.
Superficial treatment for concrete with a granulating hammer with intent to show aggregates. The result of this operation is to obtain an architectural concrete.

BUSH HAMMERING OF STONE
Bouchardage
Masonry
Smoothing away of the surface of a stone with a granulating hammer. Syn. with BUSHHAMMER FINISH; FACING

BUSH-HAMMER FINISH
Bouchardage
Masonry
Syn. with BUSH HAMMERING OF STONE; FACING

BUSH-HAMMERED STONE
Pierre bouchardée
Masonry
A material whose face is dressed with a granulating hammer.

BUSHING
Fourrure
Construction
Syn. with FISHPLATE; LINING; PACKING.

BUTT
Rabouter; About; Abouter
Work; Masonry; Construction
1. To put end to end two pieces of timber, metal, etc.
2. Syn. with END; GRAFT; JOIN END TO END

BUTT IRON
Matoir
Equipment and Tools
A tool for caulking weld beads. Syn. with MATTING TOOL

BUT-LOG
Bille de pied
Building Materials
The low part of the log of the tree that goes from the foot at the large first connects or the first crown.

BUTT STRAP
Couvre-joint
Construction
Syn. with BATTEN; BEAD; CAPPING STRIP; COVER PLATE; COVER STRAP; FILLER; JOINT COVER; TRIM

BUTT WELD
Ecolleter
Welding
To weld two steel parts end-to-end.

BUTT WELDING
Ecollage; Soudure bout à bout
Welding
1. A welding for uniting end-to-end two parts of dead soft steel.
2. A joining for uniting two parts in the prolongation one of the other; they are generally X or V-shaped.

BUTTER COAT
Beurrage
Masonry
A film covering the periphery of a drilling carried out in a masonry or concrete. This film-forming dough is made up of water and fines coming from the material drilled. The formation of this dough is due either to the necessary water supply for cooling the drilling tool tothe water contained in the material drilled.
The butter coat can constitute an obstacle to the injection work by preventing the grout from penetrating into fissures or to mask the fissures that will be undetectable with the endoscope, which can falsify the diagnosis on the real state of the sounded work.

BUTTERED DRILLING
Forage beurré; Trou beurré
Work
A boring whose periphery is covered by a kind of paste; this one forms during the drilling of a hole in the masonry by mixing of the cooling water with debris of stone, notably of chalky stones.
Fines coming from the grinding of the material by cutting edge is mixed with the water used for the drilling and form cement that adheres on the walls of the hole. At the time of the work of injection, this butter coat can present the disadvantage not to leave to penetrate the grout in the body of the masonry because the cracks or hairline cracks can be sealed by this paste; this is why a washing the drilling with water is indispensable before beginning injection.

BUTTERED JOINT
Joint beurré
Masonry
Space of a width higher than the normal in a opus incertum work.

BUTTERFLY NUT
Ecrou à oreilles
Equipment and Tools
A nut having two flat widely projecting pieces such that it can be readily tightened manually. Syn. with WING NUT

BUTTERMILK
Bât-beurre
Equipment and Tools
Syn. with PACK BUTTER

BUTTERY CONCRETE
Béton plastique
Building Materials
Syn. with PLASTIC CONCRETE

BUTTING
Aboutement
Construction
Syn. with GRAFTING; JOINING

BUTTONHEAD
Bouton; Goutte de suif
Construction; Equipent and Tools
1. A bulge at the end of an elementary thread of a steel prestressing cable. It is made by steel

pressing. It is used to seize, tighten, and anchor the cables.
2. A widened and bulged-shaped head of a screw or a rivet.

BUTTONHEAD RIVET
Rivet à tête goutte-de-suif
Metal Construction
A rivet whose head has the shape of a spherical cap.

BUTTRESS
Etayer; Arc-bouter; Contrebutée: Contrebuter
Temporary Construction; Civil Engineering Structure; Foundation; Work
1. To support, reinforce with props. Syn. with SHORE (UP); STAY (UP); STRUT; UNDERPIN
2. Syn. with PROP UP; SUPPORT
3. In the underpinning of foundations, strengthening of the base of foundations by the addition of a concrete block so as to struggle from the slipping by the base. **See Figure 56**
4. To annihilate the effects of the thrust of a vault or a wall by the construction or putting into place of elements intended for opposing it an opposite thrust.
5. To carry out a buttress at the base of a foundation.

BUTTRESS
Contrefort; Antéride; Eperon; Boutant; Bracon
Construction
1. The overhanging of a wall in elevation (of masonry or concrete) compared with all or part of a mass, a wall, with a view to increase the resistance of this last.
2. A massive construction in elevation and overhanging on the side face of a viaduct pier being able to prolong up to the top level of the tympan (under certain circumstances, the buttress has simply been erected on the tympan directly below of a pier).
3. A masonry part standing out on the facing of a wall bonded with it, and intended for strengthening this wall allowing it to withstand transverse thrusts.
4. A masonry or concrete buttress, added as a consolidation element to a construction (wall, pier, etc.). The buttress is erected projecting on the outside main plane of the construction to be consolidated.
5. Syn. with STAY
6. A sort of buttress made of a beam intended for supporting the wall of a construction whose foundations are excavated.
7. An inclined element of reinforced concrete working in compression which supports the deck of a prestressed concrete portal bridge.

BUTTRESS OF A PIER
Dosseret
Construction
A buttress designed to support an unsteady wall. Syn. with PILASTER STRIP

BUTTRESS PILLAR
Pilier adossé
Construction
A built-in or added element to a wall with intent to give it a better base or to buttress the thrusts.

BUTTRESSING OF A DAM
Cerce
Temporary Constructions
A propping-up device of curved form, made of concrete, reinforced concrete, or steel used in the sheetings or circular cofferdams. Syn. with HOOPING BUTTRESS

BUTYL RUBBER
Caoutchouc butyl
Materials
A gasproof synthetic rubber.

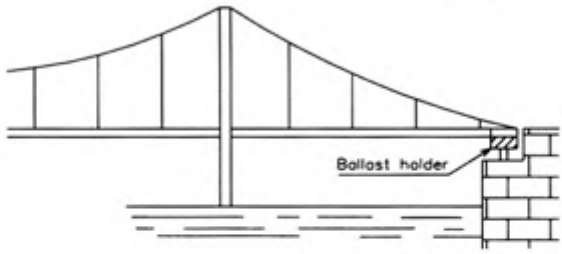
BYE-CHANNEL
Cunette de ceinturage
Sanitary Engineering and Drainage
Syn. with DIVERSION CUT; GARLAND DRAIN

BYPASS
Rocade
Civil Engineering Structure
A way, generally a road, of skirting a site. Syn. with LATERAL ROAD; PARALLEL ROAD

Figures of the letter

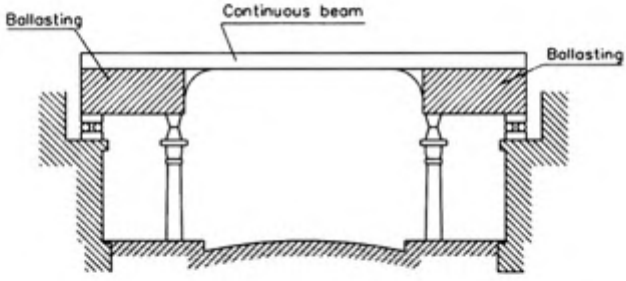


Fig. 1



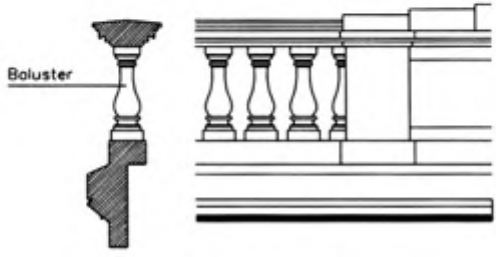
BALLAST HOLDER

Fig. 2



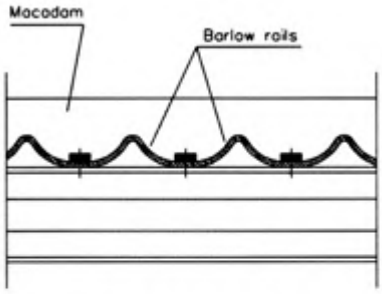
BALLASTING

Fig. 3



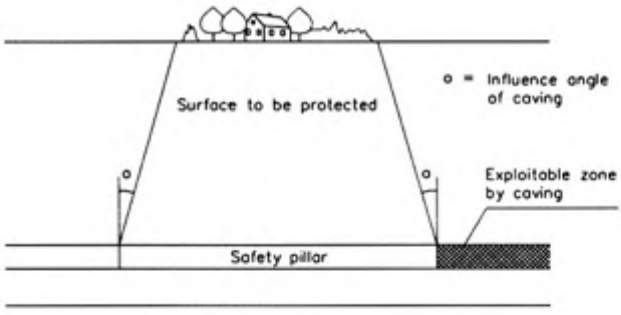
BALUSTER

Fig. 4



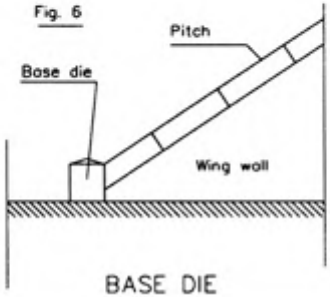
BARLOW RAIL

Fig. 5



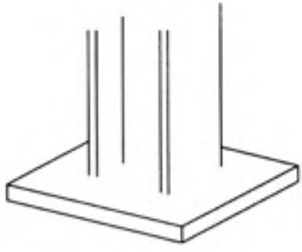
BARRIER PILLAR

Fig. 6



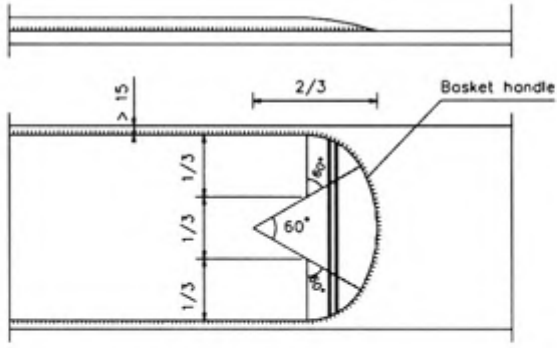
BASE DIE

Fig. 7



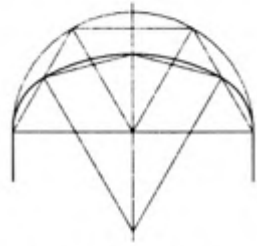
BASE PLATE

Fig. 8



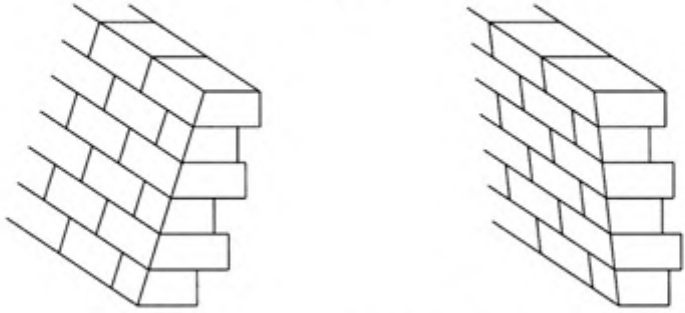
BASKET HANDLE

Fig. 9



BASKET HANDLE

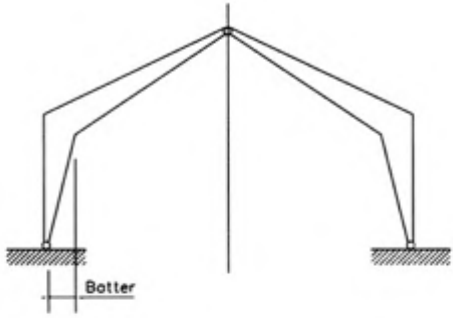
Fig.10



Batter and counterbatter

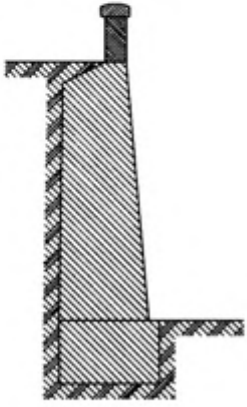
BATTER

Fig.10a



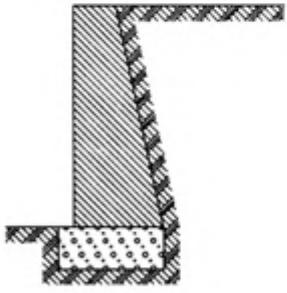
BATTER

Fig.11



Batter wall with parapet
and integrated foundation slab

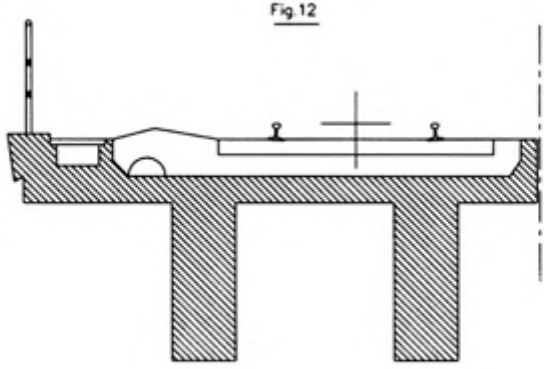
Fig.11a



Batter wall

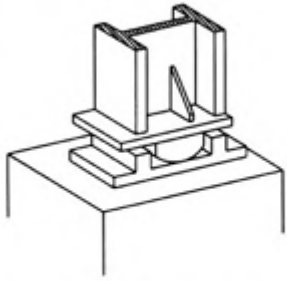
BATTER WALL

Fig.12



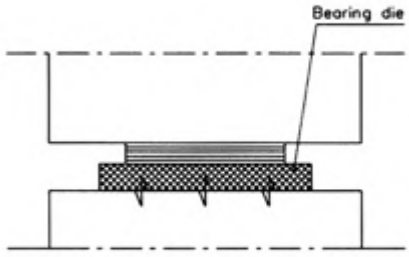
BEAM–AND–SLAB FLOOR

Fig.13



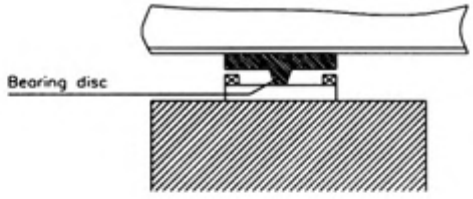
BEARING BLOCK

Fig.14



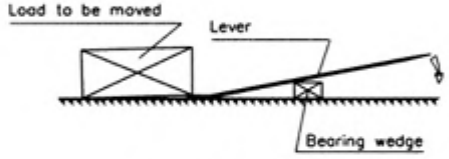
BEARING DIE

Fig.15



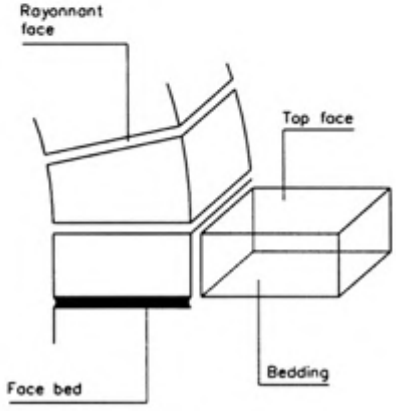
BEARING DISK

Fig.16



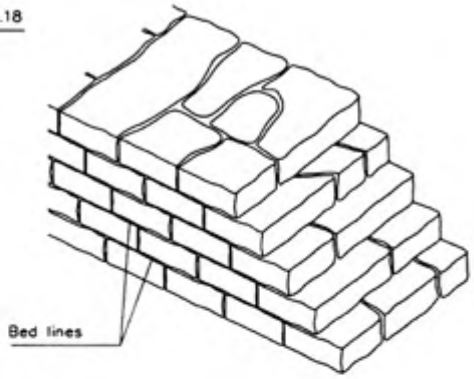
BEARING WEDGE

Fig.17



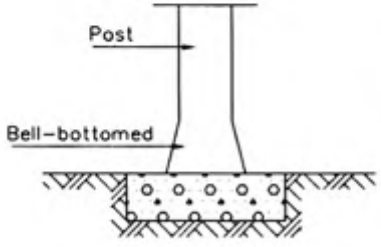
BED

Fig.18



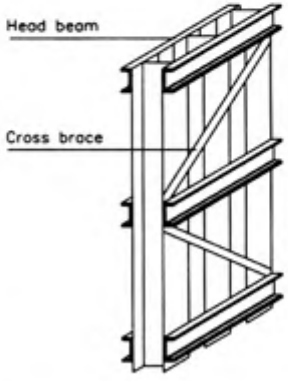
BED LINE

Fig.19



BELL-BOTTOMED

Fig.20



BENT OF STEEL (COLUMN)

Fig. 21

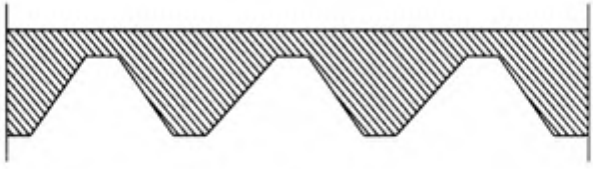
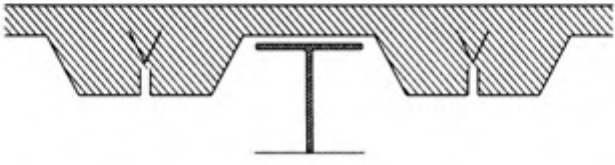
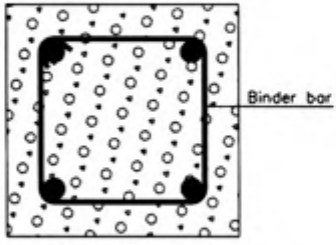


Fig. 21a



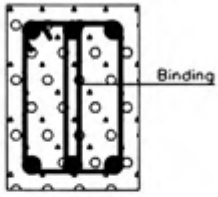
BENT STEEL SHEETING

Fig. 22



BINDER BAR

Fig.23



BINDING

Fig. 24

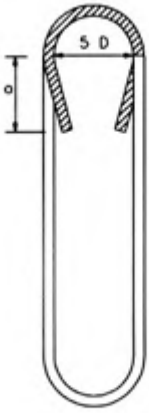
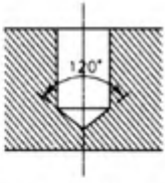
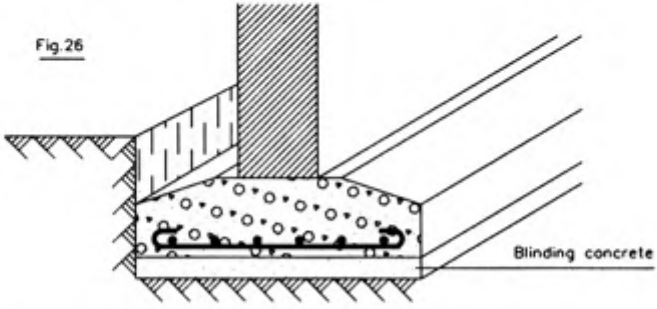


Fig.25



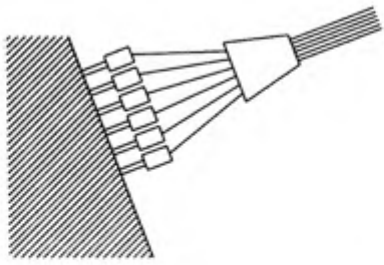
BLIND HOLE

Fig.26



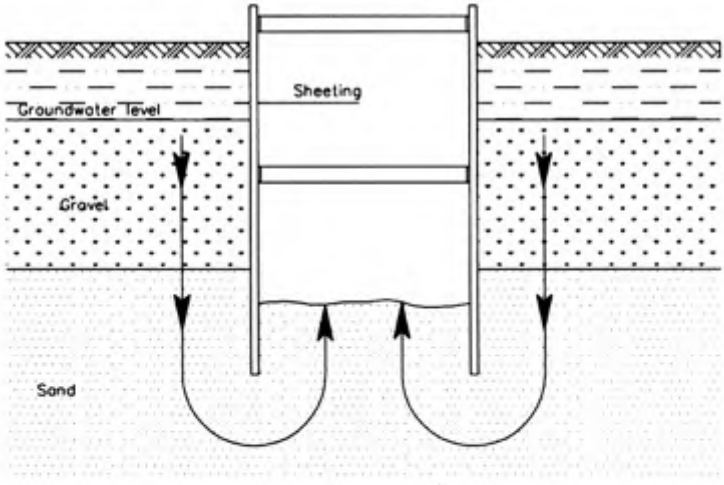
BLINDING CONCRETE or MUDMAT

Fig.27



BLOOMING COLLAR

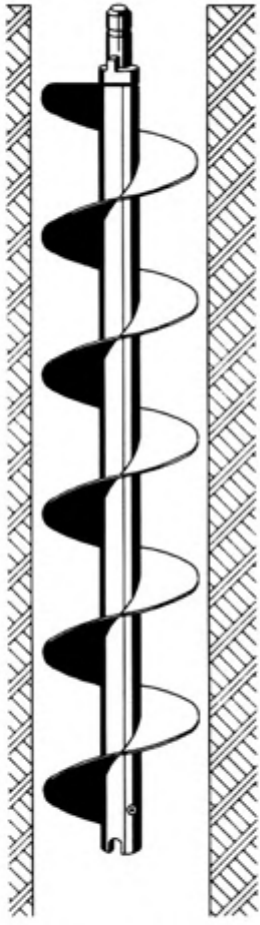
Fig.28



Blow in a timbered excavation

BLOW

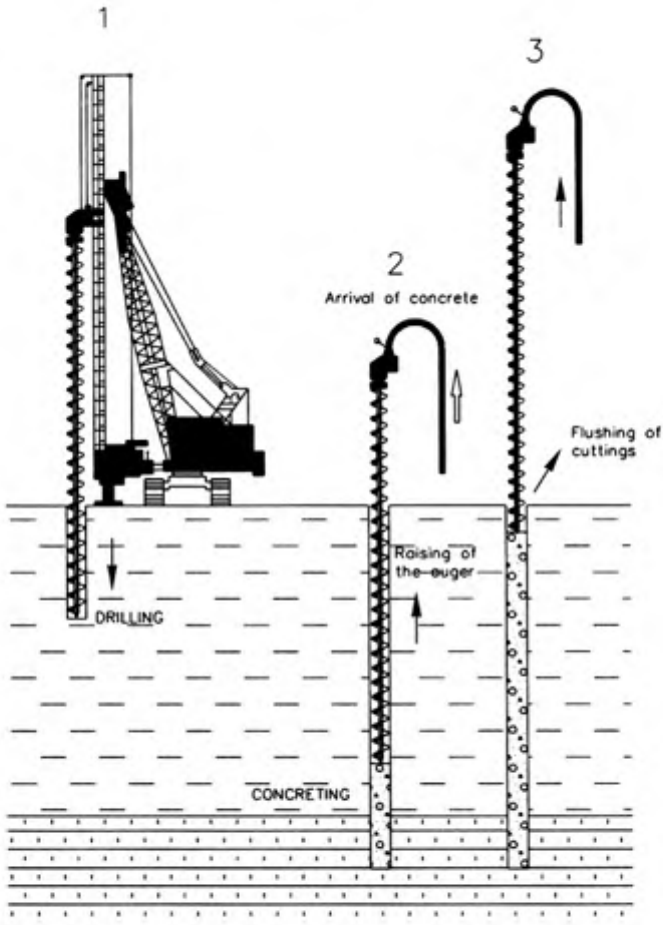
Fig. 29



Lengthening auger

BORER

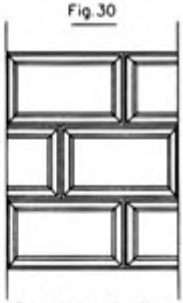
Fig 29a



Continuous auger

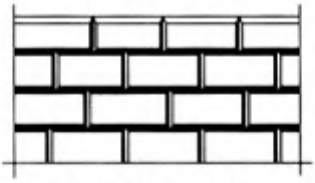
BORER

Fig. 30



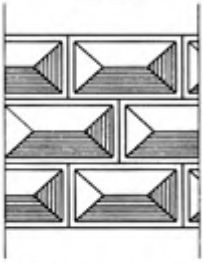
Cavetto rusticotion

Fig. 30a



Chamfered rusticotion

Fig. 30b



Diamond shaped work

BOSS

Fig. 31

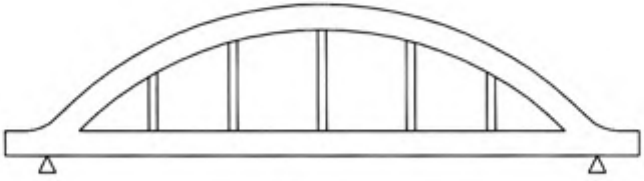
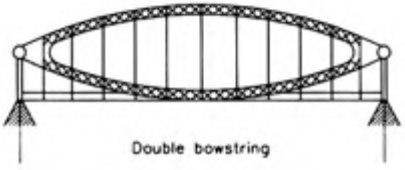


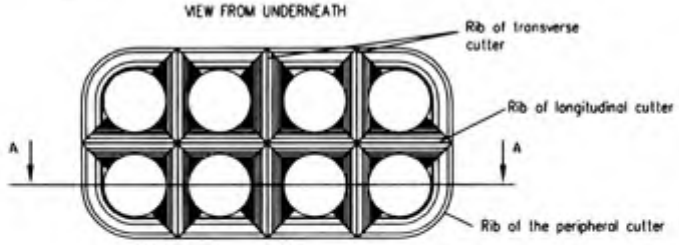
Fig. 31a

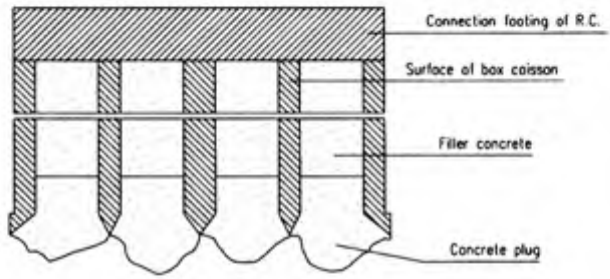


Double bowstring

BOWSTRING

Fig. 32

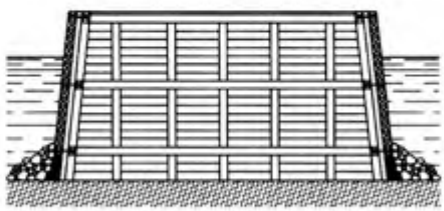




Cylinder open box

BOX CAISSON

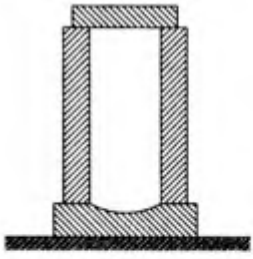
Fig. 32a



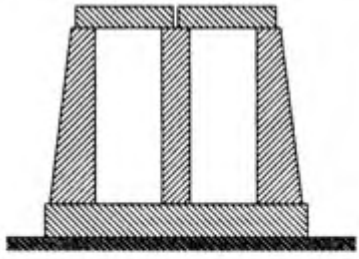
Waterproofing caisson

BOX CAISSON

Fig.33



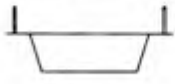
Single box culvert



Double box culvert

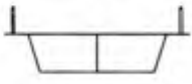
BOX CULVERT

Fig.34



1 Caisson

Fig.34a



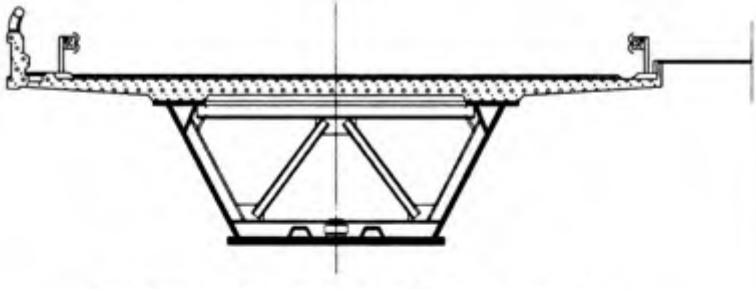
1 caisson with 3 web

Fig.34b



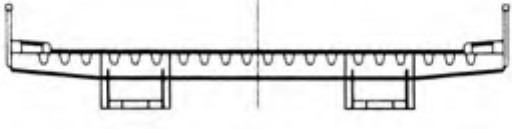
2 caissons

Fig.34c



Bridge platform with metal box and R.C. slab for roadway bridge

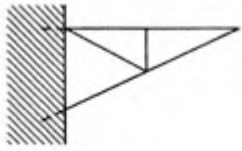
Fig.34d



Metal bridge platform with box girders and orthotropic slab

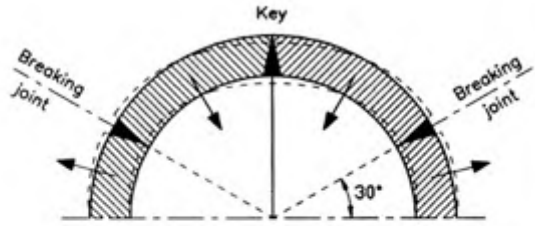
BOX GIRDER DECK

Fig.35



BRACKET

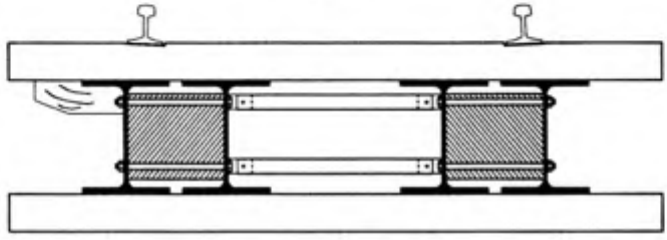
Fig.36



Breaking of a semi-circular vault

BREAKING

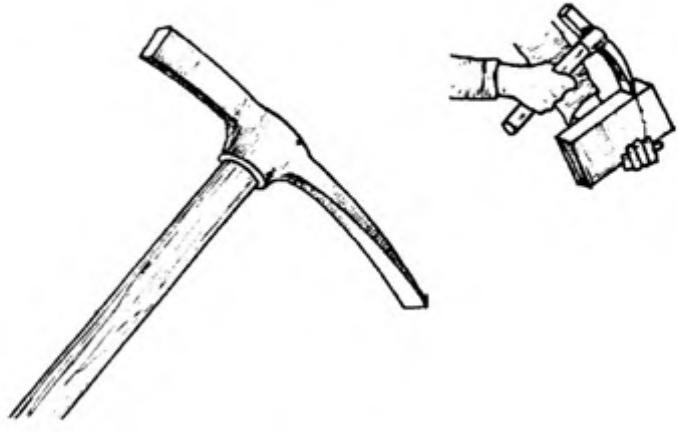
Fig.37



Bressumer in joists

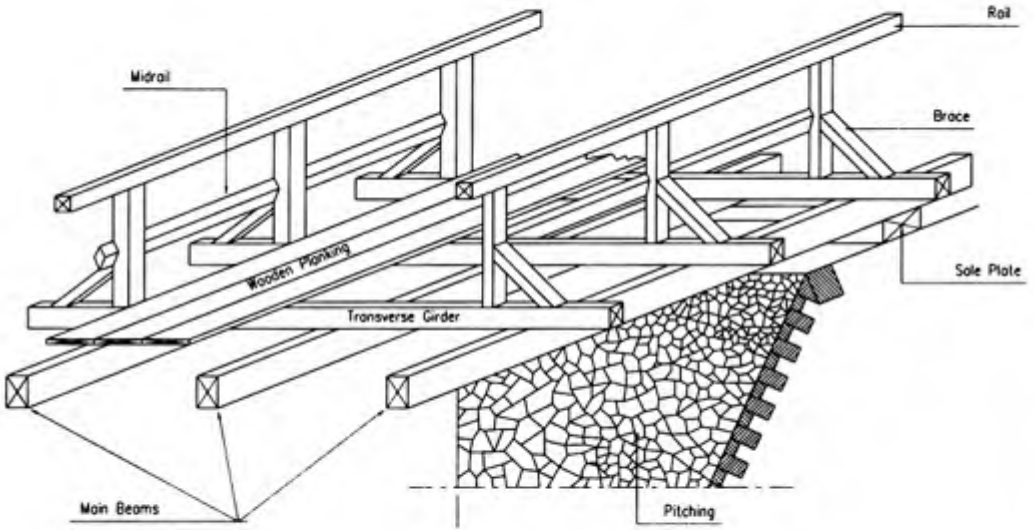
BRESSUMER

Fig.38



BRICK AXE

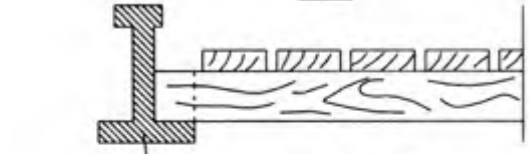
Fig. 39



Wooden Bridge

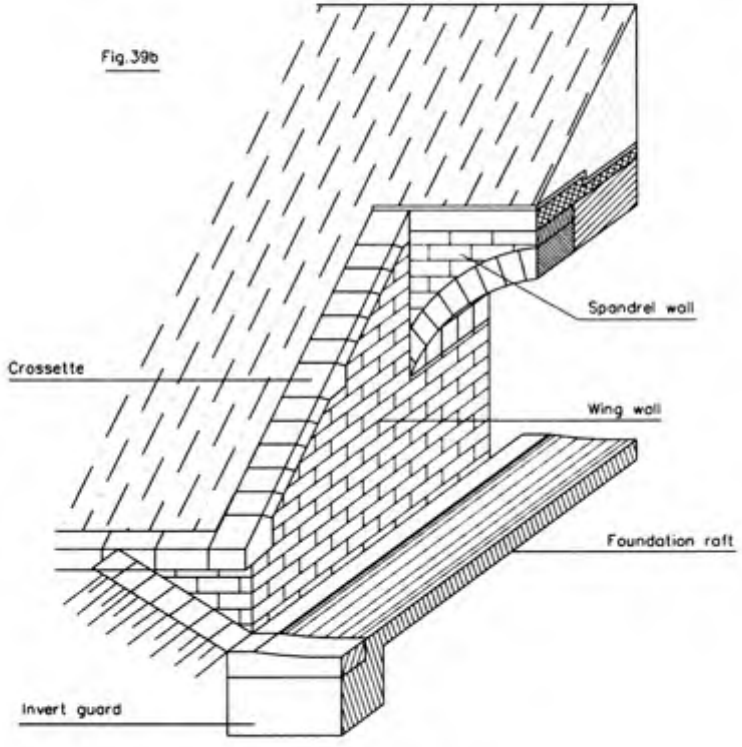
BRIDGE

Fig.39a



Cast iron bridge

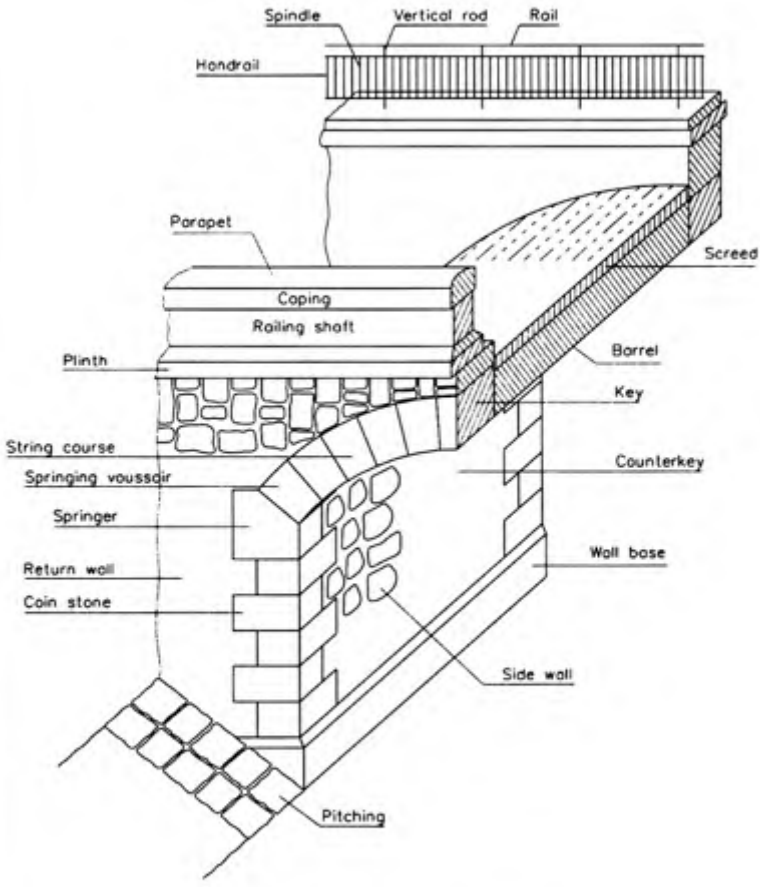
Fig.39b



Masonry bridge with wing wall

BRIDGE

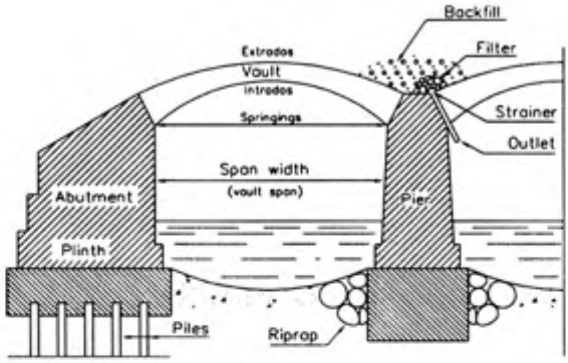
Fig.39c



Masonry bridge with return wall

BRIDGE

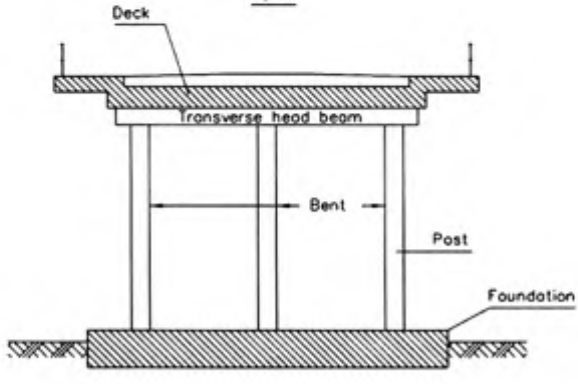
Fig.39d



Masonry bridge (schematic profile)

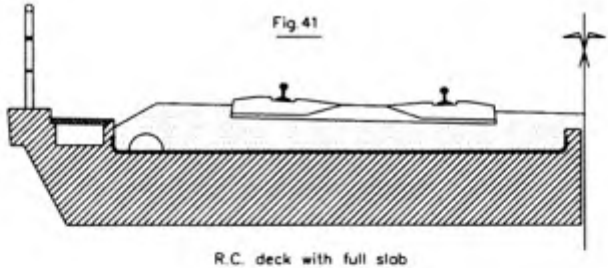
BRIDGE

Fig.40



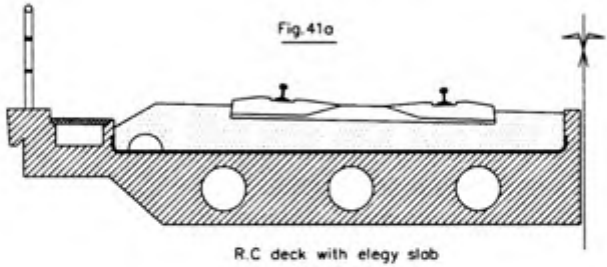
BRIDGE BENT

Fig.41



R.C. deck with full slab

Fig.41a



R.C deck with elegy slab

Fig.41b



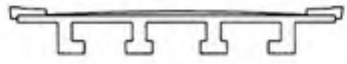
Bridge platform of R.C. or P.C. with beam and slab floor

Fig.41c



Bridge platform of R.C. or P.C. with ribbed deck

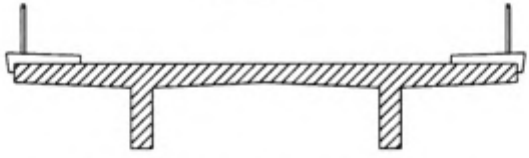
Fig.41d



Bridge platform of R.C. or P.C. with beam and slab floor and with talon beams

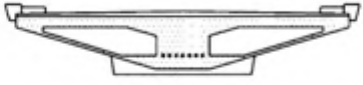
BRIDGE PLATFORM

Fig. 41e



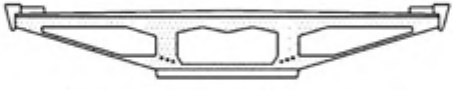
Platform bridge with girders and large cantilever

Fig. 41f



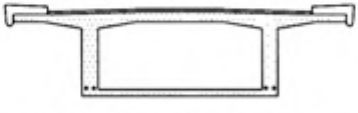
Bridge platform with R.C. or P.C. caisson

Fig. 41g



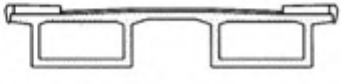
Bridge platform with R.C. or P.C. caisson

Fig. 41h



Bridge platform with R.C. or P.C. caisson

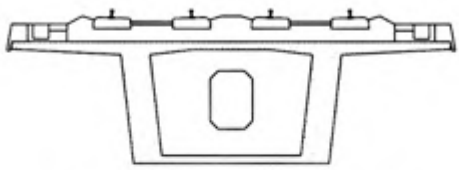
Fig. 41i



Bridge platform with R.C. or P.C. caisson

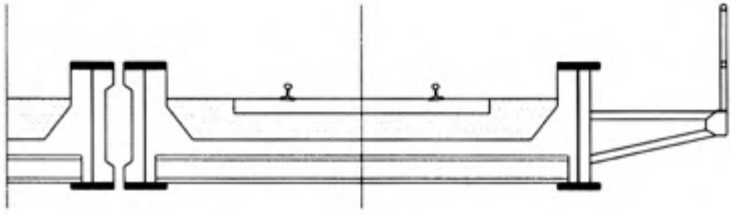
BRIDGE PLATFORM

Fig. 41 j



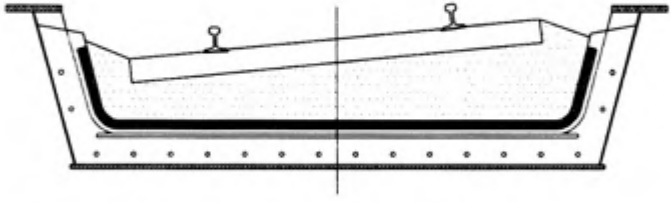
Bridge platform with R.C. or P.C. caisson

Fig. 41 k



Bridge platform with lateral girders and R.C. slab

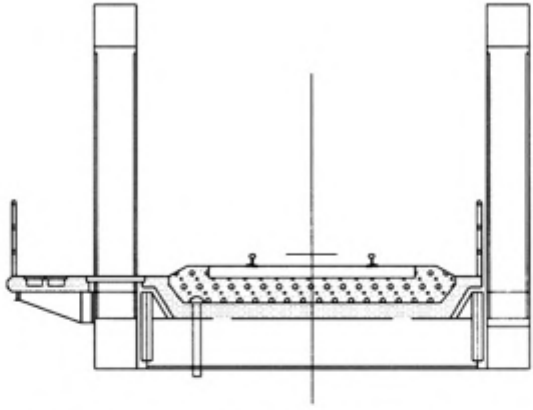
Fig. 41 l



Bridge platform with lateral girders and tilting web with concrete lining called "bac à fleur"

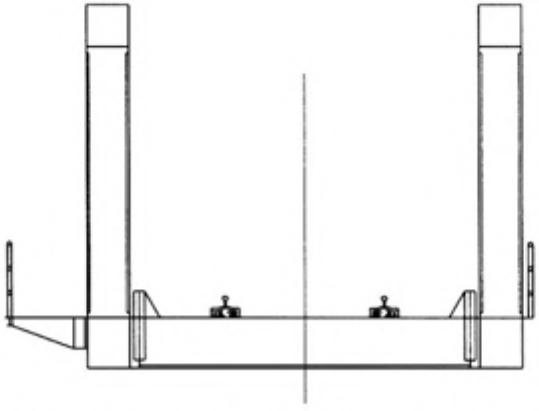
BRIDGE PLATFORM

Fig. 41m



Bridge platform with lateral lattice girders and R.C. slab

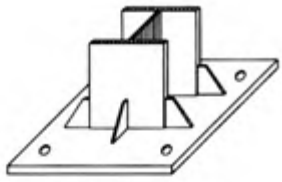
Fig. 41n



Bridge platform with lateral lattice girders and direct track laying

BRIDGE PLATFORM

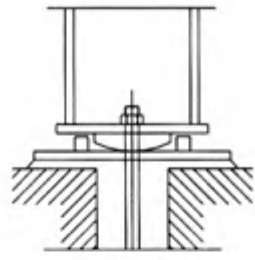
Fig 42



Fixed bearing

BRIDGE SUPPORT

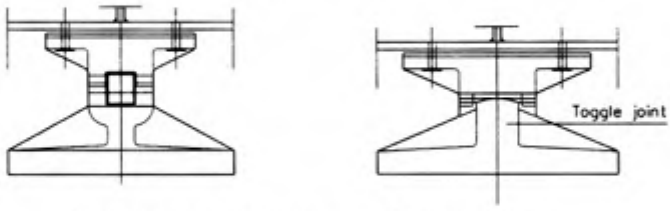
Fig. 43



Articulated bearing

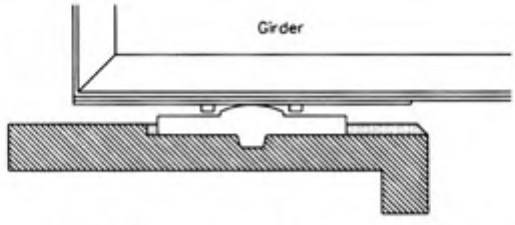
BRIDGE SUPPORT

Fig. 44



Fixed bridge-support apparatus with 2 bearing balance

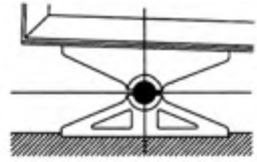
Fig. 45



Fixed bridge-support apparatus for metallic bridge

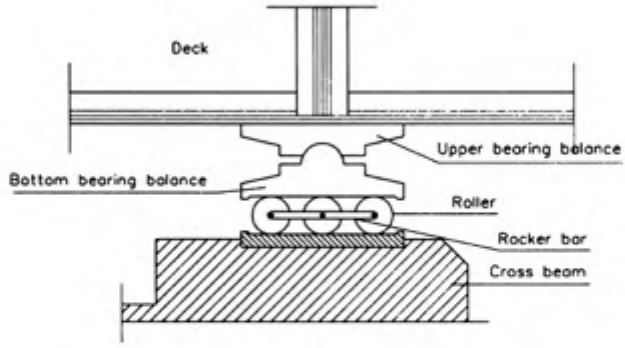
BRIDGE-SUPPORT APPARATUS

Fig. 46



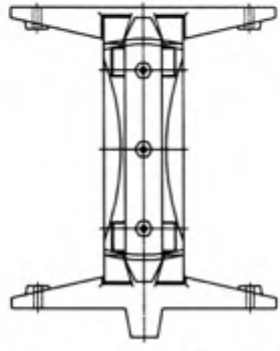
Fixed bridge-support apparatus
with 2 hinge bearing balances

Fig. 47



Moving bridge-support apparatus with rollers

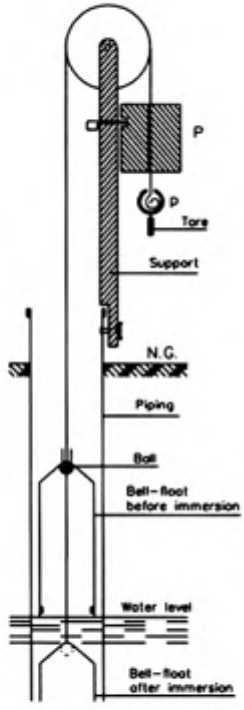
Fig. 48

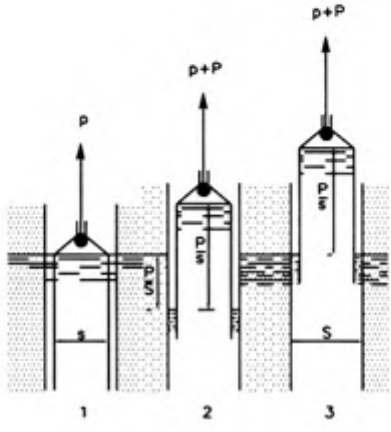


Moving bridge-support apparatus with single roller

BRIDGE-SUPPORT APPARATUS

Fig. 49

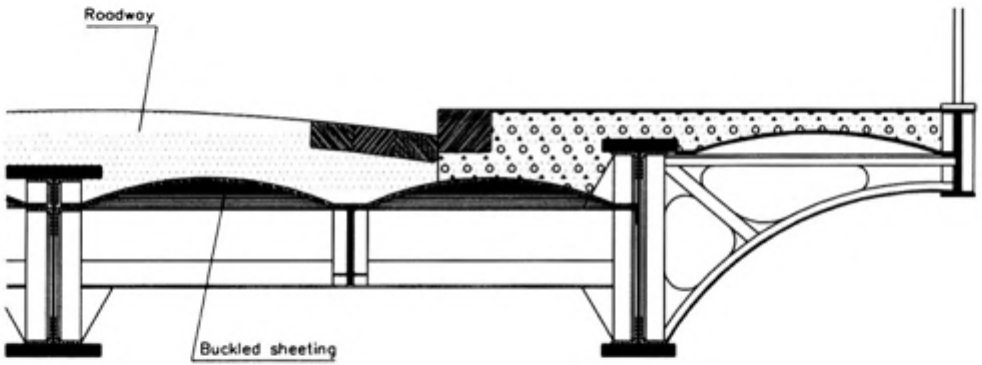




1 – Immersed bell, balanced by the tare p
2 – Instantaneous sinking due to the releasing of the counterbalance P
3 – End of the ascent

BRILLANT PERMEAMETER

Fig. 50



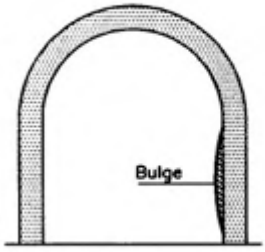
BUCKLED SHEETING

Fig.51



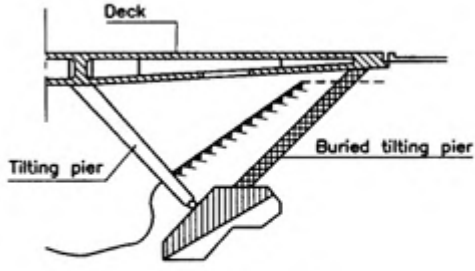
BUCKLING

Fig.52



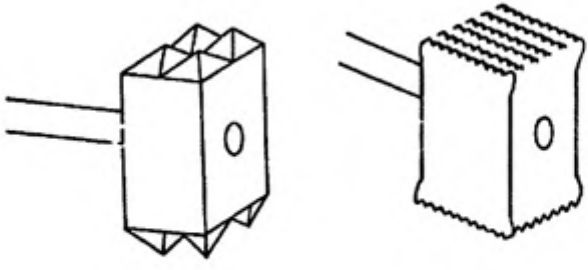
BULGE

Fig.53



BURIED TILTING PIER

Fig.54



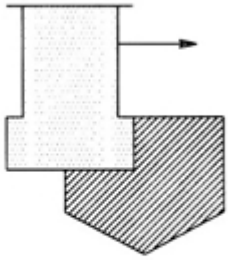
BUSH HAMMER

Fig.55



BUSH HAMMER

Fig.56



BUTTRESS



CABLE
Câble
Materials; Construction
1. A semi-flexible rope formed by many thin steel wires to helicoid rolling up either in a single strand, or in several twisted together strands between them. Cables can be metallic, of natural fibers, or synthetic fibers.
We can distinguish:
- **no-spinning cable** *(le câble antigiratoire),* obtained inverting the direction of the spiral of several layers of strands. It is mainly reserved to the handling to avoid the rotation of the suspended loads;
- **locked-coil rope** *(le câble clos),* which is a spiroid or strand rope cable whose external layers are formed by shaped wires intended, by a best contact, for limiting the water penetration inside the cable;
- **rope in a ring** *(le câble en couronne),* formed by a not contiguous set of cables whose space is kept by a core at the necklaces level;
- **twisted rope** *(le câble torsadé)* formed by an assembly of strands or stranded cables rolled between them possibly around a central strand.

Syn. with ROPE; WIRE ROPE

2. In a suspension bridge, cable that makes up of a set of cables supporting the deck. Cables make up of the main elements of the work.

CABLE BOTTOM
Culot de câble *ou* d'ancrage
Construction
A piece constituting the end of a wire rope, by which this cable is fixed or pick up on a part of the work.
In a suspension bridge, the cable bottom is of use, through the channel of the anchorage tie rods, to ensure the connection between the end of the cable, on the one hand, and the anchor block or cable saddle of the pylon, on the other hand. It is usually formed by a cast steel piece, with a truncated cavity into which wires of the cable blooms in wig and are kept by a fuse alloy filling up the cavity; the cable bottom comprises ears where fasten the anchorage tie rods. In cable-stayed bridges, there exists bottom cables for guys. Syn. with ANCHORING BOTTOM. **See Figure 1**

CABLE CLAMP
Attache de suspente
Construction
Syn. with FASTENING

CABLE COLLAR
Collier d'attache
Construction
All pieces which allow the fastener of suspenders on the load-bearing cables, by tightening of these ones and that are arranged in layer or ring. In this last case, the necklace comprises a newel. Syn. with BRACKET

CABLE CONDUIT
Caniveau
Construction
A pocket located under a sidewalk or in a corbelled construction for the passage of various pipes and/or cables. Syn. with CABLE TROUGH;DUCT

CABLE CORE
Noyau
Construction
In a cable bridge, piece laid out at the middle of a fastener clip for keeping up the spacing of cables laid out in a ring.

CABLE DUCT
Gaine
Construction of P.C.
A tight outer layer embedded inside the concrete mass of a deck, a beam, etc., into which is positioned a steel prestressing cable; the latter being thus isolated from concrete. This arrangement allows the tensioning of the cable without hindering its lengthening and its sliding motion. Conduits, usually metallic, are as a rule formed by a strip iron rolled in helix and crimped or tubular. After tensioning of the cables, they are filled with cement grout (or other product) injected whose primary aim is to protect the cable from corrosion. Syn. with CABLE DUCT; SHEATH

CABLE OF THE OVERHANGING SEGMENT
Câble de fléau
Construction of P.C.
In a prestressed concrete bridge built by successive cantilevers, cable laid out at the vicinity of the top chord of the beams and that is tensioning following the progression of the setting up of the segments. Cables of overhanging segments are intended for countering the negative bending moments brought about by the construction of the consoles and for making each segment interdependent of the part of the deck already executed.

CABLE PITCH
Pas de câblage
Nomenclature of Materials
The pitch of the helix whereby a wire is rolled up in a cable.

CABLE SLEEVE
Manchon
Construction
Syn. with COUPLING SHELL; TRACK ROPE COUPLING

CABLE STAY
Hauban
Construction
A cable or set of cables, or also oblique rectilinear bars, connecting a pylon to a point of the deck in a cable-stayed bridge or some suspension bridges.
Cable stays are usually formed by locked-coil cables, comprising round wire strands covered with several layers of Z-shaped wires or cables with parallel or stranded wires, identical to the steel prestressing cables. Syn. with GUY ROPE.
See Figure 2

CABLE STAY ARRANGEMENT
Arrangement des haubans
Construction
In a cable-stayed bridge, the configuration of the guying system, which can be:
- **fan-shaped** *(l'arrangement en éventail),* in which all guys converge at the top of the support pylon;
- **semi-fan-shaped** *(l'arrangement en semi-éventail),* in which guys show an even arrangement at the top of the support pylon;
- **harp** *(l'arrangement en harpe),* in which all guys are parallel and regularly distributed on throughout the height of the support pylon.

CABLE STOPPER
Bosse
Construction of P.C.
Bulge at the end of a twisted steel prestressing cable, carried out by the insertion of concrete between the elementary wires of the cable beforehand untwisted.

CABLE STOPPING
Bossage
Construction
A shuttered concrete protrusion which enables for example the anchorage of a cable.

CABLE TROUGH
Caniveau
Construction
Syn. with CABLE CONDUIT; DUCT

CABLE TUNNEL
Galerie à câbles
Civil Engineering Structure
A mini-tunnel reserved to the underground crossing of electric cables which pick up on wall brackets or cable racks fastened on the sidewalls.

CABLES LAYER
Faisceau de câbles
Construction
1. The set of contiguous cables belonging to the same truss of a suspension bridge or to the same cable stay of a cable-stayed bridge.
2. Set of noncontiguous cables belonging to the same truss of a suspension bridge, or to the same guy rope of a cable-stayed bridge, and located transversely at the same level.

CABLEWAY
Aérocâble; Blondin
Handling
1. A building site aerial conveyor formed by two stationary or movable pylons supporting one or several load-bearing cables on which rolls a holder-skip crab emptying itself either by the bottom, or by swinging at the implementation point.
2. An installation conceived for the lifting and aerial transportation of materials, concrete, etc., when it concerns to get over a great breach or simply an important building site.
The principle is the following: a cable is connected at two or several auto-equilibrium or braced pylons. On this cable, rolls one (or more) drop-bottom bucket transporting materials to be implemented. The movement of transfer of the drop-bottom bucket is ordered by an endless tractor cable hooked at the drop-bottom bucket, passing on a free pulley of a pylon and returning to roll on a winch of transfer of the second (or last pylon). A third cable, said lifting, is fixed on the pylon and pass by two pulleys of the drop-bottom bucket, before returning to roll on a lifting winch; it carries the load by the intermediary of a pulley-hook system. For the concreting, the order of opening of the drop-bottom bucket is often remote-controlled. There exists four types of overhead cableways:
- **fixed aerial cableway** *(le blondin fixe),* with jigging pylon or no;
- **radial travelling overhead cableway** *(le blondin radial),* with two pylons, one fixed and one movable on railway track;
- **full travel(l)ing cableway** *(le blondin mobile),* with two movable pylons on railway track;
- **luffing cableway** *(le blondin oscillant),* whose pylons are articulated at their bases and can be sinking down to right or to left.

Syn. with BLONDIN; ELEVATED CABLEWAY CRANE; FUNICULAR CRANE; OVERHEAD CABLEWAY. **See Figure 3**

CABLEWAY CONCRETING
Bétonnage au blondin
Construction of R.C. and P.C.
A concreting process that consists in transporting the concrete on the site of implementation with an overhead cableway equipped of a cablecar drop-bottom bucket.
Arrived on the site, the opening of the drop-bottom bucket is ordered and the concrete is poured at the anticipated location.
This process is used to achieve concreting work unfolding in hardly accessible places by traditional means (steep valleys, great barrages, in mountain, in the marshy terrains, etc.). Syn. with BLONDIN CONCRETING. **See Figure 4**

CADMIUM PLATING
Cadmiage
Metallurgy
Every forming process of a cadmium covering on a surface. According to the process of cadmium plating the next terminology is used:
- **electrolytic cadmium plating** *(le cadmiage électrolytique):* electrolytic deposition of cadmium;
- **cadmium plating by heat pulverizing** *(le cadmiage par projection à chaud)*: recovery by projection of smelted cadmium with squirt gun.

CADMIUM YELLOW
Jaune de cadmium
Painting
A pigment going into the composition of paints and that is constituted by a cadmium sulfate.

CAGING INJECTION
Injection d'encagement
Work
A ground treatment method by injection implemented with intent to create a tight curtain around a foundation in watery site. This peripheral curtain is obtained by a system of vertical or subvertical drillings whose spacing is about 0.50 m to halfway up of the foundation block and whose equipment consists of *tubes à manchette* with sleeve grouting. The injection is carried out on twice; it is carried out upward, by ascending phases of 0.33 m seeking to be obtained a final refusal pressure from 2 to 3 bars on drilling head. Syn. with WATERPROOFING INJECTION

CAISSON
Caisson
Civil Engineering Structure
A tube-shaped structure of an usually rectangular or trapezoidal section that can be unicellular or multicellular. **See Figure 5**

CAISSON RIB
Nervure
Construction
Box girders under roadway, of slight dimensions and not accessible.

***CAKAR AYAM* PROCESS**
Chaussée en pieds de poulet dit procédé *Cakar Ayam*
Construction
A reinforced concrete slab of small thickness restful:
- on a sand subgrade,
- on a lean concrete bed interposed between the slab and foundation.

Through the sand and the lean concrete are vertically positioned tubes of R.C. of 2 m length approximately and 0.60 m diameter. These tubes are placed by drilling before the slab concreting (and the lean concrete) and their last course is located at the lower level of the slab. The distance between the centers of each tube is approximately 2 meters. Tubes are concreted simultaneously in connection with the slab; steels of the concrete of tubes are interdependent of the slab.
This type of slab is notably created for airfield tracks, rafts of some big works and pavements of motorway. Syn. with CHICKEN'S FOOT ROADWAY

CAKE
Cake
Nomenclature of Materials and Foundation
A thin layer of clay that the bentonite settles on the walls of the excavations at the time of the execution of diaphragm walls or piles. The cake plays the role of a waterproof screen on which the pressure acts of hydrostatic manner.

CALANDERING
Calandrage
Building Materials
A process consisting in doing pass a matter between cylinders whose one at least is heating. This process is notably used to manufacture geomembranes.

CALCARENITE
Calcarénite
Geology
A consolidated calcareous gravel settled not far from the coasts and that is inserted inside the marly limestones.

CALCAREOUS MARL
Marno-calcaire
Geology
Of a formation that presents an alternation of limestone and marl benches. Syn. with CHALKY MARL

CALCAREOUS SLATE
Calcschiste
Geology
Any schistose limestone, i.e. splitting off into folias as a result of metamorphism more or less emphasized; the presence of clay, or silicate of alumina, favors the foliation. Syn. with CALC-SCHIST; LIMESTONE SLATE

CALCAREOUS WATER
Eau séléniteuse
Defects (Building Materials)
Water containing calcium sulfate or magnesium sulfate, harmful to concretes and mortars. Combined with aluminates of the cement it forms a salt called *calcium sulfo-aluminate.* (A deposit of smoke on a chalky material suffices to create a selenetic atmosphere). Syn. with SELENETIC WATER

CALCILUTITE
Calcilutite; Microspartite
Geology
A fine-grained chalky rock.

CALCIMETER
Calcimètre
Assaying Equipment
An instrument which allows to determine the carbonic acid volume coming from a given limestone.

CALCITE
Calcite
Geology; ***Construction of R.C. and P.C.***
1. Calcium carbonate in crystalline state which is the main component of the chalky rocks (the chalk is a rock overwhelmingly formed by calcite).
2. A calcium carbonate appearing in superficial deposit form on the surface of facings of some concrete works and that is due to the decomposition of the binder of the structure by seepage waters. To the contact with the air the calcite crystallizes and forms a relatively hard deposit. Syn. with CALSPAR

CALCITE CONCRETE
Béton à la calcite
Building Materials
Ordinary concrete to which calcite has been added. The objective of this addition is to improve the workability, the mechanical strength and the increased resistance from aggressive waters.

CALCIUM ALUMINATE
Aluminate calcique
Hydraulic Binders
With silicates, one of the main constituents of the clinker whose there are several types: monocalcium (in particular in the *Fondu Lafarge),* tricalcium (in particular in the artificial Portland cements). Dicalcium and tetracalcium aluminates are hydrated compounds resulting from the cement hardening, stemming from monocalcium aluminates for the first and tricalcium aluminate for the second. They are metastable substances.

CALCIUM CARBONATE ROCK
Roche calcaire
Geology
A carbonated sedimentary rock with high-content of lime carbonate (at least 50%); this rock is soluble in the carbon dioxide-laden water. This rock is heated-decomposable in quicklime and carbon dioxide. Syn. with LIMESTONE

CALCIUM LIGNOSULFONATE
Lignosulfonate de calcium
Materials
A by-product stemming from the manufacture of the cellulose paste that uses as primary constituent in the manufacture of water-reducing plasticizers, concrete admixtures.

CALCIUM PLUMBATE PRIMER
Peinture au minium
Painting
A rustproof coating formed basically of a binder (linseed oil for example), a pigment (red lead) and a driers. The lead paint is used as prime coat on the steel works. Syn. with LEAD PAINT

CALCIUM SULFATE
Sulfate de calcium
Hydraulic Binders
A product mainly extracted from pits where it is presented in a crystallized form (gypsum and anhydrite); it is used as additive to manufacture cements with intent to regularize their set.

CALCIUM SULFITE
Sulfin
Masonry
A thin layer covering the stones exposed to an industrial atmosphere, especially produced by periodic penetration by the rain and fog into stone. Atmospheric water contains dissolved sulfurous acid that attacks the calcium carbonate of the stone and turns it into calcium sulfite. This one oxidizes then to develop into calcium

sulphate. The healthy sulfiting protects stone from acid rainwaters and can replace cullet as natural protective coat. Syn. with SULPHITING

CALCIUM SULFOALUMINATE
Sel de Candlot
Defects
An expansive calcium sulfoaluminate resulting from the reaction between the hydrated calcium aluminate contained in the Portland cements and aggressive water met in soils or sea. Formed in great quantities, it can bring about the destruction of concretes, renderings, or pointings of masonry.

CALC-SCHIST
Calcschiste
Geology
Syn. with CALCAREOUS SLATE; LIMESTONE SLATE

CALIBRATE
Calibrer
Building
To pass to the gauge. Syn. with GAUGE

CALIBRATED BOLT
Boulon calibré
Materials
A stamped or turned bolt.

***CALIFORNIA* BEARING RATIO**
Indice portant de *Californie*
Geotechnics
A number that expresses in percentage the ratio between the pressures that generate a given penetration, on the one hand in the studied material, and on the other hand in a reference material.

CALIPER SQUARE
Pied à coulisse
Equipment for Measure and Control
An instrument for measuring with precision thickness's or diameters, usually of metal parts.

CALLOSITY
Durillon
Defect (Building Materials)
The part within a stone that is harder than the rest.

CALORIMETER
Calorimètre
Equipment for Measure and Control
Any apparatus for measuring the quantity of heat generated in a body or emitted by it, such as by observing the quantity of a solid liquefied or of a liquid vaporized under given conditions. Used in determining specific heat; latent heat; the heat of chemical combinations; etc.

CALORIZE
Caloriser
Metallurgy
To carry out to the steel calorizing treatment.

CALORIZING
Calorisation
Metallurgy
The cementation by thermochemical processing for steel objects allowing a superficial aluminium distribution. This processing is achieved at a temperature from 800 to 1,000°C.

CALSPAR
Calcite
Geology; Construction of R.C. and P.C.
Syn. with CALCITE

CAMBER
Flèche
Defects
Syn. with SAG

CAMBER
Cambrure; Cambre
Nomenclature of Materials
Syn. with BOWING

CAMBER
Arquer
Construction
Syn. with ARCH; BEND; CURVE

CAMBER
Bombement
Civil Engineering
The convexity of a pavement (roadway) defined by the ratio of the span-to-depth ratio to the total width of the pavement (roadway). Syn. with CROWNING

CAMBER JIG
Cerce; Cerche
Equipment and Tools.
A template for drawing the curvature of a work. Syn. with TEMPLATE

CAMBRIAN
Cambrien
Geology
The first system of the Primary Era that follows to the Precambrian and precedes the Ordovician; it extends between - 600 and - 500 millions of years.

CAMELBACK TRUSS
Poutre à hauteur variable
Construction
A girder of which the height is not uniform over all its length. **See Figures 6; 6a and 6b**

CANAL
Canal
Railway and Canals
An artificial watercourse constituted by a watering open trench and that can be built in different objectives: navigation, irrigation, feeding, etc. Syn. with CHANNEL; CULVERT; FLUME; RACE

CANAL BRIDGE
Pont-canal
Civil Engineering Structure
Syn. with CANAL AQUEDUCT

CANAL AQUEDUCT
Pont-canal
Civil Engineering Structure
A work allowing to a canal to get over a breach. Syn. with CANAL BRIDGE

CANALIZATION
Canalisation
Civil Engineering
Syn. with CONDUIT; DUCT; PIPE; PIPING; PIPELINE;

CANDLESTICK
Chandelier
Temporary Construction
A pole vertically driven into an excavation along the timbers for protecting workers from risks of landslide.

CANE
Canne
Architecture
A molding sharing the grooves.

CANKER
Chancre
Defects (Building Materials)
1. A defect that concerns some stones, characterized by the presence of small earthly cavities or matters softer than the stone. This defect is superficial and/or internal to the structure of the stone.
2. Sickness of the standing trees bringing about by cavities dug by various parasites to the continuation of an initial injury.

CANNULA
Canule
Equipment and Tools
A P.V.C. pipe used for the bulk loading of explosives in a blasthole.

CANOPY
Banne; Banner
Construction of R.C. and P.C; Temporary Construction.
1. A cloth extended on the concrete freshly poured to protect it from harmful effects of the sun, wind or rain.
2. To cover with a canopy.

CANT
Flache
Building materials
Concerning the flat sawing, one of the two skew lateral sides of a wooden board corresponding to the skin of the log. Syn. with SPLAY

CANT BOARD
Chantignole; Echantignole
Carpentry
Syn. with PURLIN CLEAT

CANT BRICK
Brique en coin
Building Materials
Syn. with COMPASS BRICK; SPLAY BRICK

CANT OF THE TRACK (RAILWAY) or BANKING (ROAD)
Dévers
Civil Engineering
The gradient of a railway or pavement (roadway) in plane compared with the horizontal.

CANT STRIP
Baguette d'angle
Construction of R.C. and P.C.
A wooden or plastic section fixed in the angles or at the top of the formwork or the mold of a work (or a concrete part), to obtain after form striking, a cut or chamfered angle. Syn. with CHAMFER STRIP

CANT WALL
Pan coupé
Construction
The closed corner of two walls which meet.

CANTILEVER
Cantilever
Construction
Of an overhanging piece, element, or structure.

CANTILEVER n.m.
Cantilever; Encorbellement
Construction
1. Of an overhanging piece, element, or structure.
2. A construction system applied to beams comprising two spans or more and characterized by the fact that the articulations are arranged in spans, following an establishment whose distance from neighbour bearings is calculated to produce a determined effect (decreasing in stress, sags, compared with a more mainline construction on simple supports). It is an isostatic beam.
3. An overhanging and cantilevered construction on the plan of a wall, being able picking up on corbels or brackets. Syn. with CORBELING (OUT)
4. The overhanging part of some beam or slab.
5. The side part of a deck that is cantilevered in comparison with the webs of main beams.

CANTILEVER BEAM
Console; Poutre cantilever
Construction
1. A corbelled structure or element of structure; by extension, span prolonging an arch of the other side of an abutment pier.
2. A cantileverd element prolonging a structure beyond a bearing.
3. A rectangular beam subjected to vertical loads picking up on several simple bearings, and divided into several sections by means of articulations, so that the bearing pressures (outside and inside) can be calculated by means of equilibrium equations of the elementary statics. The pressures as the applied forces are vertical. The common type of the cantilever beam is formed by independent spans picking up on the ends of cantilevered beams. **See Figure 7**

CANTILEVER BRIDGE
Cantilever
Civil Engineering Structure
Of a type of metal or reinforced concrete bridge whose main beams extend overhanging (in consoles) and bear in turn a beam of reduced span. **See Figure 8**

CANTILEVER SEGMENT *(or* VOUSSOIR)
Fléau
Construction of R.C. and P.C.
Set formed by the two voussoirs surrounding the segment picking up on the one bridges piers under construction in the construction method called by *successive cantilevers.* **See Figure 9**

CANTILEVERED BACK SLAB
Chaise
Construction
Syn. with CORBEL BACK SLAB; WALL STABILITY BRACKET

CANTILEVERED BEAM
Poutre console; Poussard
Construction; Temporary Construction
1. An isostatic beam picking up on simple bearings with one (or two) cantilevered end(s).
2. Syn. with CAPPING PIECE ; SPREADER; STRUT

CANTING
Dévoiement
Construction
The change of direction of a pipe (sheath, main, etc.). Syn. with OFFSET

CANVAS COVER
Bâche
Equipment and Tools
A large piece of cloth whose builders, carpenters, etc, use to protect the constructions from the bad weather. Syn. with COVER; WATERPROOF SHEET

CAP
Détonateur; Chapiteau
Explosives; Construction
1. Syn. with DETONATOR; EXPLOSIVE CAP.
2. Syn. with CAPITAL; PIER CAP

CAP STOPPER
Obturateur-chapeau
Equipment and Tools
A device fixed at the lower end of a plunger tube used at the time of the concreting of bored piles. The sealing between the obturator and the tube is obtained with a plastic o-ring. A the time of the uprising of the tube, the stopper is uncoupled under the weight of the concrete and remains at the base of the pile. **See Figure 10**

CAP WITH FILM
Filmer
Work
To cover with a protective film.

CAPACITIVE PROBE
Sonde capacitive
Equipment for Measure and Control
Electronic equipment for measuring the dielectric properties of the medium surrounding the equipment, used to monitor the level in the silos or hoppers, or to measure the moisture content in an aggregate heap.

CAPACITY
Qualité
Materials and Work
Syn. with QUALITY

CAPE
Couvertine; Chapeau de battage; Casque de battage; Culot
Construction; Equipment and Tools; Architecture
1. Syn. with COVER
2. Syn. with DRIVING CAP; DRIVING HELMET
3. A mushroom placed on a pilaster.

CAPILLARITY
Capillarité
Geohydrology
The water progression to countergravity in fine mediums to porosity of communicating interstices, of a diameter lower than 0.5 mm demonstrating when the three phases, liquid, solid and gaseous are in the presence with forming of the capillary fringe at the boundary of groundwater and air.

CAPILLARITY TEST
Essai de capillarité
Test of Materials
A test allowing to estimate the capillarity by measuring in intervals of given times, the mass of water absorbed by a sample immersed on 2 mm height. The coefficient of absorption is the slope of the line that represents graphically the evolution of the absorbed water quantity according to the square root of the time:

$$C = \frac{100M}{St}$$

M = absorbed water mass (g),
S = section of the core sample (cm^2),
t = time expressed in minutes.

CAPILLARY ABSORPTION CONTROL
Contrôle de l'absorption capillaire
Test of Materials (Concrete)
A test that consists in measuring according to a well-defined operative mode, the quantity of water absorbed by a concrete or mortar cube mold placed vertically on a sand bed saturated with water, and in following this absorption over time until the obtaining of a constant weight of the sample.

CAPILLARY ABSORPTION TEST
Essai d'absorption capillaire
Test of Materials
A test executed on the grouts for injection of prestressed concrete sleeves for verifying their watertightness beside the cables to be protected from a possible corrosive seepage water.

CAPILLARY ACTION
Action capillaire
Test of Materials (Welding)
At the time of a bleeding control, the tendency which have liquids to low surface tension to migrate inside and escape by openings to narrow walls (cracks, splits, etc).

CAPILLARY ATTRACTION
Capillarité
Materials
The power of materials to absorb water by capillary rising. The capillarity is measured by the ratio of the absorbed water mass and the square root of the necessary time to saturate by means of a test specimen placed in defined conditions. Materials (concrete, ground, stone, etc.) comprise microscopic channels into which the water circulates. This water returns to the surface under the influence of the surface tension bringing about the phenomenon called *capillarity.*

CAPILLARY CONDENSATION
Condensation capillaire
Materials
The phenomenon of interplay characterized by the condensation at the contact of walls of the fluid initially to the state of vapor. Syn. with CAPILLARY SWEAT

CAPILLARY FACTOR
Coefficient de capillarité
Test of Materials (Building Materials)
Coefficient characterized by the speed of water resumption by capillarity of a rendering, a stone, etc. Syn. with ABSORPTION RATE

CAPILLARY FRINGE
Frange capillaire
Geohydrology
The part of a groundwater table included between the interstitial water zone and wet zone. *Above the water table, the water takes up the totality of the spaces of the sand by the capillarity effect, and this on a height that depends of the dimension of interstices which are offered to it. It is retained by surface tension phenomena. In the case where, on a vertical section, the sand is homogeneous, the thickness of this fringe does not depend on the direction of penetration of the water: if, instead of proceeding by spraying, the sand is impregnated by injection with the faucet "R", one would see the water rising of the same quantity, above the piezometric level, by capillary rise.* **See Figure 11**

CAPILLARY SWEAT
Condensation capillaire
Materials
Syn. with CAPILLARY CONDENSATION

CAPILLARY VESSEL
Canalicule
Nomenclature of Materials
A microscopic vessel affecting the internal structure of stones or concretes thanks to which are made gaseous exchanges, but as well water seepages.

CAPILLARY WATER
Eau de capillarité
Building Materials
Water that enters masonry by capillary force and wanders there more or less rapidly according to the porosity of the material met.

CAPITAL
Chapiteau
Construction
Syn. with CAP; PIER CAP

CAPITAL
Chapiteau
Construction
Syn. with CAP; PIER CAP

CAPPING
Couronnement; Longrine; Morts-terrains; Découverte; Recouvrement
Construction; Building Materials
1. Syn. with CAPSTONE; COPING OF THE WALL

2. A beam distributing and transmitting loads on several bearing points.
3. Quarryman term that refers to sterile terrains that cover the exploitable rocky mass (deposit). Syn. with OVERBURDEN

CAPPING PIECE
Poussard
Temporary Constructions
Syn. with CANTILEVERED BEAM; SPREADER; STRUT

CAPPING STRIP
Couvre-joint
Construction
Syn. with BATTEN; BEAD; BUTT STRAP; COVER PLATE; COVER STRAP; FILLER; JOINT COVER; TRIM

CAPRICORN BEETLE
Capricorne
Carpentry
A gray-black xylophage insect also called *hylotrupe bajulus,* that to the larva state (of white color) is a fearsome enemy for wood. In some regions, this larva is called *the clock of midnight* because of the noise that it gives off attacking the wood, the night notably. Syn. with LONGHORN BEETLE

CAPSTAN
Cabestan
Equipment and Tools
A spoollike drum mounted on a vertical axis used for heave hoisting or pulling. It is operated by steam, electric power, or hand pushes or pulls against bars inserted in sockets provided in the upper flange or head. Syn. with CATHEAD

CAPSTONE
Couronnement
Construction
Syn. with CAPPING; COPING OF THE WALL

CAPSULE ANCHOR
Cartouche de résine
Materials
Syn. with POLYMER CARTRIDGE; RESIN ANCHOR

CAPTIVE WATER TABLE
Nappe captive
Geohydrology
A water table inserted between two impermeable stratums and into which, in-depth, water is under pressure.

CAPTURE
Capture
Hydrology
An accident in the evolution of two neighbouring streams, one of the two hoarding the upper course of the other. The capture thus achieved may be made by recession of the source of the first up to reach the course of the second; this one, being at the higher level, pours in the bed of the first. The capture can take place by pouring-out when the captured stream, having too raised its bed by contributions of alluvia, the lot of its bed and pours in the first. Syn. with BEHEADING; RIVER CAPTURE; STREAM CAPTURE

CAPUCHIN
Capucine
Construction
An entablature formed by a heel and a drip. Syn. with ENTABLATURE WITH OGEE MOULDING AND DRIP

CAR
Benne
Handling
A tip truck for transporting materials on rails.

CARBON
Carbonado; Diamant
Geology and Materials
Syn. with BLACK DIAMOND; CARBONADO

CARBON BLACK
Noir de carbone
Painting
A pigment used in painting, resulting from the incomplete combustion of gas or natural mineral oils.

CARBONADO
Carbonado; Diamant
Geology and Materials
Syn. with BLACK DIAMOND; CARBON

CARBON DIOXIDE GAS LASER
Laser à gaz carbonique
Equipment and Tools
A device for cutting out concrete and whose principle consists in concentrating the radiation in a chosen zone, what has for effect to bring about a sudden rise in temperature there. This rise in temperature creates severe stresses inside the concrete which then fissures in few seconds.

CARBON REMOVAL
Décalaminage
Metallurgy
Syn. with BLAST CLEANING; DECARBONIZATION; DECARBONIZING; DESCALING

CARBONATE
Carbonate
Materials
Salt of the carbonic acid CO_3H_2 of which is distinguished the carbonate of lime, magnesium, potassium, and sodium.

CARBONATED
Carbonaté
Materials
Of a substance chemically transformed into calcite or of a product covered by concretions of similarly nature.

CARBONATED LIME
Moelle de montagne ou de roche
Geology
A white variety of spongy carbonated lime.

CARBONATION VELOCITY
Vitesse de carbonatation
Hydraulic Binders
The speed of the carbonation process of cements which depends on several factors:
- nature of cement,
- cement and water batching,
- quality of concreting,
- ambient medium.

CARBONATITE
Carbonatite
Geology
A rock related with the limestone owing to its high carbonate content. This rock is usually associated with kimberlites and alkalic rocks.

CARBONIFEROUS
Carbonifère
Geology; Materials
1. The period of the Paleozoic Era contained between the Devonian and the Permian.
2. Said of what contains coal.

CARBONITRIDING
Carbonitruration
Metallurgy
A superficial processing process for steels that consists in mixing carbon and nitrogen into the surface zone to be hardened and that comes true by passage of a gaseous current, made of carbon monoxide, hydrogen and nitrogen and rise at the average temperature of 800°C, during some hours. This operation is followed by quenching and temper.

CARBONIZATION
Carbonisation
Building Materials
A protective treatment for woods using two processes;
- the first consists in eliminating the combined moisture of the cellulose and lignin of the wood without destroying the nature of this wood.
- the second consists in superficially burning the wood by an inflamed gas jet. It forms then a film below which wood it presents a brownish layer, roasted and containing creosote.

CARBONYL
Carbonyle
Materials
A product for protecting woods from rot, fungus, etc.
The carbonyl is a complex mixture of products from distillation of the coal tar, of a density and boiling temperature riser than that the ordinary or liquid creosote. Syn. with GREEN OIL

CARBONYLING
Carbonylage
Materials
Coating of a wooden piece with carbonyl so as to subtract it from the attack of fungus.

CARBORUNDUM™
Carborundum; Carbure de silicium
Materials
An artificial abrasive stemming from the covalent metallic carbide.

CARBURIZING
Cémentation
Metallurgy
Syn. with CASE HARDENING

CARBURIZING MATERIAL
Cément
Metallurgy
Syn. with CEMENT; POWDERED CARBON

CARCASS
Ossature; Gros oeuvre
Civil Engineering Structure
Syn. with SHELL; SHELL OF BUILDING; SKELETON; STRUCTURE;

CARDBOARD MOLD
Moule
Assaying Equipment
Syn. with MOLD; TESTING MOLD

CARICRETE
Béton de fibres de polypropylène
Building Materials
Syn. with POLYPROPYLENE FIBER CONCRETE

***CARIGNAN* BRECCIA**
Brèche de *Carignan*
Building Materials
A rock from Savoy, France.

CARPENTER
Coffreur-boiseur; Charpentier
Temporary Construction ; Carpentry
1. A worker specialized in the implementation of wooden formworks to mold concrete. Syn. with FORMWORK CARPENTER
2. Worker responsible for building a frame.

CARPENTER' S LINE
Cordeau de charpentier
Equipment and Tools
Line used to draw circles of a great radius

CARPENTER'S MATE
Gâcheur
Carpentry
A job superintendent.

CARPENTER'S WORK
Trait
Carpentry
All means for implementing frames. One also says *art ofmarking out.*

CARPENTRY
Charpenterie; Charpente
Carpentry
1. The art of joining the pieces of frame.
2. Syn. with FRAME; FRAMEWORK; STRUCTURE

CARPET
Revêtement de chaussée; Tapis; Couche de roulement
Civil Engineering; Construction
1. Syn. with PAVEMENT; ROAD METALLING; ROADWAY COVERING
2. Carriageway surfacing, often carried out of premixed coated materials. Syn. with MAT
3. Syn. with SURFACING; SURFACING COURSE; TOPPING

CARRIAGE
Charriage; Nacelle; Coltinage
Geohydrology: Construction; Handling
1. The carrying along of alluvial material by current of waterways, etc.
2. The movable element of an aerial ferry, hooked by suspenders to a trolley that moves on the main beams, and where take place the users to pass from a bank to another.
3. Syn. with HUMPING

CARRIAGE FOREMAN
Pinceur
Masonry
A supervisor of carriage workers of ashlars.

CARRIAGE WORKABILITY
Maniabilité de transport
Building Materials
Qualities which must has a concrete to be transportable and to support handlings on the building site without segregation.

CARRIAGE WORKMAN
Bardeur
Handling
A worker in charge of the hand carriage.

CARRIAGEWAY
Chaussée
Civil Engineering
Syn. with PAVEMENT; ROADWAY

CARRIER
Porteur; Benne téléphérique
Construction; Handling
1. Of a structural part which, by its site, its squaring or its structure, provides a stable bearing and supports a part of construction. Syn. with BEARER; LOAD-BEARING
2. Syn. with AERIAL BUCKET

CARRIER-DECK TRUCK
Truck porte-tablier
Equipment and Tools
A railway engine for transporting the decks, mainly temporary. It is basically formed by two elementary load-bearing push-cars supporting a flattened chassis on that rests a swivelling cross-piece for receiving the deck to be transported. Two hand-driven jacks located under the swivelling cross-piece and picking up on the flattened chassis allow to raise of 10 cm the crosspiece and the deck to be able carrying out the temporary wedging of the latter before its launching or its sliding along.

CARRIER-FRIDGE AGENT
Agent frigoporteur
Materials
In the soil freezing process, a liquid material ensuring the freezing of the soil (this expression is used when the used product is a brine).

CARRYBACK
Rapporter; Reporter
Topography
To transcribe on paper the readings executed in the field.

CARRYING *or* BEARING *or* LOAD-BEARING CABLE
Câble porteur ou parabolique
Construction
A suspension bridge cable supporting the deck through the agency of suspenders. Syn. with PARABOLIC CABLE; SUSPENSION CABLE

CARRYING *or* BEARING WIRE AND DISTRIBUTION WIRE
Fils porteurs et Fils de répartition
Building Materials
Wires composing a welded wire fabric panel whose one distinguishes:
- **distribution wires** *(les fils de répartition),* which have a diameter lower of more than 2 mm in that of wires which are perpendicular them;
- **carrying wires** *(les fils porteurs)* which have a diameter higher (at least equal to 2 mm) in that of wires which are perpendicular them (distribution wires).

CARRYING UP BY FLOATING PONTOONS
Montage par pontons flottants
Handling
A setting up process of bridges deck whose principle is to bring on the site and to set up a section of work put down on a provisional pile frame, themselves assembled on floating pontoons. For installation on site none lifting appliance is used, therefore is necessary it which the section is levelled in the first instance of the operation to a level as close as possible to its final level. The fine adjustment comes true with jacks placed on pile trestles or by ballasting of the pontoons. **See Figures 12 and 13**

CARRYING UP BY LAUNCHING
Montage par lancement
Handling
See LAUNCHING

CARRYING UP BY LIFTING
Montage par levage
Handling
A setting up process of deck elements or entire bridge decks that is done with motorway cranes, railway cranes, sheer-legs, gantries, etc. The process consists in taking the elements of deck (or the deck) from the place where it is stored or brought, to lift it and to place it at its final place.

CARRYING UP IN SYNCHRONIZED LIFTING
Montage en levage synchronisé
Handling
A setting up method of structures in which each jack depends on a pump regulated so as to each one has the same stroke speed. Generally,

multiway pumps are used thus ensuring equal debits in each circuit whatever the pressure. This process is particularly used to raise loads with different bearing pressures owing of their morphology (example: skew slab).

CARRYING UP NEARBY AND LIMITED DISPLACEMENT
Montage à proximité et déplacement limité
Handling
A setting up process of a bridge deck of which we can distinguish:
- **longitudinal displacement *or* launching** *(le déplacement longitudinal ou lançage ou montage par lancement),* syn. with CARRYING UP BY LAUNCHING;
- **lateral displacement *or* sliding along** *(le déplacement latéral ou ripage),* which consists in building the work beside its final site, usually on a service floor, then to set up it by lateral displacement. The sliding along can be carried out on roll or by slipping.

CARTRIDGE
Cartouche
Explosives
A classical packaging of explosives consisting of cylinders of paper, cardboard, or plastic of a diameter thinly lower than at the blasthole to be loaded.

CARTRIDGE TOOL
Pistolet de scellement
Equipment and Tools
Syn. with FIXING GUN; POWER-ACTIVATED TOOL; STUD GUN

CARTRIDGED SLURRY
Bouillie encartouchée
Explosives
Explosive conditioned in envelopes and that is used for earthmoving or demolition work.

CARVING
Ciselure; Plumée
Building Materials
The cut with the bolster and sledge hammer at the periphery of a rough stone performed on the beds and joints of the stones for dressing, squaring, and giving them the required shape. It is the first operation of the cut of stones.

CARVING JOINT
Joint démaigri; Joint de ciselure
Masonry
Bond of small width on a recut stone.

***CASAGRANDE* BOX SHEARING TEST**
Essai de cisaillement à la boîte de *Casagrande*
Geotechnics
Syn. with SHEAR BOX APPARATUS TEST

***CASAGRANDE* GROOVING TOOL**
Coupelle de *Casagrande*
Assaying Equipment
Syn. with CUPEL OF *CASAGRANDE*

CASE
Logement
Construction
A recess for receiving a part. Syn. with APERTURE

CASE-HARDENED STEEL
Acier cémenté
Metallurgy
A ferrous alloy recarburized with cement (coal powder, ashes, sea salt).

CASE HARDENING
Traitement thermochimique de diffusion; Cémentation
Metallurgy
1. Syn. with CEMENTATION
2. Hard-surfacing treatment for steel by incorporation of carbon (cement) into a region made permeable by heating at temperatures from 850 to 950°C.
Formerly, this processing was achieved with following products (cements):
- mixture charcoal - leather - sea salt;
- mixture charcoal - carbonate of barium;
- mixture leather – wooden sawdust - ferrocyanide.

Nowadays, the cementation is especially carried out in a gaseous phase, cementing products being brought to the gaseous or liquid state into specially expected furnaces for these operations. Syn. with CARBURIZING

CASING
Coffrage; Boisage; Masse-tige; Cuvelage; Colonne; Gainage
Temporary Construction; Equipment and Tools; Carpentry; Foundation
1. Syn. with CONCRETE FORMING; FALSEWORK; FORM; FORMWORK; FRAMING; MOLD; SHUTTERING
2. Syn. with LINING; TIMBERING
3. Syn. with DRILL COLLAR
4. A boarding shored up inside a well in the process of boring. Syn. with WELL CRIBBING
5. The assembly of steel tubes screwed together to tube a well. Syn. with STRING OF CASING
6. An operation which, at the time of the execution of drilled piles, consists in interposing between concrete and ground a rigid side metal casing made up usually of large welded metal pipes, about than 10 mm thickness. Syn. with SHEATING; SLEEVING

CASING KNIFE
Coupe-tube
Equipment and Tools
Syn. with INSIDE CUTTER; PIPE-CUTTER; TUBE FUSE;

CASK WOOD
Merrain
Building Materials
Syn. with SHOOK

CAST CONCRETE
Béton moulé
Building Materials
Concrete poured in a mould then demolded after hardening. (One generally uses this expression for concrete that will remain visible or will have to be in harmony with environment). Syn. with MOLDED CONCRETE

CAST HARDENING CAPACITY
Pouvoir trempant
Metallurgy
Syn. with CAST HARDENING POWER

CAST HARDENING POWER
Pouvoir trempant
Metallurgy
The ability that possesses a steel to be obtained in a hardened state with its best mechanical characteristics, and which allows to obtain a homogeneous quenching effect between the heart and the surface of a treated piece Syn. with CAST HARDENING CAPACITY

CAST IRON
Fonte
Metallurgy
1. A raw iron and steel product from blast furnace that contains from 2 to 6% carbon as graphite (crystallized pure carbon), carbon combined, or carbon dissolved. Gray (cast) irons, which mainly contain graphite, are alone easily workable with the tool and used in industry; white (cast) irons, with cementite, hard and brittle, are reserved for the refusion (manufacture of steel by refining). We can also distinguish the crackled (cast) iron that is a mixing of white (cast) iron and gray (cast) iron with marked breakage of white and gray points; following proportions of the mixture, it has the quality of the white (cast) iron or the gray (cast) iron. Syn. with CAST STEEL
2. A material used during the XIX° century to construct bridges.

CAST IRON BEARER
Coussinet
Construction
A metal piece, generally in cast steel or in (cast) iron, formed two shells, one lower and the other upper to jointing between they by bolts. The cast iron bearer supports axles of rotation, articulations, etc.

CAST STEEL
Fonte; Acier moulé
Metallurgy
1. Syn. with CAST IRON
2. An iron and steel product which is cast in a mold and which is primarily used to achieve pieces of massive shape (bridge support apparatus, bearing blocks, etc).

CASTABILITY
Moulabilité
Building Materials
The ability of a product, a material to be molded.

CASTABLE REFRACTORY CONCRETE
Béton réfractaire
Building Materials
Syn. with REFRACTORY CONCRETE

CASTAN APPARATUS
Castan
Equipment for Measure and Control
A truck-mounted probing device for providing the lines of generatrixes of the tunnel vaults, as sidewalls.

CASTEL
Créneau
Nomenclature of Materials
A U-shaped notch allowing the passage of a pin for heading off the unscrewing of some nuts. Syn. with CASTELLED (NUT)

CASTELLATED NUT
Ecrou à créneaux
Equipement and Tools
A special nut endowed with crenels screwed on some bolts whose shaft is pierced. A pin passes in the crenels and through the shank, thus preventing the unscewing of the nut.

CASTELLATED BEAM
Poutre évidée
Construction
A beam whose web is hollowed with an aim of lightening or aesthetics. **See Figure 14**

CASTELLATED GIRDER
Poutre ajourée
Construction
A metal product obtained from an I-universal beam by cutting out of the web according to a polygonal line reconstituted by welding. One also says *alveolar beam.*

CASTING
Coulage (du béton)
Construction of R.C. and P.C.
Syn. with POURING (of concrete)

CASTING BED
Banc de préfabrication
Construction of R.C. and P.C.
Syn. with PRECASTING AREA; PRESTRESSING BED; PREFABRICATION FORM

CAST-IN-PLACE CONCRETE PILE
Pieu en béton moulé dans le sol
Foundation
An element carried out directly into the ground and whose principle consists in boring a cylindrical cavity having the diameter and depth allocated to the pile and then concreting it.
The cast-in-place concrete pile is similar to the pit and must, as the latter, to go down up to the good ground. Often reinforcements are introduced into the cavity before concreting. There is a great range of processes of making of the cast-in-situ concrete pile that only differ by the mode of sinking of the tube (in the case of tubing), the mode of concreting and the type of toe. In this category of piles, we can mainly distinguish:

- **needle pile** *(le pieu à adhérence améliorée par injection):* see NEEDLE PILE;
- **pressure pile** ***or*** **air-compressed pile** *(le pieu comprimé),* of which pouring is executed under pressure of compressed air; the borehole is carried out by the mainline method of drilling. The process consists in going down, into a drilling carried out as a preliminary, steel tubes of a diameter from 25 to 50 cm. Elements of tubes are screwed between them progressively of their going down. The upper opening of the tubing is sealed and the compressed air is introduced under pressure. The concrete is then injected with a pipe; pipe fills so with concrete, which is pneumatically compressed and backed in all cavities or crevices. The compressed air acting on the breech, makes to go back up progressively the pipe accordind to the ascent of the concrete;
- ***Ménard*** **expanded pile** ***or*** **wedge pile** *(le pieu expansé Ménard)* of which we can distinguish two execution processes:
  - creation of a cylindrical hole by drilling with introduction of a provisional metal tube, or,
  - driving of a lost point with protective casing.

In the first case, after drilling and before withdrawal of the tube, one sets up a dilator which one can increase the diameter by injection of pressurized air or water. The plastic concrete is introduced into the annular space and strongly compressed by the dilator after withdrawal of the tubing (pressure from 0.3 to 0.6 MPa kept up to the set); the compression improves the lateral friction. The casing thus carried out is filled at a later date with concrete. For the driven

foundation pile, the lost pile shoe consists of a cutting shoe and the diameter of the tubes of driving is lower than the shoe. In the annular space plastic concrete is poured as they advanced of the going down. The tubing is then gone back up after having reached the wanted ultimate set (refusal) and after introduction of the dilator. The system allows to increase the point resistance by possible grout injection at the base. One can also execute a bulb at the base by introducing a special dilator subjected at high pressures;

- **decored pile, deepened into the ground** *(le pieu décarotté);* it is carried out by extraction of the stratums of the basement unlike the mainline practice that uses the compression. This process is used faced of argillaceous grounds. The execution of this pile uses the standard pile driving and a special bell constituted by two semi-cylindrical jaws sliding inside a ballasted tube. The apparatus is dropped on the bottom of the tube, jaws fill up with clay; the bell is then gone back up and emptied thanks to a special mechanism. The tube is sunk into the cavity executed by downwards drawing it by reminder cables tended by the weight of the pile driving. When the extraction of excavated materials is finished, the tube is concreted;
- **exploded pile** *(le pieu explosé),* formed by one or several steel tubes from 40 to 60 cm diameter and sunk into the ground by driving. A wooden pile provided with steel-tipped toe is placed inside the tubing. Arrived at the required depth, the wooden pile is extracted then one goes down at the base of the tubing an explosive cartridge. Concrete is then poured on the all height of the tubing then one rises the latter about than 1 m. Using a detonator, one brings about the explosion of the cartridge which creates, at the base of the pile, an excavation about than 1.50 m diameter, thus giving a widened base to the pile;
- **bored pile** *(le pieu foré),* carried out by extraction of the ground using any tool and which we can distinguish two great families of practices for achievement which are characterized by the use or not of a driving tube; they are the simple drilled piles, tubed drilled piles, piles drilled with mud, piles drilled with hollow auger and cast screwed piles:
  - *piles drilled with driven tubes (les pieux forés avec tubes battus),* whose principle of achievement is as follows: an open tube is sunk by driving, or by tacking, or by directed vibrations. The captive ground inside the tube is extracted by means of a fining cleaning tool (bailer with valve, auger, hammergrab, special skip). The tube is gone back up progressively of the concreting, either with the winch, or with a helmet in which water or compressed air is admitted, what brings about the rise of the tube and settlement of concrete. In the presence of water, one carries out the concreting, either to dry by driving out water with compressed air, or under water by the practice of the tremie tube, or as well injecting a skeleton of aggregates with a colgrout, non miscible in water,
  - *tubeless bored piles (les pieux forés sans tube),* whose execution consists in achieving a drilling with a ballasted bore bit actuated by a hollow rigid stand of drill pipe, concurently communicating a vertical movement of driving and a slow movement of rotation to it. Bentonite is sent under pressure in these rods and comes out by special nozzles of the bore bit. Cuttings, put in suspension, goes back up on the surface whereas the bentonite covers the walls of a clayey film (cake) which, in recognition of the pressure exerted, supports the ground. Before concreting, a metal or reinforced concrete casing (jacketed piles) can be came down into the drilling. The concreting is carried out under drilling fluid by the process of the tremie tube,
  - *simple drilled piles (les pieux forés simples),* carried out without use of drilling tube or mud, the wall of drilling holding naturally,
  - *bored piles with hollow (earth) continuous auger (les pieux forés en tarière continue creuse),* whose process, derived from the techniques of soil survey, consists in using by way of tubing the tool itself which, in this case, is a continuous auger whose hollow web can be sealed during drilling and be opened then to be of use as a column of concreting. This technique does not allow the installation of reinforcements,
  - *cast-in-place screwed piles (les pieux vissés moulés),* whose principle of achievement is as follows: by rotation and pile driving, one makes penetrate into the ground a tool as the shape of a double screw surmounted of a grooved column. This tool is bored in the axis of the grooved column and provided by a pipe plug. The nominal diameter of the pile is the largest diameter of the tool, except the helical blade with which it is provided. At the top of the column is laid out a container filled with concrete. The

extraction of the tool is achieved turning in the opposite direction to that of the penetration. The concrete takes round the clock, as the influence of gravity, the place left by the tool. These piles cannot receive a reinforcing cage, but can comprise projecting bars and a central bar over all the height. (The process cannot apply of the noncohesive sandy ground located under the underground water table owing of the risks of mudslide of the drilling walls);

- **standard *Forum* pile** *(le pieu Forum),* carried out by drilling safe of a tubing recovered after concreting;
- **friction pile** *(le pieu à frottement amélioré),* of a slight diameter, which is drilled with or without tube into which is inserted a reinforcement and a tube à manchette. This pile is carried out with a cement grout and, thanks to the manchettes, one carries out bulbs thus improving lateral friction of the pile;
- **butt-jointed piles** *(les pieux jointifs),* carried out by execution of tangent piles made of cast-in-situ concrete pile, usually made alternatively for forming a more or less waterproof enclosure; **See Figure 15**
- **cast-in-place piles driven by vibration** *(le pieu moulé dans le sol foncé par vibration),* the process consists in driving into the ground a metal tube as the influence of suitably selected vibrations in direction and amplitude. A *self-propelled drilling rig* is used. The first section of the tube comprises a cutting shoe; at the base, the tube also comprises a device of keying of the skip used to go up cuttings. The drilling by discontinuous core drilling is carried out without destressing of the ground. The concreting is done according to the mainline processes;
- **root pile** *(le pieu racine),* of a small diameter (60 to 220 mm), drilled by rotation, notably used for strengthening foundations. (The rotary drilling avoids the shocks and allows to come through the concrete or traditional masonries without particular problems). The drilling which can reach any incline, is made safe from tubing or possibly by drilling muds. The pile is reinforced with high bond steel (central web), then concreted with compressed air. One thus achieves a clogging of cracks of the ground, an important compacting and a good connection with the ground. The pouring of concrete or mortar under pressure improves moreover the state of masonries to be taken again. The root pile allows to carry out a dense system with different inclines in all directions and to create a waterproof network enclosing the ground. One can thus obtain a consolidation and load-bearing system reflecting the common bearing piles. (The root pile going into the micropiles family);
- **secant *or* cutting piles** *(les pieux sécants),* which intersect between them in order to constitute a cut-off and continuous wall. The principle consists in achieving a number of concrete piles not reinforced, with retarder (odd series). Before hardening of the concrete, the second series of piles is drilled (even series) in order to cut in the two surrounding piles on a given width. These piles are reinforced on their periphery and are then concreted by means of a tremie tube; **See Figure 15a**
- **soil-cement pile** *(le pieu sol-ciment),* carried out by a homogeneous mixing of the in situ ground and cement or colloidal mortar. The brewing of the ground and grout is carried out using blades of which is endowed the mixing head and by which arrives the grout;
- **driven cast-in place piles *or* compressed concrete piles** *(le pieu à tube battu),* of which execution consists in sinking into the ground by driving a tube which is normally closed at its base by a lost or a recoverable point, or by a concrete plug. The tube is made of metal, or constituted by superimposed concrete sheaths. The ground is therefore laterally backed and nothing is extracted. This type of pile has been similar of this viewpoint to the pile worked in advance. The driving is done using a rammer either on the protected head of the tube, or on the base of the tube, or at once on the basis, with a punch, and on the head. The concreting is carried out by direct pouring of the fresh concrete into the tube:
  - by slices carried out by successive slopings of the concrete with a skip, follow-up of a tamping; in this case the pile is called *compressed concrete pile*; or,
  - by means of a tremie tube and without tamping; in this respect the pile is called *driven cast-in-place pile*.

Whatever the type of these piles one can also distinguish three cases:

- the tube is withdrawn, the concrete is cast directly into the ground,

- the tube is go back up and another called *sheath* is substituted to it; they are the piles with lost sheath,
- the tube itself is left in the ground (lost tube).

Among the cast-in-place piles the most bread-and-butter one can quote:

- *Franki foundation pile (le pieu Franki),* which is characterized by the mode of driving of the tube put in by impact on a compressed concrete plug located at the base of the tubing. The power of touch is high and it is possible to make a widened base. The pile is reinforced over all or part of its height and can be tubed. The driving by a concrete plug process allows if necessary to use a little thick tube which one gives up or to use a lost sheath. The concreting of the shaft is carried out by tamping with progressive rise of the tubing; the concrete used is strongly batched with a low water content,
- *Paumelle foundation pile (le pieu Paumelle),* which is different from the *Franki* foundation pile by the mode of driving of the tubing. This type of pile is provided at its base with a recoverable metal point or lost concrete point. The rammer knocks the top of the tubing by the agency of a driving helmet. The concreting is carried out by concrete sloping and tamping by the rammer with progressive extraction of the tubing. The rammer came out of the tubing before each concrete introduction to check that none in-rush of water is occurred through the in situ concrete, **see Figure 17** under PILE.
- *Simplex foundation pile (le pieu Simplex),* which consists in driving into the ground, by driving up to refusal, a steel tube closed hermetically at its lower part (either by two jaws called *alligator points,* or by a cast iron base). When the tube arrived to the refusal, the concrete is poured and tamped by successive landing about than 1 m, the tube having gone up pouring progressively.

Noted: Among the piles that use this technique (driven tube with repression of the ground) one can quote *Express* foundation pile, *Vibro* foundation pile, and *Alpha* foundation pile.

CAST-IN-SITU PILE
Pieu en béton moulé dans le sol
Foundation
Syn. with CAST-IN-PLACE CONCRETE PILE

CAST-STEEL LINING
Cuvelage; Revêtement primaire
Construction
The lining of a tunnel vault put in place to the continuation of the shield at the time of the heading. The revetment is usually formed by segmental rings of (cast) iron or of reinforced concrete.

CAST-STEEL SEGMENT
Voussoir
Construction
Syn. with SEGMENTAL RING

CATACLINE
Cataclinal
Geology
Of a waterway that goes down in the even direction that the dip of geological beds.

CATALYSIS
Catalyse
Materials
The phenomenon by which a body releases, accelerates or delays a chemical reaction without participating itself in this reaction.

CATALYST
Catalyseur
Materials
Every substance that modifies the velocity of a chemical reaction without appearing in the final products. In 99% of the cases, the catalyst is used to accelerate the chemical reaction velocity. Syn. with CATALYTIC AGENT

CATALYTIC AGENT
Catalyseur
Materials
Syn. with CATALYST

CATAPHORESIS
Cataphorèse
Painting
A painting process by electrodeposition of the pieces put in cathode in a cationic paint bath.

CATCH
Capter
Sanitary Engineering and Drainage
To collect by means of trenches, channels, aqueducts, etc., the spring or seepage waters.

CATCH BASIN
Bassin de réception
Hydrology
The top part of a stream.

CATCH DRAIN
Rigole
Construction
A groove, furrow, hollowed line allowing to a liquid to run out. Syn. with DRAINAGE DITCH

CATCH PIT
Puisard
Sanitary Engineering and Drainage
Syn. with DRAINAGE WELL; SOAKAWAY

CATCHMENT AREA
Bassin versant
Hydrology
For a given point *A,* the totality of a topographic surface drained by a waterway and its affluents. All flow originating inside this surface passes by point A before proceeding downstream. We can distinguish:
- **topographical watershed** (crest line) [*le bassin versant topographique, (ligne de crête)*];
- **real watershed** (takes account of geological strata: restitution of infiltration water) *(le bassin versant réel).*

CATENARY WEATHER-BOARD
Auvent pour caténaire
Construction
An element which, set up on the structures, has for role to create a protection for users of sidewalks and tracks so that the latter cannot have contact with catenary suspensions.

CATHEAD
Cabestan
Equipment and Tools
Syn. with CAPSTAN

CATHEDRAL
Cathédrale
Construction
A gallery of large dimensions having a vaulted transverse section (ogival arch, semicircular or surbased) fitted out inside the abutments of some works of great height (viaducts, masonry or concrete bridges). Following the height of the embankment, some abutments show superposed cathedrals. **See Figure 16**

CATHETOMETER
Cathétomètre
Topography
A topographical instrument allowing the measurement of the vertical distance separating two points or two horizontal plans.

CATHODIC SPRAYING
Pulvérisation cathodique
Work
A high-thin coats deposit of materials on a conducting support to modify the surface properties.

CATION
Cation
Metallurgy
Ion positively charged that makes one's way toward the cathode at the time of the electrolysis of a solution.

CATIONIC RESIN
Résine cationique
Polymers
A synthetic product fixer of cations.

CAT'S PAW
Patte-de-chat
Defects (Building Materials)
A concentration of small knots in a timber piece or on the surface of a plywood sheet. The cat's paw can be a defect when it affects some wood or plywood which is used as formwork, because during demolding, the facing is likely to reproduce this defect. Syn. with KNOT AREA

CATWALK
Passerelle de visite ; Passe-pied
Civil Engineering Structure; Construction
1. Syn. with CATWALK WAY
2. A pathway reserved for pedestrians above a barrage.

CATWALK WAY
Passerelle de visite
Civil Engineering Structure
A fitted pathway laid out under a deck, giving access at the various parts of the frame in a bid to their examination or maintenance. There are

longitudinal or fixed catwalk, which rest on the distance pieces or that are hooked on the cover of the work. There is also transverse catwalks, generally movable on rails attached to the deck. These last can be fitted out to residence or removable. Syn. with CATWALK

CAULK
Calfater; Mater un joint
Tightness; Masonry
1. To press back with a special tool called *caulking tool,* analogue to a blunted cold chisel, and to blows of a mallet, a bead of tow, etc., into joints located between sheet metals of the bridge decking in order to produce the complete sealing and tightness.
2. To press vigorously mortar into a joint with a caulking tool on which one strikes with a sledgehammer.

CAULKER
Calfat
Tightness
A worker in charge to make tight the joints of bridge; by extension: *tighter.*

CAULKING
Matage; Calfeutrement
Welding; Tightness
1. An operation during which is cold-crushed more or less strongly with a smooth butt iron, a pass of weld so as to decrease the resulting deformations, or contraction stresses, and which further to increases the resistance to the fatigue.
2. Syn. with FULLERING

CAULKING TOOL
Matoir
Equipment and Tools
A steel tool formed by a flat bar whose one end shows a net rectangular section a bit higher than to the bar itself. The other end, which one strikes, also comprises a round part of steel. This tool is used for ramming the pointings of masonry. **See Figure 17**

CAUSSE
Causse
Geology
Syn. with LIMESTONE PLATEAU

CAUSSE STONE
Ecaussine; Ecossine
Masonry
A variety of building stones.

CAUSTICITY
Causticité
Materials
Characterizes what is corrosive.

CAVE
Caverne; Foudroyer
Geomorphology; Defects
1. A natural or artificial excavation opened on the surface of the ground, which is the prerogative of the karsts and whose evolution is ordered by two decisive factors: the setting in solution of the limestones and hydrological intern circulation (that is mostly organized starting from a network of joints and blocks on waterproof levels).
2. To bring about voluntarily or not, in totality or partially, the collapse of the roof in a gallery.

CAVE DRAPERY
Draperie
Geology and Civil Engineering Structure
A chalky concretion covering the face of masonry, a cave, etc.

CAVE-IN
Affaissement
Defects (Masonry and Construction of R.C. and P.C.)
Syn. with SETTLEMENT

CAVERN
Caverne
Geomorphology
Syn. with CAVE

CAVERN
Caverne
Masonry
A space of a certain importance located in the internal structure of a masonry.

CAVERNATION
Cavernement
Geomorphology and Masonry
The formation of a cavern in the basement or inside a masonry.

CAVERNOUS
Caverneux
Geomorphology and Masonry
Of an area or geologic formation, such as limestone, that contains caverns. Said of the texture of a volcanic rock that is coarsely porous or cellular.

CAVETTO
Cavet
Architecture
A concave molding having the form of a quarter of circle and being able to be straight or reversed. Syn. with HALLOWED MOLDING

CAVING
Foudroyage
Defects and Work
An accidental or voluntary collapse of the roof in a gallery.

CAVING DETACHED "COFFIN" IN THE ROOF
Cloche de foudroyage
Defects (Civil Engineering Structure)
Syn. with CAVING DOME

CAVING DOME
Cloche de foudroyage
Defects (Civil Engineering Structure)
A zone of crumbled and strongly dislocated grounds above a tunnel with caving. (Above the caving dome, limiting to some meters height, grounds subside without breaking up). Syn. with CAVING DETACHED "COFFIN" IN THE ROOF

CAVITATION
Cavitation
Materials
The formation of bubbles in a liquid in movement when the pressure in the liquid becomes lower than the steam tension of this one.

CAVITATION n.f.
Cavitation
Matériaux
1. Formation de bulles dans un liquide en mouvement lorsque la pression dans le liquide devient inférieure à la tension de vapeur de celui-ci..
2. A bubbling that forms inside a material at the time of its working-out (inside a concrete, metal, etc.).

CAVITY
Cavité; Cloche; Flocon; Armaire; Alvéole; Enfonçure
Masonry: Defects; Work; Geomorphology; Geology
1. In masonry works, hollow or space, opening or no, being able allocating:
- the body of the masonry,
- the mass of filling located above the vault,
- the foundation mass or the bearing ground.

2. A defect concerning notably the underground works characterized by an important and isolated round-shaped empty (over-section) consequent of the progressive alteration of the country rock. Under some circumstances, this defect can take the appearance of an open. Syn. with OPEN; DOME; POT HOLE
3. Defect of a forged or laminated metal characterized by small cavity inside the mass of metal.
4. A cavity executed in a wall but not coming through entirely. **See Figure 18**
5. A globular-shaped depression that affects a ground.
6. A hollow or cavity in a rock. Syn. with RECESS

C.B.R. (CALIFORNIA BEARING RATIO)
Essai C.B.R. (Indice portant californien)
Geotechnics
A test carried out on a soil sample and that consists in measuring its punching resistance. The test takes place in laboratory on a soil whose grading is lower than 20 mm and having the optimal water content determined to the preliminary by the modified Proctor compacting test. One writes down the penetration in the ground of a piston (displacing to a constant speed) in function of the pressures exerted. The test allows to evaluate the thickness' of ground layers to be implemented according to the intensity of the supposed traffic. **See Figure 19**

CEILING
Plafond
Construction
The plain face forming the underside (the intrados) of a pitch staircase.

CELITE
Célite
Hydraulic Binders
A calcium aluminate that is one of the artificial cement components. The other constituents being alite, belite, and brownmillerite.

CELL
Cellule
Foundation
Unit element of a crib having the form of a parallelepipedal case of galvanized wire netting, filled up of dense and high permeability materials: pebbles, gravel, and pebbles.

CELL
Capteur, Organe traducteur
Equipment for Measure and Control
An instrument placed in determined points for detecting a physical magnitude, such as: displacement, pressure, velocity, acceleration, etc., and to turn it into electric impulses.
Among the most used collectors, we can distinguish:
- **horizontal displacement sensor under fillings** *or* **level displacement sensor** *(le capteur de déplacements horizontaux sous remblais),* which is intended for measuring the direction and amplitude of the relative deformations at the level interface ground-filling during and after the achievement of the latter.
The cell is formed by a metal cylinder into which slides a piston. The cylinder is covered by a ringed sheath of reinforced P.V.C. and supplied at its ends by two plates for its anchorage in the ground. Measurements can be made by resistance measurement, or by tension measurement;
- **inductive sensor** *(le capteur inductif),* which is a machine based on the principle of the electromagnetic induction and that can be electrodynamic, electromagnetic, or to inductance. Measurements obtained involve either displacement, or speeds, or also accelerations;
- **piezoelectric sensor** *(le capteur piézo-électrique),* which uses the invert effect of the magneto-constriction and that is used to measure fast variations;
- **pore pressure sensor** *(le capteur de pressions interstitielles),* which is used for measuring pressures that rest on a sensitive membrane. This one subjected to a water pressure modifies the tension of a vibrant string that transmits its variations to a recording apparatus;
- **extensometer** *(le capteur à résistance variable),* see EXTENSOMETER;
- **typical sensor Labo of Angers** *(le capteur type Labo d'Angers),* which is a pressure measuring device consisting of a pressurizing cell (actual sensor) and a portable measuring panel.

The cell is placed under a structure or against a wall (passive earth pressure-earth pressure) and comprises a rigid support and the slimest membrane fixed on the support. The cell appears as a stainless flat disc of 215 mm diameter and 7 mm thickness. A pressure p *of gas, applied inside the sensor with controlled debit, balances the pressure to be measured exerting on the membrane. The measurement takes rapidly by connecting the measuring panel at the buried cell through the channel of small plastic pipings, also buried. This sensor measures total pressures from 0 to 5 bars and can be connected to a recorder.*
Syn. with SENSOR. **See Figure 20**

CELLULAR CONCRETE GROUTING
Injection de béton cellulaire
Work
The blocking up of a very important cavity situated above an underground work by injection of a lightened concrete.

CELLULOSE
Cellulose
Nomenclature of Marerials
A non-nitrogenous substance that is one of the two main matters constituting the wood with the lignin (cellulose 50% approximately, lignin 20 to 30%); the rest being the hemicellulose, sugars, albuminoids, resin, tannin, starch, and various mineral matters.

CEMBUREAU PRACTICE
Méthode _Cembureau_
Test of Materials
A method being designed to determine the cement, water and aggregates contents as well as the particle analysis of aggregates in completely unknown concrete.
The principle consists in admitting that after thermal decomposition, disintegration and granulometric separation, the fraction lower than 63 micrometers solely consists the dehydrated hydrates of cement. The practice includes: thermal decomposition at 600° C during two hours, followed the disintegration with sifting. All these operations are followed by chemical analysis.

CEMENT
Cément; Ciment
Metallurgy; Geology; Hydraulic Binders
1. A solid, liquid or fizzy body, rich in carbon used to carburize superficially metal pieces. Syn. with CARBURIZING MATERIAL; POWDERED CARBON
2. A matter of chemical origin that unites between them the constituents of a rock.
3. A hydraulic binder, formed by anhydrous constituents, crystallized or vitreous, appearing in the form of fine powders obtained by the baking at high temperature and the grinding of a mineral mixture (silica, alumina and lime). The hardening is mainly due to the formation by combination of these anhydrous constituents with water, hydrated silicates and aluminates slightly soluble into the water.
Two categories of cements are available:
- **artificial cement** *(le ciment artificiel),* which is mainly formed by silicates (tricalcium and dicalcium) and tricalcium aluminate. Its manufacture consists essentialy in grinding and mixing in suitable proportions the carbonate of lime, silica, alumina, oxide of iron, chemically and physically homogenized in all their parts, in liquid mud (wet process) or very fine powder form (dry process). The mixture is baked at a high temperature (about 1,450°C). The compound that results some, called *clinker,* is ground in the ball (grinding) mill with a certain quantity of gypsum;
- **natural cement** *(le ciment naturel),* which is a product resulting from natural rock limestones calcination containing more or less clay and that is actually a natural lime containing more 20% of clay (hydraulicity index of 0.50). The essential difference between natural cements and limes rests over time set and final strength. The natural cement contains little free limes; silica, alumina and iron are be found there in sufficient quantity to combine all the lime. It is manufactured in furnaces (baking temperature about than 1300°C) then crushed and bolted.

CEMENT
Cimenter des pierres, des briques, etc..
Masonry
To bond materials with cement. By extension: of a similar operation with another binder that the cement.

CEMENT CLINKER
Clinker
Hydraulic Binders
A product constituted in major part by silicates and aluminate of anhydrous calcium, obtained by baking until partial fusion of a mixed and homogenized mixture of raw matters having mainly as component the lime, silica and, in lesser proportion, alumina and oxide of iron. The clinker has hydraulic properties. At the exit of the furnace, the clinker appears in form of small nodules; it is the primary constituent of the Portland cement.

CEMENT CONCRETE GUNITE MACHINE
Machine à projeter
Equipment and Tools
Syn. with AIR-PLACING MACHINE; CONCRETE GUN; CONCRETE PLACING GUN; MORTAR GUN

CEMENT CONSISTOMETER
Consistomètre
Equipment and Tools
Entirely made of stainless steel, this apparatus is used to measure the viscosity of cement mixtures and their degree of thickness over a period of time.
Among the application is the checking of hydraulic binders used in oil wells in compliance with A.P.I. standard.

CEMENT FOR MARINE (*or* SEA) CONSTRUCTION
Ciment prise mer
Hydraulic Binders
A hydraulic binder that withstands the aggression of sea waters.

CEMENT GROUT
Coulis; Barbotine; Laitance
Materials; Construction of R.C. and P.C.
1. An initially fluid mixture of cement, water, and admixtures, injected under pressure into the prestressing cable ducts to ensure, after setting and hardening, the protection of cables and the mechanical connection between cable and cable duct.
2. A mixture of water, cement, and various other products, or mixture of other substances such as resins, which are injected into certain soils or into the vacuums in concrete to make it more strength and/or waterproof.
3. A mixture of various substances such as cement and water with or without filler materials (ashes, sand, bentonite, etc.), which is sufficiently fluid that it can flow by simple gravity between pointings of masonry or be injected as grout into masonry cracks, cavities, etc.
4. Syn. with CEMENT SLURRY; GROUTING; SLIP
5. Syn. with DUSTING; LAITANCE; MILK

CEMENT GROUTING OF EMBANKMENTS
Cimentation des remblais
Civil Engineering
A cement grout injection into an embankment of bad quality with intent to consolidate it and to improve its mechanical characteristics.

CEMENT GUN
Lance de projection (béton ou mortier projeté)
Equipment and Tools
Syn. with CONCRETE GUN; GUN (SHOTCRETE *or* SPRAYED CONCRETE); MORTAR GUN.

CEMENT HYDRATION
Hydratation du ciment
Hydraulic Binders
The dissolution of anhydrous aluminates in the presence of water to form hydrates that are responsible of the development of the strengths. In short, all chemical and physicochemical processes occurring between the cement and the water and transforming a soft paste (the dense cement suspension in water) into an artificial stone (the hardened cement paste). We can distinguish the *set,* during which the processes accelerate, then the hardening corresponding at the slowing down of the processes.

CEMENT INGREDIENTS
Constituants du ciment
Hydraulic Binders
All different materials going into the composition of cement among which one distinguishes:
- products specially manufactured for that purpose (clinker),
- by-products of others industries that undergo, in a bid to their mixing into the cement, a selection and more or less elaborated preparation (slag, fly ashes), or
- natural products (filler).

CEMENT MORTAR SCREED
Chape en mortier
Tightness
Syn. with MORTAR COVERING; MORTAR FINISH

CEMENT OVERBATCHING
Surdosage en ciment
Building Materials
An operation that consists in adding a certain quantity of cement to a proportion of concrete or mortar in order to increase quickly its strength. In the case of cold-weather concreting, the overbatching increases the heat of hydration thus allowing to the concrete to behave better beside of the low temperatures. One can also overbatch in the case of pumped concrete thus facilitating its flow through pipings thanks to the effect of lubrication due to this overbatching.

CEMENT PASTE
Pâte pure
Hydraulic Binders
A product resulting from the binary mixing cement and water.

CEMENT PLANT
Cimenterie
Building Materials
The manufacture factory of cement.

CEMENT PLASTER
Enduit
Masonry
Syn. with RENDERING CEMENT

CEMENT RENDERING COAT
Crépi
Masonry
Syn. with ROUGHCAST.

CEMENT ROLLER
Boucharde
Equipment and Tools
Syn. with ROUGHING ROLLER

CEMENT SCREED
Chape
Construction
Syn. with COVERING; FLOOR SCREED; SCREED; TOPPING;

CEMENT SLURRY
Barbotine
Materials
A pure or fine sand-laden cement grout, used to smooth small surface shortcomings that can affect a concrete facing or used as bonding grout coat, over time of concreting reworks. Syn. with CEMENT GROUT; GROUTING

CEMENT STONE
Ciment-pierre
Building Materials
A product constituted from Portland cement, lime and aggregates of marble or hard limestone that form the mortar skeleton. The cement-stone is especially used as finish rendering.

CEMENT STRENGTH RATE
Classe de résistance d'un ciment
Hydraulic Binders
The organization into a hierarchy of binders in function of the results of the compressive strength tests obtained at 28 days on each category of cement. The denomination of the class corresponds to the average of the maximal and minimal limit strength at 28 days. Nowadays one distinguishes three main grades (32.5 – 42.5 - 52.5) and two grades called *High performance* (HP) and *High rapid performance* (HRP). We can distinguish also for grades 42.5 and 52.5 the subgrades 42.5 R and 52.5 R (R = Rapid) whose strength on two days is specified. (The unit used in the designation of the grade is the megapascal (MPa) that equals to 10 bars).
Syn. with GRADE OF CEMENT

CEMENT-ASBESTOS
Fibrociment; Amiante-ciment
Building Materials
Syn. with FERROCEMENT

CEMENTATION
Injection de sol
Work
A ground treatment by penetration for a product, which is usually carried out by means of drillings (from 5 to 15 cm diameter) and by ground slices (from 3 to 6 m thickness) often called *passes of injection.*
Nature and proportions of the grout, injected quantity, density of boreholes, grouting pressure are accomodated following the nature of the ground (fissured rocks, cavities, alluvia), of the required result (cementation or/and tightness), and the type of work to be achieved (vertical shell, horizontal bottom or earth mass needed to enclose an underground work). In the fissured rocks, the injection can be carried out by stage (downward slices), or upstage (upwards slices). In the alluvia, it is necessary to case the drilling, as well for the behavior of walls as for the blocking of the obturator. See: *tube à manchettes process.*
Grouts used can be:
- *stable suspensions containing cement and bentonite* in sands and gravels;
- *gel of clay or chemical gel* (soda silicate and reactive) in average sands;
- *polymerizable resins* in fine sands.

There are several types of grouting:
- **stage grouting *or* by downward slices** *(l'injection à l'avancement ou par tranches descendantes),* which consists in drilling a slice and to treat it by means of a lance supplied with an obturator, then, after set of the grout, to re-bore the slice already injected, to drill the following slice and to inject it, and so on. This type of treatment is used in the mass of fallen

rocks (or earth) grounds or very fissured rocks; **See Figure 21**

- **cementation** *(l'injection de consolidation ou de confortation),* injection of a grout into fractured grounds (example: country rocks of a tunnel) or into a masonry very impoverished in binder with intent to give them or give again a certain cohesion and solidity;
- **permeation grouting** (*l'injection gravitaire),* a treatment method for grounds strongly decompressed or concealing enormous cavities and that consists in letting run out the grout freely or to inject it under very low pressure;
- **tube à manchettes process** *(l'injection avec tubes à manchettes),* a process used to achieve injections of ground or masonry. The injection cannot be made that if one slaps the sheath directly below of the manchettes. This operation comes true with the grouting under pressure localized inside the tube à manchettes by means of a lance supplied with a double obturator; thus the grout can come out of the tube but to enter not there. Thanks to this device it is easy to inject deep beds, to start by anyone horizon, to return an unspecified point to continue or to complete the treatment if this one were insufficient on a given level;
- **packer grouting *or* obturator grouting** *(l'injection à l'obturateur),* which consists in drilling over all the necessary length and grouting in successive phases behind the obturator;
- **preliminary cementation** (*l'injection préalable),* a treatment process for incoherent grounds or in aquiferous zone, carried out beforehand to the opening of an excavation or boring work of gallery or tunnelling and with intent to restore a certain cohesion to the ground to be excavated;
- **upstage grouting *or* by upwards slices** *(l'injection en remontant ou par tranches remontantes),* that consists in drilling into only once until the required depth and processing going up, by successive slices, by means of a lance supplied with a simple obturator. **See Figure 21a**
- **jet grouting** (*l'injection sous forte pression à jet dirigé):* see JET GROUTING.

Syn. with. ARTIFICIAL CEMENTING; SOIL GROUTING; SOIL INJECTION

CEMENT-GRAVEL MIXTURE
Grave-ciment
Building Materials
Rolled or crushed alluvial material, presenting a continuous particle size grading curve to which is added cement in small quantity (3 or 4 %). This material made in concrete mixing plant is used to realize stabilized layers or embankments. Syn. with ROLLED LEAN CONCRETE

CEMENT GUN
Cement-gun
Equipment and Tools
A device used to spray mortar, in which a jet of compressed air powers the mortar inside a conduct and throws it with force onto the surface to be rendered. A regular rendering perfectly compressed and compact are obtained: the sprayed mortar.

CEMENTING
Cimentation
Construction; Civil Engineering
1. The intimate bond of materials with a cement or a product having a similar action.
2. An aquiferous ground treatment by grouting into its fissures to head off water in-rushes. Syn. with ARTIFICIAL CEMENTING

CEMENTING OF A TUBING
Cimentation d'un tubage
Work
The filling of the annular space between the drilling tubes and the wall of the hole with a cement grout, with in view to isolate between they the various geological stratums passed by the drilling.

CEMENTITE
Cémentite
Metallurgy
An agglomeration of a free iron carbide, i.e. not committed in the pearlite mixture. The cementite is extremely hard and meets in the extra-hard steels, the white (cast) iron and semi-steels.

CENOMANIAN
Cénomanien
Geology
Lower formation of the upper Cretaceous.

CENOZOIC
Cénozoïque
Geology
An era of geologic time, from the beginning of the Tertiary period until nowadays. It is subdivided into the Tertiary and Quaternary periods. Era covers the Earth' history during the last 65 MA. Syn. with CAINOZOIC ERA

CENTER
Cintrer; Cintre
Temporary Constructions
1. To create a centering.
2. Syn.with CENTERING

CENTER (OF STRUCTURAL WORK)
Noeud
Construction
Syn. with NODE. PANEL POINT

CENTER LINE
Axe
Civil Engineering Structure
1. An ideal straight line marking a direction.
2. The reference line on which is ordered an alignment, a construction.

CENTER OF BENDING
Centre de flexion ou de torsion
Strength of Materials
The point of a section where must be applied the force so that a bending is accompanied by a parasitic twist. One could have called it *common antitwist center with the center of gravity* if the section possesses two axes of orthogonal symmetry; it differs some and lot often from the outside size of the section in the opposite case. Syn. with CENTER OF TWIST; FLEXURAL CENTER. **See Figure 23**

CENTER OF GRAVITY
Centre de gravité
Strength of Materials
The point of application of the resultant *R* of the forces of gravity which are exerted on each of punctual elements of a mass, so that equilibrium conditions remain the same. The center of gravity is called *barycentre* when the field of parallel forces is not vertical but directed in a some direction. Syn. with CENTER OF MASS; MASS CENTER

CENTER OF MASS
Centre de gravité
Strength of Materials
Syn. with CENTER OF GRAVITY; MASS CENTER

CENTER OF TWIST
Centre de flexion ou de torsion
Strength of Materials
Syn. with CENTER OF BENDING; FLEXURAL CENTER

CENTER SPAN
Travée centrale
Construction
Concerning a work with several spans and when the number of these last is odd, that of the medium takes the name of *the center span.*

CENTERING
Cintre; Cintrage
Temporary Construction
1. A temporary metal or wooden framework being of use as floor and scaffolding for the construction of masonry or concrete vault until it becomes self-supporting.
Centerings are the construction molds of vaults and can be erected in permanent formwork, on floats or also suspended. A complete centering is formed by several trusses connected between they by wind-brace bars. Strains that applies it the vault are transmitted at the poles by a system of triangulation. Poles transmit to the grounds the stresses that they through the channel of distribution soldiers.
There are several types of centerings:
- **fixed centering** *(le cintre fixe),* used to construct works and that comprises intermediate bearings postponing the loads on the ground. This centering has a great rigidity.

There exists four main typical permanent centering:
- *centerings with posts (les cintres a poteaux),* in which stresses are transmitted by vertical pieces or poles. This system has the disadvantage to necessitate the establishment of many posts, **See Figure 22**
- *centerings with posts and raking shores (les cintres à poteaux et contrefiches),* in which the number of posts is minimized by the use of inclined raking shores. The number of raking shores can be multiplied to minimize to the

maximum the number of posts and one obtains then from centerings with rayonnant raking shores, **See Figure 22a**

- *centerings with rayonnant raking shores (les cintres à contrefiches rayonnantes),* which have for advantage to decrease the length of ribs, ribs being recut timber and therefore impossible to be reused, **See Figure 22b**
- *spoke centerings (les cintres à rayons),* in which compressed pieces are normal with the intrados of the vault. This system is highly interesting for semicircular arches little heightened because it allows only to implant a single intermediate bearing; **See Figure 22c**
- **framework centering** *(le cintre en charpente),* which is formed by vertical trusses more or less spaced according to their resistance and the importance of the vault, arranged according to the cross section of the vault, and united between they by wind-braces. These trusses rest through the channel of decenters apparatus on fixed bearings: posts or small posts made of wood or masonry. On the trusses are arranged the lagging (joists) that bear a decking on which will rest the masonry. Laggings are fixed on pieces following the form of the intrados: the ribs, that picking up on the principal rafters of the truss. The truss itself is constituted according to principles of the frame:
  - by triangulation of pieces working in bending or compression,
  - according to their resistance and the importance of the vault;
- **snub centering** *(le cintre retroussé),* whose trusses only pick up on the two extreme bearings arranged at the drops. There are no intermediate bearings and therefore it allows the construction of vaults above important breaches; **See Figure 22d**
- **earth centering** (*le cintre en terre*), temporary work which, when the site lends itself to it, allows for little important vaults to build the centering straight from the ground by giving to this one the profile of the vault which will be built on the surface obtained possibly covered with a wooden decking. The decenter is made by digging of the earth block.

Syn. with ARCHED FALSEWORK

2. Mise en oeuvre des éléments d'un cintre de voûte.

CENTER-TO-CENTER DISTANCE
Entraxe
Construction
The distance separating the axes from two consecutive holes, bearings, etc..

CENTIPOISE
Centipoise
Metrology
The hundredth part of the poise, dynamic viscosity unit.

CENTRAL GIRDER
Longeron
Metal Construction
Syn. with LONGITUDINAL GIRDER; STRINGER; STRINGER BEAM

CENTRAL GRATING
Grille du trou central
Construction
Set of openwork metal plates (example: grating) being designed to cover the central space between two half-works.

CENTRAL SPRING
Ressort central
Construction of P.C.
A piece for asiding draw wires or strands in a prestressing cable duct.

CENTRIFUGAL PUMP
Pompe centrifuge
Equipment and Tools
A pump formed, on the one hand, by a crankcase inside whose turns a wheel and, on the other hand, by a diffuser connected with a discharge pipe. This pump (as piping) must be filled with water before the starting; the operation is called *beginning.* The two primary types of centrifugal pumps are: the unicellular pump and multicellular pump. Among these two types one also distinguishes: pumps not submarines that are laid out above the sheet of water to be drained, in which they pump by the agency of a suction pipe, and the submarine pumps whose body is dived into the sheet of water.

CERAMIC NETTING
Treillage céramique
Building Materials
A metal skeleton map with square meshes, of sizes 0.02 x 0.02 m whose wires are assembled at

each crossing by a ceramic chip. The ceramic netting is in particular used to be of use as reinforcement to the renderings.

CERATESTOMELLA
Ceratestomella
Defects - Damage (Building Materials)
A discoloration fungus that causes by its attack the turning blue of the wood.

CERTIFICATE OF COMPLIANCE
Certificat de conformité
Welding
Syn. with CERTIFICATE OF CONFORMITY

CERTIFICATE OF CONFORMITY
Certificat de conformité
Welding
A document certifying that a product or a service is true with standards or with determined technical specifications. Syn. with CERTIFICATE OF COMPLIANCE

CERTIFICATION BODY
Organisme de certification
Civil Engineering Structure
An organization that has the competence and reliability necessary to manage a system of certification and within are represented the interests of all concerned parts in operation of the system.

CERTIFIED REFERENCE MATERIAL
Matériau de référence certifié
Materials
A reference material of which one or several values of properties are certified by a technically valid procedure, having a certificate or another document to that effect, that accompanies it or which can be reported to it, which is delivered by an organization of certification.

CESS SIDE
Accotement
Construction
Syn. with BANK; BENCH; ROADSIDE; SIDE PATH; SHOULDER

***CETIC* METHOD**
Méthode *Cetic*
Test of Materials (Concrete)
A method used to determinate the cement, water and aggregates contents in a hardened concrete. This method is carried out by thermal decomposition; this is a lightened alternative of the *Cembureau* practice.

CHAIN
Chaîner
Topography
To notice the dimensions of a terrain with a chain measure. By extension: to measure with the measuring tape.

CHAIN MEASURE
Chaîne d'arpenteur
Topography
A ribbon of steel or lengthened links, 10-m lenght. (Ancient chains consists of 100 links joined together by rings). Syn. with LAND CHAIN; SURVEYING CHAIN.

CHAIN PIN
Fiche
Topography
Syn. with ARROW

CHAIN PUMP
Noria
Equipment and Tools
A single or double endless chain supporting buckets or platforms and that is designed to carry liquids, solids, muds, pulverulent products, etc. Syn. with BUCKET CHAIN; BUCKET CONVEYOR

CHAINAGE
Chaînage
Topography
Syn. with CHAINING

CHAINING
Chaînage
Topography
The measurement with the chain measure or the double decametre. Syn. with CHAINAGE

CHALK
Craie
Geology
A white sedimentary rock of chalky nature, presenting a grain of a great fineness. The chalk is a pulverulent material that results from natural grinding of shells; it is a good material being able to be of use as foundation bed so that it is

under the cover of water in-rushes. The water has for effect to mix the chalk that turns rapidly into sticky mud.

CHALK A LINE
Tringler; Cingler
Masonry and Construction
To draw lines with a line coated by coloring matter. Syn. with LASH

CHALK LINE
Ligne; Cordeau à cingler; Cingleau
Work
A string impregnated with a colored substance (usually of chalk) that allows to mark, striking the wall or the ground, a level line or the site of a frame to be assembled on the ground, for example. Syn. with SNAPPING LINE; STRING LINE

CHALK PIT
Crayère
Materials
A pit where the chalk is exploited.

CHALKY
Crayeux
Materials
Is said of what contains chalk.

CHALKY MARL
Marno-calcaire
Geology
Syn. with CALCAREOUS MARL

CHAMBER
Four; Eclusette
Earthwork; Foundation
1. Syn. with KILN
2. A small compartment located in the lock chamber of pneumatic caissons which serves for carting away excavated materials and to introduce new materials.

CHAMBER NAVIGATION LOCK
Ecluse à sas
Hydraulic Work
A construction composed of two locks or a channel separated by an interval called a *lock chamber.*

CHAMBER WALL
Bajoyer d'écluse
Construction
Syn. with LOCK WALL; SIDE WALL OF LOCK

CHAMFER
Chanfrein; Chanfreiner; Biseauter
Nomenclature of Materials; Materials; Construction; Building Materials
1. A very narrow splay performed on the edge of a member, a stone, a metal piece (example: preparation for welding).
2. To bevel an edge or corner. Syn. with BEVEL

CHAMFER STRIP
Baguette d'angle
Construction of R.C. and P.C.
Syn. with CANT STRIP

CHAMFERING
Ecornure; Chanfreinage
Defects; Nomenclature of Materials
1. A spall detached from the edge of a stone, a wall, etc., following a shock.
2. Syn. with SPLAYED JOINTING; SPLAYING

CHANCELADE
Chancelade
Building Materials
Any limestone of a chalky aspect; this stone is considered a great dedicacy in construction and that is extracted from Chancelade's quarry (Dordogne).

CHANGE POINT
Station
Topography
Location where is positioned the measuring instrument (example: tacheometer). Syn. with TURNING POINT

CHANGING DIRECTION
Brisure
Construction
Syn. with BREAK

CHANNEL
Refouillement; Refouiller; Auget; Rainure; Saignée; Saigner
Masonry; Construction; Work
1. A notch executed among three, four or five preserved faces in a stone or a facing. **Fee figures 24; 24a and 24b**
2. To execute a channel.
3. A funnel of plaster carried out on the edge of the joint of two contiguous stones and allowing the introduction of grout for sealing them. Syn. with POCKET
4. Syn. with RABBET; FURROW; GROOVE; SLOT
5. A more or less deep narrow notch carried out in a material using cutting edge tools (burin, scissors, heading chisel, grooving machine, etc). Syn. with CHASE; HOLE; RAGLET
6. To carry out a channel. Syn. with TO RAGLET

CHANNEL
Echau; Noc; Larron d'eau; Mouille; Havée
Sanitary Engineering and Drainage; Hydrology; Earthwork
1. A ditch or channel used to flood grasslands or for water flow.
2. A small channel transversely fitted under a path, a road and which allows to make flow water from one side to another. Syn. with DRAIN
3. A small canal built to guide water run-off (an aqueduct can be compared with a channel).
4. A hollow zone located between the beds of alluvia in a river, that reflects the undermining zones due to the influence of swirls and which as often as not meets downstream from a bridge pier. Syn. with WHIRLPOOL PASS
5. Syn. with CUT; TRACK

CHANNEL
Chenal; Canal; Cannelure
Railway and Canals; Architecture
1. The navigable part of a waterway.
2. A small feeder canal.
3. Syn. with CANAL; CULVERT; FLUME; RACE
4. A hollow molding done lengthways or in spiral, to equidistant gaps, around the shaft of a column, on the surface of a pilaster. Syn. with FLUTE; GROOVE

CHANNEL IRON
U
Metallurgy
Syn. with U-CHANNEL

CHANNEL OF COMMUNICATION
Voie de communication
Civil Engineering
Installations, devices which give the means to the men to travel and to transport goods; one counts among them not only the roads, railway tracks, and airfields, but also aqueducts, canals, pipelines and gas pipelines. Syn. with THOROUGHFARE

CHANNEL TUBE
Buse
Civil Engineering Structure
Syn. with BARREL; DUCT; PIPE CULVERT; SLEEVING

CHANNELING
Recoupement
Masonry
The creation in a masonry of a channel higher than 10 cm depth. Syn. with GROOVING. **See Figure 25**

CHANTIGNOLE
Chantignole
Building Materials
A brick making the half-thickness of a normal brick, while preserving its other dimensions.

CHAP
Gerçure
Defects (Painting)
Syn. with CRACK

CHAPEL
Chapelle
Defects (Construction)
An overbreak of any geometrical shape impairing the noncovered tunnels and that can be the result of the fall of a dihedral. Syn. with VAULT

CHARACTER
Caractère
Building Materials
All particularities of a material defining it (example: geometrical, physical, chemical, etc., characters).

CHARACTERISTIC VALUE OF BUILDING MATERIALS
Valeur caractéristique d'un matériau
Building Materials
The value which, in the hypothesis of an unlimited serie of tests carried out from a homogeneous quantity of this material, would have a prescribed probability not to be reached.

CHARGING
Chargement d'une mine
Explosives
The loading of a blasthole with an explosive charge.

***CHARPY* MACHINE**
Mouton-pendule de *Charpy*
Assaying Equipment
An equipment used to perform the impact resistance tests of steels.

CHART
Abaque
Drawing
Syn. with DIAGRAM; GRAPH; NOMOGRAPHY

CHASE
Saignée
Construction
Syn. with CHANNEL; RAGLET.

CHASING
Brettelure
Masonry
Syn. with NOTCHING; TOOTHING

CHECK
Gerce
Defects - Damage (Building Materials)
Syn. with CRACK

CHECK OF CONTINUITY
Vérification de la continuité d'un pieu
Control of Materials
A test for verifying the continuity of prefabricated concrete piles after installation. It is a control shaft set into an axial tube at the time of the pouring. If the pile is flawless the shaft can be driven up to the base. (This process cannot detect the possibility of future cracking).

CHECK TEST
Contre-épreuve
Test of Materials
A test for confirming or invalidating the results of a preceding test.

CHECK SURVEY
Contre-étude
Contract
A new study for verifying the previous one of it.

CHECKED CONCRETE
Béton contrôlé
Building Materials
Any concrete that is the object of tests of both tension and compression strengths so as to verify its manufactured regularity, its proportions, etc. in comparison with a study test concrete.
This verification is made on standardized cylinder tests that are probed the seven and twenty-eighth days after conservation at 20°C in humid atmosphere.

CHECKED NUT
Contre-écrou
Materials
Syn. with BACK-NUT; COUNTER NUT; FAM-NUT; KEEPER; LOCK-NUT; SAFETY-NUT; SET-NUT

CHECKER
Vérificateur
Contract
A specialist in accounting, he or she verifies costs and expenditures of a job or contract.

CHECKING OF WELDING
Contrôle des soudures
Welding
An operation that consists in detecting possible defects; the ordinary means used are: the direct visual examination, radiography, gammagraphy, ultrasonic waves, magnetic-particle inspection with two poles (deep defects) or with direct current (defects situated near the surface), sweating with the red organol and talc in sprays or not in white light, fluorescent sweating of *Wood* light, thermal control.

CHECKUP
Bilan
Mineralogy
Syn. with SITUATION

CHEEK
Joue
Construction
Syn. with SIDE

CHEEK BOARD
Joue de coffrage
Temporary Construction
The side face of a formwork located at the ends of this one and making the thickness of the wall, the pier, etc., to be concreted.

CHEMICAL COMPOSITION (centesimal or elementary)
Composition chimique (centésimale ou élémentaire)
Geotechnics
The result of the centesimal chemical analysis.

CHEMICAL DEPOSIT
Dépôt chimique
Metallurgy
A coating obtained by electrochemical or chemical reaction on the surface of the parent metal in a suitable bath without outside supply of electric current.

CHEMICAL INJECTION
Injection d'étanchement
Masonry
A treatment for inhibiting water seepage or for removing dampness due to the capillarity rising inside masonries. This treatment is carried out making penetrating under pressure in the spaces of the structure to be sealed, a product whose characteristics are function of the destination of the work, nature of masonry, importance of the spaces and, if necessary, type of sealing carried out. Products used can be cement grout, acrylic resin, epoxydic resin, etc. Syn. with DAMP-COURSE INJECTION

CHEMICAL PICKLING
Décapage chimique
Welding
The elimination by electrochemical or chemical action of oxides or other impurities from the surface of the parent metal of two pieces to be asssembled by welding.

CHEMICAL SURFACE PROCESSING
Traitement de surface chimique
Metallurgy
An operation with intent to bring about the surface insoluble salt formation by immersion into a chemical bath, without electric current.

CHEMICAL TEST
Essai chimique
Test of Materials (Hydraulic Binders)
A test for determining insolubles, the SO_3 content, carbonic dioxide dosage, and the free lime batching (in the hydraulic limes) that contain binders. Chemical tests are also achieved on other materials such as paints, aggregates, waterproof blankets, etc.

CHERRY PICKER
Cherry-picker
Equipment and Tools
At the time of a tunnelling, mucking out device constituted by a small traveling crane that allows to lift an empty cart to change it of track or in order which the train of carts could go beneath. This device allows to make successively pass empty carts from the rear of the train to the head of this one by simple manoeuvres, without having in unharnessing the tractive unit.

CHERT
Chert
Geology
A sedimentary rock constituted by a siliceous heap formed by an opal and chalcedony mixture, with spicules of sponges. Syn. with SILICEOUS CONCRETION

CHESTNUT OAK
Durelin
Building Materials
Durmast oaktree. Syn. with MOUNTAIN OAK

CHESTNUT TREE
Châtaignier
Building Materials
A tree with compact and hard wood of which density is 0.6 to 0.7. Placed in water, it acquires a great hardness, endowing it a longer life.

***CHICAGO* CAISSON**
Puits *Chicago*
Earthwork
Syn. with *CHICAGO* WELL

CHICAGO WELL
Puits _Chicago_
Earthwork
A circular excavation executed in the grounds that cannot require an immediate sheeting. The sheeting is executed afterthought with vertical balks assembled to tongue-and-groove. Each setting of runners is kept in position by two that can be dismantled metal flat iron rings or in channel. These hooping butress' are fastened on the balks by way of some coach screws.
This type of well is drilled manually and excavated materials went up with winch. Dimensions of these wells range from 1.10 to 3.60-m diameter and can reach up to 40-m depth.
Syn. with CHICAGO CAISSON

CHICKEN'S FOOT ROADWAY
Chaussée en pied de poulet dit procédé _Cakar Ayam_
Construction
Syn. with *CAKAR AYAM* PROCESS

CHIEF POST STONE
Chardonnet
Construction
A stone endowed of a groove in which turns each swivel poles of a lock gate.

CHILL COUPLER
Coquille
Construction
Syn. with HALF COUPLER

CHIMB
Echantignole
Carpentry
Syn. with CLEAT; PURLIN CLEAT

CHIMERA
Chimère; Gargouille
Sanitary Engineering and Drainage
Syn. with GARGOYLE

CHIMNEY DRAIN
Drain cheminée
Sanitary Engineering and Drainage
A thin and vertical drain of calibrated or uniform material, placed inside an embankment, below the zone of the watertight core of an earth fill dam so as to remedy the infiltration into the aforementioned core.

CHINA CLAY
Kaolin
Geology
Syn. with KAOLIN

CHINA STONE
Petunsé
Geology
A mica-bearing feldspathic rock.

CHINESE WHEELBARROW
Brouette chinoise
Equipment and Tools
A two wheel vehicle carrying a box which is used to transport small quantities of concrete, sand, or gravel. The dumping is made by tipping forward. This small vehicle is hand powered.

CHINK
Lézarde; Crevasse
Defects
1. Syn. with CRACK; CREVICE
2. Syn. with CREVICE; DEEP CRACK; SPLIT

CHIP
S'épaufrer; Cliver; Ripe
Building Materials; Geology; Equipment and Tools
1. To fracture and to come off to the continuation of a shock, speaking about the edge of a stone, a quarry stone, a brick, or a concrete piece. Syn. with SPALL
2. To foliat, get separated by layers, folias. Syn. with CLEAT
3. A stonecutter's tool used to polish the stone, formed by a steel rod thinly S-bended which the worker takes with the hand; it has a cutting edge at each end, one toothed which one passes on the stone after the rough hammer and the other plain to finish the cut. **See Figure 26**

CHIP (OF BRICK)
Briqueton
Building Materials
1. A near-enough regular fragment of brick.
2. A steady brick fragment, lesser than the bat or brickbat.

CHIP REMOVAL
Frotture
Defects
An accidental matter removal on a timber piece to the following of a shock.

CHIPBOARD
Panneau de particules
Building Materials
A plate, generally of rectangular shape, made up from wood fragments or other woody products joined by sticking. Syn. with FLAKEBOARD; PARTICLE BOARD

CHIPPING
Gravillonnage
Work
Syn. with FINE GRAVELLING; GRITTING

CHIPPINGS
Gravillon
Building Materials
A material coming from the dredging or crushing of rocks, of a grading displaying between 5 and 25 mm (after sifting) and that is used to manufacture concretes. Syn. with FINE GRAVEL

CHIPPINGS CARPET
Tapis d'enrobés
Civil Engineering
A road surface which consists of a layer of products containing a stony material, mixing of sand and chippings of various sizes coming from pits or ballast-pits, and bitumen stemming from refineries. Syn. with CHIPPINGS MAT

CHIPPINGS MAT
Tapis d'enrobés
Civil Engineering
Syn. with CHIPPINGS CARPET

CHISEL
Ognette; Burin; Gravelet; Repoussoir; Buriner
Equipment and Tools; Metal Construction
1. Syn. with PITCHER
2. A knocking tool with a single hardened-cutting edge which is used for various tasks such as matter removal, unriveting, cut of sheet metals, etc. Syn. with BURIN; COLD CHISEL; CUTTER
3. A small chisel used by the stonecutter.
4. A long chisel used by stonecutters to carve moldings on the ashlars.
5. To carry out work of cutting, unriveting, etc. with a burin or a heading chisel.

CHISEL KNIFE
Peigne de quadrillage
Equipment for Measure and Control
An instrument for checking the adhesion of the paintings on their substrate.

CHISELING
Ciselure
Nomenclature of Materials
A smooth frame from 20 to 30 mm width executed on the perimeter of ashlars.

CHLORINATED RUBBER
Caoutchouc chloré ou isomérisé
Painting
An incombustible thermoplastic resin derived from the natural rubber and that is plastic-coated with siccative oils or alkyd resins. It cold-dries by evaporation of solvents.
Chlorinated rubber paints give supple films, adhere on most metals. They are waterproof and stand up to acids, salts and alkaline diluted mediums. This also are good dielectrics. Chlorinated or isomerised rubber-based coatings applied in four or six layers allow efficiently to protect the steel shown in humid atmosphere or in contact with saline or acidic solutions. They also have good behavior in the presence of abrasive atmospheres (dusts, sands, etc.). The prime coat is usually pigmented with red lead or powder of zinc, if the medium is not acidic.

CHLORITE SCHIST
Chloritoschiste
Geology
A metamorphic rock with a chlorites high content that presents a very pronounced foliation.

CHORD
Membrure
Metal Construction
1. The top or bottom part of a beam usually arranged on two perpendicular plans with the web or lattice. The chord is formed by a flat iron called *table* resting on two corner irons laid out on both sides of the girder web; the assembly between these various elements being carried out by riveting or bolting. In the laminated beams, chords are called *flanges;* in the welded reconstituted beams, frames are called *booms* or *chords.* Syn. with BOOM; FLANGE. **See Figures 27 and 27a**

2. For a restrained vault, distance between the centers of the restraint sections.

CHORD ANGLE IRON
Cornière membrure
Metal Construction
Syn. with FLANGE ANGLE; FLANGE PLATE

CHROMATING
Chromatation
Metallurgy
Syn. with CHROMIC FINISHING

CHROMIC FINISHING
Chromatation
Metallurgy
A chemical surface processing in aqueous baths of compounds of chromium, applied on surfaces of zinc, cadmium, aluminum. This process is also called *chromating, bichromating and chromic finish.* The use of terms of *passivation* and *tropicalization* are to be proscribed for this type of treatment. Syn. with CHROMATING

CHROMING
Chromage
Metallurgy
Syn. with CHROMIUM PLATING

CHROMIUM PLATING
Chromage
Metallurgy
The depositing by electrolysis of a metal chromium coating on a metal surface. According to the process of chromium plating or its use, the following terminology is used:

- **decorative chromium plating** (*chromage décoratif):* electrolytic depositing of the shiny chromium, normally fewer 1 μm thickness, generally executed on a base of nickel;
- **hard chromium plating** *(chromage dur):* direct electrolytic depositing on parent metal, without intervention of another deposit, of a chromium layer having a thickness being able to go from some micrometers to several tenths millimeters thickness.

Syn. with CHROMING

CHROMIZING
Chromisation; Chromage thermique
Metallurgy
A thermochemical surface processing of the surface distribution of chromium in the steel.

CHROMOMETER
Colorimètre
Equipment for Measure and Control
Syn. with COLORIMETER

CHUCKHOLE
Nid-de-poule
Defects - Damage (Civil Engineering)
The erosion of a pavement (roadway), often due to the bad weather, in hole-shaped more or less circular. Syn. with POTHOLE

CHURN BUTTER
Battre le beurre
Masonry
To execute a hole of small diameter and great depth with the crowbar while handling the tool of a conical motion, a rotational movement similar to that used to beat the butter (example: to execute a vertical hole in a block of stone).

CHUTE
Goulotte; Goulette; Cheminée
Sanitary Engineering and Drainage; Equipment and Tools; Construction
1. A built downspout built to hillside for directing and draining waters coming from a crest ditch toward an outlet located at the base of the slope.
2. Syn. with CONCRETE CHUTE
3. Syn. with FUNNEL; RAIN

CHUTED CONCRETE
Béton fluide
Building Materials
A material that presents a slump of 16 cm (± 3 cm) at the time of the slump cone. Syn. with FLOWING CONCRETE

CHUTES
Rebonds; Retombées
Building Materials
Losses coming from the revival of aggregates from concrete or mortar sprayed onto the receiving surface.

CIFERIZATION
Ciférisation
Metallurgy
A technique of steel passivation by spreading of vegetable oil onto their surface. Syn. with OIL PASSIVATION

CINCTURE
Ceinture
Architecture
A small square molding at the top and/or down below of a column, connecting with a coving.

CINDER
Cendre; Mâchefer
Materials
1. Syn. with ASH
2. The residue coming from the melting and agglomeration of ashes, in particular in the thermal plant equipped with a grid furnace, or in factories of incineration of household refuse.
The clinker is sometimes used as aggregate in the manufacture of some concretes or in improved subgrade on clayey soils. Syn. with SLAG

CINDER BRICK
Brique vitrifiée
Building Materials
A brick fired beyond 1260°C to vitrify clay or at least its surface. The color of these bricks can change depending on the paste that is ferruginous or more or less chalky and that contains a significant proportion of flux. Syn. with GLAZED BRICK

CINDER CONCRETE
Béton de mâchefer; Béton de scorie
Building Materials
A low density material whose aggregates consist of unburned clinkers. Syn. with SLAG CONCRETE

CINDERIZATION
Clinkerisation
Hydraulic Binders
The baking until partial fusion of elements for providing the clinker.

CINDERSTONE
Crassin
Masonry
Syn. with STONE SLAG

CINERITE
Cinérite
Geology
A vulcano-sedimentary rock.

CIPOLINO
Cipolin
Geology
A metamorphic rock formed by crystals of calcite and that represents one of the most beautiful range of marbles.

CIRCLE
Cerce; Embrassure
Construction: Materials
1. The curved part of the frame of safety hoops of which are supplied some ladders. Syn. with HOOPING
2. A steel belt encircling a piece, pipe, etc.

CIRCLE APPARATUS (GONIOMETER)
Cercle
Topography
A goniometer equipped of a single graduated limb, inside which moves a graduated tray or *alidade* supplied of a vernier and movable around the center. The circle apparatus is solely intended for measuring angles (horizontal or vertical) in the field. They are several types of circle apparatuses of which the alignment, azimuthal, zenithal and to reflection circle apparatus.

CITRINE
Citrine
Mineralogy
A yellow variety of quartz.

CIVIL ENGINEERING
Génie Civil
Construction
A discipline which includes all techniques concerning the civil constructions (bridges, buildings, transportation systems, tunnels, viaducts, airports, dams, harbors, water distribution,etc.).

CIVIL ENGINEERING STRUCTURE
Ouvrage d'art
Civil Engineering Structure
All civil engineering constructions built of masonry, concrete, reinforced or prestressed concrete, metal, etc, such as bridges, tunnels, retaining walls, barrages, etc, and that are necessary to the realization of the equipments of

a country (transport link, hydraulic developements, etc).
We can distinguish:
- **small works** (*les petits ouvrages*), of which span is lower than 8 m;
- **medium works** (*les ouvrages moyens*), of which span lies between 8 and 25 m;
- **large works** (*les grands ouvrages*), of which span lies between 25 and 40 m.

Syn. with ENGINEERING WORK; STRUCTURE. **See Figures 28 and 28a**

CIVILIAN BUILDING
Construction civile
Work
Syn. with CIVILIAN CONSTRUCTION; PUBLIC WORKS

CIVILIAN CONSTRUCTION
Construction civile
Work
A technical field of the civil engineering that is interested in mechanical, physical and chemical properties of building materials, as well as to the laws, method and processes that govern the combining, the assembly and implementation of these last-mentioned, in a bid to achieve constructions that answer the best possible to the demands of legislative or specification texts and to the particular blueprints. The civilian construction contains two parts: on the one hand, the study of materials, on the other hand, the technology of implementation of these ones, as the statement of laws, trade practices and standards that govern this last. Syn. with CIVILIAN BUILDING; PUBLIC WORKS

CLACK VALVE
Clapet articulé
Equipment and Tools
Syn. with ARTICULATED VALVE

CLAD
Paramenter; Plaquer
Masonry
1. Syn. with FACE
2. To place tablets (quarry stones or bricks of slight thickness) on the facing of a wall. Syn. with VENEER

CLADDING
Parement; Revêtement par doublage; Plaquis; Revêtement; Pavement
Construction; Metallurgy; Building Materials; Civil Engineering
1. A wall lining made of stones or bricks implemented on a concrete construction of which primary aim is aesthetically pleasing.
2. The recovery of a support, metal or not, obtained by means of plates assembled mechanically or by welding and linked or not with the support.
3. A covering formed by slip tiles of stone, marble, etc.. placed on the facing of a wall. Syn. with FACING
4. Syn. with COATING; FACING; LINING; REVETMENT; SHEATING
5. Syn. with PAVING

CLAMP
Clame; Serre-joint; Bride ; Brider
Metal Construction; Equipment and Tools; Construction
1. A metal piece (flat iron, angle section, etc.) used in the process of assembly to ensure the maintenance and precise positioning of two pieces to be made up.
2. A tool of tightening used to keep up in a certain position the parts to be assembled by welding, nailing, sticking, bolting, etc. Syn. with JOINER' S CLAMP; SCREW CLAMP
3. Syn. with CRAMP IRON
4. To install a clamp.

CLAMP IRON
Agrafe
Masonry
Syn. with DOUBLE-DOVETAIL MASONRY TIE; MASONRY TIE; METAL CRAMP; WALL TIE

CLAMP STRAP
Etrier
Construction
A strenghtening device for fissured beams of R.C. (or P.C.). The clamp strap is composed by two plates connected between them by high-tensile steel rods; the unit surrounding the beam. **See Figure 29**

CLAMPING
Serrage; Clamage
Work; Metal Construction
1. The intimate compression of pieces with clamps or similar devices, so as to prevent their relative displacement during their machining or assembly.
2. A stiffening and assembly device of sheet metals for avoiding the distortions between sheet metals at the time of their welding connection.

CLAMPING PLATE
Crapaud
Construction
A clamp system that allows to hang up a load under a beam, without performing boring in the flange or bottom boom of this beam. The clamp itself is formed by two claws, usually opposite, made of sloped angle sections tightened by bolting.

CLAMPING RING
Collier de serrage
Materials
A removable device, shut on itself by a screw or notched device, used to keep up in position the end of a pipe, hose, etc. Syn. with PIPE CLAMP; PIPE CLIP

CLAMSHELL GRAB
Benne preneuse
Equipment and Tools
Syn. with GRAB; GRAB BUCKET; GRAPPLE

CLAPOTIS
Batillage; Batillement
Hydrology
Syn. with SHIP-GENERATED WAVES

CLAQUAGE GROUTING
Coulis de gaine
Materials
Syn. with SHEATH CLAY-CEMENT GROUT; SLEEVE GROUTING

CLASSIC(AL) CONCRETE
Béton classique
Building Materials
Hydraulic concrete most often used since they are cement based (CPA-CEM, CPJ-CEM, CLC-CEM) and whose aggregates are sand and gravel. The water is added for two reasons: to provoke, at the contact with the cement, the setting chemical reaction and to ensure the workability of the obtained material.

CLASTIC
Clastique
Geology
Of the grounds, rocks that present obvious marks of fractures.

CLAW HEAD
Pied-de-biche
Equipment and Tools
Syn. with CROW; CROW BAR; NAIL DRAWER; NAIL DRIVER; PINCH BAR; WRECKING BAR

CLAY
Argile; Glaise
Mineralogy; Hydraulic Binders; Geology
1. A highly complex family of hydrated aluminosilicates with phylliteous or fibrous structure. Their particles appears as stacking of folias, these ones consisted by the association of two basic units, i.e., the silica tetrahedron and alumina octahedral. Each elementary folia consists of superposition of two or three of these basic units.
Clays are sedimentary rocks which usually come from the destruction or deterioration of former eruptive rocks and of which one distinguishes two types, actual clays and residual clays.
- **clays** (*les argiles*), actual clays are soft rocks, breaking in a dry state with a conchoidal fracture and endowed of a great adsorbent capacity. They inflate when it absorb water and can become plastic, then disperse in the aqueous mediums to give a colloidal solution whose particles are apt to flocculate in the presence of some salts. The primary types of elements which go into their composition are:
  - *clayey minerals* (kaolinite, montmorillonnite, illite, glaucony, chlorite, sepiolite, attapulgite, halloysite, nontronite, boillite),
  - *detrital minerals* (feldspar or quartz grains, of which dimension is in the range of the micrometer),
  - hydrated oxides of aluminium, silicon, iron or manganese,
  - insoluble minerals such as pyrites,
  - electrolytes (sulphates of calcium, carbonates, ferrous chlorides),

- organic matter;
- **residual clays** *(les argiles résiduelles),* which are represented broadly by kaolin (white clay), red clay of caves, various types of clay-with-flints.

Syn. with SILICATE OF ALUMINA

2. Material used to manufacture cements.

3. Syn. with LOAM; POT CLAY; TILE CLAY

CLAY CONSOLIDATION
Consolidation des argiles
Work
Settlement obtained by expulsion of the interstitial water that contain saturated clays.

CLAY HEAVING
Gonflement des argiles
Geology
The property of certain clays and anhydrite to absorb and expand in contact with water then to retract after drying. This property of clay (and anhydrite) can have serious impact for foundations of works being able to go up to the ruin of these. Indeed, swelling by hydration of certain clays (montmorillonites) can reach of the first magnitude values, of a ratio from 1 to 10.
Syn. with CLAY SWELLING

CLAY OF DECALCIFICATION
Argile de décalification
Geology
A material coming from the dissolution of limestones and dolomites by carbon dioxide-laden rainwater.

CLAY OF DEGRADATION
Argile de dégradation
Geology
A material coming from the deterioration of a preexistent clay by loss of ions and disorganization of the folias.

CLAY PIT
Argilière; Marnière; Glaisière
Geology
1. A pit where clay is quarried. Syn. with MARL PIT

2. The place from where the loam is quarried.

CLAY PUDDLE
Corroi
Temporary Construction and Hydraulic Works
Syn. with PUDDLE; PUG

CLAY SWELLING
Gonflement des argiles
Geology
Syn. with CLAY HEAVING

CLAY-WITH-FLINTS
Argile à silex
Geology
The name given in the basin of Paris to the formations of constitution and variable structures, which have as a common character the fact of usually containing flints, as a great majority non worn or little worn, in a loose matrix, clayey, or sandy-clay, or, more rarely, sandy or muddy. These clay-with-flints are rich in kaolinite and iron oxide.

CLAYEY GROUND SLICE
Terrain très argileux
Geology
A ground described as *heavy* (marls and plastic clays type) with diversified vegetation.

CLAYEY ROCK
Roche argileuse
Geology
A sedimentary rock basically formed of clay, waterproof but which can there be diluted, and which, by drying or cooking, gives a building material.

CLEAN
Dérocher; Détaper; Dégorger; Ravaler; Décolmater
Earthwork; Metallurgy; Painting; Work; Sanitary Engineering and Drainage
1. To do a rock excavation work. Syn. with STRIP

2. To remove the rust from a steel, to subtract the black coming from the forging.

3. To remove the excess of paint from a brush or paint brush pressing it on the sill of the pot or tray.

4. Syn. with REDRESS; SCRAP

5. To clean a filter, grating, drain, etc. from rubbish, sand or sludge that obstruct its openings.

CLEAN OFF
Ebousiner
Building Materials
To complete the cleaning off.

CLEANOUT TRAP
Trappe de nettoyage
Temporary Constructions
A sealable opening reserved in a formwork that allows the cleaning of the bottom of a mold or a wall shuttering (falls of tie wires, ground, various rubbish, etc.) before concreting.

CLEAN UP
Ragréer
Masonry and Building Materials
To remove the surface irregularities of a material, damaged facing by new material contribution.

CLEANED (OUT) STONE
Pierre ébousinée
Building Materials
A material removed of the sand crust.

CLEANING
Curage
Sanitary Engineering and Drainage
The removal of solid elements settled in the drainage devices. It can be made manually (flue brush, scraper, etc.) or mechanically. The self-cleansing is possible when there is an important water rush and a sufficient declivity. Syn. with CLEANING OUT

CLEANING
Décapage
Painting
The cleaning and/or exposing of a material before its painting or metal spraying and that comes true by abrasive blasting, sanding, water spraying under pressure, wet sandblasting, washing, and acid washing, brushing, etc.
We can distinguish:
- **acid etching *or* acid pickling** (*le décapage à l'acide*), which is a process of surface cleaning to paint carrying out with the sulfuric, phosphoric, or hydrochloric acid and which comes true solely in workshop;
- **white surface stripping** *(le décapage à blanc),* which consists in sand blasting or blast cleaning a metal surface so as to expose. The white surface stripping precedes generally an operation of repainting, metal spraying, or the assembly of metal pieces with HT bolts.

Syn. with PICKLING; STRIPPING

CLEANING
Nettoyage
Work: Masonry
1. The elimination of all deposits likely to harm esthetics (example: paintwork) or to damage the stone (or the concrete), such as a mineral or organic dusts, microorganisms, parasitic vegetation, soluble salts, soots, etc.
Cleaning can be:
- **mechanical** (*le nettoyage mécanique*), process which is carried out by bared brushing, sandpapering, or scraping with nail float, point tool, rotary brushes, etc.
- **by blasting** (*le nettoyage par projection*), a process that calls to an equipment more sophisticated than that quoted above. One can quote: hydropneumatic sanding, dry sanding, water streaming, pressurized water blasting (see these various definitions). The three primary processes of cleaning by blasting are:
  - *pneumatic:* the abrasive is conveyed by compressed air,
  - *centrifugal:* the abrasive is thrown by a turbine,
  - *wet:* the abrasive is transmitted by pressurized water jet;
- **chemical** (*le nettoyage par application de produits chimiques*), of which the principle is as follows: after damping of the facing to be cleaned, the product is applied with the brush or roll; after chemical reaction, the facing is abundantly rinsed. This technique only cannot be complementary to the cleaning with hot or cold pressurized water. The primary chemicals used are acids and acidic salts, alkaline products, detergents, solvents.

2. The removal of mortar smudges at the time of the carrying out of coursing beds.

CLEANING A RIVET
Toilette d'un rivet
Metal Construction
An operation which consists in detaching with (cold) chisel the bead which remains around the second head of a rivet after riveting.

CLEANING BY WATER STREAMING
Ruissellement d'eau
Work
A cleaning process of the facings that consists in doing streaming with a sprinkler pipe a water film onto the surface of the facing to soften and

carry dirts. A complementary brushing with sweet brushes improves its effectiveness. This practice has the advantage to preserve the cullet of the stone.

CLEANING OFF
Ebousinage
Building Materials
Removal of soft or earthly parts (sand crust) covering quarry stones exiting a quarry.

CLEANING OUT
Curage
Sanitary Engineering and Drainage
Syn. with CLEANING

CLEANING THE CLAY
Déglaisage
Earthwork
In an embankment, removal of a clayey layer to replace it with a layer of nobler materials, less subject to fluctuation. Syn. with UNCLAYING

CLEANING UP
Ragrément
Masonry
An operation that consists in regularizing a surface by new material contribution.

CLEAR HEIGHT OF A PILE
Hauteur libre d'un pieu
Foundation
The length of the pile exceeding from the ground.

CLEAR PRODUCTS
Produits clairs (épais ou liquides)
Materials
A range of tightness materials that are based on oil of oxane, chlorinated rubber, etc., and which are used to seal cracks, the surface waterproofing of concrete, etc.

CLEAR SPAN
Débouché linéaire
Civil Engineering Structure
The sum of the straight clear spans of arches or spans of a work, reduced, if it takes place there, by the widths occupied by sidewalks, thickness of piles, etc.; concerning a hydraulic work, it is exactly the same thing taking at water level.

CLEAR SPAN
Ouverture
Construction
Syn. with BRIDGE SPAN; OPENING

CLEARANCE
Débouché; Gabarit; Refuite, Jeu
Civil Engineering Structure; Construction: Metrology
1. The free surface offered by a work to the flow of water; by extension: passage offered to vehicular traffic. (Not to confuse clearance with structure gauge. The structure gauge defines an opening of statistical order that has to enable not only the passage of current transportation vehicles but that has also to envision a close future. The structure gauge is established in function of the vehicles, the clearance is a characteristic of the way).
2. The minimum gap or space required between a plane and passing surface, e.g., the bottom of an object used for transporting people, fluids, etc. and the road during movement. Syn. with STRUCTURE GAUGE
3. The play given to an assembly. Syn. with PLAY
4. The difference between the theoretical length and real length of a part. It is a tolerance less-less in comparison with the theoretical length. The clearance allows, while letting remain a gap in the mutual assembly of two parts, an accosting and an easier assembly of these parts. **See Figure 30**

CLEARANCE ANGLE (OF CUTTING TOOL)
Angle d'attaque, de dégagement, de dépouille, d'un outil
Equipment and Tools
Syn. with CUTTING ANGLE; DISENGAGEMENT, STRIKING

CLEARANCE OF LINE
Jeu de ligne
Masonry
Syn. with SPACE OF LINE

CLEARING
Abattis; Dessouchage; Essartage
Building Materials and Masonry; Work; Civil Engineering
1. Pieces of stone cut down by a quarry worker.

2. Materials coming from the demolition of a work.
3. The removal of tree stumps. Syn. with STUMPING
4. The clearing of a ground notably at the direct surroundings of works to facilitate their inspection or to caution them from the ominous roots effect. Syn. with GRUBBING; LAND CLEARING BY BURNING

CLEARING AWAY
Déblaiement
Handling
The carting away of excavated materials or materials of some place. Syn. with MUCKING; REMOVAL

CLEARING OF MUD
Débourbage
Hydrology
The first operation of settling of mud-laden waters containing a lot of matters in suspension before a second operation of decantation. Syn. with SETTLING OUT

CLEARING STRUCTURE
Ouvrage de franchissement
Civil Engineering Structure
In the classification of the structures following their function, work whose purpose is to cross or to jump a natural (river, etc.) or artificial obstacle (transport link). For this type of work, the characteristic element is above all the clearance, i.e., dimensions and the shape of the space that the work must release below it. (In the usual terminology, one reserves the name *bridge* to this type of work.) Syn. with CROSSING STRUCTURE

CLEAT
Echantignole
Carpentry
A wedge-shaped wooden piece, nailed on the principal rafter to support purlins or placed on a pole to sit a cross member. Syn. with CHIMB; PURLIN CLEAT

CLEAVAGE
Clivage; Schistosité
Nomenclature of Materials; Geology
1. The breaking way of a material by sudden decohesion along a specific surface of its structure.
2. A natural joint, usually oblique in comparison with the plan of stratification, causing a division of the rock in more or less thin and steady folias.
3. Syn. with SCHISTOSITY.

CLEAVING
Débitage
Building Materials
Syn. with CUTTING

CLEAVING FRACTURE
Fracture de fendage
Defects
Damage impairing the masonry works of a usually horizontal direction located in the haunches of the vault that is brought about by the forward swinging of abutments. This swinging brings about excessive compressions in intrados at the key that bring about into these cleaving fractures.

CLEVIS
Etrier
Equipment and Tools
Syn. with BINDING CLIP

CLIENT
Maître d'ouvrage
Civil Engineering Structure
Syn. with OWNER

CLIMATIC LOADS
Charges climatiques
Strength of Materials
Stresses whose it is taken account in the design calculations of civil engineering structures and which include wind, rain, snow, etc.

CLINOFOR™
Clinofor
Equipment for Measure and Control
A similar inclinometer to the movable sensor inclinometer, but whose probe is replaced by a fixed-measurement system. It appears as a cane supporting measuring points. The principle of the measurement rests on the detection by an inductive effect, with no mechanical connection of the movements of a pendulum with a bent blade. It is 10 times more precise than a mainline inclinometer.

CLINOMETER
Clinomètre; Gïtomètre; Clisimètre; Inclinomètre
Topography; Equipment for Measure and Control
1. Syn. with BATTER LEVEL
2. A topographical instrument for measuring ground slopes.
3. Syn. with DRIFT INDICATOR CLINOMETER; INCLINOMETER

CLIP NAIL
Chevillette
Equipment and Tools
A builder's tool formed by a pointed metal rod on which slides a counter-cranked plate. This tool is used to fast temporarily against a wall adjustment or leveling devices such as screed intended for leveling renderings, screed to level a last course, etc.
The principle of implementation consists in introducing into the masonry by percussion the rod, then to jam the screed to be fastened, while striking on the plate. Syn. with LINE PIN. **See Figure 31**

CLIQUART
Cliquart
Geology and Building Materials
1. A fine-grained hard stone containing little conchiferous remains, with a net breakage and metal sound.
2. A fragile, brittle, finest-grained quartz sandstone.

CLOACA
Cloaque
Civil Engineering Structure
Syn. with AQUEDUCT

CLODDING
Mottage
Defects (Hydraulic Binders)
The agglomeration in clods of bulked-cement or bagged-cement in consequence of a taken of moisture.

CLOGGING
Colmatage
Sanitary Engineering and Drainage
The insensitive obstructing of drains, filters, etc. by particles carried along by the mud-laden water that make one's way through them.

CLOGGING COEFFICIENT
Coefficient d'obstruction
Hydrology
In a hydraulic structure, ratio between the surface obstructed by the bridge and that than would be available if the bridge did not exist.

CLOISTERED ARCH
Arc-de-cloître
Construction
A form of vault formed by the penetration of two cylinders having even base.

CLOSE GRAIN SIZE
Granularité serrée
Building Materials
The dimensional grain distribution of an aggregate in which sizes of the various grains are included in a very narrow grading range.

CLOSE POLING BOARD
Planche de flanc
Temporary Constructions
In a sheeting of an underground gallery, board plated against the sides of the excavation and which is supported at the right of the carriers by a board (called *false setting*), shims and wedges. Syn. with FOREPOLE

CLOSED ASSEMBLY TIME
Temps d'assemblage fermé
Adhesives
Concerning adhesives, gap of time contained between the setting in intimate contact, with or without pressure, of substrates and obtaining, under pressure with or not a contribution of heat, mechanical characteristics allowing the handling of the assembly.

CLOSED BEAD
Nervure fermée
Metal Construction
The rolled edge of a sheet metal forming a fully closed circular buckle.

CLOSED FRAME
Cadre fermé
Civil Engineering Structure
A quadrangular-shaped work of reinforced concrete.

CLOSED GRAIN SIZE
Granularité fermée
Building Materials
The specification for an aggregate with few voids between grains.

CLOSED STAIRS
Vomitoire
Construction
A small staircase of masonry fitted into the thickness of the wall of a basin and giving access to the latter.

CLOSED-CIRCUIT TELEVISION
Television en circuit fermé
Equipment for Measure and Control
A video instrument which allows to view control drillings of masonry, piles, etc. The system comprises a narrow camera, a cable, a receiver and a case of command. The camera, introduced into the drilling, includes a body which carries the source of light, electronic part and interchangeable lens with axial or radial sight.

CLOSER
Palplanche de fermeture; Clausoir; Rablette
Building Materials; Masonry; Temporary Construction
1. An element generally made specially and made-to-measure suit, closing enclosures carried out in metal sheet piles with unit.
2. Syn. with ANGLE CLOSER
3. Each element of the fourth face of a post formwork, added to ensure the closing of the formwork as they advanced of the rise of concrete. Closers are kept by a device needed to ensure their maintenance to withstand the thrust of fresh concrete. Syn. with PACKING BOARD.
See Figure 32

CLOSING
Bouchement
Civil Engineering Structure
Sealing with mortar of rendering zones, which disappeared on a masonry wall.

CLOSING DEVICE
Obturateur
Equipment and Tools
A device placed between an injection tube and the periphery of the drilling, which allows during the execution of the ground or masonry injection, to inject zones quite precise and determined in advance. The obturators routinely used are:
- **hand-driven screw stopper** *(l'obturateur manuel à vis),* whose swelling of a rubber sleeve is obtained by compression between two steel disks;
- **inflatable socket stopper** *(l'obturateur à manchons gonflables),* whose expansion is obtained with an assistant fluid (air, water, etc.);
- **compression stopper** *(l'obturateur à compression),* based on the principle of the crushing of a number of rubber discs by means of a column rod-tube associated with a screw jack. It mostly connects at the drilling head;
- **small ditch stopper** *(l'obturateur à coupelles),* which can be simple or double and whose sealing is done by means of rubber or leather dishes. Used in double, this obturator allows to isolate in a drilling, a slice length focused at the wanted level;
- **expansible sheat stopper** *(l'obturateur à gaine dilatable),* whose tightness inside the drilling is ensured by air or water inflating of a flexible tubular membrane. Syn. with BLOWOUT PREVENTER; OBTURATOR; SHUTTER; STOPPER

CLOSING OF EXCAVATION
Comblement de fermeture
Earthwork
The final backfilling of an excavation with putting back at its original level.

CLOTH
Nappe
Tightness
The totality of assembled strips of a geomembrane in a final way in factory or in a workshop close to the site of service.

CLOUD CHAMBER
Chambre de brouillard
Building Materials
A place oversaturated by steam (100% of humidity) at a temperature of 20°C where are preserved concrete cylinder tests intended for design mixing tests, concrete suitability tests, or concrete control tests.

CLUB HAMMER
Massette
Equipment and Tools
A small sledgehammer used by stonecutters which are a kind of short-handled hammer without peen. Syn. with MASH HAMMER

COAL
Houille
Geology
A carbonated rock to high carbon content. Syn. with BLACK COAL

COAL SANDSTONE
Taille apparente
Masonry
In the area of Saint-Etienne, France, name given to a coal-bearing sandstone used as building stone.

COAL TAR
Goudron de houille; Coaltar
Materials
A hydrocarbons and particles of carbon mixture resulting from the distillation of the coal, of a viscous aspect and black color. Syn. with BITUMINOUS TAR

COAL-TAR PITCH
Brai
Materials
Syn. with PITCH

COARSE AGGREGATE
Gros granulat
Building Materials
A crushed stone or gravel whose dimensions are higher than 2 mm (mostly 4.76 mm). Syn. with STONE

COARSE ROCK PROTECTION
Contre-garde
Foundation
An enrockment arranged at the periphery of a bridge pier in aquatic site to protect it from underwashings.

COARSE SAND
Sable grossier
Building Materials
Sand particle having a diameter from 2 to 4.76 mm.

COARSE SANDSTONE
Taille gratteuse
Building Materials
The regional designation that applies to a coarse sandstone.

COARSE-ROCK LAYING BARGE
Chaland à basculement
Equipment and Tools
A kind of barge for placing enrockments underwater.

COAT
Enrobage d'une électrode
Welding
Syn. with ELECTRODE COATING

COAT
Couche; Enduit; Enrober
Painting; Civil Engineering
1. A thin deposited of varnish, paint, or coating, of a thickness as uniform as possible, carried out in the same operation of continuous application. There are several types of coats:
- **priming coat *or* prime coat** (*la couche primaire*), applied directly onto the substrate beforehand prepared. Its role is overriding and it must reply to next requests:
  - to inhibit the corrosion process of the steel (in the case of application onto a metal surface),
  - to have a very good adhesion,
  - to allow a good bond of the intermediate coat that will cover it.

  It is the reason in order that it has high content in pigments, and that it is a dye and thin tint. The adhesion of this priming coat on the substrate is broadly due to the physicochemical nature connections, what involves that the support must be carefully prepared. The adhesion is considerably strengthened by conversion treatment such that the use or wash-primers, especially for the surface of galvanized steel;
- **intermediate coat *or* second coat** (*la couche intermédiaire*), which allows the bond between the priming coat and the top coat and that must be chemically inert and waterproof in the corrosive outside medium. Intermediate coats mostly are flat, half-thin and less pigmented than priming coats. Pigments mixed in intermediate coats often have a particular form that strengthens the qualities of impermeability rising on the surface of the film and by forming courses covering mutually. Among the main pigments of

this type, one can quote the graphite, mica-bearing iron oxide, powder of zinc, dust of aluminum, etc.;

- **top coat *or* overcoat *or* finishing coat *or* final coat** (*la couche de finition*), the last coat of protection that must be as waterproof and continuous as possible and that must ensure the resistance to mechanical stresses that are imposed it: frictions, shocks, abrasion, deformation. More, it must resist chemical agents of the surrounding medium. As intermediate coats, it contains pigments strengthening the qualities of impermeability to the water, gases, sunbeams, just as the mechanical strength of the coating. This top coat can also play a decorative role, and coloring pigments can be introduced such: the lampblack, ochres, the blue and green of phatalocyanine, etc.;
- **reinforcement coat** (*la couche de renforcement*) of identical composition to the priming coat or primer;
- **embellishing coat *or* trim coat *or* overcoating** *(la couche d'habillage),* applied after the top coat and whose purpose is to give a decorative aspect;
- **sealing coat** (*la couche d'impression*), directly applied onto an absorbent substrate;
- **undercoat** *(la couche de fond)* that corresponds at the totality of the coats of a paint system with the exclusion of the top or trim coats.

2. Syn. with COATING; FILLING PASTE

3. To form a continuous bituminous film or tar on all the surfaces of an aggregate. Syn. with COVER

COAT *or* CEMENT
Enduire
Work
To apply a coating (paint) or a rendering (masonry) onto a support.

COAT WITH ZINC
Zinguer
Metallurgy
To carry out zinc plating.

COATING
Revêtement; Enrobement; Enrobage; Enduction
Metallurgy; Building Materials; Welding; Work
1. The steel protection from various aggressions of which steel is likely to be victim, in particular the corrosion. We can distinguish the metal coatings (metal spraying) and non-metallic coatings: paints, varnishes, phosphating, etc, which are used to protect surfaces of the metal parts. Syn. with REVETMENT

2. Syn. with CLADDING; FACING; LINING; REVETMENT; SHEATHING

3. Syn. with COVERING

4. The display onto the surface of a support of liquid or pasty products for protecting, masking some irregularities, modifying the aspect or also providing particular properties.

COATING
Enduit; Enduisage
Painting
A powdered or pasted preparation coat for removing imperfections of a substrate. It can be one-part or multicomponent, ready for use or to be prepared on the site.
Coatings most used are:

- **water-diluting coat** (*les enduits diluables à l'eau*), which contain all coatings of which dispersion medium is water. We can distinguish:
  - *powdered coats* (*les enduits en poudre*) which appear as pulverulent form and which receive an water adding for use,
  - *filling pastes* (*les enduits en pâte*), which appear in ready for use form, of consistency more or less fluid,
  - *multicomponent coats* (*les enduits pluri-composants*), generally prepared on site at the time of use. They comprise liquid elements such as emulsions, resins, colloids, water and solid elements such that plasters, cement, carbonates, cellulose derivatives, coloring, pigments;
- **oil-based coats** (*les enduits glycérophtaliques*) in aqueous phase or in solvent phase;
- **fillers** (*les enduits gras*), which have as a basis drying oils and/or fat binders, fillers, and pigments. These coats are incompatible with alkaline backgrounds of pH higher than 8 at the time of the application;
- **lean and composite coats** (*les enduits maigres et mixtes*), which have as a basis drying oils and/or fat binders and others, with addition of pigments, fillers, solvents, and thinner. Fillers and pigment volume in comparison with the binder is more important than in the filler. Most are incompatible with alkaline background.

Syn. with COAT; FILLING PASTE

2. Syn. with SURFACE DRESSING

COATING ADHESION
Adhérence d'un feuil
Painting
All bonding strengths which are exerted between a film and its substrate (naked or already covered of a film). Syn. with COATING BOND

COATING ADHESION TEST
Essai d'adhérence d'un feuil
Test of Materials (Painting)
A test that consists in checking the tackiness of a paint film applied onto a substrate. The two tests are:
- **adhesion test by wrenching strength** (*l'essai d'ahérence par résistance à l'arrachement*); operation which consists in trying to tear off a paint film and to measure the adhesion stress under the effects of a traction perpendicular to the support. Wrenching can occur within the painting system (between coats), at the interface painting-ground or also within the substrate.
- **adhesion test** *(l'essai d'adhérence):* destructive test carried out on a paint film and which consists of a grid (carried out using a chisel knife or a cutting edge tool) with a gap of cut about than 2 mm for the first two coats of a system. This grid is carried out with a cutting-edge tool with a gap of cut of 4 mm when it is a question of checking the adhesion of a complete painting system.

Syn. with ADHESION TEST

COATING BOND
Adhérence d'un feuil
Painting
Syn. with COATING ADHESION

COATING BY IMMERSION IN MOLTEN METALS
Revêtement par immersion dans des métaux fondus
Metallurgy
A protective coating obtained while immersing the parent metal in a bath of another molten metal (hot galvanization, etc).

COATING BY METALLIZATION WITH SQUIRT GUN
Revêtement par métallisation au pistolet
Metallurgy
A coating obtained by spraying in thin droplets of a molten metal by a flame oxygen-gas, with electric arc or plasma.

COATING BY PLATING
Revêtement par placage
Metallurgy
Syn. with LINING BY PLATING; SHEATHING BY PLATING

COATING BY POWDERING
Revêtement par poudrage
Metallurgy
A technique that consists in covering parts to be protected by a preparation in powder form.
Powders contain thermoplastic or thermosetting resins, crushed with pigments following very elaborated techniques, to obtain particles of a diameter lower than 100 micrometers. Powders are applied according to three practices:
- **by a thermal spraying gun** *(par pistolet-chalumeau),* process in which the powder is sprayed through a flame with a squirt gun. It melts and comes forming a tended and enough thick film;
- **by gun *or* electrostatic bath** *(par pistolet ou bain électrostatique),* process in which the squirt gun, or bath, allows to give an electrostatic charge to each powder grain. Grains are attracted by the surface to be covered which has an opposite polarity with them. The powder coat then passed to the furnace to allow its melting or its baking;
- **by soaking in a fluidized bath** *(par trempage dans un bain fluidisé),* process that consists in soaking the parts heated beforehand at a temperature higher than that of the fusion of the powder into a vat where this one is put in suspension by a fitting draft. The powder melts in contact with the part and form a film. Then parts are again passed in the furnace to bake the resin if it is about thermosetting or well to smooth film.

COATING BY THERMAL SPRAYING
Revêtement par projection à chaud
Metallurgy
A protective film obtained by spraying in thin droplets of a molten metal by an oxygen-gas flame, to the electric arc or plasma.

COATING BY WELDING
Revêtement par soudage
Welding
A recovery of a parent metal by means of metallic deposits obtained by a welding process.

COATING OF PAINT SYSTEM
Charge
Painting
A surface covered by several paint coats.

COATING WITH HEATPROOF MATERIALS
Revêtement en matériaux résistants aux températures élevées
Metallurgy
A coating obtained by throwing of refractory materials onto steel objects to be protected, by means of the standard squirt gun or with plasma jet blowtorch. The latter allows to reach a melting point of materials much higher than in the method by hot spraying.

COBALT BLUE
Bleu de cobalt
Materials
Cobalt aluminate-based synthetic pigment which is characterized by a strong vivacity and an excellent resistance from chemical agents, a heat-proofing and a light-proofing. The cobalt blue possesses a slight coloring power.

COBALT COLORING
Cobaltage
Metallurgy
A metal surface treatment that consists in covering it by a cobalt film so as to protect it from corrosion.

COBBLE
Cadetter; Pavés; Caillou
Building; Building Materials; Geology
1. To pave with small paving stones.
2. Syn. with COBBLESTONE; PAVING BLOCK; PAVING STONE; SET
3. Syn. with PEBBLE; SHINGLE

COBBLESTONE
Pavé
Building Materials
A parallelepipedal stone (often of granite) or concrete used to realize the roadway or sidewalk pavement. Syn. with COBBLE; PAVING BLOCK; PAVING STONE; SET

COBBLESTONE CUT
Cadette
Building Materials
A dressed stone of small dimensions, used for paving. Syn. with SMALL PAVING STONE

COBBLESTONES
Pavage
Masonry and Civil Engineering
Syn. with PAVEMENT; PAVING; PITCHING

COCK
Goujon
Building Materials
Syn. with DOWEL; SETSCREW

COEFFICIENT
Coefficient
Strength of Materials; Test of Materials; etc.
A physical magnitude having a dimension, defined as quotient of two magnitudes of different dimensions. Syn. with FACTOR; RATIO

COEFFICIENT OF ADHESION
Coefficient d'adhérence
Strength of Materials
The friction value to a relaxed body by opposition to the coefficient of slipping, called also *friction in movement* that expresses for example the adhesion of a motor roller on a rail so that there is no relative slipping.

COEFFICIENT OF EQUIVALENCE
Rapport *ou* Coefficient d'équivalence
Construction of R.C. and P.C.
The coefficient resulting from the ratio of the steel elasticity modulus to the concrete elasticity modulus and that brings about the formula:

$$n = \frac{Ea}{Eb}$$

Ea being the modulus of elasticity of steel taken equal than 20,000 kg/mm^2 and *Eb* being the modulus of elasticity of the concrete.
The French regulation specifies that for the calculation of stresses in the reinforced concrete, one must take $n = 15$.

COEFFICIENT OF EXPANSION
Coefficient de dilatation
Building Materials
A relative modification, linear or volumic, of a material when the temperature varies of 1 °.

COEFFICIENT OF HEAVY SATURATION
Coefficient d'imbibition pondéral
Test of Materials (Building Materials)
Ratio of the weight of absorbed water to the weight of the dry sample (steamer or not) and that is extremely variable following the porosity and nature of stones. Example: granite = 1%, sandstone = 5% to 22%, soft limestone = 30% to 50%.

COEFFICIENT OF INTERNAL FRICTION
Coefficient de frottement interne
Geotechnics
A coefficient symbolized $tg\varphi$ and that going into the Coulomb equation for the study of ground shear. It depends on the angle of internal friction of the studied ground (see ANGLE OF REPOSE).

COEFFICIENT OF LINEAR RETRACTABILITY
Coefficient de rétractabilité linéaire
Test of Materials (Building Materials)
The length variation of the wood for a variation of 1% of the moisure content.

COEFFICIENT OF PERMEABILITY *K*
Coefficient de perméabilité *K ou* Continuité hydraulique
Hydrology
Syn. with HYDRAULIC CONDUCTIVITY; *K* PERMEABILITY FACTOR

COEFFICIENT OF THERMAL EXPANSION OF THE CONCRETE
Coefficient de dilatation thermique du béton
Construction of R.C. and P.C.
The ratio between the dilation (length variation) between two temperatures and the difference between these two temperatures.

COEFFICIENT OF UNIFORMITY
Coefficient d'uniformité *ou* de Hazen
Geotechnics
Syn. with *HAZEN'S* RATIO; MODULUS OF UNIFORMITY; UNIFORMITY COEFFICIENT

COEFFICIENT OF WELD JOINT
Coefficient de soudure
Welding
A value determined by the comparative test that corresponds to the ratio of the necessary load to obtain the break of a welded test bar by that necessary for a test bar of similar geometry constituted solely by the parent metal. Syn. with JOINT EFFICIENCY

COEFFICIENT OF WOOD RETRACTABILITY
Coefficient de rétractabilité du bois
Building Materials
A value expressing the volume variation of the wood for 1% humidity variation (the characteristic and constant variation of woods between the anhydrous state and the saturation state of the air).

COFFERDAM
Batardeau; Dame
Temporary Construction
1. A temporary water tight enclosure (dike) for diverting all or part of a waterway, to isolate a zone in a flooded ground in a bid to the performance of certain works. This dike enables the achievement or work under dry conditions once dewatering and is commonly achieved for facilitating the creation of the works foundations. The composition and shape of the cofferdams depends of the waterway or location of the desired work.
Types of cofferdam are:
- **concrete** *(le batardeau en béton),* constituted by a temporary enclosure erected if there is the construction of important structures and that can be made up by:
  - concrete blocks (gravity dam principle),
  - diaphragm walls,
  - secant piles of concrete,
  - close piles of concrete;
- **timber** *(le batardeau en bois),* simple or double walled. We can distinguish between two practices of erection: winnowed horizontal boards or with vertically placed sheeting:
  - the *horizontal curtain of piles and sheetings* constituted by a row of wooden piles spaced about than 2 m that are embedded into the ground, then connected at the head by a strut. Curtain of piles and sheetings are carried out by a stacking of timbers setting on edge that rests

against the piles. A clay buttress is laid out inside of the enclosure with the purpose of sealing off the unit and also to buttress the thrust of waters,

⊃ *the vertical wood-sheet piles to a simple or double wall:*

- in the system with simple wall, a row of wooden piles is embedded into the soil with a spacing about than 2 m, then sandwiched double members in head. In the space located between the piles, a number of butt-jointed wooden sheet piles is driven. The sealing is ensured by a tilt that covers the outside paneling, kept at the base by a clayey earth flange,
- in the process with double wall two similar enclosures was build to that described above which are stayed by double members at the head of piles. The space between the two walls is filled using a clayey ground which ensures the sealing;

• **sheet pier bulkhead** (*le batardeau en cellule autostable*), assembly of boxes formed by metal sheet piles filled with clayey ground called *cells.* These cells are laid down onto the bed of the river and are connected between them by special sheet piles. To be auto-equlibrium, these cells have a diameter close of the height of water to be contained. A mass of enrockment is laid out at the base of the cells. This type of cofferdam is mostly reserved for large enclosures;

• **rock-fill crib** (*le batardeau en enrochements),* simple stone stacking often intended for creating calm water zones. It is not tight but can be it covering it upstream water side by a waterproof material mask; **See Figure 33**

• **crib-type (water)** *(le batardeau en gabions),* simple stacking of steel cribs whose function is identical to that of the rock-fill crib cofferdams; **See Figure 33a**

• **sheetpiles** (*le batardeau en palplanches),* close curtain of sheet piles embedded up to the encounter of an impermeable ground and supplemented either by a ground solid mass downstream side, or with two curtain of sheet piles kept up by ridge ribs at the head with insert earth block; **See Figure 33b and 33 d**

▪ **earthen** *(le batardeau en terre),* a clayey earth enclosure covered on the water-exposed side by ripraps intended for calming the turbulence of water and head off the incidents such as underminings; **See Figure 33d**

♣ **double-wall** *(le batardeau mixte terre et palplanches),* curtain of sheet piles driven into an earth massif and embedded into the undisturbed soil up to the meet of an impermeable layer. **See Figure 33e**

Syn. with DAM; WATER COFFERDAM.

2. A cofferdam created in a canal dug to avoid flooding.

COFFERDAM CLAY
Argile à batardeau
Materials
A material more or less sandy endowed of a slightly shrinkage at the time of its excessive drying and that is used to form the tight core of some cofferdams. Syn. with PUDDLE CLAY

COFFERING
Coffrage
Temporary Construction
A vertical temporary supporting carried out of various materials (boards, battens, plywood, sheet metals, etc.) flattened against the walls of a trench to avoid earth from a landslide. Syn. with LINING

COFINE
Cofine
Defects (Building Materials)
A wood difficult to be worked (wood which splits, warps).

COG
Embrèvement; Embrèver
Carpentry
1. Syn. with JOGGLE JOINT; SKEW NOTCH.
2. To join two timber pieces by a joggle joint.

COGHAMMER
Polka
Equipment and Tools
A stonecutter's hammer of which one of the bevels is indented. Syn. with POLKA (HAMMER)

COGROLLER APPARATUS
Appareil à cylindre unique denté
Equipment and Tools
An apparatus being designed to the elaboration of pit aggregates. The breaking up of these materials is obtained by pressure against a cylinder furnished with steel-toothed plates and against a concave permanent jaw also furnished with steel plates.

COHERENT ROCK
Roche cohérente
Geology
A hard sedimentary stone of which grains are joined by a natural cement.

COHESIMETER
Cohésimètre
Assaying Equipment
An instrument for testing cohesivity.

COHESION
Cohésion
Building Materials; Strength of Materials
1. The property of a material of which primary quality is the homogeneity; the fact of to be coherent.
2. The maximum shearing stress c on a facet when the concurrent normal stress σ is null. When this stress is not null, the value of the maximum shearing stress τ is given, in soil mechanics, by Coulomb's law: $\tau = \sigma \operatorname{tg}\varphi + c$, where φ is the angle of internal friction.

COHESIONLESS SOIL
Sol pulvérulent
Geology
Beds which does not have cohesion and whose prototype is the sand when it consists of the juxtaposition of grains without binder. Syn. with GRANULAR SOIL

COHESIVE SOIL
Sol cohérent
Geology
A material largely formed by fine elements belonging to the particle-size ranges of silts and clays.

COHESIVITY
Cohésivité
Building Materials
1. A phenomenon of stability (property to be bent (out of shape) without wrench neither internal cracking) of a bituminous binder subjected to the initial strength tensile test with the Alwetron apparatus.
2. The property whose are endowed some materials and that, by the internal attraction game, allows them to preserve a certain stability.

COHESIVITY PRODUCT
Produit cohésifère
Materials
A material of which primary quality is to improve the cohesion of grounds intervening on the capillarity of the ground, in particular of clays.

COIN STONE
Chaîne d'angle
Construction
A bonding of ashlars forming the angle between the sidewall masonry (or abutment) and that return or wing walls. Syn. with DRESSING; QUOIN; QUOIN STONE. **See Figure 34**

COINS
Jambe d'encoignure
Construction
Syn. with QUOINS

COLBOND™
Colbond
Materials
A nonwoven geotextile used notably in drainage and that presents in tablecloth form of a weight about 450 g/m^2. It is a nonwoven of the dry process, formed by lashed polyester fibers and linked by a resin. Colbond has an aspect more rigid than Bidim for example.

COLCRETE
Colcrete
Building Materials
Any concrete of large aggregates into which a colloidal mortar is injected. Syn. with GROUTED AGGREGATE CONCRETE

COLD CHISEL
Burin
Equipment and Tools
Syn. with BURIN; CHISEL; CUTTER

COLD HAMMERING
Ecrouissage
Metallurgy
The modification of the structural state of a metal or an alloy as a result of a hot working or a localized plastic deformation at ordinary to tepid temperature, always resulting in a pronounced lengthening of the grains in a restricted sense.

COLD SHUTS
Gouttes froides
Metallurgy
Particles of metal which are not molten in the mass. This defect occurs when the cast iron is cast at too low temperature, first drops of casting solidifying itself in contact with walls of the mold not overheated yet. In the case of steel, that are the particles of metal cooled in contact to the ingot mold do not form inherent part of the ingot.

COLD HAMMER
Ecrouir
Metallurgy
To work a metal or an alloy at a lower degree than its temperature of annealing, creating permanent deformations under the superior stresses of its yield point. Syn. with COLD WORK

COLD WORK
Ecrouir
Metallurgy
Syn. with COLD HAMMER

COLD-HAMMERED (*or* WORKED) STEEL
Acier écroui
Metallurgy
An iron and steel product having undergone a cold hammering processing.

COLD ROLL
Ecrouir
Metallurgy
Syn. with COLD DRAW; COLD HAMMER; HAMMER HARDEN

COLGROUT
Mortier activé
Building Materials
A colloidal and thixotropic mixture of a high fluidity, which in particular is very used in injection. It is about a mortar in which sand is added only at the end of the brewing in a high-turbulence mixer.
It is obtained:
- by **a physicochemical process;** the deflocculation is carried out adding into the mixing water of products that mostly are the following:
  - a dispersing product that, by its absorption on the surface of the cement grains and also often of the finest elements of sand, deflocculates grains by keeping them in a stable state of dispersion thanks to repulsive actions, from grain to grain, of electrical nature,
  - a finest pozzolanic powder that determines the intergranular viscous suspension,
  - a finest aluminum powder that has two primary effects: it increases rigidity and partially compensates the shrinkage because of the expansion that results from the effect of the aluminum powder on the lime of cement, generative of many gaseous bubbles;
- by **a mechanical process;** the intergranular charging is obtained mechanically by lamination at high speed of the paste. One can refer for example the practice called to *high turbulence,* the colcrete;
- by **a mixed process** (mechanical + physicochemical), combination of the two practices described above.

Syn. with ACTIVATED MORTAR; COLLOIDAL GROUT; COLLOIDAL MORTAR

COLLAPSE
Affaissement brusque; Effondrement
Building Materials; ***Defects (Masonry and Construction of R.C. and P.C.)***
1. The subsidence of a test specimen under an applied load, in particular that which occurs during the slump test under load at high temperature.
2. The ultimate stage of stress on a structure, ending in a total or partial collapse of a part or the totality of the work. Syn. with FALL IN

COLLAR
Hague; Frette; Collerette
Construction; Materials
1. A molding or annular stick applied onto a circular piece to strengthen or to conceal a joint. Syn. with ADAPTER
2. Syn. with BARREL BAND; FERRULE
3. A torus-shaped piece for achieving joins of sheaths. Syn. with RING

COLLECTION
Captage
Sanitary Engineering and Drainage
The collection and draining of permanent inrushes of water (from the ground or a work) of a notable outflow.

COLLECTOR
Collecteur
Sanitary Engineering and Drainage
Syn. with MAIN SEWER

COLLIMATION
Collimation
Topography
The achievement of sights in determined directions.

COLLIMATION LINE
Ligne de collimation
Topography
A line of sight of a surveying instrument that passes through the intersection of the cross hairs in the reticule; the optical axis of a topographic telescope.

COLLIMATOR
Collimateur
Topography
A surveying instrument designed to do sights.

COLLOID
Colloïde
Materials; Geology
1. A substance with large molecules likely to disperse in a solvent and to remain there in balance; these molecules called, *macromolecules,* or *micelles,* have dimensions from 20 to 200 millimicrometers. The ionization or solution of colloids brings about to the flocculation that is a breaking bringing about to the frank separation of the colloid and its solvent. One uses colloids in the flocculated state to fasten an unstable ground; example: running fine sand. This mixing of colloids has for effect to restore a certain cohesion.
2. A suspension of particles in a fluid.
3. A sedimentary material of lower size than 0,1µm. Syn. with GEL

COLLOIDAL
Colloïdal
Materials
Of a highly divided system of grains or drops that is obtained by precipitation or by grinding (solid grains), by hard agitation (emulsions), or by pulverization (aerosols).

The colloidal state is generally unstable: particles have tendency to get soldered between them. A colloid can be stabilized by three main practices: placing on the surface of the grain groups electrically charged; adding surface-active, or amphiphile, that be adsorbed selectively to the interface; casing the grain by flexible polymeric chains.

COLLOIDAL CEMENT GROUT
Coulis activé, A haute turbulence ou Thixotrope
Materials
A preparation of some stability obtained by agitating the substances in grout at "high turbulence" in a special mixer. In a relatively short time the grout's rigidity is increased and its viscosity decreased.

COLLOIDAL CONCRETE
Béton activé; Béton colloïdal
Building Materials
A material whose skeleton whose is injected with a colloidal mortar paste. A colloidal concrete can be made lighter by addition of polystyrene beads in the injection mortar

COLLOIDAL GROUT
Mortier activé; Colgrout
Building Materials
Syn. with ACTIVATED MORTAR; COLGROUT; COLLOIDAL MORTAR

COLLOIDAL MORTAR
Mortier colloïdal
Building Materials
A relatively fluid and stable material which has colloidal properties (dispersion of solid grains in a liquid phase which end up gelling). Homogenizing mortars, made up of cement, sand and water until the stage of dispersion grain by grain of the finest elements of cement, one can obtain mixtures of a certain stability. Preparations are carried out in homogenizing apparatuses turning at a given speed. Products obtained are known under the name of *colgrout* (colloidal mortar). These mortars can be used to inject cracks or masses of aggregates already placed. Syn. with ACTIVATED MORTAR; COLGROUT; COLLOIDAL GROUT

***COLOGNE* BROWN**
Terre brune de *Cologne*
Geology
A lignitic clay used in paint manufacture.

***COLOGNE'S* METHOD**
Méthode de *Cologne*
Temporary Constructions
A gallery sheeting process during execution in bad ground. In this practice the traditional roof and flank boards are replaced by sheet-shaped gutter encasing itself laterally like sheet piles, and are driven with a pneumatic hammer into the ground parallel with the axis of the underground. These sheet metals are kept against the ground by templates of sections strengthened by timberings.

COLONNADE
Colonnade
Construction
A continuation of columns of a construction including what they bear (slabs, pier cap, etc.) or what overcome them.

COLOR MEASUREMENT
Mesure de couleur
Test of Materials (Painting)
The determination of the trichromatic coordinates (X, y, Y) using a filter chromometer in the geometrical conditions defined by the CIE (45°/0°): the lighting of the sample with a source C, under an incidence of 45° and measures light reflected in a direction perpendicular to the surface.

COLOR POINT
Point de couleur
Painting
The figurative point of a color of which colorimetric characteristics are defined by its coordinates x, y and Y in the colorimetric space C.I.E.
By convention, and more usually, projection of this figurative point on the plot of chromaticity (in the xOy plan).

COLORED
Coloré
Construction and Painting
Of a body, substance, or surface of which spectral factor of transmission and/or reflection varies with the wavelenght in the field of the visible radiation.

COLORED CONCRETE
Béton coloré
Building Materials
A material whose dominant required tint has been obtained by addition of pigments to the cement (green copperas for example) and/or by using colored aggregates.

COLORIMETER
Colorimètre
Equipment for Measure and Control
An instrument for measuring the intensity of the colors of the paints. It is usually based on the relationship between concentration of a chemical solution and the amount of absorption of certain characteristic colors of lights. Syn. with CHROMOMETER

COLORIMETRIC TEST
Essai colorimétrique
Test of Materials (Building Materials)
A test for determining the content in organic elements of aggregates.

COLORIMETRIC TOLERANCE
Tolérance colorimétrique
Painting
Maximum values of the allowed colorimetric variations to reproduct a colored achievement defined by its nominal colorimetric characteristics (x, y, Y). Syn. with COLOR TOLERANCE

COLORING AGENT
Colorant
Painting
Syn. with DYE

COLUMN
Poteau moulé; Colonne; Pilier
Construction; Metal Construction
1. An circular element poured in only one part and which can be of concrete or cast-iron and that bears vertical loads. (Generally this designation is reserved for cast iron columns.) Syn. with MOLDED POST
2. A cylindrical pillar, with base and capital that is used as bearing or support.

Among the primary morphologies of columns, we can distinguish:
- **coupled *or* double** *(les colonnes accouplées),* of which bases and capital make flush two by two;
- **ringed column *or* annulated** *(la colonne annelée* ou *baguée),* which presents a shaft surrounded by moldings in protrusion;
- **bonded** *(la colonne appareillée),* of which shaft is formed by several bonded courses;
- **fluted** *(la colonne cannelée),* which presents a hollowed shaft of running lengthways grooves;
- **stopped flute** *(la colonne embâtonnée),* which presents salient moldings filling its grooves until a certain height;
- **rubble bond** *(la colonne fourrée),* which is externally formed by bonded stones and whose interior is filled by hard-core materials;
- **twin** *(la colonne gémelée),* built of lower quarry stones and whose base is fixed by gudgeons and the capital by clamps;
- **plain shaft** *(la colonne lisse),* whose shaft does not present neither grooves, nor ornaments;
- **thin** *(la colonne maigre),* which presents a very lengthened shaft by comparison with its diameter;
- **monolithic** *(la colonne monolithe),* whose shaft is formed by a single block;
- **bare *or* stripped** *(la colonne nue)* whose shaft is smooth;
- **drums** *(la colonne à tambours),* constituted of at least four superposed courses;
- **column with sections** *(la colonne à tronçons),* formed by two or three superposed courses.

Syn. with PILLAR; SUPPORT

3. A naked column, not ornamented.

4. A post of strong section (noncylindrical) in comparison with the other bars of a frame.

5. A post supporting heavy loads in a construction.

6. A round pillar set vertically or horizontally in a heading to support a machine drill

COLUMN OF FORMATION
Profil géologique
Geology
The section of a ground on which are reproduced the various strata of ground met at the time of cored borings. Core samples are accompanied by forms indicating their depth, thickness, aspect, color, possibly their odor.

COMB
Peigner
Masonry
To scratch superficially a rendering.

COMB HAMMER
Laie; Laye
Equipment and Tools
A stonecutter's tool being designed to dress the facing of stones. This tool has the shape of an axe with two cutting edges whose one is jagged. Grooves left by the comb hammer are called *hacking* (or *comb hammering*). **See Figure 35**

COMBED JOINT
Gargouille
Construction
The more or less controversial designation given to the slip mortise assemblies. Syn. with OPEN MORTISE

COMB-GRAINED WOOD
Bois maillé
Building Materials
A converted piece, on a face of which the silver grain is visible. Syn. with EDGE-GRAINED WOOD; RIFT-GRAINED WOOD

COMB-HAMMER
Layer
Construction in R.C. and P.C and Masonry
Syn. with HACK; TOOL; TOOTH

COMBINATION SOCKET
Souricière combinée
Equipment and Tools
A socket used to seize the socket of a cable, rod of a bore bit or any tool which is unscrewed inside a drilling hole.

COMBLANCHIAN
Comblanchien
Geology
A very hard, rosy or gray chalky stone.

COMBUSTIBLE ROCK
Roche combustible
Geology
A sedimentary rock arising from the partial decomposition, safe from the air, of vegetable remains: coal, anthracite, lignite, peat.

COMMON BRICK
Brique ordinaire
Building Materials
Syn. with BUILDING BRICK

COMMON RAFTER
Chevron
Building Materials
Syn. with RAFTER

COMPACT
Compacter; Serrer
Earthwork: Construction of R.C. and P.C.
1. To compress a ground, concrete, etc., by various processes.
2. To carry out to the compacting of any mortar, concrete.

COMPACT DRAWING
Plan centré
Drawing
A representation condensed around a center where cross the axis of symmetry of the various elements of a construction (which can be circular, elliptic, polygonal, etc.).

COMPACT MASS
Masse compacte
Earthwork
In the classification of the difficulties of hand-driven earthwork, ground attackable with the pick, jumper bar, or wedge.

COMPACT MILLSTONE GRIT
Caillouasse
Building Materials
A homogeneous and compact white gritstone range.

COMPACTED CONCRETE BY JOLTING
Béton compacté
Building Materials
Gravel-sand mixtures processed with hydraulic binders that are in particular used in the courses of pavement (roadway).

COMPACTING
Compactage
Earthwork
Operation which aims to provoke, by means and suited devices, a pressing down of the ground or materials in place, so as to bring them to a state of sufficient compactness to oppose effectively to considerable or harmful settlements under the influence of the one's own weight of the ground in place (it is the case of high embankments), under that of the repeated rolling loads.
There are several types of compacting:
- **explosive compaction *or* deep blasting** (*le compactage par explosifs*), a technique for increasing the physical and mechanical characteristics of granular grounds thanks to the explosions brought about within the massif to be consolidated, which have a complex action summarily described hereafter:
  - the gaseous cavity and Shockwaves created at the time of an explosion distribute inside the massif provoking the destruction of the soil skeleton, of which grains know a rearrangement more or less quick and more or less important,
  - this rearrangement brings about to an increase of density that depends of the nature of the soil and its permeability, power and position of charge as the confinement of the treated volume;
- **grouting compacting** *(le compactage par injection solide),* process of ground treatment derivative of the cement grout-based injection practice that consists in doing penetrate in force any mortar or micro-concrete into the ground that one wants to be consolidated. This material is put in place from drillings whose depth and the grid layout are determined according to the nature of the ground to be treated. The material put in place has a firm consistency and its introduction into the ground brings about a repression of the country rock, increasing thus its compactness as they advanced that bulb of introduced materials increases;
- **(short) piling compacting** *(le compactage par pieux courts),* improvement of soils consisting in driving fields of short piles that compress the ground. Piles have a length from 1.50 to 2.50 m.

COMPACTING STATE
Etat de compactage
Civil Engineering
The state of a layer of compacted materials after a number of determined passes.

COMPACTION FACTOR
Compacité ou Taux de compactage
Civil Engineering
Syn. with COMPACTNESS

COMPACTION SENSITIVITY
Sensibilité à la compaction
Geotechnics
Capacity that possesses certain grounds to be more or less subject to lose its shape by bringing closer of their elementary components, under the influence of a pressure which is applied to them.

COMPACTNESS
Compacité
Building Materials
The state of a material, matter, which presents a good density, i.e., little or no spaces (air or water) between its grains or different constituents.

COMPACTNESS
Compacité ou Taux de compactage
Civil Engineering
For a ground, ratio of the dry density to the Optimum Normal Proctor. Syn. with COMPACTION FACTOR

COMPACTOMETER
Compactomètre
Equipment for Measure and Control
An instrument for measuring the compacting ratio of a material.

COMPACTOR
Compacteur
Equipment and Tools
A plant used in earthwork to compact materials (backfills, roads, etc.) and that is mostly on rubber-tired wheels inflated with air or water and whose one makes vary the intensity of the compacting by the pressure of tires in function of the material to be compacted.

COMPASS BRICK
Brique en coin
Building Materials
A wedge-shaped brick. Syn. with CANT BRICK; SPLAY BRICK

COMPASS
Compas
Carpentry
The angle formed at the top of a frame by the conjunction of two principal rafters. Syn. with ANGLE PEAK

COMPATIBILITY BETWEEN PAINT AND FILM
Compatibilité d'une couche d'un produit *B* et d'un feuil *A*
Painting
The ability of a product to be applied onto a film, in some restrictive conditions if necessary, without reciprocal risk of alteration, immediate or differed, to give a film presenting a durable bonding.

COMPATIBILITY OF BINDERS
Compatibilité des liants
Hydraulic Binders
The ability that possess binders of different nature to be able being associated or mixed between them without disadvantages (risk of cracking, segregation, refusal of set, etc.).

COMPETENCE OF A RIVER
Compétence d'un fleuve
Hydrology
The power of a waterway to carry, in a given point, blocks of a certain size and that expresses in unit of volume of the largest blocks carried in this point. The competence varies with the flow and, especially, with the speed and is therefore very changing over time and space.

COMPETENCE OF A ROCK
Compétence d'une roche
Geotechnics
All mechanical qualities that possesses a rock that make it is admissible in a situation or a given use.

COMPETENT STRATA
Roche compétente
Geology
A material having satisfactory mechanical qualities.

COMPLETE CRACK
Cassure
Defects (Civil Engineering Structure)
Damage impairing the constructions that brings about a very deep or total sectioning of a structural part. Syn. with FRACTURE

COMPLETE CRACK OF FRESH CONCRETE
Cassure du béton frais
Defects (Construction of R.C. and P.C.)
A breaking that intervenes within a concrete mass and that is partly caused by the sedimentation of the concrete, itself strongly influenced by electrical forces between the fine grains; a reduction of these forces opens the way to the cement paste with a low porosity and to the sand concrete.

COMPLETION
Complètement
Topography
A sketching achieved on the land for completing a plan obtained by photogrammetry by postponing there information that have not been able being obtained by the aerial photograph.

COMPLEX
Appareil; Edifice; Complexe
Geology
All rocks that results from a common dynamics (plutonic, volcanic, sedimentary complex, etc.).

COMPLEX MODULUS
Module complexe
Strength of Materials
A modulus characterizing the behavior in deformation of a linear viscoelastic material under harmonic stress, to characterize the behavior in deformation of the bituminous-coated materials under stresses of a sufficiently low amplitude.

COMPLEX RETICULATED SYSTEM
Système réticulé complexe
Strength of Materials
A reticulated system which escapes to the definitions of other reticulated systems recalled in this dictionary.

COMPONENT PROPERTY
Propriété des constituants
Hydraulic Binders
The power of certain constituents of hydraulic binders, such as clinker, slag, and ashes, to endow to the binder hydraulic or pozzolanic properties.

COMPOSITE
Matériau composite
Building Materials
A product formed by several elementary components, of which association endows at the whole properties that none components taken separately possesses. A composite consists at least of two elements: the reinforcement (usually in filaments), which has for role to bear the applied loads, and the matrix which has for role to link the reinforcements between them, to distribute the applied load, and to protect the reinforcement from outside environment.

COMPOSITE BEAM
Poutre mixte
Construction
An element formed by a metal beam and a concrete slab, made interdependent at their junction by connectors.

COMPOSITE CELLULAR MATERIALS TO CHECKED PHYSICAL PROPERTIES
M.P.P.C. (Matériaux cellulaires composites à propriétés physiques contrôlées)
Building Materials
A binder-based cellular product (hydraulic or no) into which an emulsifying solution containing active fatty alcohol as fillers or fibers are added. This product, presenting a good stability and homogeneity, has advantageous qualities such as pumpability and absence of settling.

COMPOSITE CEMENT
Ciment composé
Hydraulic Binders
Syn. with BLENDED CEMENT; COMPOUND CEMENT

COMPOSITE DAM
Barrage-mixte
Civil Engineering Structure
A structure whose composition holds from the gravity dam and the arch dam; shaped in a circular arc form allows for the reduction of its thickness as compared to a gravity dam. It can be built in concrete or masonry.

COMPOSITE PILE
Pilot composite
Foundation
A minipile drilled then injected using a mortar or cement grout.

COMPOSITE PRODUCT
Produit composite
Metallurgy
A flat material obtained hot-rolling together two or several layers of superimposed metal so as to bind them together closely.

COMPOSITE STRUCTURE
Ouvrage mixte
Civil Engineering Structure
A metal construction in which concrete (reinforced or not, or prestressed) intervenes substantially in the resistance of the unit. We mainly can distinguish:
- **steel beams** (sections, reconstituted beams) supplemented by a concrete slab which takes part in the strength of the whole through the channel of connectors. This type of construction can be traditional, prestressed in situ or in factory;
- **tubular steel posts** filled with concrete and bearing the load by contact on the concrete alone or the concrete and steel concurently;
- **slabs of footbridges** (for pedestrians mostly), constituted by sheet metals or ribbed vats covered with ordinary or lightweight concrete, adhesion between steel and concrete being obtained by the form of the corrugations, by embossings, or other means.

COMPOSITE TOP SLAB
Hourdis à dalle mixte
Construction
An element formed by the association of a concrete slab and of a continuous sheet decking, the connection between the two elements is achieved by means of connectors being opposed to the sliding of the one with regard to the other.

COMPOUND CEMENT
Ciment composé
Hydraulic Binders
A product identified under the general term of C.P.J. and that contains at least 65% of clinker. "J" can correspond to a slag, pozzolan, ashes, fillers, or to a mixture of these last.
There are several types of compound cements:
- **blast furnace** *(le ciment de haut-fourneau),* see BLAST-FURNACE CEMENT;
- **lime-slag** *(le ciment de laitier à la chaux (C.L.X.)),* a product having a slag content higher than 70%, hydraulic lime lower than 30% and possibly addition of a filler in the limit of 3% of all constituents;
- **clinker-slag** [*le ciment de laitier au clinker (C.L.K.)*], which contains at least 80% of slag, the rest of constituents being the clinker, with possibly a filler in the limit of 3% of all constituents;
- **slag and ash** [*le ciment au laitier et aux cendres (C.L.C.)*], which can contain between 20% and 45% of slag, between 25% and 60% of clinker, between 20% and 45% of ashes and possibly a filler in the limit of 3% of all constituents.

Syn. with BLENDED CEMENT; COMPOSITE CEMENT

COMPOUND GIRDER
Poutre composée
Construction
An I-shaped unit comprising a vertical web, generally solid, assembled with horizontal flanges and which can be rectangular or camelback. Syn. with BUILT-UP GIRDER

COMPOUND RETICULATED SYSTEM
Système réticulé composé
Strength of Materials
A reticulated system is known as *compound* if it can be regarded as an assembly of several simple reticulated systems by means of bars and articulations ensuring strictly the rigidity of the formed system. Warren-derived girders are compound reticulated systems.

COMPOUND WATERPROOFING
Hydrofugation dans la masse
Construction of R.C. and P.C.
The mixing into the concrete, either powders, or colloidal substances, that create a complementary crystalline system or have a hydrophobic action on the pores and capillaries.

COMPOUNDING
Démixtion
Materials
The reciprocal and partial solubility of a liquid into another. Syn. with SOLUBILITY

COMPRESSED-AIR CONVEYOR
Transporteur pneumatique
Equipment and Tools
A device for transporting solid, pulverulent or liquid matters, in a supple or rigid conduct by compressed air. This method is used to carry the cement, mortar, concrete, etc, when the place of use is unavailable by other methods or that the technique imposes (shotcrete, grouting, etc.).

COMPRESSED-AIR MOLE
Taupe
Equipment and Tools
A rocket used to create underground drillings.

COMPRESSIBILITY CURVES
Courbes de compressibilité
Geotechnics
Curves obtained by charting on a graph the effective pressure logarithm on the abscissa, and on the ordinate, not the volume, but the indices of the vacuum, following a compression testing on a soil sample.
The test to determine these curves takes place in the following manner. A soil sample is placed between two porous stones in a metal cylinder permitting drainage to the loading or the soaking of the soil to the discharge. The sample is subjected to growing loads whose degrees are applied over 24 h. Reductions in volume are measured for each value of the compression and the corresponding curves are traced.

COMPRESSIBLE SOIL
Terrain compressible
Geology
A light ground such as sludge, topsoil, etc., opposing only one low resistance when submitted to compressive stresses.

COMPRESSIMETER
Compressimètre
Equipment for Measure and Control
A similar instrument to the penetrometer which is formed by a needle on which one makes fall a rammer of a determined height. Of the sinking of the needle into the ground and with the help of a plot, the superficial strength of the ground is deduced.

COMPRESSIOMETER
Compressiomètre
Equipment for Measure and Control
An instrument that allows to determine the static elasticity modulus of hardened concretes. The test consists in measuring the diametral or longitudinal bending (out of shape) of a cylinder test during the compression testing.

COMPRESSION
Compression
Strength of Materials
Compressive strain that undergoes a body when it is subjected solely to the action of two equal forces, of opposite direction, having their direction in the continuation of each other and having tendency to be neared their points of application. In the action of these two forces, the body tends to shorten or decrease the volume.

COMPRESSION FLANGE
Table de compression
Construction
The horizontal part or flange of a T-beam. **See Figure 36.**

COMPRESSION RATIO
Indice de compression
Geotechnics
The incline of the odometric curve defined beyond the pressure of preconsolidation.

COMPRESSION TABLE
Table de compression
Construction
The upper or lower compressed horizontal part of a framework connected to one or more webs.

COMPRESSIVE STRENGTH
Résistance à la compression
Test of Materials
The quotient of the maximum load recorded during the compression of a test specimen of a material by the initial section of this test specimen.

COMPRESSIVE STRESS
Contrainte de compression
Strength of Materials
The tension that undergoes the upper fiber of a beam resting on two bearings and at the center of which a force F is exerted.

COMPRESSOL™ PILE
Pylône *Compressol*
Foundation
A pit or pile carried out into the ground by means of a truncated pestle, called a *perforator,* falling in free fall and whose operation is executed with pile driving. While penetrating into the ground, the pestle compresses laterally the ground on the periphery of the achieved hole. When the necessary depth is reached, one carries out the material stopping (concrete) into the pit with a ogival-shaped special pestle, called *stuffer.* The minimum diameter of this pylon is 0.70 m.

COMPRESSOR
Compresseur
Equipment and Tools
A device that provides the compressed air for feeding a number of tools or machines (jackhammer, sandblaster, mechanical application plant or injection plant, etc.). There exists compressors with pistons, rotary, and screw. Syn. with AIR COMPRESSOR

CONCEALED JOINT
Joint dérobé
Masonry
A joint of voussoir which is vertical on the visible face and tilted on the behind of the voussoir.

CONCENTRATED LOAD
Charge concentrée ou ponctuelle
Strength of Materials
An action which acts on an extremely minimized and localized zone (example: reaction of a pole on a beam). Syn. with POINT LOAD. **See Figure 37**

CONCENTRATED RUNNING
Ruissellement concentré
Geomorphology and Hydrology
A flow characterized by hierarchy of elementary channels, which meet to form streamlets able digging ravines or torrents. Syn. with RILLWASH

CONCHIFEROUS SAND
Sable coquillier
Geology
A granular substance formed primarily of broken-up shells. They are sea sands.

CONCHIFEROUS STONE
Pierre coquillière
Geology
A sedimentary rock containing small fossilized shells of sea animals and presenting dull facings.

CONCRETE
Béton
Building Materials
An artificial material reconstituted from three primary components that are: aggregates (or inert matter: sand, gravels, pebbles, etc.), a binder (lime, tar, cement, etc.), a reactive that can play two roles: that of reactive and binder or a single as the water which only intervenes as reactive.
The fresh concrete forms a wet mass, more or less plastic, that can be poured in molds or formworks.

CONCRETE ADDITIONS
Ajouts du béton
Hydraulic Binders
Products usually formed by fines and that broadly have a corrective role of grain-size distribution. They are fillers, fly ashes of coal, pozzolanic fines, silica fume (or microsilicas), etc. Are also classified as additions, colorings of mineral origin (natural or synthetic).

CONCRETE ADHESIVE
Colle à béton
Adhesives
A resin-based product that usually occurs as ready for use preparations in the case of thermoplastic resins, or in two or more parts for thermosetting resins. This product is intended for bonding by contact two concrete pieces.

CONCRETE ADMIXTURE
Adjuvant du béton
Hydraulic Binders
An additive which mixed in smaller quantity into a concrete or mortar during mixing, to obtain or upgrade certain properties. It can be liquid or powder.

CONCRETE ARCHIVE CYLINDER TEST
Eprouvette-archive de contrôle des bétons
Test of Materials (Concrete)
A cylinder test preserved during long months (perhaps several years), it allows therefore to check at long time the evolution of the concrete qualities.

CONCRETE BEARING
Appareil d'appui en béton
Construction
A device of connection and transmission of actions to the elements of bearing. It is made of mortar or concrete and whose mainly we can distinguish the band of mortar, Freyssinet articulation and truncated roller of reinforced concrete for continuous beams:
- *pointing* (*la bande de mortier mâté*) is used to constitute the fixed bearing of decks with cased composite girders or precast of reinforced concrete. Decks are put on a band of mortar set by caulking with or without anchorage;
- *hinge Freyssinet* (*l'articulation Freyssinet*), used for bridges with slab of reinforced concrete casting in place and made up of a section of concrete mostly linear, sometimes punctual.

CONCRETE BLOCK
Parpaing; Block de béton manufacturé; Aggloméré
Buildings Materials
Syn. with BUILDING BLOCK

CONCRETE BOX
Coulotte
Handling
A square box used to pour concrete in underwater site.

CONCRETE BOX TEST
Caisse d'essai
Assaying Equipment
A wooden parallelepipedal container of 60 x 60 x 15 cm into which is sprayed the concrete, the crate being appreciably in the vertical position. Samples are taken by coring for 7 and 28 days. These cylindrical samples of 6 x 12 cm will be subjected to compression testings so as to assay the strength of the shotcrete at aforementioned dates.

CONCRETE BREAKDOWN
Désintégration généralisée (du béton)
Defects (Construction of R.C. and P.C.)
The advanced destruction of the concrete (localized or general) that can be due to a chemical corrosion of the concrete, phenomenon of alkali-aggregates reaction, frost, corrosion of reinforcements or also to the excessive mechanical strains. It is characterized by swellings, scalings, fissures, etc.

CONCRETE BREAKER
Brise-béton
Equipment and Tools
A device formed by a more or less large point tool, percussion working, usually hydraulically working and used to pull down structures of concrete, masonry or also to break away the rocks. Syn. with HYDRAULIC HAMMER; PNEUMATICALLY HAMMER

CONCRETE CANCER
Réaction alcali-granulats
Defects (Construction of R. C. and P. C.)
Syn. with ALKALI-AGGREGATE REACTION

CONCRETE CARBONATION
Carbonatation du béton
Defects (Construction of R.C. and P.C.)
A whitish deposit covering the facings of concrete works.
The forming process is the following.
The free lime, aluminates, and silicates can get carbonated. The reaction of carbonation of the free lime is the following:
$$Ca(OH)_2 + CO_2 \rightarrow CaCO_3 + H_2O$$
This reaction, catalysed by the atmospheric humidity progresses from the outside to the inside and brings about the progressive neutralization of the cement alkalinity: the basic medium losses this alkalinity and its pH going lower than 9.
Furthermore, the carbon dioxid-laden water creates a low acid (carbonic acid) and attacks the lime and carbonate of lime. The bicarbonate of lime thus formed is soluble in water and destruction of the concrete takes place by progressive washing out of the binder, with sometimes forming of stalactites.

CONCRETE CHUTE
Goulotte; Goulette
Equipment and Tools
A concrete or aggregates-handling device formed by half-cylinders from 20 to 40 cm width which are inclined about 30° on the horizontal and into which the concrete or aggregates can regularly and freely flow by simple gravity.

CONCRETE CLAW
Griffe à béton
Equipment and Tools
A fork of three teeth with ends crooked in hook form for concrete displaying.

CONCRETE COHESION
Cohésion du béton
Building Materials
The property of fresh concrete to preserve its homogeneity. Syn. with CONCRETE HOMOGENEITY

CONCRETE COMPACTION
Serrage
Construction of R.C. and P.C.
The homogenization and intimate mixing of the components of a concrete or a mortar to give it more compactness. Compaction is usually obtained by vibration, and arguably by rodding for weak thickness's.

CONCRETE COMPACTNESS RATIO
Coefficient de compacité d'un béton
Building Materials
The ratio of absolute volume in liters of the solid ingredients of the concrete taken individually (gravel, sand, cement) to the total volume of the fresh concrete put in work.

CONCRETE COMPRESSIVE STRENGTH *or* CONCRETE NOMINAL STRENGTH
Résistance à la compression *ou* Résistance nominate d'un béton
Test of Materials (Building Materials)
Average of arithmetical value for concrete a having 28 days, of the determined strength to the crushing by the axial compression of a straight cylinders of 200 cm^2 section and of a height double their diameter (Ø 16 cm, H = 32 cm).

CONCRETE COMPRESSIVE STRENGTH TEST
Essai de résistance à la compression du béton
Test of Materials (Building Materials)
A test that allows to check the compressive strength of the concrete at various ages and that is carried out on standardized cylinder tests (diameter 16 cm, height 32 cm, surfaces of 200 cm^2) made in metal molds, or in waterproofed cardboard molds, placed into a metal counter mold. Cylinders are crushed between the trays of a press, the stress being exerted in a direction parallel to the generatrixes. Faces of the cylinder are regularized and leveled before crushing by a thin layer of a mixture of sulfur and fine sand.

CONCRETE CONSTRUCTION JOINT
Joint
Construction
The visible discontinuity after a concreting resumption between two sections.

CONCRETE CONTROL TEST
Epreuce de contrôle des bétons
Test of Materials (Concrete)
See TEST OF CONCRETE CONTROL

CONCRETE CORROSION
Corrosion du béton
Construction in R.C .and P.C.
The chemical modification of the concrete that demonstrates by swellings, alopecia of the concrete, disintegration of the components (aggregates, cement, etc.) and that is due to the action of water, aggressive atmosphere, or forming of calcium sulfoaluminate. This degradation has for consequence a loss of strength and a worsened risk of corrosion of the reinforcements.

CONCRETE CYLINDER TEST
Eprouvette pour essais de béton
Test of Materials (Concrete)
A cylinder of diameter 16 x 32 cm height intended for different standardized tests (design, suitability, control, and inquiry) of concrete. These cylinder tests are intended for compressive and splitting tests. (In times past, tests of tensile strength had executed on cube tests, mostly of 7 x 7 x 28 cm.)

CONCRETE DISINTEGRATION
Désagrégation du béton
Defects (Construction of R.C. and P.C.)
Any deterioration bringing about the partial detachments more or less deep of concrete from the mass. The latter are two types: surface or deep.

CONCRETE FLUIDITY
Fluidité d'un béton
Building Materials
State of liquefaction of grout, mortar, concrete, etc., that measures with the flowmeter or the slump cone.

CONCRETE FORMING
Coffrage
Temporary Constructions
Syn. with CASING; FALSEWORK; FORM; FORMWORK; MOLD; SHUTTERING

CONCRETE FREEZING
Réfrigération du béton
Building Materials
Syn. with CONCRETE REFRIGERATION

CONCRETE GRINDER
Ponceuse à béton
Equipment and Tools
Syn. with FLOOR GRINDER

CONCRETE, GROUT, MORTAR RIGIDITY
Rigidité d'un béton, d'un coulis, d'un mortier
Building Materials
The consistency state that characterizes the final set of a mortar, grout, or concrete.

CONCRETE GUN
Machine à projeter; Projeteuse de béton
Equipment and Tools
Syn. with AIR-PLACING MACHINE; CEMENT CONCRETE GUNITE MACHINE; CONCRETE PLACING GUN; MORTAR GUN

CONCRETE HACKING
Layage du béton
Construction of R.C. and P.C.
The grooving of a concrete facing by parallel furrows.

CONCRETE HOMOGENEITY
Cohésion du béton
Building Materials
Syn. with CONCRETE COHESION

CONCRETE HULL
Coque
Construction
An added structure of cast-in-place concrete or shotcrete forming a shell on an existing vault and that is designed to strengthen it. Syn. with SHELL. **See Figure 38**

CONCRETE INQUIRY TEST
Essai d'information des bétons
Test of Materials (Building Materials)
A test for appreciating strengths actually reached by the concrete in the works according to the time (duration), of the weather conditions and for judging opportunities of form striking, unwedging, and decenter. This test also allows to check somewhat the effects of the external low temperatures on the concrete.
This test is in particular carried out in cold period or when requirements impose a demolding in a relatively restricted time. Cylinder tests are preserved in the same conditions as the concrete of the work. The test is carried out on hardened concrete cylinder tests thorough up to breaking.

CONCRETE MINERALIZER
Minéralisateur pour béton
Materials
A solution, mostly quartzose, with a great capacity of diffusion, which is used for the structural confortation of the concrete. Mortars and concretes thus treated, acquire properties of impermeability, resistance from atmospheres and aggressive waters as well as cathodic protection of reinforcements.

CONCRETE MIXER
Malaxeur; Bétonnière
Equipment and Tools
1. MIXING MACHINE
2. Syn. with CONCRETE MIXER DRUM; CONCRETE-MIXING MACHINE; GRAVITY-TYPE MACHINE

CONCRETE MOLDING
Moulage du béton
Building Materials
The pouring of horizontal concrete parts of which dimensions in plan are distinctly higher than the thickness (slab for example).

CONCRETE PLACER
Pompe à béton
Equipment and Tools
Syn. with CONCRETE PUMP

CONCRETE PLACING GUN
Machine à projeter
Equipment and Tools
Syn. with AIR-PLACING MACHINE; CEMENT CONCRETE GUNITE MACHINE; CONCRETE GUN; MORTAR GUN

CONCRETE PLUG
Bouchon
Foundation
1. Concrete poured in the bottom of a cofferdam, caisson, or an excavation. It protects these works from inrushes of water which comes from the bottom after dewatering (phenomenon of piping).
2. Concrete poured on the base of some types of piles. This avoids protects the drilling from being invaded by water. This concrete goes into the definitive confection of the pile.

CONCRETE POROSITY
Porosité du béton
Construction of R.C and P.C.; Defects
1. The sum of water contents and empties of the concrete which conventionally characterizes the quality of the concrete after its placing. The "normal" porosity of a concrete is usually included between 10% and 14%.
2. A defect that concerns concrete works, due to a lack of compactness and homogeneity inside the concrete mass. It can be observed according to the aspect of the facing and is confirmed by dynamic sounding, gammagraphy, coring, or an endoscopic sounding.

CONCRETE POURING
Bétonnage
Construction ofR.C. and P.C..
Syn. with CONCRETING; PLACING OF CONCRETE

CONCRETE PRERECORDED STRAIN
Déformation différée du béton
Defects (Construction of R.C. and P.C.)
A deformation due to the shrinkage and creep (relative shortenings).

CONCRETE (BLOCK) PRESS
Presse à béton
Equipment and Tools
In the industry of the manufactured concrete, machine bearing the molds and allowing, thanks to a compression mostly associated with a powerful vibration, to set up any concrete mixed with a minimum of water, which is then removed from the mold immediately (gutters, rims, etc.).

CONCRETE PUMP
Pompe à béton
Equipment and Tools
A concrete-carrying device which consists in pushing it in suitable ducts with an alternative piston pump mechanically or hydraulically powered. Syn. with CONCRETE PLACER

CONCRETE PUMPING
Pompage du béton
Work
The pressurized carrying of the concrete into a piping by means of a pump or a compressor, until the place where it must be placing.

CONCRETE RAM
Pilette
Equipment and Tools
A tool for tamping concrete.

CONCRETE RAMMER
Batte
Equipment and Tools
A builder's tool for packing down and leveling concrete.

CONCRETE REFRIGERATION
Réfrigération du béton
Building Materials
A process which consists in keeping on a certain level the temperature of a concrete freshly poured. The method consists in embedding into the concrete a system of cooled water circulation. The refrigeration is a process used in particular

in tropical countries. Syn. with CONCRETE FREEZING

CONCRETE REINFORCEMENT CORROSION
Corrosion des armatures
Construction of R..C. and P.C.
A degradation phenomenon of the concrete reinforcements that mostly brings about by their expansion causing spalls and chippings. The corrosion is often the consequence of a fall of the pH and the concrete porosity. The mechanism of the corrosion unfolds into two successive phases:
- *incubation phase:* period during which aggressive elements permeate up to the reinforcement through of the concrete cover and induce the corrosion;
- *growth phase:* period during which the corrosion continues to a certain speed, leading to the forming of rust and to the ultimate degradation stages.

CONCRETE REVIBRATION
Revibration du béton
Construction
The second vibration of the concrete executed under certain circumstances and under certain conditions before the final set.

CONCRETE SAW
Scie à béton
Equipment and Tools
A power saw provided with a set of diamonds disks. Types are:
- **floor saw** *(la scie mobile),* which is used to saw in a horizontal plan (slab, for example);
- **stationary saw** *(la scie fixe),* in which disk is mounted on a telescopic fixed frame stowed on the wall to be cut. This apparatus is used to cut vertical walls;
- **articulated boom saw** (*la scie sur bras articulé*), in which disk is mounted at the end of a telescopic articulated boom. This apparatus is mounted on a swiveling frame and allows the cutting following the profile of the work (cutting according to the profile of a tunnel, for example).

CONCRETE SCREENINGS
Béton de gravats
Building Materials
A material whose aggregates consist of demolition products of masonry.

CONCRETE SHRINKAGE
Retrait du béton
Building Materials
The characteristic property of the concrete to decrease in volume over time without loads.

CONCRETE SLAB
Dalle en béton; Hourdis
Construction
1. A quadrangular element whose dimensions in plan are relatively important in comparison with the thickness. This type of slab is obtained by casting of the concrete between formworks and is generally reinforced. Under this designation is regrouped an extended range of types of slabs that comprise the duct cover as well as the slab of a bridge. Slabs can be precast or poured in situ.
2. A reinforced concrete slab whose thickness is small in comparison with its dimensions in plan and that rests on the totality or almost the totality of his periphery. The concrete slab is designed to receive important dynamic or static loads. We can distinguish the top concrete slabs and bottom concrete slabs (example: a segment for bridge of P.C. is formed of a bottom concrete slab and top concrete slab connected by webs). Syn. with TOP SLAB

CONCRETE SPECIALIST
Cimentier
Construction of R.C. and P.C.
A specialist in creating all work of reinforced concrete, executing the formwork and bar setting, ensuring their placing and checking the concreting. After form striking, it carries out to the retouches or possible necessary smoothings.

CONCRETE STEAM CURING
Autoclavage du béton
Construction in P. C. and P. C.
A concrete treatment process which consists in placing molds filled herewith concrete in autoclaves. This practice is often used to achieve cellular concrete. The autoclave curing endows at the concrete thus treated, high strength in compression. Syn. with AUTOCLAVE CURING; HIGH-PRESSURE STEAM CURING

CONCRETE SUITABILITY TEST
Epreuve de convenance de béton
Test of Materials (Concrete)
A test executed on the site for verifying that with the means of the site one can achieve with a minimum of risks the concrete defined by the design mix test. It also has for purpose to verify that the quantities of the expected concrete ingredients per a cubic meter of concrete give a cubic meter of concrete implemented.

CONCRETE SURFACE PREPARATION
Préparation de surface du béton
Construction of R.C. and P.C.
Any operation of dressing (planing or scabbing) of a surface intended for receiving a rendering, to obtain a better adhesion of the added product.

CONCRETE TENSILE STRENGTH
Résistance à la traction d'un béton
Test of Materials (Building Materials)
The average of the arithmetical value of the resistance to the splitting of straight cylinders of 200 cm^2 section and a height double of their diameter (cylinder test of 16 x 32 cm), given on concrete aged 28 days.

CONCRETE THERMOMATURATION
Thermomaturation du béton
Building Materials
A concrete thermal treatment that allows to accelerate the set and hardening of it and which can be performed:
- before the placing of concrete; it is the method known as *of the hot concrete* by reheating of certain constituents: heating by injection of vapor into the mixers, heating in electrified waiting skips;
- after its placing into formworks or molds by internal addition of heat (insulated molds and self-drying, current passing in the reinforcements or positioned wire, etc.), or by external addition of heat (heating molds, steamers, tilts heating, infra-red panels, etc.);
- after demolding (parts with an immediate demolding): steamers, enclosures heating, hot baths, electrified tilts, etc.

CONCRETE UNDERFORM
Renformis
Construction
1. In the former works, bed of concrete implemented on top of a horizontal cover to obtain a slope or the bulging profile of a (pavement) roadway.
2. A bed of lean concrete not reinforced added on the foundation raft of a work (underpass for example) which not only allows to give the desired profile, but also to embed there the possible pipings of supply water, electricity, etc.
This constructive arrangement is not taken into account in the designs of strength of the work, except as regards the resistance to the vertical hydrostatic thrust prompting the works buried in aquiferous site. The concrete underform allows, if necessary, to reach more easily the various feeder systems without attacking the structural integrity of the work (cut of steel of the bar setting in particular).

CONCRETE VIBRATING
Vibrage du béton
Building Materials
An operation that consists in subjecting concrete, before beginning of its set, to the vibrations in order to obtain better homogeneity and compacting of its various concrete ingredients.

CONCRETE WORKABILITY METER
Maniabilimètre
Assaying Equipment
An instrument for checking and measuring the plasticity of the mortar and fresh concrete. We can distinguish the:
- ***Lesage* workability meter** (*le maniabilimètre Lesage),* for testing the workability of a mortar or a concrete that consists in a prismatic vat separated into two parts by a mobile tilted partition. This separation has a close incline to the slope of the natural flow of the concrete, without vibration. The principle of the test consists in introducing fresh concrete into the first compartment (of the right-hand side) then to withdraw the partition. The withdrawal of this partition brings about to start a vibrator attached to the container. The concrete flows then toward the second compartment and one measures the time that it puts to arrive up to a line spot

appeared on one of the walls. The time of flow depends on two parameters:
- water content;
- ratio sand/gravel;
- **mortar workability meter L.C.L.** *(le maniabilimètre L.C.L. à mortier),* used to test the workability of the concrete and that is formed by a metal parallelepipedal mold provided of a vibrator. The mold is divided into two by a removable partition. The test consists in measuring the time *T'* of flow of a given volume of concrete in the mold throught the agency of a vibration.

See Figure 40

CONCRETE-MIXING MACHINE
Bétonnière
Equipment and Tools
Syn. with CONCRETE MIXER; CONCRETE-MIXER DRUM; GRAVITY-TYPE MACHINE;

CONCRETE/STEEL PERCENTAGE
Pourcentage béton/acier
Construction of R.C. and P.C.
The ratio of the volume of the reinforcements to the volume of the concrete over a given length of a reinforced concrete piece.

CONCRETE-MIXING PLANT
Centrale à béton
Equipment and Tools
An installation for manufacturing concrete that can be temporary or put up at residence on important sites. The manufacture of the concrete takes in mixers and the batching of the various concrete ingredients is automatically achieved. Any concrete mixing plant is equipped with:
- reception and stocking installations;
- a batching group;
- an installation of mixing;
- a control room which is the brain of the installation. **See Figure 39**

CONCRETING
Mise en place du béton; Bétonnage
Construction of R.C. and P.C.
An operation that consists in filling molds or formworks with concrete; it is characterized by the equipment used and its period of validity, conditions of placing, shapes and dimensions of the mold, presence of a reinforcement and its arrangement, diameter of piping in the event of pumping, etc. Syn. with CONCRETE POURING; PLACING OF CONCRETE

CONCRETING LIFT
Levée de bétonnage
Construction of R.C. and P.C.
The vertical distance separating two successive horizontal construction joints. Each lift reflects the volume (and the height) of concrete poured into only once.

CONCRETING LINE
Chaîne de bétonnage
Construction of R.C. and P.C.
The succession of operations contained between the moment where the concrete ingredients arrive to the site or the factory and the form striking of the pieces or structures.

CONCRETING PHASE
Phase de bétonnage
Construction of R.C. and P.C.
Each fraction of a concrete mass to be poured, given at the time of the design engineering of the work.
As far as possible, it is desirable to avoid the division of the concreting because the surface of separation between part of concrete having already made its set and a part poured thereafter, creates a discontinuity inside the mass; however a tension, even slight, will bring about to a separation between the two parts. It is thus necessary to pour in only once a beam, a slab, etc; when that is not possible because of important volume (abutments, important slabs, etc.) or of technical needs (progressive loading in a given order), a concreting program must be arranged, defining the construction joints (position, the shape, order of concreting of the sections, possible extra barsetting, etc.).

CONCRETING PIPE
Pipe de bétonnage
Equipment and Tools
An interdependent pipe of a formwork, on which links the pipe of supply of the fresh concrete. The concrete is thus placing without other intervention. The principle of the concreting pipe is in particular used to concrete tunnel vaults.

CONCRETING PROGRAM
Programme de bétonnage
Construction of R.C. and P.C.
A detailed contractor's account accompanied by drawings that defines for all concretes the phases of placing needed to progress round the clock nor rework, as their succession.
The concreting program defines the position and configuration of rework surfaces, type, characteristics and number of vibrators as the maximum mutual distances from the points where must act the vibrators. It also specifies the nature and capacity of the installations of manufacture, the carrying of the concrete as means of backup facilities possible and the treatment method of the accidental rework. For each planned phase, the program specify: the wall of formwork which must be placed as a preliminary and those which must possibly be build in the process of phase, quantity of concrete to be implemented per unit of time, configuration, thickness and volume of the various fresh concrete bed to be implemented, under which condition, with special emphasis on within which time limits, and the successive beds must be possibly superimposed or juxtaposed.

CONCRETING TUBE
Colonne de bétonnage
Equipment and Tools
A steel tube for placing the concrete in a pile. One calls it also *tremie tube,* if it dives effectively in the concrete in place. **See Figure 41**

CONCRETING WINDOW
Fenêtre (de bétonnage)
Temporary Constructions
An opening made at regular intervals in the form lining of a formwork of a tunnel following a panel defined at the time of the study of the project and that allows to ensure the correct filling of the volume to be concreted and to introduce poker vibrators. The window is afterward sealed with a panel of a similar nature as the form lining of the formwork and jointed by pins.

CONCRETING WITH BAGGED CONCRETE
Bétonnage avec béton en sacs
Foundation
A concreting process in aquatic site, that consists in piling underwater bags in cloth of jute preliminary impregnated with cement grout and containing the concrete. These piled bags will be of use as course to the envisioned construction.

CONCRETION
Concrétion
Geology; Defects
1. A hardened mineral accumulation in a ground, after segregation of diverse origin, such chalky nodules, or dolls of the loess, flints of the chalk, etc.
2. Deposits on masonries of crusts or blooms of calcite or sulfates, due to water seepage that wander through the concrete or masonries and that dissolve the pure lime that they meet. This lime water turns into a lime carbonate at the touch of the dioxide acid of the air to give rise to the crystalline deposits called *concretions.* These concretions can be red or brown by oxides of iron. Syn. with DRIPSTONE

CONCRETIONED FACING
Parement concrétionné
Defects (Civil Engineering Structure)
A surface covered by concretions.

CONDENSATION
Condensation
Materials
The change from the gaseous to the liquid state, or change of state releasing heat.

CONDENSATION WATER
Eau de condensation
Building Materials
An aqueous film stemming from thermal differences between the ambient air and materials and that deposits on their surface or penetrates their pores by capillarity. Syn. with DRIPING MOISTURE

CONDENSED SILICA FUME
Microsilice; Silice micronique; Fumée de silice
Materials
Syn. with MICROSILICA; SILICA FUME

CONDUIT
Canalisation; Coulisse
Civil Engineering; Handling
1. Syn. with CANALISATION; DUCT; PIPE; PIPELINE; PIPING
2. An evacuation pipe for excavated material or demolition rubble.

CONE (-TYPE) CRUSHER
Broyeur à cône
Equipment and Tools
A rock-breaking device used to provide sand of a grading about than 3 mm. It is equipped by a truncated cone revolving on its vertical axis within an outer chamber, the annular space between the outer chamber and cone being tapered. Syn. with GYRATORY CRUSHER; GYRATORY BREAKER

CONE GRIP
Cône d'ancrage
Construction
1. Any confined concrete or steel cone that allows the anchorage of steel prestressing cable by post tensioning.
2. A cylindrical piece endowed with a truncated recess on the surface which come blooming the wires of the steel prestressing cable.
Syn. with ANCHORAGE CONE. **See Figure 42**

CONE PENETRATION TEST
Essai de pénétration statique
Test of Materials
The determination of the resistance of a soil that consists in pushing into this one, at constant speed (20 mm/s), a stand of drill pipe ended by a point supplied with a cone and to measure in a continuous way the penetration resistance of this cone.
This test allows to measure in addition the:
- total strain of penetration,
- strain of friction on a socket above the cone,
- pore water pressure developed at the level of a filter located close to the cone (piezocone).

This type of test applies at the all fine and granular soils of which average dimension of the elements does not exceed 20 mm.

CONE TIE
Bouchon conique
Construction of R.C. and P.C.
Truncated-shaped cork made of plastic. The cone tie seals the tubes in PVC which were bracing to wall forms used for the formwork of a wall. After form striking and withdrawal of tie rods, these wall forms remain embedded in the concrete.

CONFINED CONCRETE
Béton fretté
Building Materials
Reinforced concrete in which independent stirrups are replaced by a continuous binder.

CONFINING STRESS
Contrainte de confinement
Strength of Materials
A tension that appears at the interface between country rock and the earth retaining (or the covering) and that originates in their interplay.

CONFIRMATION WELL
Forabilité
Work
The character of a ground or a material to let oneself be drilled with more or less facility.

CONFLUENCE
Confluence; Confluent
Hydrology
The reunion of two or more waterways.

CONFORMITY MARK
Marque de conformité; Label
Welding; Building Materials
1. A reference attesting that a product or service is in keeping with standards or given technical specifications.
2. The usual guarantee resulting from normal tests of materials by a registered organization.

CONGELIFRACTION
Gélifraction; Cryoclastie; Gélivation
Geomorphology
A breaking-up of the coherent rocks due to the increase of the volume of water (in the range of 9%) when the latter freezes. This increase in volume brings abouts stresses in the cracks or pores where water is stored bringing about the

detachment of fragments of the rock. Syn. with FROST WEATHERING.

CONGELITURBATION
Géliturbation; Cryoturbation
Geomorphology
Syn of CRYOTURBATION

CONGLOMERATE
Conglomérat; Poudingue
Geology
1. A coarse-grained sedimentary rock formed by fragments (≥ 2 mm) cemented between them by a natural cement. When fragments are angular, it concerns a breccia; when they are rounded (pebble), a pudding stone.
2. A detrital sedimentary rock made of large rounded pebbles cemented betwen them. Syn. with PUDDINGSTONE

CONGLOMERATE BLOCKWORK
Aggloméré
Buildings Materials
Syn. with ARTIFICIAL STONE; BLOCKWORK; BUILDING BLOCK; PERPEND

CONICAL AUGER
Pointe taupe
Equipment and Tools
Syn. with MOLE POINT

CONICAL WALL
Mur à surfaces coniques; Mur conique
Construction
A construction bordered by two conical surfaces. The wall can be straight or oblique according to whether the axis of cones are vertical or tilted. The straight conical wall allows to connect two battered walls.

CONIFEROUS TREE
Résineux
Building Materials
Trees rich in resin whose primary specimens are the fir tree, the spruce, and the pine.

CONIFEROUS WOOD
Bois résineux
Building Materials
A wood of conifers, as opposed to leaf wood. Syn. with SOFTWOOD

CONIOPHORA CEREBELLA
Coniophora cerebella
Building Materials
A fungus said of *surface* that can, just as the serpula, directing its attack against the wood very far from the origin source.

CONNATE WATER
Eau fossile; Eau connée
Geohydrology
Syn. with FOSSIL WATER

CONNECTING PLATE
Platine d'extrémité
Construction
A transverse plate used to joint.

CONNECTING WORK
Ouvrage de raccordement
Sanitary engineering and Drainage
Work which allows to connect between them different cleansing devices; ditch and collector for example. This work is usually constituted by a manhole.

CONNECTION
Liaison; Liaisonnement; Attache; Assemblage; Ajutage
Work Construction of P.C. and P.C; Civil Engineering Structure; Equipment and Tools
1. The association of two pieces having at least a common surface. The connection that can be dismantled or permanent, rigid or elastic. Syn. with BINDING; COUPLING; JOINING; LIAISON; LINKING BOND
2. A way of material assembly for making them interdependent between them. Syn. with BINDING; COUPLING; JOINING; LIAISON; LINKING BOND
3. In a bar setting, tie which unites the reinforcements in order to keep up them in position during concreting.
4. Syn. with ASSEMBLY; COUPLING; JOINING UP; JOINTING
5. Syn. with FLOW NOZZLE; JET; NOZZLE

CONNECTION PLATE
Tôle de raccord
Metal Construction
1. In the metal bridges with independent spans, sheet part connecting the top flanges of the end distance pieces of two consecutive decks (directly below of the intermediate bearing). The

fastening set allows the mechanical independence of the decks (fastening by bolts placed into oblong holes, for example).
2. A sheet part putting in longitudinally and connecting two adjacent steel decks.

CONNECTOR
Connecteur
Construction
A metal part ensuring the connection between the reinforced concrete slab and the metal frame as the transmission of stresses (mixed deck iron-concrete). The aim of the connectors is also to prevent the slipping and the uprising of the concrete toward the steel.
There are several types of connectors:
- **thrust connectors [***les connecteurs à butée (éléments de cornières, goujons)***]**, which are welded on the chords of beams but present the disadvantage not to oppose to the uprising of the slab; **See Figure 43**
- **anchoring connectors** *(les connecteurs à ancrages),* constituted by reinforcing rods of different shapes, folded and welded on the top chord of beams. They are, in general, slanted to 30° or 45° on the chords, their functioning is analogous to that the stirrups of the reinforced concrete; **See Figure 43a**
- **thrust and anchoring connectors** *(les connecteurs à butée et ancrage),* which constitute a combination of the two previous systems and that are mainly used for thick slabs. **See Figure 43b**

CONNECTOR (material)
Raccord
Construction
A material ensuring the connection and continuity of a structure.

***CONSIDERE* SEMI-HINGE**
Semi-articulation *Considére*
Construction
A temporary articulation of a reinforced concrete work intended for centering pressures curve and that one concretes completely once the system of force established such as in an articulated system, thus avoiding the most large extent of the shrinkage effects. The system comprises a prism of confined concrete came through by continuous bars that keep it in the center of the two parts to be articulated. As the effect of the very high stresses which develop, the concrete of the nucleus becomes plastic and its shortenings being near enough independent of the stresses, the force lies automatically centered.

***CONSIDERE-CAQUOT* ARTICULATION**
Articulation *Considère-Caquot*
Construction
A reinforced concrete segment for being of use as bridge-support apparatus for reinforced concrete works. This articulation consists of an equalizer with cylindrical roll on plans called *moving articulation;* it constitutes a movable bearing. **See Figure 44**

CONSISTENCE
Consistance
Strength of Materials
Syn. with CONSISTENCY

CONSISTENCY
Consistance
Strength of Materials
The resistance opposed by a product (paint, concrete, etc.) from the external mechanical stresses, such that the flow by gravity, the mechanical or hand-driven agitation, etc. Syn. with CONSISTENCE

CONSISTENCY LIMITS
Limites d'Atterberg
Geotechnics
Syn. *with ATTERBERG* LIMITS

CONSISTENCY PENETROMETER
Pénétromètre de consistance
Assaying Equipment
A laboratory apparatus for studying soils, composed at its top by a cone of known angle and weight Q which is kept levelling the upper surface of a soil sample, then released. Height of sinking H, one deduces the not drained cohesion of the ground:

$$Cu = K \frac{Q}{H^2}$$

The apparatus is used basically to determinate the not drained cohesion of the purely coherent soils, generally for values of this one lower than 0.4 or 0.5 bars.
One can also deduce the Atterberg limits, moisture contents to which a standardized cone (60° and 60 g for WL, 30° for Wp) undergoes a

given sinking. It is then about a classification test.

CONSISTENCY PROBE
Sonde de consistance
Assaying Equipment
An equipment allowing to measure the consistency of the neat cement grout; it is composed of a frame supporting a probe of 10 mm diameter, weighing 300 g and sliding along a graduated reglet. The principle consists in placing under the probe a cupel filled with neat cement grout to be tested and let come down to constant speed the probe into this one. **See Figure 45**

CONSISTOMETER
Consistomètre
Equipment for Measure and Control
An instrument for measuring the degree of consistency of different products or materials (oil, paint, neat cement grout, etc.) in particular thermal conditions.

CONSISTOMETRIC MEASUREMENT
Mesureconsistométrique
Test of Materials
Syn. with PLASTICITY MEASUREMENT

CONSOLE
Ancon; Console
Construction
1. A wall bracket supporting a cornice. Syn. with ANCON
2. An element of a structure built-in in a bearing and developing cantilevered.

CONSOLE LEVEL
Niveau à console
Equipment for measure and Control
An air bubble instrument fixed on a square for checking the verticality of a wall, a post, etc.

CONSOLIDATE
Affermir
Earthwork
Syn. with STRENGTHEN

CONSOLIDATED GROUND
Terrain consolidé
Geology
A ground of which air and water were expelled by the natural phenomenon of consolidation.

CONSOLIDATED QUICK SHEARING TEST
Essai de cisaillement rapide consolidé
Geotechnics
A test carried out with the shear box that allows to determine the shear strength of a ground in some conditions and that consists in consolidating beforehand the soil sample, i.e. that one applies it a system of stresses sufficiently long to cancel the pore water overpressure thus produced; the shearing stress is afterward quickly applied.

CONSOLIDATING RAMMER
Dameuse;Grenouille
Equipment and Tools
Syn. with JUMPING JACK; STOMPER

CONSOLIDATING STONES
Perdriaux
Construction
Stones placed around some blocks or milestones to consolidate them.

CONSOLIDATION
Consolidation
Work
An operation for strengthening, making firm, etc., a soil or a construction. Syn. with STRENGTHENING

CONSOLIDATION PRESS
Oedomètre
Assaying Equipment
Syn. with CONSOLIDOMETER; ODOMETER

CONSOLIDOMETER
Oedomètre
Assaying Equipment
Syn. with CONSOLIDATION PRESS; ODOMETER

CONSTRAINT WORKS
Ouvrage de sujétion
Civil Engineering Structure
A construction of which cost is high owing of the difficulties of execution or by the importance of waste.

CONSTRUCTIBLE
Constructible
Work
Of a ground able to bear a construction.

CONSTRUCTION BLOCK
Aggloméré
Building Materials
Syn. with ARTIFICIAL STONE; BLOCKWORK; BREEZE BLOCK; BUILDING BLOCK; CONGLOMERATE BLOCKWORK; PERPEND

CONSTRUCTION FAULT
Vice de construction
Defects (Civil Engineering Structure)
A defect in a work (or portion of work) due to a structural defect. Syn. with FAULTY CONSTRUCTION

CONSTRUCTION JOINT
Reprise de bétonnage; Joint
Construction of R.C. and P.C.; Construction
1. A zone delimited by a natural or unintentional cut between two phases of concreting.
2. A cut between two parts of a work which allows to each part to move freely, without cracking.

CONSTRUCTION JOINT OF CONCRETING
Joint de reprise de bétonnage
Construction of R.C. and P.C.
A discontinuity surface of which site is given according to the calculations; it cannot be avoided in certain constructions owing to the large quantity of concrete to be poured. Syn. with BUILDING JOINT

CONSTRUCTION MOISTURE
Eau de construction
Building Materials
Quarry water on stones and mixing water in mortar that causes dampness in some constructions.

CONSTRUCTION PLANT DRAWING
Plan d'installation de chantier
Drawing
On a drawing, representation that locates the site of the site huts, positioning of the plants, platforms of prefabrication, various equipment (example: concrete mixing plant), etc.

CONSTRUCTIONAL STEEL
Profilés dits poutrelles et analogues
Buildings Materials
1. Syn. with ROLLED-STEEL SECTION; SECTIONAL IRON
2. Techniques concerning the working of the sheet; sheet parts.

CONTACT PRESSURE
Pression de contact
Foundation
The unit pressure which acts in each point of the bearing of a foundation on the ground onto which it picks up. (Theoretically this pressure is uniform.)

CONTACT-BOND ADHESIVE
Adhésif de contact
Adhesive
Syn. with DRY-BOND ADHESIVE

CONTENT
Teneur
Building Materials
Concerning the mineralogical analysis of hardened concretes, the proportion of an element in a quantitative composition. This term applies as well to the oxides in the chemical composition as to the mineral species in the mineralogical composition.

CONTENT IN A GIVEN CONCRETE INGREDIENT
Teneur en un constituant donné
Building Materials
Concerning the fresh concrete after its placing, the yield of the batching of this concrete ingredient by the compactness.

CONTINENTAL
Continental
Geomorphology
Of a deposit or sediment removed by the erosion on the surface of emerged earths.

CONTINENTAL FORMATION
Formation continentale
Geology
A sedimentary deposit of continental origin exclusively, laid down by the wind, glaciers, rivers or in lakes, or resulting from removals to the open air.

CONTINUAL VISUAL REMOTE CONTROL
Contrôle de continuité par télévision
Test of Materials (Concrete)
A verification practice of the cast-in-place concrete works (piles, supporting-wall unit, etc.), coming true by the next manner. At the time of the pouring of the pile, a circular recess is accommodated overall the length of the pile at the time of the concrete pouring (the drilling can be also carried out by core drilling after hardening of the concrete). By the orifice thus achieved, a lateral or axial filmings television camera of a small diameter is introduced, likely to reproduce on a screen the image of the concrete overall the height of the recess. Gaps and peripheral cuts thus are detected.

CONTINUED LOAD
Charge permanente
Strength of Materials
Stresses due to the peculiar weight of the construction. Syn. with DEAD LOAD; DEAD WEIGHT

CONTINUITY CABLE
Câble de continuité
Construction of P.C.
A rope for jointing cantilever voussoirs of a prestressed concrete deck, built by successive cantilevers, and for ensuring the resistance of the work to the working loads.

CONTINUITY REINFORCEMENT
Acier de couture
Construction of R.C. and P.C.
Syn. with TIE BAR

CONTINUITY SLAB
Dallette de continuité
Construction
Part of a top slab ensuring a connection between two contiguous independent spans. **See Figure 46**

CONTINUOUS BEAM
Poutre continue
Construction
A horizontal rectangular beam resting on more than two incompressible simple bearings. The beam is subjected to vertical loads and reactions exerted by the bearings on the beam are vertical; it is a hyperstatic beam.

CONTINUOUS CORE DRILLING
Sondage à carottage continu
Test of Materials
A rotary drilling using on the bottom of the hole a diamonds or hard alloy bit and allowing a complete sampling of the passed through grounds, masonry, etc.

CONTINUOUS CORE SAMPLING
Carottage mécanique continu
Test of Materials (Foundation)
A check process of the concrete piles (or diaphragm walls and supporting-wall unit) for verifying of precise manner the strength and homogeneity of concrete, level and nature of anomalies, quality of the contact ground/pile.
To verify the quality of the contact ground/pile, it is necessary to anticipate, before the execution of the concrete pouring, the installation of a metal tube guide, fixed on the cage of reinforcement and of which lower level stands about than 1 m above the base of the pile. The base of the tube is sealed by a plug easily destructible by the core drill. The coring is carried out inside the tube guide up to a depth of at least 1.50 m under the point of the pile. The tube guide can also be used as sounding tube in the case of sonic tests by transparency. It allows besides, to inject under the point of the pile when a defect of contact ground/pile has been detected.

CONTINUOUS GRAIN SIZE
Granularité continue
Building Materials
The dimensional grain distribution of an aggregate whose grading curve does not comprise an important plateau.

CONTINUOUS GRAIN SIZE (or GRADING) CONCRETE
Béton de granularité continue
Building Materials
A material made up of a string of elements varying from grains of cement to grains of largest aggregates and containing all intermediate sizes.

CONTINUOUS PEDESTAL
Stylobate
Construction
A base supporting columns (this term is more used in architecture about it than in civil

engineering structure). Syn. with BLOCKING COURSE; STEROBATE; STYLOBATE

CONTINUOUS SHEARING TEST
Essai de cisaillement lent
Geotechnics
A test realized with the shear box that allows to know the value of the angle of the internal friction for the solid phase of a soil. This test consists in exerting a vertical pressure *n* that consolidates the soil sample, then one applies for a shear stress sufficiently slowly in order that the pore water pressure adapts at the variation of stress; one achieves some summons the hydrostatic balance. This test is also called *slow test or drained test.*

CONTINUOUS SUPPORTING
Soutènement continu
Temporary Constructions
A practice particularly used for the tunneling when one lies in the presence of cohesionless or loose, dry or moisten ground. The process consists in making progress into the ground, as the effect of hydraulic actuating cylinders, a set of metal sheeting piles guided and picking up on a cast in one piece supporting; this set is constituted by welded metal sections and stayed between them to the progress of earthworks.

CONTOUR LINE
Courbe de niveau; Courbe isotype; Courbe hypsométrique
Topography
Syn. with LEVEL CURVE

CONTRACT
Forfait; Marché
Contract
1. A price suited in advance between the contractor and the project manger for the execution of a job.
2. An agreement signed between a building owner and contractors for the achievement of a project.

CONTRACT SECTION
Lot d'ouvrages
Civil Engineering Structure
All simple or complex works forming the subject of an unique contract. Syn. with BUILDING PLOT

CONTRACTION
Retrait
Metallurgy
The reduction in volumn or and/or length which metal products undergo during an operation (casting, cooling, sintering, welding).

CONTRACTION CAVITY
Retassure
Defects (Metallurgy)
Syn. with SHRINK MARK; SHRINKAGE HOLE (casting)

CONTRACTION CRACK
Tapure
Defects (Metallurgy)
A serious defect that can be observed in metal parts which takes the shape of a crack included or emerging, brought about by a fast cooling. We can distinguish: major contraction cracks, which involve a major part of the piece concerned, and minor contraction cracks which have only limited incidence. Syn. with QUENCH CRACK;CHINK

CONTRACTION HEAT
Chaude de retrait
Metallurgy
The localized heating of a steel piece during which the heated part, due to the fact of the mechanical inertia of the rest of the piece, undergoes expansion and inhibited shortening. After the contraction heat, the piece is curved concavely toward the source of heat. This process can be used to form elements initially rectilinear or plane, or to straighten deformed elements. The forming or straightening ability, although certain, is limited.

CONTRACTION HOLE
Retassure
Defects (Metallurgy)
A defect that can be observed in rolled steels and characterized by the presence of gaps due to contraction and generally located near the middle of the ingot. Syn. with CONTRACTION CAVITY; SHRINK MARK

CONTRACTION JOINT
Joint diapason
Metal Construction
A joint formed by a supple material, mostly bituminous, placed between two contiguous

metal elements for compensating contraction effects of the metal. Syn. with SHRINKAGE JOINT

CONTRACTION OF A CROSS SECTION
Striction
Metallography
A localized reduction of the transverse dimensions of a steel test bar subjected to a tensile test, occurring during the test under the influence of the load. (The contraction of the cross section characterizes the ductility of a metal).

CONTRACTION WRENCHING
Retirure
Defects (Metallurgy)
A type of wrenching seen in certain castings and which is usually located in zones of abrupt changes of section of the parts. This defect is due to the contraction of metal that has been cast too liquid.

CONTRACTOR'S BILL
Mémoire
Contract
A detailed state of executed work and containing the nomenclature of the work and supplies their measurements, quantities, and prices.

CONTRACTUAL DRYING PERIOD
Délai de séchage contractuel
Painting
The maximal duration fixed by a contract or a technical specification in which must enter the observed drying time of a paint.

CONTROL OF CONTINUITY BY ROTARY BORING
Contrôle de continuité par sondage rotatif
Test of Materials (Concrete)
A test that consists in verifying the homogeneity of a work (pile, diaphragm wall, etc.) of cast-in-place concrete by achievement of a core boring to detect possible cuts, inclusions, washing out, etc., that would be prejudicial to its good preservation over time.

CONTROL OF CONTINUITY BY SONIC BORING
Contrôle de continuité par sondage sonique
Test of Materials (Concrete)
A control process of the cast-in-place concrete works (piles, diaphragm walls, wells, supporting-wall unit, etc.) that consists in carrying out ultrasonic or sonic trials by sending of ultrahigh frequency waves into the pile and collecting consequent echoes on an oscillograph. One can of this manner determine the presence of gap(s) inside the pile.
Three methods are used:
- **mechanical impedance method** which consists in measuring various mechanical characteristics in vibratory regime, from alone access on the top surface of the pile;
- **microseismic method by transparency;**
- **sonic core-drilling method,** called *sonic sounding in transparency* that is most used. It consists in carrying out to a ultrasonic sounding of the pile overall its height from transmitters and acoustic wave receivers that are gone down into two or more vertical pipes performed in the pile. These pipes can be carried out by mechanical drilling after achievement of the pile, or anticipating, what mostly is the case, to equip the pile overall its height by vertical plastic or metal tube. Sonic core drilling notices, between two tubes (or several) arranged vertically and parallel in the pile, the variations of the propagation velocity and amplitude of waves gave off. The presence of anomalies (ground or mud inclusion, interruption of concreting, polluted concrete pockets) is clearly noted by the simultaneous appearance of an increase of the time of wave propagation, diminution of amplitude consequently and a modification of received signals.

CONTROL POINTS
Canevas; Polygone topographique
Topography
Syn. with SKELETON TRIANGULATION

CONTROL RING
Anneau
Equipment for Measure and Control
A circle of metal for verifying if materials of metalling, crushed aggregates, are reduced to the provided dimensions. Syn. with TESTING RING

CONTROL STRUCTURE
Ouvrage de régularisation
Civil Engineering Structure
Syn. with TRAINING WORK.

CONTROLLED GRADIENT TEST
Essai à gradient contrôlé
Geotechnics
A test that allows to determine the void ratio of a soil sample before test and its variation during the consolidation as the water content, curve of compressibility, coefficient of consolidation, and the coefficient of permeability.
This test is carried out on a soil sample using a cylindrical test specimen of small height. The test specimen, saturated, is placed inside an odometer in which the drainage is carried out in the axial direction and only by the top face of the test specimen. At the bottom face of the test specimen, the interstitial over pressure is measured, which one keeps constant by gradually applying an axial load to the piston. Besides a cell equipped at its base with a system of measurement of the pore water pressure, the controlled test gradient requires a system of enslavement of the load applied on the piston to the variations of the pore water pressure measured at the base of the test specimen.

CONTROLLED SCREWING TIGHT BOLT
Boulon à serrage contrôlé
Materials
A bolt used to joint by friction two pieces, by tightening them on each other. This mode of assembly needs the use of high strength friction bolt. Syn. with HIGH-STRENGTH FRICTION GRIP BOLT (HSFG BOLT)

CONVENTIONAL SPECIFIC CONSUMPTION
Consommation spéifique conventionnelle ou C.S.C.V.
Painting
The quantity (in liters) of a product necessary for painting 1 m^2.

CONVERGENCE
Convergence
Civil Engineering Structure and Earthwork
The length variation of the opening of the cross section of a underground cavity that is regularly measured with a convergencemeter.

CONVERGENCE MEASUREMENT
Mesure de convergence
Civil Engineering Structure
An operation that consists in measuring the variation of distance between two opposite reference marks of the cross section of a work (between sidewalls, abutments, etc.) and that allows to follow of it the evolution (convergence or divergence). This measurement is made with ribbon instruments or tended wire to a given tension (example: distancing unit).

CONVERGENCE METER
Convergencemètre
Equipment for Measure and Control
An instrument for measuring the distance variation of the cross section in a tunnel or a gallery (usually convergence of the sidewalls). The principle rests on the accurate measurement of the change of distance between two fixed points linked by an invar wire or tape submitted to a constant tension. Two models essentially are available.
- **wire distomat** (*le distancemètre à fil*); uses a "nut and screw" unit associated to a high-precision dynamometer mounted at the end of an invar wire which is tensioned to a set value by an electric motor. **See Figure 47**
- **tape convergence meter** *(le convergencemètre à ruban)* in which a perforated tape is tensioned between two anchored convergence bolts in a well-defined and reproducible way by means of a tensioning element and an adjustment tube. Change of lenght or distance in comparison with the initial reading can be measured by a dial gauge. Before and after each measurement the measuring unit and the dial gauge can be calibrated on their respective frame.

CONVERSION PROCESSING
Traitement de conversion
Metallurgy
A chemical or electrochemical operation in the course of which there is reaction between treated metal and the bath of treatment and formation of a layer of which composition is a function of the bath, conditions of treatment, and nature of metal. Primary conversion treatment are anodic oxidation, phosphatizing, oxalation and chromation.

CONVERT
Débiter
Building Materials
To saw the wood into pieces following ordered dimensions.

CONVERTED TIMBER
Sciage
Building Materials
A lumber that originates from logs sawn longways on. Syn. with SAWN TIMBER

CONVEYOR
Convoyeur
Equipment and Tools
A device built in closed circuit, aerial, or on the ground for transporting materials.

CONVEYOR LINE
Chemin de roulement
Handling
Syn. with BALL RACE; RACEWAY; ROLLERPATH; RUNWAY; TRACK

COOKING ZONE
Zone de cuisson
Equipment and Tools
The part of the furnace where they are burned the clinker.

COOLER
Refroidisseur
Equipment and Tools
A cooling device of the clinker set on the outlet side of the furnace. Commonest of these apparatuses are the grid coolers and coolers with small balloons.

COORDINATE AXES
Axes de coordonnées
Topography
A formation generated by two mostly perpendicular reference lines which allow to define the marks necessary to the construction.

COPE
Chaperonner; Chaperon; Couronner
Construction
1. To carry out a coping of wall.
2. To finish a work by a capstone. Syn. with CROWN; TOP
3. Syn. with CAPE; COPING; COPING STONE

COPING
Cordon; Table de jambe étrière; Chaperon; Entablement d'un quai; Couronnement
Construction
1. A band course made of ashlars or bricks, located at the springing of a vault and prevailing overall the length of the same abutment connecting the bridge pier caps. **See Figure 48**
2. The plinth of a parapet with circular profile. Syn. with STRING COURSE
3. The last stone that crowns a stone pier.
4. Syn. with CAPE; COPE; COPING STONE
5. The top part of a quay. Syn. with TABLET OF QUAY
6. A cornice, entablature or even simple string moulding of ashlars (plinth) that rests on the last courses of masonry and that supports a parapet or a guard rail. Its longitudinal section nears that the way on the work: horizontal, in steady slope, in symmetrical slopes connected by an arch of circle, in continuous curve. Syn. with CAPPING; CAPSTONE.

COPING STONE
Chaperon; Coupe larme
Construction
1. The top of a wall usually made sloping for facilitating the rainwater. The coping stone is usually made of ashlars (example: coping of downstream or upstream cut-water of a bridge pier). Syn. with COPING. **See Figure 49**
2. Narrow string course or cope.

COPOLYMER
Copolymère
Polymers
A polymer resulting from the polymerization of two or more different monomers or oligomers (in the case of three monomers, one often speaks of terpolymers).
There are several types of copolymers:
- **random copolymers** *(les copolymères statiques)* where the sequence of monomeric motives is random;
- **block copolymers** *(les copolymères séquencés)* where the sequence been made by sequences of identical monomeric motives;
- **grafted copolymers** *(les copolymères greffés)* where, on the chain of a given polymer, hang the sequences of another polymer;
- **alternate copolymers** (*les copolymères alternés*), more rare, where monomeric motives alternate regularly, one after the other.

COPOLYMERIZATION
Copolymérisation
Polymers
The reaction of polymerization from two or more different monomers or oligomers.

COPPER COATING
Revêtement de cuivre
Metallurgy
A thin layer of copper added on a metal piece for protecting certain pieces from corrosion. This type of coating can be obtained by:
- *electrolytic coppering (cuivrage électrolytique):* see COPPERING;
- *coppering by metal spraying with the squirt gun (cuivrage par métallisation au pistolet):* see COPPERING;
- *plating of copper (placage du cuivre),* the coating is obtained by application of a cuprous alloy or copper sheet onto a basic sheet steel, the reciprocal adhesion of the faces in contact being realized by a hot-rolling after a special treatment of surfaces. The plated sheet can be covered with copper on the two faces.

Syn. with COPPER SHEATHING

COPPER DEPOSIT
Cuivrage
Metallurgy
Syn. with COPPERING

COPPER METER
Cuprimètre
Equipmentfor Measure and Control
Syn. with CUPRIMETER

COPPER SHEATHING
Revêtement de cuivre
Metallurgy
Syn. with COPPER COATING

COPPERING
Cuivrage
Metallurgy
Every forming process of a metallic copper coating on a surface. Coppering can be:
- **electrolytic** (*le cuivrage électrolytique*), a process in which the coating is obtained by the electrolytic copper deposition onto the surface of the steel things to be protected;
- **metallization** *(le cuivrage par métallisation au pistolet),* a process in which the coating is obtained by spraying of a smelted copper onto the steel things to be protected with a special squirt gun.

Syn. with COPPER DEPOSIT

COQUE SKIN
Coque
Construction
Syn. with BARREL SHELL; HULL

COQUINA
Coquin
Defects (Building Materials)
Any conchiferous detrital limestone presenting a lack of homogeneity.

CORBEL
Corbeau; Cul-de-lampe
Construction
1. A bedded or molded built-in support, overhanging on the main plane of a wall, slab, or a vault, for serving as support to a beam for example.
The corbel can be an isolated element or constituting a succession of elements regularly spaced and in this respect, they can serve as bearing to a corbelled construction, a transition slab, etc.
The corbel differs from the console by its size, notably in height, that is appreciably lower than this last. Syn. with BOLSTER; BRACKET
2. Syn. with CUL-DE-LAMPE

CORBEL (OUT)
Encorbeller
Construction
Syn. with PROJECT

CORBEL BACK SLAB
Chaise
Construction
Syn. with CANTILEVERED BACK SLAB; WALL STABILITY BRACKET

CORBEL COURSE
Chapeau
Construction
A horizontal element supported by one or more uprights.

CORBELED CONSTRUCTION
Construction en encorbellement
Work
Syn. with OVERHANGING CONSTRUCTION

CORBELING (OUT)
Encorbellement
Construction
Syn. with CORBELED CONSTRUCTION; CANTILEVER

CORD
Cordon de soudure
Welding
Syn. with WELD BEAD; WELDING SEAM

CORDED
Côte
Construction
The part, on a column, separating grooves.

CORDON
Cordon; Cordon de briques
Construction
1. A supple lengthened profile, protecting a joint between the parts of a work from foreign bodies insertion.
2. Syn. with BRICK COPING

CORDTEX
Cordeau détonant
Explosives
Syn. with DETONATING FUSE; PRIMACORD

CORE
Ame; Carotte; Carotter; Stross
Carpentry; Nomenclature of Materials; Civil Engineering Structure; Geotechics; Earthwork
1. The central part of a frame work formed by three parts.
2. The central veneering of a multiply panel. **See Figure 50**
3. Syn. with BOREHOLE SAMPLE; CORE SAMPLE; DRILL CORE
4. To achieve a core drilling.
5. At the time of the heading (of a tunnel), earthy mass remaining included between the sidewalls and the foundation raft, after clearing of the drift and workings.

CORE
Ame d'un câble, d'un toron; Cœur du bois
Nomenclature of Materials; Building Materials
1. The central element of a cable or a strand which can be formed by a single wire or a set of twisted wires (usually three).
2. The oldest internal rings of a trunk; there are the most tightened and harder. Syn. with HEARTWOOD

CORE BIT
Carottier; Couronne de carottage
Equipment and Tools
1. Syn. with CORE DRILL; CORE (CUTTING) MACHINE; CORE CUTTER; CORER; SAMPLER
2. A hollow cylindrical drilling tool, supplied at its base of teeth, that cut the ground or material samples that one calls *core samples.* The are several types of core-bits:
- **(Chilled) shot-bits** (steel grains of some millimetres of diameter) *(les couronnes à grenaille (grains d'acier de quelques millimètres de diamètre)),* formed by a steel tube with plane base supplied of a notch by which passing the water. The shot is introduced by drill rods, lodges under the tool and uses the rock;
- **tungstene carbide core-bits** (crowns to prisms) *[les couronnes au carbure de tungstène (couronnes à prismes)],* which are carved serrated of which points are ended by prisms of carbide. These teeth attack the ground as tools of lathe (angles from 8° to 15°). These tools are used to core drill the little abrasive rocks;
- **diamond drilling bits** *(les couronnes diamantées),* which are used to core drill in homogeneous and hard rocks among which one distinguishes:
  - *crowns to stones* that are thin or thick, to straight or rounded profile and in which diamonds are inlaid into the metal;
  - *crowns to impregnation* that are formed by a mixture of metal and small dispersed diamonds (40% in volume of the alloy).

Syn. with CORE HEAD

CORE BORING
Carottage
Civil Engineering Structure and Geotechnics
Syn. with CORE DRILLING; CORING

CORE CUTTER
Carottier
Equipment and Tools
Syn. with CORE BIT; CORE DRILL; CORE (CUTTING) MACHINE; CORER; SAMPLER

CORE DRILL
Carottier
Equipment and Tools
A special tool having a hollow cylinder form comprising at its base an annular crown bit supplied of wheels or diamonds and, screwed on the crown of probing, allows to take a core sample.
There are several types of core drills:
- **core drill with cables *or* wire line** *(le carottier à câbles),* a rotary core drilling device which allows on the one hand the simultaneous tubing of the drilling and on the other hand the handling of the actual core drill, when it is collected the sample, a very rapid way, with a cable and winch, instead of the usual stand of drill pipe;
- **double-tube (core) sampler** *(le carottier double),* used in the method of core drilling by rotation and that comprises two envelopes; that interior that contains a sleeve of light sheet metal in which is molded the core sample and that remains immobile whereas, the exterior envelope turns;
- **screw (core) sampler** *(le carottier à hélice),* provided of a helix on the external wall and that is sunk by screwing. The core drill is equipped of a double envelope, the internal envelope that receives the not turning sample during the driving in;
- **core drill LBTP *or* LBTP sampler** *(le carottier LBTP),* formed by a metal cylinder of 112 mm diameter equipped of a cutting shoe and internal tube divided into two half-shells intended for receiving a plastic envelope. A piston supplied of a valve blocks metal shells on the cutting shoe. The bottom of the hole being cleaned, the core drill is sunk into the layer to be sampled, then rise. The cutting shoe is unscrewed. With the help of the piston, one pushes the steel shells that part afterward and liberate the plastic container and its core sample;
- **thin-wall (tube) sampler** *(le carottier dit à mince paroi),* formed by a tool from 50 to 75 mm diameter and a length from 0.50 m to 1 m and that is used to achieve core drillings in soft fine-grained grounds. It is formed by a metal cylinder supplied of a ball playing the role of valve to create a thin dip above the core sample if the latter comes to slip (or to subside thinly). The cylindrical part containing the core sample is unscrewed to be then dispatched to the laboratory after sealing of the ends;
- **stationary piston (type) sampler** *(le carottier à piston stationnaire),* for taking intact samples into grounds of mechanical behavior particularly slight. The process consists in driving into the ground and up to the top level where one desires taking the sample, a hollow tube with thin walls whose base is sealed by a conical piston. The piston being located at the sampling level, this one is immobilized by a drilling string ascending up to the work platform and, with a second annular drill string to the first, one drives by jacking the hollow tube overall the height of the sampling. All the device is gone back up on the surface of the ground including the ground sample;
- **stamping core drill *or* stamping corer** *(le carottier poinçonneur),* for performing the taking of intact samples in loose grounds sinking by percussion or jacking a hollow tube ended by a cutting shoe; inside the core drill is a sheath, intended for collecting the sample of the ground that will be this naturally conditioned way;
- **single sampler *or* single corer** *(le carottier simple),* used in the method of core drilling by rotation. Herewith method, the cored ground is in contact with the tool lively of the movement of rotation.

Syn. with CORE BIT; CORE (CUTTING) MACHINE; CORE CUTTER; CORER; SAMPLER

CORE DRILLING
Carottage
Civil Engineering Structure and Geotechnics
A process for obtaining cylindrical samples of masonry, ground, etc., by means of annular-shaped rock-cutting bits with a maximal recovery percentage. Samples thus taken are intended for the recognition, study, test, etc., of the material subjected from this taking.
We can distinguish:
- **sinking coring** *(le carottage par fonçage),* implementation process of metal pipes consisting in driving into the ground (horizontally or vertically) a steel tube by driving or jacking without extracting materials that penetrate the

tube. The core is not eradicated of the tube that when the latter is entirely positioned. The steel tube is supplied ahead of a cutting shoe that ensures its protection and allows it to make it's way through all types of ground. Pipes are sunk with pneumatic autoreactive pile hammers or jacked (cases of driving in peaty grounds). They do not resting in the well of work. The assembly of the elements been made by welding;

- **rotational coring** *(le carottage par rotation),* a test boring process in which the tool attacks the ground or material thanks to its rapid rotation movement. The tool is supplied by a diamond or carbide of tungsten crown bit.

Syn. with CORE BORING; CORING

CORE HEAD
Couronne de carottage
Equipment and Tools
Syn. with CORE BIT

CORE (CUTTING) MACHINE
Carottier
Equipment and Tools
Syn. with CORE BIT; CORE DRILL; CORE CUTTER; CORER; SAMPLER

CORE OF A DAM
Noyau
Hydraulic Works
In a riprap or earth dam (cofferdam), waterproof zone usually formed by compacted clay. The core is separated from the upstream and downstream refills, permeable, by filters. Syn. with IMPERVIOUS CORE (WALL)

CORE RECTIFICATION
Epannelage
Masonry
The cutting of beds on rubble stones.

CORE SAMPLE
Carotte
Civil Engineering Structure and Geotechnics
A cylindrical masonry or ground sample taken with a core drill and that is mostly examined and subjected at various assay in laboratory. Syn. with BOREHOLE SAMPLE; CORE; DRILL CORE

COREBOARD
Latté
Building Materials
Syn. with BATTENBOARD; BLOCKBOARD; STAVED LUMBER CORE

CORER
Carottier
Equipment and Tools
Syn. with CORE BIT; CORE DRILL; CORE (CUTTING) MACHINE; CORE CUTTER; SAMPLER

CORING
Carottage
Civil Engineering Structure and Geotechnics
Syn. with CORE BORING; CORE DRILLING

CORMELTREE
Cormier
Building Materials
A tree giving a very hard reddish wood for manufacturing tool handles.

CORNEL TREE
Cornouiller
Building Materials
A tree giving a very hard and flexible wood for manufacturing tool handles, notably those used by the blacksmith. Syn. with DOGWOOD

CORNER
Coin; Commissure; Cornier; Pan coupé
Materials; Masonry; Construction; Nomenclature of Materials
1. A small metal piece of triangular transverse section for parting the lips of the end of an anchor rod of the slot-and-wedge type during the tightening. Syn. with WEDGE
2. A narrowest joint located between two contiguous ashlars. Syn. with CORNER JOINS
3. Syn. with CORNER POST
4. Syn. with BEVEL; CUT CORNER; CUTOFF EDGE; SPLAY

CORNER ANGLE
Cornette
Construction
A corner iron posed on the edge of a wall for protecting it from shocks. Syn. with ANGLE BEAD; CORNER BEAD; CORNER GUARD

CORNER BEAD
Cornette
Construction
Syn. with ANGLE BEAD; CORNER ANGLE; CORNER GUARD

CORNER BONDING
Besace
Construction
Syn. with IN-AND-BOND; QUOIN BONDING; SADDLE

CORNER BRACE
Jambe de force; Contre-fiche
Construction; Carpentry
1. Syn. with BRACE; PROP; STAY; STRUT
2. Syn. with ANGLE BRACE

CORNER GUARD
Cornette
Construction
Syn. with ANGLE BEAD; CORNER ANGLE; CORNER BEAD

CORNER JOINS
Commissure
Masonry
Syn. with CORNER

CORNER PIECE
Ecoinçon
Construction
Syn. with CORNERSTONE

CORNER PLATE
Equerre; Equerre d'assemblage; Gousset
Construction; Metal Construction
1. A bolted or riveted piece formerly used to achieve right-angled assemblies and which is formed by a corner iron piece of small length. Syn. with ANGLE BRACKET
2. A L-shaped metal piece for strengthening or jointing timber pieces.
3. A piece, generally metal, of usually trapezoidal or triangular shape, being designed to perfect the rigidity of an assembly. **See Figures 51 and 51a**
4. A plane metal plate onto which are assembled the convergent bars of a lattice girder, of a wind brace for example.
Syn. with ANGLE TIE; BRACKET; GUSSET PLATE

CORNER POST
Cornier
Construction
An element posed at the angle of a wall. Syn. with CORNER

CORNERSTONE
Ecoinçon; Ancon; Pierre d'encoignure; Angle
Construction; Masonry
1. A stone uniting two masonry walls at an intersection. Syn. with CORNER PIECE
2. The angle stone of a wall.
3. An element that presents two faces in facing and form a salient angle or a reentrant angle.
4. Syn. with QUOIN

CORNICE
Corniche; Acrotère
Construction
1. The top part of an entablature.
2. An element of a superstructure standing out on the head of a bridge for crowning the work in an aesthetic objective and at the same time to avoid rainwater streaming on the facing. Generally the guardrail is embedded in the cornice. Cornices can be of R.C. (casting on the spot or added by precast elements) or of ashlars.
3. The plinth of a parapet comprising several moldings.
Syn. with LEDGE **See Figures 52 and 52a**
4. Syn. with ACROTERIUM

COROLLA SPILLWAY
Déversoir en corolle ; Marguerite
Hydraulic Works; Construction
1. In a hydraulic improvement, spillway constituted by a tower of which high part is widened to form a circular-shaped threshold of sluice, the bottom part being connected to a spillway gallery going through the bank or under the retention dam.
2. A corolla-shaped outlet.

CORRASION
Corrasion
Geomorphology
A form of wind abrasion that is a type of rock scouring achieving typical shapes (tarnishing, working of pebbles, cavities, etc.). Syn. with WIND CARVING

CORRECTION SYSTEM
Système de correction
Welding
A device that automatically appreciates one or more parameters during a welding cycle and corrects hence the corresponding adjustments, in view to ensure the quality of the welding.

CORRODE
Corroder
Materials
To gnaw, attack slowly and gradually by a chemical, physical or physicochemical action. Syn. with ERODE; WEAR AWAY (metal, stone, etc.)

CORROSION
Corrosion
Defects
1. The degradation of the initial metal state being able going up to the destruction, throught the agency of the ambient medium and by a process other that mechanical.
The corrosion takes place as the effect of an electrochemical or chemical action. These two types of corrosion can to elsewhere be catalyzed by some present microorganisms in the medium of attack; it then concerns corrosion called *bacterial.* There exists several types of corrosive mediums that bring about corrosion:
- **atmospheric** *(la corrosion atmosphérique),* of which process is dependent of many parameters, mainly of climatological factors: temperature, relative humidity of the air, rains more or less acidic, smoke, wind, pollution in general;
- **water** *(la corrosion par l'eau),* which is one of the primary causes of the metal degradations. A metal structure subjected to the cycles of immersion-emersion undergoes a corrosive action due to the fact of the attack by oxygen during the periods of emersion. This degradation is more emphasized if the metal is immersed into seawater;
- **underground** *(la corrosion par les sols),* which has an action on the buried metal structures and that comes true when there is the transfer of ions or electrons between the metal and ambient medium that plays the role of electrolyte. The intensity of the corrosion depends on the nature of the ground, its basicity or acidity, wandering currents that crosses it, its permeability to the air and water, etc.

Among the primary ranges of corrosion one distinguishes:
- **biochemical** *(la corrosion biochimique),* which make intervene morever the bacterial attack of the metal;
- **cavernous** *(la corrosion caverneuse),* which comes in localized reductions form of the metal and that is due to the progressive acidification of corrosive solutions imprisoned in narrow spaces (interstices, nooks, under solid matter deposits, etc.), generally in places where the access of oxygen is limited;
- **chemical** *(la corrosion chimique),* which results from the attack of a metal as the effect of a reaction with the ambient medium, without current intervention. In the case where the medium is gaseous, the oxidation takes place for example at high temperature, by oxygen of the air: a case in point is the iron oxidation;
- **by contact** *(la corrosion par contact),* which results from the contact between the steel and another metal, or between two steels of different compositions, and that been made by forming of an electrolytic couple between them;
- **electrochemical** *(la corrosion électrochimique),* due to a process that intervenes in the corrosion in humid atmosphere. Phenomena are then localized in a thin coat of humidity resulting from the condensation of the ambient humidity on the metal (it is the case notably for reinforcements of the reinforced concrete). This corrosion is characterized by the appearance of electric currents, outside of all external source, by displacement of electrons in the same metal or between two different metals, placed in a conductive solution (electrolyte), that are found carried to different potentials. It forms thus a battery whose anode is constituted by the element it most electronegative, that dissolves in ions form while the cathode is found protected;
- **electrolytic** *(la corrosion électrolytique),* a form of electrochemical corrosion accompanied by the circulation of a measurable electric current of various origin circulating between an anodic zone and a cathodic zone distanced of each other. There is electrolytic corrosion by forming of:
  - galvanic battery due to the heterogeneousness of the composition of the structure (different metals),
  - geological battery (for buried structures) due to the heterogeneousness of the ambient medium

or to the differential aeration in a homogeneous terrain.
It is mostly characterized by a crystalline attack with cavities with abrupt walls, sometimes dug in sapping and long corroded furrows in the metal. Cavities can be distributed at random or to get succeeded following straight line along the structure; **See Figure 53**

- **nonelectrolytic** *(la corrosion non électrolytique),* a form of the corrosive attack of metal structure by electrochemical corrosion due to the forming of microbatteries to nonmeasurable current.

It is characterized by a surface and uniform attack. Usually, cavities are not dug in sapping, but are in progressive erosion and all those that can get formed have tendency to be typical little deep and saucer-shaped;

- **stress** *(la corrosion sous fatigue),* more or less linked to the three basic mechanisms that are the general corrosion and the pitting corrosion or intergranular corrosion. Alternate stresses that act on the structure of the work can bring about to a failure for a fatigue limit lower than the normal;
- **general** *(la corrosion générale),* which allocates the totality of a construction and that occurs in the acid mediums. It bring about to a steady slimming of the wall of metal;
- **intergranular** *(la corrosion intergranulaire),* which consists of an attack of the structure of stainless steels, notably of the austenitic steels. At the contact of the acidic medium and most notably in zones that have been made fragile by maintenance at a temperature contained between 500° and 800°C (example: during a welding operation). This phenomenon develops along of the grain joints causing a real disintegration of the metal;
- **corrosion between parts** *(la corrosion entre pièces),* which brings about by a location of the corrosion between metal pieces in contact;
- **pitting** *(la corrosion par piqûres),* the metal is attacked solely in some points of the surface and progresses in depth;
- **understress *or* corrosion stress** *(la corrosion sous tension),* which affects stainless steel and that demonstrates by the breaking of the steel subjected concurently or alternately to a mechanical extension stress and chemical attack;
- **stress corrosion with crack formation** *(la corrosion fissurante sous tension),* an inherent flaw to the wires or bars of high tensile steel and that brings about by an evolutionary cracking over time, perpendicular to the axis of the piece.

2. Characteristic disease of the stone which appears as splittings sometimes surface and localized, attributed to the expansion of soluble salts crystallized in the dry zones or zones of maximum evaporation and which bursts the surface layer of the cullet, sometimes affecting the mass in depth and reducing the material to a sort of sand, as by a dissolution of the natural cement as the effect of the humidity.

CORROSION DETECTION PROBE
Sonde de détection de corrosion
Assaying Equipment
A cell made of two electrodes (a reinforcement bar and a stainless steel electrode) separated and restrained in the concrete at various depth levels. As long as the electrodes are protected by the concrete alkalinity, no electric current passes between them; even as this alkalinity disappears, a current creates for itself reinforcement in phase of corrosion toward the stainless electrode. The measurement of this current by an ammeter allows to estimate straight the corrosion velocity of reinforcements.

CORROSION INHIBITOR
Inhibiteur de corrosion
Construction of R.C. and P.C.
A product which, mixed into the concrete at the time of its manufacture, is intended for preventing the corrosion of reinforcements. Products most routinely used are sodium nitrite, sodium benzoate, potassium chromate, potassium or sodium molybdate, phosphates).

CORROSION PITTING
Piqûre de corrosion
Defects (Painting)
Syn. with SPOTLIGHT CORROSION

CORROSION-RESISTANT PRIMER
Peinture pour couche primaire anticorrosion
Painting
A product specially for being applied in primary coating on metal substrates and having the inherent property to be able protecting them from the corrosive actions of the ambient medium.

CORROSION SCALE
Echelle de corrosion
Metallurgy
All negatives or typical-pictures, often in color, of the corrosion pitting of which the surface densities gradually vary a picture with following and that enable estimating roughly, by comparison with the naked eye, the degree of corrosion of a corroded surface.

CORROSION TEST
Essai de corrosion
Metallurgy
A test which consists in subjecting steel plates covered of paint (or other system of protection) to the aspersion cycles of water ⇢ drying until obtaining a net corrosion of the surface.

CORROSIVE
Corrodant
Materials
Of something that possesses the power to gnaw.

CORROSIVE WATER
Eau corrosive
Geohydrology and Hydrology
A fluid substance that attacks metals, binders, stones, etc.
We can distinguish, in addition to distilled water and rainwater, notably:
- all very pure waters and feebly mineralized coming from terrains:
- of eruptive rocks (granite, basalt),
- of schists and micaschists,
- of sandstone;
- of peaty and marshy grounds.

CORRUGATED IRON
Tôle ondulée
Building Materials
Syn. with CORRUGATED STEEL PLATE

CORRUGATED STEEL PIPE
Buse métallique souple *ou* Aqueduc métallique
Civil Engineering Structure
A structure formed by curved or galvanized corrugated iron elements. Different kinds of steel pipes culvert can be found, on one hand, circular ducts and on the other hand, circular tube like arch and which are flattened at their lower parts.

CORRUGATED STEEL PLATE
Tôle ondulée
Building Materials
A metal or plastic plate of which cross section shows a regularly spaced succession of hollow and reliefs. Syn. with CORRUGATED IRON

CORSET
Ceinturage
Construction
Syn. with ENCLOSING

CORUNDUM
Corindon
Materials
A natural abrasive that is a crystalline form of the alumina. The molten corundum, used after crushing as abrasive, is prepared to the arc furnace while melting the bauxite with a limited quantity of coal for reducing the oxides other that the alumina, that produce a (cast) iron at the bottom of the furnace. Syn. with EMERY

COTTER
Goupille
Equipment and Tools
Syn. with SPLIT PIN

***COULOMB'*S LAW**
Loi de *Coulomb*
Geotechnics
A law that gives the shear strength of a loaded solid mass according to the cohesion, of the load and angle of the internal friction of the ground. Syn. with RULE OF COULOMB

COUNTERARCH
Arc renversé
Construction
Syn. with INFLECTED ARCH; INVERTED ARCH

COUNTERBATTER
Contre-fruit; Surplomb
Construction
The tangent of the angle that makes a facing with the vertical when it leans toward the outside of the work. Syn. with INNER BATTER

COUNTERBORE
Lamer
Metal Construction
To carry out a counterboring using a (milling) cutter or a drill sharpened to 180°. Syn. with FACE

COUNTERBORING
Chambrage; Lamage
Metal Construction
1. A cylindrical recess performed in a piece to reduce the length of a boring or to accommodate there the head of a bolt, a nut, etc.
2. A cylindrical hollow accommodation, little depth, carried out with a special tool called *blade* on the circumference of a hole. The dressed recess thus obtained is used as bearing surface for a disk, a nut, etc. Syn. with FACING. **See Figure 54**

COUNTERCOPING
Contrechape
Construction
A system for protecting waterproof blankets from natural or accidental shocks (punching of the ballast for example) and that can be realized of mortar, concrete, pour coat, bituminous concrete, prefabricated, bituminous microconcrete, etc. (to a degree, countercopings also participate to the tightness).

COUNTERCORNICE
Contre-corniche
Construction
The concrete part poured in situ linked with the structure for anchoring the cornice when it is prefabricated and for supporting the small slabs of sidewalk.

COUNTERCOVERING
Contre-revêtement
Tightness
A coating or supple tightness system covering a vertical tightness coating with the purpose to protect it from possible impacts, punching, etc.

COUNTERFLOW
Contre-fil
Hydrology
The opposite of the normal invert level speaking about of the current of a river. Syn. with OPPOSITE DIRECTION

COUNTERFORT
Contrefort; Eperon
Construction
An origin or added support of masonry or concrete standing out at the back of some walls to avoid the overturning by rotation of these walls. **See Figure 55**

COUNTERKEY
Contreclef
Construction
Each archstone which surrounds the key of a masonry vault.

COUNTERNUT
Contre-écrou
Materials
Syn. with BACK-NUT; CHECKED NUT; LOCK-NUT; SAFETY-NUT; SET-NUT

COUNTERPILASTER
Contre-pilastre
Construction
A pilaster joined to another.

COUNTERROAD CURB
Contre-bordure
Construction
The concrete part poured in place and linked with the structure, intended for butting the curbstone of a sidewalk and for supporting small cover slabs.

COUNTERSINK
Fraisure
Metallurgy
The truncated widening of a hole to lodge there the head of a screw, a bolt, or a rivet. Syn. with COUNTERSUNK HOLE. **See Figure 56**

COUNTERSINK A HOLE
Fraiser
Metallurgy
To machine in V (mostly at 120°) the upper part of a hole in order that comes to lodge there the countersunk head of a screw, bolt, or rivet.

COUNTERSINKING
Noyure
Construction
A small recess created in a metal or a timber piece to receive there a screw, bolt or rivet head.

COUNTERSLAB
Contre-dosse; Chon
Nomenclature of Materials
Second and next to last extracted board of the trunk of a tree.

COUNTERSUNK HEAD
Tête fraisée
Nomenclature of Materials
The truncated-shaped head of a rivet or a screw forming an angle, generally 120°.

COUNTERWALL
Contre-mur
Construction
A wall built against another to strengthen it, to protect it or also for bearing a vault. Syn. with INNER WALL

COUNTERWEIGHT
Contrepoids
Construction
The balancing element of a movable bridge. Syn. with BALANCE WEIGHT. **See Figure 57**

COUPLE
Accoler
Civil Engineering Structure and Handling
Syn. with JOIN SIDE BY SIDE

COUPLER
Coupleur; Manchon
Construction; Equipment and Tools
1. A piece used to join steel prestressing cables end to end.
2. A threaded female screw used as a coupler to connect reinforcements in order to ensure their continuity. Reinforcements, of which ends are threaded, are screwed into the coupler.
3. Syn. with COUPLING SLEEVE

COUPLING
Liaisonnement; Liaison; Assemblage
Work; Civil Engineering Structure
1. Syn. with BINDING; CONNECTION; JOINING; LIAISON; LINKING BOND
2. Syn. with CONNECTION; JOINING; JOINTING

COUPLING SHELL
Manchon
Nomenclature of Materials
A casting constituted by two half-shells assembled by bolting and that is used as anchorage of tie rods on the carrying cable of suspension bridges. Syn. with CABLE SLEEVE; TRACK ROPE COUPLING. **See Figure 58**

COUPLING SLEEVE
Manchon; Joint
Equipment and Tools
1. A hollow metal piece with double female thread, used to link end to end by screwing two drilling rods, two tubes, etc. Syn. with COUPLER
2. A coupler in two parts, screwed at the ends of the drilling rods and allowing fast operations of assembly in the process of the going down or going back up operations of the bore bit.

COUPLING TRUCK
Wagon couplage
Equipment and Tools
A railway machine for installing and taking out bridge decks. It is a special truck formed by beams or metal universal beams picking up at their ends on two auxiliary frames forming bogie trucks. It thus constitutes a moving gantry directed in the direction of the track. Decks are hooked under the universal beams in the gap of the auxiliary frames.

COURCON
Courçon; Courson; Courcou
Building Materials
A timber piece whitout prescribed length.

COURSE
Cours d'assise; Parcours
Masonry; Hydrology
1. A row of quarry stones or bricks of similarly height on the entire length of a wall.
2. The preferential course that follows running water.

COURSE
Assise
Construction and Masonry
1. Each horizontal row of stones, quarry stones, bricks or artificial blocks bordered at their upper part and their lower part by a horizontal plan and forming a wall or a bearing point.
There are several types of courses:

- **course of bricks, stones, etc,** *(l'assise de briques, moellons),* consisting of a material row of which elements have the thickness of the wall;
- **perpend course** *(l'assise parpaigne),* consisting of a construction carried out in through stones;
- **recess course** *(l'assise de retraite),* consisting of forefront bricks or quarry stones row located at the level of the ground, called thus because it usually set back from the foundations;
- **regular course** *(l'assise réglée),* carried out by rows of regular height and whose elements are correctly alternated (see BOND);
- **radial course** *(l'assise radiale),* whose appreciably parallelepipedal stones are coursed in vault;
- **springing course (of arch)** *(l'assise de retombée),* consisting of the forefront of bricks, stones or quarry stones of a vault which rests on a abutment pier;
- **bastard ashlar course** *(l'assise de libage),* which constitutes a course of foundation and which is made up by quarry stones (of more or less large dimensions) more or less rough of extraction.

2. Each element belonging to the horizontal row constituting the course.
3. A part for receiving a structural part.
Syn. with BED; LAYER

COURSE BOND
Appareil assisé
Masonry
Type of bonding of quarry stones laid in courses and whose bed joints are rectilinear. Syn. with COURSED MASONRY

COURSE DISFLUSHING
Désafleurement d'assises
Defects (Masonry)
Damage met in the brickworks or stoneworks that appears by a transverse gap between the courses of the facing that can be origin or accidental. Syn. with PROUDING; COURSE PROUD.

COURSE JOINT
Joint de lit
Masonry
Syn. with BED JOINT

COURSE OF LARGE STONES
Bahut
Masonry
A bread-and-butter course of ashlar.

COURSE PROUD
Désafleurement d'assises
Defects (Masonry)
Syn. with COURSE DISFLUSHING; PROUDING. **See Figure 59**

COURSED MASONRY
Appareil assisé
Masonry
Syn. with COURSE BOND

COURSED RUBBLE
Petit appareil
Masonry
Syn. with SMALL COURSE

COUSSINET
Coussinet
Construction
An ashlar of important volume inserted into the abutment and that is intended for receiving the bearing plates of the metal deck. Syn. with BEARING PAD; PIER CAP

COVER
Couvertine; Tampon
Construction
1. A kind of metal lid (or other materials) covering and protecting the upstands from adjacent slabs of a bridge deck. **See figure 60**
2. Closure of a manhole, a gulley, etc, consisting of a concrete, steel or cast iron plate. Syn. with MANHOLE COVER; INSPECTION COVER

COVER
Enrobage d'une barre ; Epaisseur d'enrobage
Construction of R.C. and P.C.
1. The shorter distance between the axis of a bar of a bar setting and the concrete facing of the most neighbor decreased half of the nominal diameter of this bar.
2. The minimal distance between the generatrix of a reinforcement bar and the facing of a reinforced concrete work.

COVER
Enrober; Bâche
Civil Engineering; Equipment and Tools
1. Syn. with COAT
2. Syn. with CANVAS COVER; COVER; WATERPROOF SHEET

COVER METER
Pachomètre
Measuring Equipment and Control
Syn. with ELECTROMAGNETIC COVER METER; PACHOMETER

COVER HOLE
Couvre-lumière
Metal Construction
A metal piece added by welding, riveting or bolting onto a metal piece. It is intended for masking a port (or a hole) no longer taking place to be apparent.

COVER PLATE
Couvre-joint
Construction
Cover over a void between two parts of a work, or a joint between two metal pieces or to mask an expansion joint in a retaining wall. Syn. with BATTEN; BEAD; BUTT STRAP; CAPPING STRIP; COVER STRAP; FILLER; JOINT COVER; TRIM. **See figures 61 and 61a**

COVER STRAP
Couvre-joint
Construction
Syn. with BATTEN; BEAD; BUTT STRAP; CAPPING STRIP; COVER PLATE; FILLER; JOINT COVER; TRIM.

COVER WITH ZINC *or* LEAD
Amboutir
Building Materials
To cover a timber piece with zinc or lead.

COVERING
Chape
Construction
Syn. with CEMENT SCREED; FLOOR SCREED; SCREED; TOPPING

COVERING CAPACITY
Pouvoir couvrant
Painting
Syn. with COVERING POWER

COVERING PLATE
Recouvrement
Construction
A part which covers the joint of two contiguous parts. Syn. with JUNCTION PLATE

COVERING POWER
Pouvoir couvrant
Painting
The power of a paint to be able covering the earlier coat. Syn. with COVERING CAPACITY

COVERING SECTION OF TAUT BARS OF BENDING PRISMATIC MEMBER
Section d'enrobage des barres tendues d'une pièce prismatique fléchie
Construction of R.C. and P.C.
The area of the taut concrete surface, delimited in a cross-section of the piece by the contour of the latter and one or possibly two parallel right lines to the neutral axis, such as this area contain all taut bars taking in account in the calculation and admit the same center of gravity than the section of this reinforcement in the considered cross section. For a tie rod, the section of coating confuses in the total section.

COVING
Congé
Construction
Syn. with NECK MOLDING

COW HORN (of the bridge)
Corne de vache
Construction
In a vaulted masonry bridge, side part of a vault (join tympan/intrados) that widens concavely and gradually from the intrados (to the springing) to the outside (nearing the key but, unlike the arching, interrupting before).
The cow horn can spread out overall the development or on a part of the vault. This arrangement can be achieved in an aesthetic objective, or, for works built above the waterways, to facilitate the flow of the water in the event of rise in the water level.
The cow horn mostly ornaments bridges with basket-handle vault or with surbased vault. **See Figure 62**

CPN NUCLEAR GAUGE (_Campbell_ Nuclear Gauge)
Sonde nucléaire _CPN_ (Nucléo-densimètre-humidimètre)
Assaying Equipment
An instrument for measuring the density and moisture content in the materials (ground compacting, concrete placing control, geophysics, etc.). The principle of measurement is as follows: gauges produce through their thoroughly protected radioactive sources an emission of photons: Cesium 137 emits gamma rays, all the more absorbed as the material is more dense, whereas the Americium 241/Beryllium generates quick neutrons which will be all the more slowed down as the hydrogen content will be higher. Appropriate meters record reception of the particles after transfer within the material to be measured.

CRAB
Chariot
Equipment and Tools
1. A small truck for transporting (colliery) wagons along of an incline.
2. A two-wheel lorry.

CRACK
Craqure; Gerçure; Gerce; Poil; Lézarde; Cassure
Defects
1. A fissure impairing some thin metal pieces (sheet metal for example).
2. Small cracks impairing a paint film. Syn. with CHAP
3. A wood defect which is characterized by small cracks of direction and variable amplitude on the surface of sawings. This defect appears after the felling; it is due to a shrinkage during drying (differential fibers contraction). Syn. with CHECK
4. A hairline crack containing foreign matters which mostly concerns limestones. This defect ends in causing a bursting of the stone with the time.
5. A broad and deep fissure affecting the concrete or masonry works and which can concern or not all the thickness of the work.
It is mostly acknowledged that a fissure becomes a crevice when its opening exceeds 10 mm at the level of the facing thus enabling to a lizard to easily slip there. Syn. with CREVICE; CHINK
6. Syn. with BREAK

CRACK
Fissure
Defects
1. A nonadhesive surface impairing the constructions of masonry (quarry stones, concrete, etc.), metal, etc., but not sharing completely the element considered. They are narrow clefts and variable opening. A crack is characterized by its layout and its play. The play of a crack (relative movement of the two lips) is the resultant of three components: the throw, the disflushing, its opening). Cracks are describeb as:

- **active** *(la fissure active; la fissure vivante),* discontinuity of which opening varies over time according to the thermal or hygrometrical gradients, of the stresses of the work or defects of execution (absence of joints, settlements of bearing, etc.);
- **adaptation** *(la fissure d'adaptation),* discontinuity coming from unequal movements of the various parts of a work, movements often brought about by the peculiar weight and variable compressibility of the ground. These cracks mostly appear at the intrados of masonry works as early as the construction and are stabilized thereafter;
- **articulation** *(la fissure d'articulation),* characteristic defect of the masonry works. This defect appears as of a discontinuity appearing in the bottom faces and which has an any natural origin; it appears at the key and breaking joints under the influence of the loads and variations of temperature. This crack is often underlined by chalky contributions coming from the penetration of water by the extrados;
- **blind** *(la fissure aveugle),* a throughing discontinuity, but inaccessible on one or several sides of the structure;
- **hairline _or_ capillary** *(la fissure capillaire ou microfissure),* of which opening is less than 0.1 mm;
- **shear** *(la fissure en casquette),* a discontinuity affecting the vaulted masonry works. It is a shear crack cutting panels in the covering. (The term *shear crack* is used when the panel from the base of the sidewalls up to the calotte; it can be due to earth pressures, with swellings);
- **herringbone** *(la fissure en chevron),* which concerns masonry works, and which appears as

of an open crack (mostly showing a significant throw) characterized by a drawing in Y straight or reversed. This crack is isolated, or associated with other cracks;

- **short** *(la fissure courte),* discontinuity of length less than 60 cm existing at the construction and which concerns the concrete works. It appears in general on the surfaces subjected to an excessive drying before the final set of the concrete;
- **breakdown** *(la fissure de désintégration),* which concerns concrete works. It is a matter of a whole of closer brought short cracks, surface, which are due to the frost or an excessive compression. It has over time for consequence scaling, chipping, and the breakdown of the concrete;
- **diagonal** *(la fissure diagonale),* a nonparallel discontinuity to the main axes of the work;
- **dislocation** *(la fissure de dislocation),* which concerns the masonry works. This form of discontinuity which appears in the bottom faces is harmful, it is mostly a prelude to the deformations and overturnings likely to bring about the ruin of the work. This crack can be an indication of undermining of foundations, an abnormal fatigue, or deterioration of constitutive materials;
- **rung** *(les fissures en échelon),* which concern masonry works. They are characterized by parallel discontinuities, not directly related which mostly constitute a relay between two cracks or two joints which have a relative movement of sliding motion (or of slip). They can be due to differential settlements, swinging of head, etc.;
- **hairline *or* threadlike *or* filiform** *(la fissure filiforme),* of which opening is by convention less than 0.5 mm;
- **continuous** *(la fissure franche),* of which layout is continuous;
- **swelling** *(la fissure de gonflement),* which concerns mortar and concrete and is created under the repeated action of the watering and drying of the concrete;
- **along steel prestressing cables** *(la fissure le long des câbles de précontrainte),* a discontinuity which follows all or part of the layout of a steel prestressing cable;
- **longitudinal** (vertical in the case of piles, walls or abutments) *(la fissure longitudinale),* which shows a layout parallel with the longitudinal axis of the work;
- **dead *or* stabilized** *(la fissure morte):* see STABILIZED CRACK;
- **stress** *(la fissure de mouvement),* brought about by the various movements of the work, to the tensioning for example; it can reach several millimeters of opening;
- **oblique** *(la fissure oblique),* which concerns masonry and which is characterized by a discontinuity cutting obliquely the longitudinal axis of a work;
- **crack reproducing bar setting** *(la fissure reproduisant le ferraillage),* which concerns reinforced concrete work. This discontinuity reproduces the squaring of the reinforcements and appears as early as the construction in consequence of a vibration of the reinforcements or in time when the work is nearby electrical installations;
- **shrinkage** *(la fissure de retrait),* a discontinuity appearing on the surface of concrete or mortar facing and which are mostly due any too fast desiccation, to a mixing water surplus or to a proportioning too rich in binder. Under certain circumstances it takes the form of a hairline cracking;
- **stabilized, dead or passive** *(la fissure stabilisée, morte ou passive),* a discontinuity no undergoing any evolution as well moving as in opening, whatever the climatic conditions or of stress of the work. Their cause disappeared or became negligible;
- **nonstabilized or alive** *(la fissure non stabilisée ou active),* a discontinuity of which lips move, causing the cracking of a telltale applied on it. Its origin is of a structural nature: absence or insufficiency of the expansion joints, variation according to the stress load of the work, subsidence of foundations, etc;
- **surface crack** *(la fissure de surface),* a discontinuity not through the thickness of the structure. The opening in this case is maximum on the surface and null within the material;
- **transverse *or* cross** (or horizontal in the case of the piles, walls, and abutments) *(la fissure transversale),* a discontinuity parallel with the transverse axis of the work;
- **fracture** *(la fissure traversante),* a visible discontinuity on at least two faces of the structure;
- **stress corrosion** *(la fissure de corrosion sous tension),* a defect affecting the cables of suspension bridges or the guys of cable-stayed

bridges, little visible to the naked eye, inherent to certain steels. These cracks are propagated in the course of time;

- **cable bottom** *(la fissure du culot),* which concerns anchorages of cables bridges; this defect mostly meets on the cast iron cable bottom;
- **head of pylon** *(la fissure en tête de pylône),* which concerns the part of the pylon supporting the cable saddle of a cable bridge; generally, this damage follows the blocking of the saddle.

Syn. with FAILURE; RIFT; FISSURE

2. The beginning of breaking in an aggregate due to a stress causing a small empty of a dimension lower than the pores.

CRACK
Crique
Metallurgy and Metal Constructions
Syn. with FLAW

CRACK
Claquer un terrain
Work
To the continuation of an overpressure of the grouting during an operation of ground consolidation, to bring about an uprising of the underlying layers with propagation of the grout into the cracks thus generated.

CRACK ACTIVITY
Activité d'une fissure
Defects
The evolution of a crack characterized by its variation of opening over time.

CRACK DETECTION
Essai de ressuage; Essai de remontée
Test of Materials (Welding, Metallography)
Syn. with PENETRANT FLOW TEST

CRACK INDUCER
Faux-joint; Joint diapason
Construction
Syn..with DUMMY JOINT

CRACK MEASUREMENT APPARATUS
Fissuromètre
Equipment for Measure and Control
1. Equipment used to test the ability of elongation of the bituminous matters and to measure the corresponding strain.

2. Equipment that measures the opening of the cracks whose several types are distinguished:

- **magnifying glass *or* micrometric telescope** *(la loupe ou lunette micrométrique)* on which is printed a graduated scale. The magnifying glass is applied on the crack and one reads the width of this one instantaneously there;
- **measuring glass rule** *(la règle graduée transparente),* giving by visual comparison the opening of the crack;
- **balls fissurometer** *(le fissuromètre à billes),* equipment allowing to measure the relative movements of a crack and whose principle is the following. Lips of the crack to be followed on both sides, one sticks two balls using a template, then helped of an equipment provided with a comparator and presenting two small cavities coming to lodge itself on the balls, one measures the spacing. The evolution of the crack can thus be followed easily and precisely thanks to the direct reading on the comparator;
- **triaxial fissurometer** *(le fissuromètre triaxial),* an equipment intended for precise measurement, from distance, of the components according to three trirectangular directions of a movement of deformation. The equipment is formed by two parts without mechanical connection:
  - the block support of the three proximity probes of cubic shape,
  - a trirectangular target.

The principle rests on detection without contact by inductive effect of the trirectangular target; **See Figure 63**

- **monoaxial fissurometer** *(le fissuromètre monoaxial),* which is an inductive probe used to follow-up large cracks and fractures. It has a significant movement (40 mm). **See Figure 63a**

Syn. with FISSUROMETER

CRACK OF A WELD BEAD or OF PARENT METAL
Fissure d'un cordon de soudure ou du métal de base
Defects (Welding)
A discontinuity of the metal which can result:

- of the propagation of a crack started in the vicinity of a soldering;
- (in a piece) of an excessive concentration of stresses, which can itself result from a geometrical defect or bad appreciation of the functioning of the piece.

These two phenomena are favored by the fatigue.

CRACK SEWING
Couture de fissures
Work
Repairing of masonry crack by placing alternately slantwise ties from one lip to the other so as to bind the two parts of the masonry. **See Figure 64**

CRACK SHOWING
Clameau
Masonry
A device consisting of two crooked reinforcements, anchored on both side of a crack and whose the space is measured in order to verify appreciably the evolution of this last.

CRACK; WARP; STRAIN; etc.
Travailler
Geology and Earthwork; Defects
1. Concerning a ground or rock solid mass: to subside, inflate, to get broken, etc. In the case of a timbered excavation, to force on the sheetings up to be bent (out of shape) them.
2. Concerning a work or a part of work, to undergo deformations, crackings, creeps, etc.

CRACKED COATING
Enduit gercé
Defects (Masonry)
A mortar coating covered by hairline crackings.

CRACKING
Craquelage; Craquelure
Defects (Painting)
An alteration characterized by the presence of strias or cracks arranged in a stitches system more or less steady or close not bringing about nevertheless systematically scaling of the film. The cracking is called *hairline cracking* when it is superficial and that its geometrical drawing reminds the aspect of some faiences. Syn. with CRAZING

CRACKING
Faïençage
Defects (Civil Engineering)
1. A superficial deterioration of a pavement (roadway) characterized by a system of fissures.
2. Syn. with CRAZING; HAIRLINE CRACKING; MAP CRAZING

CRACKING
Fissuration
Defects; Metal Construction
1. A defect characterized by the presence of crazings, fissures, on the surface of a piece, work, material, etc.
2. A process leading to the formation of one or more cracks.
Syn. with FISSURING
3. A discontinuity affecting some welds and which can have serious impacts in terms of the solidity of the assembly; we can distinguish in particular:
- **hot cracking** *(la fissuration à chaud),* which brings about the appearance of cracks, mostly in the molten metal, ascribable to the presence of significant stresses at the time when metal is even very hot;
- **cracking by "lamellar tearing"** *(la fissuration par «arrachement lamellaire»),* consequence of a cracking, occurs parallel with the skin of the laminated product, at the right of a welded joint trying this material in the direction of the thickness;
- **cold cracking** *(la fissuration à froid),* from afar, the type of the most dreaded defect in the welding of steels, so much so that the concept of weldability of steels is often confused with their susceptibility to this defect.

4. The appearance and development of a discontinuity during the development or the use of a metal part, due to mechanical stresses or to a very localized corrosion known as *cracking.*

CRACKING BY FROST
Gélivité
Building Materials
An irreversible degradation of certain materials due to their sensitivity to frost.

CRACKING FAILURE
Rupture par fissuration
Strength of Materials
A crack likely to be propagated suddenly until causing a sudden breaking and resulting from a metal defect or of a concrete structural part (reinforced or not). This phenomenon brings into play the tenacity of material, property related with the energy of cohesion of the matter.

CRACKING MAP DRAWING
Fissurographie
Drawing
A representation on a drawing of the cracks of a work (direction, opening, etc., including the possible telltales) and of the follow-up of their evolution over time. **See Figure 65**

CRACKING RATIO
Coefficient de fissuration
Strength of Materials
A coefficient that intervenes in the calculation of the allowable tensile stress of steels that is equal to the unit for plain bars, and fixed by its form of identification for each type of high-adhesion reinforcement bar.

CRACKING RESISTANCE TEST
Essai de résistance à la fissuration
Test of Materials (Painting)
A test that consists in determining the appearance of cracks in a paint coating applied on a concrete cylinder test which one brings about cracking.
One uses concrete cylinder tests (18 cm diameter and 50 cm tall) axially reinforced by a high-bond steel bar (30 mm diameter and 80 cm length), a notch being carried out in the reinforcement to position the breaking. Faces of the cylinder test are covered with the products to be tested. The high-bond bar is subjected to a tensile test. For each load applied, one writes down the appearance of cracks in the concrete and their width. One thus determines the bearable width of cracking without breaking for each coating.

CRACKING TENDENCY
Fissurabilité
Defects
The ability of certain materials to fissure.

CRACKING TEST
Essai de fissuration à l'anneau sur ciment
Hydraulic Binders
A test whose purpose is to determine the cement resistance to cracking.
To carry out this test a cement paste is prepared with which one makes rings that are placed into a drying atmosphere, after being preserved 24 h in an atmosphere saturated with humidity. Thus placed, they lose water; it results from it shrinkage that brings abouts a tension in the paste since any deformation is prevented. This shrinkage grows over time, whereas the tensile strength decrease. Thus, when the tensile forces due to the shrinkage become equal to the direct tension of the paste, there is cracking. Syn. with TEST OF CRACKING TO THE RING ONE CEMENT

CRACKING TEST AFTER FATIGUE
Essai de fissuration après fatigue
Test of Materials (Tightness)
A test for checking the flexible (watertightness) coping's resistance to the cracking. The setting is identical to the test of simple cracking. It is carried out to a spacing of the blocks of 1.5 mm with return to 0.5 mm during 150 cycles. The temperature of the test 20° C. Speed of block transfer 30 mm per minute. One tests two test specimens in the direction of calendering and two in the perpendicular direction. After execution of the 150 cycles, one carries out the test of simple cracking. Tests are regarded as though positive if the test specimens can support a spacing of the two blocks of 2.5 mm without shearing the bitumen.

CRACKLING VARNISHES
Vernis craquelants
Test of Materials
Products often containing rosin which, once deposited and dry, have plasticity in tension very minimized. They are used to determine the directions of the main stresses on the surface of a solicited part. The varnish is cracked perpendicular to the maximum stress in tension and perpendicular to the minimal stress in compression.

CRADLE
Berceau; Sellette
Construction;
1. A half-cylindrical-shaped fixed support for bearing a piping or any other circular thing. Syn. with FLAT BEARER; SUPPORT
2. A small seat that use the painters to work along vertical surfaces. This small seat is hanging on a rope at the end of a winch. Syn. with DECORATOR'S CRADLE; PAINTER'S CRADLE

CRAMP
Clampe; Happe; Clameau; Sergent
Equipment and Tools; Carpentry
1. An interlocking clamp.
2. A steel piece with two lengthened U-shaped points, used to bind together adjacent stones or wooden pieces. In carpentry: syn. with DOG.
3. A tool, mostly metal, for keeping up tight between them (during the setting time) two stuck timber pieces for example.

CRAMP HOLE
Trou en culotte
Nomenclature of Materials
A skew opening in a cladding stone plate, into which comes lodging itself the hook which is embedded into the wall to be tiled.

CRAMP IRON
Ancre; Bride
Buildings Materials; Construction
1. Syn. with ANCHOR; S-ANCHOR; T-ANCHOR, TIE; ETC.
2. A locking iron bar placed on a wooden piece to consolidate it. Syn. with CLAMP

CRAMPING
Ancrage
Masonry
Syn. with WALL TIE.

CRANK
Bras
Equipment and Tools
Syn. with ARM; JIB

CRANE
Grue
Equipment and Tools
An apparatus for lifting loads and which is formed primarily by a horizontal or to fixed or adjustable incline arm, called *boom* or *jib*. This apparatus is mounted on a support or a frame of nature and variable height, and one, two, or three devices allowing modifying the span, the orientation of the boom and the translation of the unit. There are several types of cranes:

- **tractor crane *or* mobile crane** *(la grue automotrice),* which moves under one's own power a building site. It is mounted on pneumatics or caterpillar tread; **See Figure 66**
- **motorway crane *or* automotive-type drive crane for road travel** *(la grue autoroutière),* which going into the range of tractor cranes, conforms at the road regulations and having the appearance of a lorry-mounted crane whose the load-bearing part was conceived and carried out by the constructor of the turret and indissociable of this one. The translatory movement and lifting controls are grouped in the same cabin; **See Figure 66a**
- **railway crane** *(la grue ferroviaire),* setting on bogie trucks solely circulating on railway track. The placement of these cranes is long and delicate, in particular in curve with large slant; **See Figure 66b**
- **telescopic jib crane** *(la grue à flèche télescopique),* formed by elements encasing by sliding motion one in another and that deploy through hydraulic actuating cylinders;
- **floating crane** *(la grue flottante),* put on a barge or pontoon;
- **construction crane *or* locomotive crane** *(la grue de manutention),* setting on a mobile chassis (turning) and that is formed by a boom carrying the hoisting cable sued by a winch. This unit is mounted on a load-bearing tracked or pneumatic-mounted chassis;
- **truck-mounted crane *or* lorry-mounted crane** *(la grue mobile)* setting on truck or fixed on a chassis especially designed for the evolution in various ground; it is then a mobile crane any ground. The power-driven strengthened chassis is provided with several axles equipped with pneumatic wheels, with flattened driving cab, ensuring a less obstruction of the unit at the time of the road journeys; this type of equipment is known under the terms of automotive-type drive crane for road travel or rapid crane of intervention;
- **tower crane** *(la grue à tour),* formed by a lattice mast on the top of that is also moves a lattice boom to variable flight. This boom is operated with cables since the ground. This type of machine is used to construct works to great height.

2. A small crane used on the building sites to lift loads of relative levity (4 to 500 kg maximum).

CRANE HOIST
Potence
Equipment and Tools
A pivoting lifting appliance consisting of a horizontal arm fixed at the one of the ends in a wall in a permanent way, or by means of a pivot allowing its displacement in a horizontal plan. The system of lifting is constituted by a winch or hoist which can if necessary to move along this arm. Syn. with BUILDER' S JACK. **See Figure 67**

CRANE JIB
Volée; Flèche
Equipment and Tools
Syn. with BOOM

CRANE POLE
Mât-grue
Equipment and Tools
A lifting appliance formed by a vertical mast and formed of that can be dismantled lattice panels. The apparatus moves on a rail laid on the ground by the agency of a horizontal sleeper provided with two rollers in tandem; it is supported by a second rail, placed at 10 m height, and is supported by vertical uprights planted at 1.50 m of the construction, as by extensible arch-butresses. The mast carries at its summit a crane whose frame is unbalanced. The mechanism includes a hoist winch with two speeds, one ordering of rotation and one ordering of translation.

CRANE RAIL
Chemin de roulement
Handling
An alignment of beams on top or under which circulates a lifting appliance. According to this one, several configurations of track are possible. The main four types are:
a) *for a traveling crane:* the track is formed by two parallel alignments called *beams of track;*
b) for *a semigantry crane:* the device of displacement is formed by a track rail resting on the ground and a track beam in height;
c) for *a portal crane (or a gantry crane):* the device of displacement is formed by two parallel track rails resting on the ground;
d) for *a velocipedic crane:* the device of displacement is formed by two parallel track beams and superposed in the vertical plan:
- one of these beams only receives the horizontal reaction of the balancing couple due to the overhang of the machine,
- the other beam receives the horizontal reaction of the even couple and the vertical reaction, the sum of the weight of the machine and raised loads.

CRANE SAFE WORKING LOAD
Abaque de charge
Handling
A graph allowing to determine the maximum load that one can raise, according to the angle formed by the jib with the vertical line and of the horizontal span from the axis of the lifting appliance.

CRANE TOWER
Sapine
Equipment and Tools
Syn. with GIN POLE (DERRICK); HOIST TOWER

CRASH BARRIER
Glissière de sécurité
Civil Engineering
A protective barrier erected along a roadway or on an engineering work designed to keep an out of control vehicle on the roadway. We can distinguish between light, normal and heavy barriers with respect to the category of vehicle requiring restraint.

CRASH HELMET
Casque de battage
Equipment and Tools
Syn. with DOLLY; DRIVING CAP; DRIVING HELMET; HEAD; PILE HELMET

CRATER
Cratère
Geomorphology
A funnel-shaped natural hollow.

CRATER CRACK
Fissure de cratère
Defects (Welding)
A discontinuity appearing in the crater of a weld bead which can be brought about by slag inclusions.

CRATER PIPE
Retassure de cratère
Defects (Welding)
A cavity (or dip) localized at the end of the pass or resumption of welding, not eliminated before or during the execution of the next pass.

CRAWLER
Chenillard
Equipment and Tools
A wagon drill formed by a unique groove mounted on a caterpillar train, driven by compressed air.

CRAWLER DOZER
Bouteur à chenilles
Equipment and Tools
A tracked earthmover.

CRAWLING
Frisage; Peau de crapeau; Crocodilage
Defects (Painting)
1. An initial defect variety characterized by thin folds of a paint film in all or part of its thickness, as appearing of a succession of short waves more or less regular, of a small amplitude.
2. Syn. with ALLIGATORING; CROCODILING; TOADSKIN

CRAZED
Faïencée
Defects (Painting)
Of a paint (or a coating) in which happen cracks or small splits.

CRAZING
Craquèlement; Faïençage; Craquelage
Defects
1. A capillary cracks system impairing a rendering, a concrete facing and that is due to a surplus of water in the preparation of the mortar or concrete.
2. A defect that occurs or appears on rendered or concrete facings by a characteristic system of surface linear openings of very weak width; this defect occurs in the form of a geometrical drawing to irregular meshes, that form generally in a square not exceeding a side of 20 cm.
Generally the hairline cracking is confined to the surfacelayer of the concrete or the rendering to the hydraulic binder basis. This damage is often due to either too rich a dosage of binder in the concrete or mortar, or to drying that was too rapid or excessive, or to excessive troweling. We can distinguish the fissures and hairline cracks by the fact:
- that it concerns only the surface concrete layer and rendering them;
- that it is independent the bonding of blocks built;
- that it appears a short while after the execution of the support.

Syn. with CRACKING; HAIRLINE CRACKING; MAP CRAZING. **See Figure 68**
3. Syn. with CRACKING

CREAMING
Crémage
Defects (Materials)
The rise on the surface of the particles of an emulsion.

CREASE
Pli
Construction
The interior angle (reentrant) formed by the junction of two walls.

CREEP
Cheminer; Déversement; Coup
Construction; Defects (Civil Engineering Structure)
1. Syn. with ADVANCE; TRUDGE
2. Syn. with OVERTURNING
3. The overturning of a wall that is going to collapse.

CREEP
Fluage
Construction of R.C. and P.C.; Geomorphology; Geotechnics; Matallurgy
1. A phenomenon of slow, plastic and irreversible deformations which undergoes the concrete subjected to the action of prolonged loads.
These deformations are proportional to the applied stresses, they increase slowly and gradually according to time, and tend asymptotically towards a value which can reach 3 to 5 times the instantaneous elastic deformation. (The speed and value of creep are closely related to the conditions of imposed stresses. The primary parameters are the: value of the applied stresses, age of loading,

hygroscopy of conservation before then after loading, dimensions of the loaded parts). We can consider that the deformation due to the creep is the sum of a deformation proportional to the elastic deformation called linear creep *or* proportional creep *and of a complementary deformation called* nonlinear creep. Syn. with FLOW

2. A type of landslide which occurs slowly without modification of the applied stresses. Actually, these strains lead to a stress of the structure close to the ground of the failure, the ultimate state being able to be stabilization, or failure:

- displacements into the massif moving are continuous but low speeds;
- one cannot put in obviousness of breaking surface.

These movements mainly concern various natural slopes.

A special case of creep is solifluction. This phenomenon results from the periglacial climates. At the time of the thaw, the water content of material grows superficially and the movements accelerate; they can present two aspects:

- *superficial slipping of the mantle of alteration (solifluction);*
- *crawling at high altitude of the topsoil mantle.*

See Figure 69

3. A deformation that undergoes the intergranular skeleton of a ground over time under the combined and antagonistic action of the outside loads and the interstitial free water pressure; stresses resulting from these two factors being constant over time or not.

4. The property of the metals solicited at a temperature exceeding about one the third of the absolute temperature of melting, to be bent (out of shape) even if the stress remains constant: it is the phenomenon of creep. That brings about a viscosity which becomes added to the plasticity.

Three types of creep are available:

- **logarithmic** *(le fluage logarithmique),* which intervenes at low temperatures in the field $0 < T < 0.25\ Tf$, or Tf refers the absolute temperature of melting of the considered material;
- **distribution** *(le fluage diffusion),* that of the high temperatures in the field $T > 0.6Tf$, where the autodiffusion phenomena of the atoms of the material are superimposed on the effects of the stress;
- **restoration** *(le fluage restauration),* which intervenes in the intermediate temperatures: $0.25Tf < T < 0.6Tf$.

Syn. with TIME YIELD

(PLASTIC) CREEP
Fluage
Strength of Materials
A phenomenon during which a material, subjected to a constant stress and kept at a given temperature and hygroscopy, becomes deformed according to time.

CREEP LOAD
Pression de fluage
Geotechnics
The stress reflecting at the end of the elastic phase of a ground from which start the plastic deformations.

CREEP TEST
Essai de fluage
Geotechnics; Metallography
1. A test which consists in measuring with the odometer the settlement of a soil test specimen saturated or not with water, during a period at least equal to 7 days under several loads applied successively. The reading of settlement measurements is made with gaps of identical times for each stage. At the end of the test, one weighs the sample after stoving.

2. A test that has an objective to determine the metal's resistance to creep.

Progress of the test: a test specimen of initial length Lo, fixed to the two ends rods of moor, is placed inside a furnace presenting a constant temperature zone sufficiently long. A load is applied on the test specimen by the intermediary of a lever fixed to one of the rods of moor. The furnace is brought to a permanent temperature and one records of the length variation of the test specimen in function of the time. Tests behave in two manners, following the use of the material: isothermal tests to various temperatures under the same load; isothermal tests to a single temperature, but to various loads.

CREEPING OF SLOPE
Reptation de talus
Civil Engineering
The displacement of a slope following its gradient as forming a succession of undulations

or ministeps; this phenomenon is mostly due to the repeated action of cycles drying-humidification.

***CREMONA* GRAPHIC**
Crémona
Drawing
(The name of the inventor is Luigi Cremona.) A line, by means of the graphic statics, of a finished design giving in magnitude and direction, the value of stresses that solicit the bars of a trussed structure.

CRENEL
Créneau
Nomenclature of Materials
A U-shaped notch allowing the passage of a pin intended for heading off the unscrewing of the castellated nuts. Syn. with CASTELLATED NUT

CRENELATION
Crénelure
Materials
A crenel-shaped notch.

CREOSOTE
Créosote; Créosoter
Materials
1. A derivative product of the tar (liquid phenols).
2. To inject or soak with creosote.

CREOSOTING
Créosotage
Building Materials
A wood preservation process by soaking or injection of creosote.

CREST
Crête
Construction
The top of a wall, a slope, an embankment. Syn. with RIDGE; TOP

CREST CHANNEL
Revers d'eau
Sanitary Engineering and Drainage
A water collecting device built on crest of slope and constituted by a plan in a reverse gradient (very widened V) in its transverse section and longitudinal slope about 1%.

CREST DITCH
Fossé de crête
Sanitary Engineering and Drainage
A channel usually with widened edges dug on the top of a slope, an embankment, for harnessing the streaming water in order that the latter do not flow on the embankment or on the slope and to head off any gullying risk.
See Figure 20 under DITCH.

CRETACEOUS
Crétacé
Geology
The last period of the Mesozoic era that must its name to the period of the chalk appearance.

CREVICE
Fente; Lézarde; Crevasse; Fissure
Defects; Geomorphology
1. A more or less large and/or deep fissure. Syn. with FISSURE; RIFT
2. Syn. with CHINK; CRACK; CRANNY
3. Syn. with CHINK; DEEP CRACK; SPLIT
4. Syn. with FISSURE; FRACTURE

CRIB
Gabion
Foundation
A stacking-up of parallelepipedal boxes of wire netting containing stones or quarry stones for constructing cofferdams, constitution of a stop or barrier from the mud flow (in this case, it is built at the foot of an unstable slope), or constitution of protection from the risks of underwashings of the foundations of works built in watery site. Syn. with GABION. **See Figure 70**

CRIB WALL
Mur de gabions
Construction
A construction made of a stacking of cribs mounted at the foot of a side of a bank or a landslide to be used as a self-draining stop.

CRIPPLE RAFTER
Empannon
Metal Construction
In steelworks, piece intended for dividing into several intermediate spans the interval between two trusses, so as to reduce the section of purlins. (The cripple rafter is located in a parallel plan

with the principal rafter of trusses.) Syn. with JACK RAFTER

CRITICAL FLOW TIME
Temps d'écoulement critique
Building Materials
A time of the flow of a concrete of which the quantity of mixing water tallies with the critical water proportioning for the mode of placing applied. The critical flow time reflects the minimal value of the concrete porosity after placing according to the mode in question.

CRITICAL GRAIN
Grain critique
Sanitary Engineering and Drainage
A granular element having a dimension such as it does not risk to block or clog a filter. In order to obtain materials offering the minimum of resistance to the filtration, tests are performed on aggregates in the objective to define a critical grain. This process of determination is used to build filtering block, a socket around a drilling or a well, etc. Syn. with CRITICAL PARTICLE. **See Figure 71**

CRITICAL HEIGHT
Hauteur critique
Civil Engineering; Earthwork
1. The maximum height at which a vertical or sloped bank of soil will stand unsupported under a given set of conditions.
2. The allowable maximum height of a vertical wall of stable excavation, without supporting and for which the risks of collapse are practically null. Generally, this situation is only provisional, inrushes of water and destressing change this state of stability.

CRITICAL LOAD
Charge critique
Strength of Materials
A stress beyond which thin pieces solicited following their axis or their average surface present excessive side deformations and a loss of stability.

CRITICAL PARTICLE
Grain critique
Sanitary Engineering and Drainage
Syn. with CRITICAL GRAIN.

CRITICAL POINT
Point critique
Work
A point of the execution of a building site that requires the materialization of the internal audit on a monitoring document of performance as a preliminary information of external control so that it can, if it considers it useful, carry out its control. The critical points are defined in the plan of quality assurance.

CRITICAL STRESS
Contrainte critique
Strength of Materials
The value of the compressive stress of a pole, beyond which this pole is found in an instability limit (buckling).

CRITICAL WATER FACTOR
Dosage en eau critique
Building Materials
Proportion of water in order that the concrete presents the minimal porosity after placing following a mode and particular conditions.

CROCODILE SAW
Crocodile
Equipment and Tools
A handsaw used by the stonecutter to saw soft stone. Syn. with STONE SCOFFILA

CROCODILE SKIN
Crocodilage
Defects (Metallurgy)
A rolling defect allocating the laminated sheet metals that present a surface having the aspect of a skin of crocodile.

CROCODILING
Peau de crocodile *ou* de Crapaud; Crocodilage
Defects (Painting)
Syn. with ALLIGATORING; CRAWLING

CROCODILING
Peau de crocodile
Defects (Metallurgy)
A surface aspect of laminated products resulting from the use of cylinders superficially cracked or scaled.

CROOKED HOLE ZONE
Zone de déviation de l'outil
Work
Zone of a drilling in which the bore bit tends to change its orientation. This deviation is due to the dip of the encountered geological layers, or of the change of the resistance of the encountered ground.

CROOKED TIMBER
Bois courbe
Building Materials
A piece which has undergone an operation of bending.

CROSS BAR
Moise; Traverse
Temporary Construction; Construction
1. Syn. with SCAFFOLDING TIE
2. In a guard rail, discontinuous element, horizontal or rampant, of small section.

CROSS BAR UNDER SUPPORT
Appui sous entretoises
Construction
In an oblique bridge with metal beams, secondary bearing on which comes to lean a distance piece. (The secondary bearing rests on the bridge pier cap of the abutment.)

CROSS BEAM
Traverse; Pièce de pont; Entretoise; Chapeau
Construction; Temporary Construction
1. A horizontal element connecting the uprights of a portal frame.
2. Syn. with BRIDGING PIECE; DISTANCE PIECE; JOIST; TRANSVERSE GIRDER
3. Timber piece fixed by steel studs on the crowns of a sheet piling.

CROSS BRACE
Croisillon; Echarpe
Construction
1. Syn. with HERRINGBONE STRUT; X-BRACING
2. Syn. with DIAGONAL BRACE

CROSS BRACING
Etrésillon; Contreventement; Etrésillonnement
Construction; Temporary Construction
1. A rigid piece for playing the role of distance piece between two pieces for keeping up rigid and that will keep its shape.
2. Syn. with WIND BRACE
3. The placement, across a dig or any type of excavation, of pieces of timber (or metal) called *shores* resting against a soleplate, flattened against the wall. The cross bracing of the trench prevents opposed walls from approaching each other.

CROSS CRACK
Fissure transversale
Defects (Welding)
Syn. with TRANSVERSE CRACK

CROSS GRAIN
Contre-fil; A fibre tranchée
Building Materials
1. Of a wood of which fibers are successively slanted in different directions in comparison with the axis of the trunk.
2. Of a sawn wood whose sawcuts are not exactly parallel to the direction of fibres.

CROSS LINE
Réticule
Topography
A disk bored of a circular opening crossed by two very thin threads which cross to a straight angle and to be of use as sight in the topographic telescope. Syn. with RETICULE

CROSS MEMBER
Traverse
Carpentry
A horizontal piece making part of a frame and assembled with the poles. Syn. with CROSS BEAM

CROSSOVER
Saut-de-mouton
Civil Engineering Structure
Syn. with FLYOVER; Y-JUNCTION

CROSS REINFORCEMENT
Armature diagonale
Construction of R.C. and P.C.
The reinforcement of a bar setting located parallel to a diagonal of a reinforced slab.

CROSS REINFORCEMENTS
Armatures transversales
Construction of R.C. and P.C.
Syn. with TRANSVERSE REINFORCEMENTS

CROSS SECTION
Coupe; Coupe transversale; Profil en travers
Drawing
1. The represention of a work, a part of a work, or a piece following a vertical cross section. Syn. with PROFILE
2. Representation of a work or a piece shown perpendicular to its longitudinal axis.
3. A profile in a perpendicular plan to this axis.

CROSS SECTION
Profil en travers
Geomorphology and Hydrology; Road; Railway; Topography; Civil Engineering Structure
1. The section of the bed of a waterway perpendicular to the flow. It is characterized by the number of branches, the width and depth of each one, their dissymmetry, bottom pads, sills and whirlpool passes them. Extended at the alluvial plain, this section allows to distinguish an ordinary bed, or main river bed, and a high-water bed. According to the excavation of the bed, the speed of the river and, consequently, its power of erosion or aggradation varies.
2. The transverse section of a road that includes the width, slopes toward the ditches, cants in the curves, width of the shoulders, dimensions of the ditches, profiles of curbs, etc.
3. The cross section, in a point of the track, which is the section by a normal vertical plan to the axis and passing by the axis of the platform; it cuts the superstructure, infrastructure, and the undisturbed soil.
4. A broken line representing the intersection of an undisturbed soil by a vertical plan perpendicular to the axis of the work, the term works being taken in its most general direction. The establishment of the cross section consists in determining the altitude and horizontal distance to the axis of each top of definite broken line the above, then to calculate and defer the elements thus surveys.
5. The characteristic cross section in a given point of the work, perpendicular to its axis. Designation of some types of cross sections:
- circular,
- semicircular arch,
- in surbased arch,
- elliptic with large vertical axis,
- elliptic with large horizontal axis,
- at several centers (in basket arch or ogival),
- in moorish arch,
- tunnel with rectangular cross section (typical frame or portal frame),
- pseudocircular when there is more than three centers.

See Figures 72 to 72i

CROSS SECTION
Section droite
Strength of Materials
An imaginary cut perpendicular to the longitudinal axis of a bar, a beam, etc., that allows one to study stresses.

CROSS SECTION (OF PILE)
Section
Foundation
The area A of the cross section of the shaft of a pile.

CROSS SLEEPER
Traversine
Foundation
A timber piece posed perpendicular to the longitudinal beams and connecting between them the heads of piles to form the grating of a foundation on piles.

CROSS STAFF
Equerre d'arpenteur
Topography
An octagonal prism of which four diametrically opposite faces two by two and to a right angle, carry a narrow split ending to a rectangular window. Plans of sight cut rectangularly on the axis of the prism. The four other tails of the square only carry a longitudinal split and each plan, determined by two opposed splits, met plans led under an angle of 45°. The cross staff to be of use to raise, to drop the perpendiculars or to determine straight lines that meet under angles of 45°. This equipment is only used for sights lower than 25 m. Syn. with OPTICAL SQUARE

CROSS TUNNEL
Galerie de jonction
Construction
An underpass that connects two parallel or superimposed tunnels and which allows to the teams of supervision or maintenance to reach more easily at one or the other work.

CROSS CUT SAW
Passe-partout
Equipment and Tools
1. A saw used to cut soft stones.
2. A large blade saw, generally concave, provided at each end with a handle to operate by two people.

CROSSBAR
Croisillon
Metal Construction
Syn. with CROSSPIECE

CROSSETTE
Crossette
Construction
An ashlar of a special shape, bonded in the pitch of the wing walls between the other stones. The bottom bed face picks up horizontally on the underlying masonry and form step. The insertion in the pitch of the crossettes regularly spaced allows to head off the slipping of the other elements. **See Figure 73**

CROSS-FIBERED WOOD
Bois racheux
Building Materials
A material which is hard to work owing of its grains or knots.

CROSS-GRAIN SAWING
Sciage à bois tranché ; A contre-passe
Work; Masonry
1. The cutting up of the wood perpendicularly to the medullary canal.
2. The facing of a stone obtained by sawing of a block perpendicularly to its natural face.

CONTRE-PASSE (À) l.f.
Sawing reverse; Cross-grain
Maçonnerie
Parement d'une pierre obtenu par sciage d'un bloc perpendiculairement au lit de carrière.

CROSSING
Passage
Civil Engineering Structure and Construction
Syn. with PASSAGE

CROSSING STRUCTURE
Ouvrage de franchissement
Civil Engineering Structure
Syn. with CLEARING STRUCTURE

CROSS-LINK
Réticuler
Polymers
To form a system, speaking about of the association of the macromolecules of polymer chains.

CROSS-LINKED POLYMER
Polymère réticulé
Polymers
A substance whose chains join between them to form a network. Chains (or macromolecules) are not independent, but united the ones with the others by chemical connections. A cross-linked polymer is insoluble and infusible; however, it inflates in most solvents.

CROSS-LINKING
Réticulation; Pontage
Polymers
For macromolecules of a polymer, the change from the independent state into a state of connection to form a system. Syn. with RETICULATION

CROSS-LINKING AGENT
Agent de réticulation; Réticulant
Polymers
1. A substance which initiates or regularizes the reaction of reticulation between the chains of polymers.
2. Of a product which can cross-link; i.e. which can form chemical connections between macromolecular chains.

CROSSPIECE
Croisillon
Metal Construction
In a metal bridge, diagonal in Saint Andrew's cross that constitutes the web of a trussed piece other that a main beam. Syn. with CROSSBAR; CROSS BRACE. X-BRACING

CROSS-SECTIONAL AREA
Aire de la section
Nomenclature of Materials
The measurement of the surface delimited by the cross section of a section, a beam. *(Section* is frequently used instead of *cross sectional area.)*

CROW
Pied-de-biche
Equipment and Tools
Syn. with CLAW HEAD; CROW BAR; NAIL DRAWER; NAIL DRIVER; PINCH BAR; WRECKING BAR

CROWBAR
Pied-de-biche; Pince; Anspect; Barre à mine
Equipment and Tools
1. Syn. with CLAW HEAD; CROW; NAIL DRAWER; NAIL DRIVER; PINCH BAR; WRECKING BAR
2. A steel bar pointed at an end and flat to the other, used as a lever to lift a load or carry out a hole in a soft material. Syn. with TOMMY BAR
3. A kind of pile used by quarry workers to pull down soft rocks.
4. Syn. with JUMPER BAR; JUMPING DRILL

CROWN
Ciel d'un tunnel; Clef; Couronne; Couronner; Tablette; Tiers-point
Construction
1. The part of the cross section of a tunnel located above the sidewalls before that the tunnel is covered. **See Figure 74**
2. The transverse axis of a vault or arch or also the median section of a beam or deck to variable inertia.
3. The intrados of an underground gallery. Syn. with INTRADOS
4. Syn. with COPE; TOP
5. An ashlar forming the coping of certain masonry retaining walls and presenting a sloped salient part on the main plane of the wall. It often comprises a drip at its lower part. Syn. with COPING STONE
6. The intersection of two arches.

CROWN
Couronne
Geomorphology
In a landslide, zone located above the main escarpment, mostly little concerned by disorders. Alone some fissures or crevices testify the tensioning of grounds in this zone.

CROWN POST
Poinçon
Carpentry
Syn. with KING POST.

CROWNING
Couronnement; Bombement
Earthwork; Civil Engineering
1. Concerning the heading of a tunnel to the explosive in rocky ground, top spherical part of the future tunnel which is to pull downed to the explosive. It concerns the fourth operation of shooting after the creation of a first central excavation called *cut,* that widens in continuation gradually the firing to the peripheral blast. Arc therefore following :
- the cut,
- the clearing,
- the side facings,
- the crowning,
- and finally, the raising.

See Figure 75
2. Syn. with CAMBER

CRUDE NITRATE
Caliche
Geology
A soft limestone partially made up of clay.

CRUMBLE CINDERS
Cendre
Geology
Dust coming from the disintegration of a friable stone.

CRUMBLING
Ecroulement; Effritement
Geomorphology and Construction; Defects
1. The sudden fall of a major rocky mass. A typical crumbling is represented by the collapse of a vertical large section of cliff. It also refers to the partial or total abrupt collapse of a construction. Syn. with FALL. **See Figures 76 to 76b**
2. Syn. with DISINTEGRATION

CRUMBLY *or* LOOSE GROUND
Terrain ébouleux
Geology
A ground formed by a mixing of clay and sand in variable proportions; it can have good behavior to the opening of the excavations, behavior which can disappear quickly throught the agency of atmospheric agents (air, rain, freezing).

CRUSH
Concasser
Building Materials
To break up a stone by crushing. Syn. with BREAK

CRUSHED BRICK CONCRETE
Béton de bricaillons
Building Materials
A material achieved with remains of bricks that replace the traditional aggregate.

CRUSHED SLAG
Laitier concassé
Building Materials
A heavy aggregate coming from the crushing of air-cooled blast-furnace slag.

CRUSHED STONE
Concassé
Building Materials
A fragment of stone obtained by crushing of larger elements. Syn. with ANGULAR AGGREGATE

CRUSHER
Broyeur
Equipment and Tools
1. A device for crumbling materials and for reducing them into small fragments. Syn. with GRINDING MACHINE
2. A device of quarry used to break up stones. There are several types of crushers:
- **rotary *or* giratory** *(le concasseur à giration ou giratoire)* used for cutting operations (primary crusher), crushing (precrusher), granulation (fine crusher), grinding and pulverization (tertiary crusher). In this machine the breaking up is obtained by pressure between a fixed annular vat in truncated cone form (the body) and a grinding cone also truncated-shaped driven of an eccentric movement inside the body. Among types of machine to gyration we note: the conical breaker, gyrasphere crusher, and hydrocone;
- **jaw *or* jaw breaker *or* blake breaker** *(le concasseur à mâchoires)* used for cutting operations of quarry stones, crushing of stones or the granulation of gravel. In this machine the stone is broken up by two jaws, one fixed the other mobile, supplied of removable fluted plates. There exists two types of machine: to simple effect and double effect;
- **hammer** *(le concasseur à marteaux)* that works by percussion of the matter by means of articulated or rigid masses, driven of a quick rotation movement. Composing one or two stages of hammers, it is used for friable and half-hard materials, but not abrasive;
- **cone** *(le concasseur conique)* used to break up and that is constituted by an eccentrically turning cone in an envelope of similarly shape.

Syn. with KIBBLER; MILL; STONE BREAKER

CRUSHING
Concassage
Building Materials
An operation of rock breaking that provides broken stones.

CRUSHING AND GRINDING
Fragmentation
Building Materials
The cutting of the rock to obtain quarry stones, sand, etc., and whose primary operations are cutting, crushing, granulation, grinding, and pulverization. Syn. with SPLITTING UP

CRUSHING INDEX
Indice de concassage
Building Materials
The proportion in weight of elements higher than the diameter "D" of the elaborated aggregate contained in the material of origin subjected to crushing.

CRUSHING RATIO
Rapport de concassage
Building Materials
The ratio between the smallest dimension of a material subjected to the first crushing and "D" of the obtained aggregate.

CRYOCLASTY
Cryoclastie; Gélifraction; Gélivation
Geology
Syn. with CONGELIFRACTION; FROST WEATHERING

CRYOGENIC FLUID
Fluide cryogénique
Civil Engineering
A refrigerating liquid or gas notably used to freeze the grounds.

CRYOTURBATION
Géliturbation; Cryoturbation
Geomorphology
A displacement of matters within superficial formations, generated by alternations of the frost-thaw cycles. Syn of CONGELITURBATION

CRYPT
Cryptoportique
Civil Engineering Structure
An underground vaulted gallery. Syn. with UNDERCROFT

CRYPTOEFFLORESCENCE
Crypto-efflorescence
Defects
1. A whitish deposit thinly shiny that which can be observed on the breakage of some chalky stones in work and that is due to the crystallization of some salts. The presence inside the stone of these salts produces an increase of the volume that brings about its disintegration (analogous to that observed by the frost).
2. A whitish deposit covering the surface of some renderings.
Renderings that mostly present this disorder find a source of the dampness in the ground. There is the capillary rising of the water through the masonry toward the facings. This water frequently contains efflorescent salts that often are calcium or potassium nitrates. All these salts carried by the water come to settle in facing impoverishing the mortar of the lime carbonate that it contains. The phenomenon develops more easily on the nonhydraulic lime renderings that on the cement renderings.

CRYPTOGAMIC ROT
Champignon cryptogame
Defects (Building Materials)
A parasite that brings about the rot of the wood, such as the serpula.

CRYPTOZOIC
Cryptozoïque
Geology
The Antecambrian period.

CRYSTAL
Cristal
Mineralogy
A solid homogeneous natural mineral, bordered by flat faces. The quartz, gem salt, spearhead gypsum are crystals. A mineral substance presenting no crystalline face is called *amorphous.*

CRYSTAL HABIT
Habitus
Mineralogy
The appearance that defines the shape and arrangement of a crystal or representative of a mineral species, taken separately and considered for itself in its relations with its immediate neighbors.

CRYSTALLINE ROCK
Roche cristalline; Roche éruptive
Geology
Syn. with ERUPTIVE ROCK.

CRYSTALLINE SOLID MASS
Massif cristallin
Geology
All plutonic and/or metamorphic formations, mostly opposed to the sedimentary units. It can be a shield or a base.

CRYSTALLIZATION
Cristallisation
Materials
The transformation into crystals of some solutions that is due to the vaporization of their solvent and that occurs when they are abandoned to the open air or heated.

CRYSTALLIZED
Cristallisé
Materials
Of the solid state of the matter in which atoms, molecules or ions are distributed in a determined

geometrical order, called *crystalline system.* Plans of cleavage of a crystal mostly correspond to the particular directions of this system.

C-SHAPED BAR IRON
C
Metal Construction
A C-shaped metal section, going into the composition of some bridge equipments. Syn. with BEADED CHANNEL

CUBATURE
Cubature
Earthwork
An operation that consists in evaluating or calculating the volume of excavated materials or fillings. Syn. with CUBIC VOLUME

CUBIC ROT
Pourriture cubique
Defects (Building Materials)
A wood alteration characterized by the disappearance of the fibrous structure of wood and by its crazing following transverse, radial, and tangential plans.

CUBIC VOLUME
Cubature
Earthwork
Syn. with CUBATURE

CUE
Queue de billard
Construction
The part of a construction comprising a more or less streamlined skew alongside of a property, in common ownership or in connection on another construction. **See Figure 77**

CUIRASS
Cuirasse
Foundation
Any protection of foundations in aquatic site from underwashings, which resembles to the cribs. It is constituted by two metallic cloths that keep between them a small thickness (10 to 15 cm) of pebbles or small enrockments. This continuous structure forms a kind of rug laid down on the bed of the waterway beforehand leveled.

CUL D'ARC-BOUTANT
Cul d'arc-boutant
Construction
Syn. with ARCH BUTTRESS

CUL-DE-LAMPE
Cul-de-lampe
Construction
A finely worked corbel (decorated with moldings) resembling the bottom of a former lamp. Syn. with CORBEL

CULLET
Calcin
Building Materials
A hard thin layer covering the chalky stone and that is broadly composed of calcium carbonate. The cullet is due to the surface crystallization of salts dissolved by the quarry sap at the time of its evaporation.

CULTELLATION
Cultellation
Topography
A particular manner to chain on sloped ground that consists in tightening the chain to the horizontal, then, from the highest end of the chain in comparison with the ground, to leave falling a leaden arrow that will serve as mark.

CULTIVATOR
Cultivateur
Equipment and Tools
A plant used to loose the ground, before the passage of the earthmovers or scrapers.

CULVERT
Ponceau; Aqueduc; Canal
Civil Engineering Structure; Railway and Canals
1. A small masonry bridge (mostly arched) whose opening lies between 1.50 and 4 m and that is usually built to the passage of streamlets. A culvert is generally formed by only one span. Syn. with ARCHED CULVERT
2. Syn. with AQUEDUCT; WATER DUCT
3. Syn. with CANAL; CHANNEL; FLUME; RACE

CUNETTE
Cunette
Earthwork; Sanitary Engineering and Drainage
1. In the heading method called *Belgian* or *two galleries,* section of ground excavated in the

third place. The cunette is situated in the axis of the cross section and at the base of the work. **See Figure 78**

2. A reinforced concrete ditch (precast or not) no supplied of drainage channels.

3. Syn. with CURVED CHANNEL; DITCH

CUPEL OF *CASAGRANDE*
Coupelle de *Casagrande*
Assaying Equipment
A tool to determine the limit of liquidity of a soil, consisting of an articulated cupel on a base to which a series of shocks, by means of a cam and a crank, can be transmitted, each the equivalent corresponding to a fall from a 10-m height. **See Figure 79**

CUPOLA
Coupole
Construction
Syn. with DOME

CUPRIMETER
Cuprimètre
Equipment for Measure and Control
A graduated test tube allowing, with the help of a reactive (ammoniacal cyanided solution), the colorimetric control of copper sulfate solutions used to inject wooden piles. Syn. with COPPER METER

CURING AGENT
Accélérateur de prise
Polymers
A compound mixed into a thermosetting resin to speed up its hardening or to an elastomer to speed up its vulcanization. Syn. with HARDENER

CURING COMPOUND
Antiévaporant; Produit de cure
Construction of R.C. and P.C.
1. A product applied on the concrete after form striking or hardening so as to head off in hot weather the phenomenon of excessive drying.

2. A product for protecting the fresh concrete from a too fast excessive drying due to the evaporation of water, in particular in hot season. Curing compounds appear as a colorless or colored liquid, whose viscosity is variable, just as the percentage of the active dry extract. One sprays them onto the surface of concrete (or mortar) after form striking or about 1 h after the end of the placing for uncoffered concretes (shotcrete for example).

The spraying is done by engine or also agricultural sprays or with the squirt gun. Curing compounds are admixtures based on:
- waxes, paraffins, resins or emulsions in water,
- resins (artificial or natural) dissolved into an oil solvent (xylene, white spirit, etc.),
- rubber chlorinated.

CURING COMPOUND OF CONCRETE
Cure du béton
Construction of R.C. and P.C.
The concrete surface treatment during its hardening period for heading off a too quick evaporation of the mixing water (excessive drying) that would be prejudicial to its normal hardening process. It is made by humidification (pulverization of water, curing blanket, damp doormats, etc.), or with waterproof temporary coating (emulsion of wax, pulverized resin, curing membrane). Syn. with CURING OF CONCRETE

CURING OF CONCRETE
Cure du béton
Construction of R.C. and P.C.
Syn. with CURING COMPOUND OF CONCRETE

CURL
Ronce
Defects (Building Materials)
Syn. with BURL; BURR

CURLED WOOD
Bois madré
Building Materials
A wood whose fibers are singularly confused. Syn. with FIGURED WOOD

CURLING
Roulage de bord
Metallurgy
An operation that consists in fringing a sheet metal or a piece according to a circular profile using a wheel profile or lifting of edge tools.

CURRENT
Fil d'eau
Sanitary Engineering and Drainage
Syn. with INVERT LEVEL; STREAM

CURRENT METER
Moulinet hydrométrique
Equipment for Measure and Control
Equipment for measuring the speed of the stream of lowing waters as in streamlets, rivers, canals or into drillings.

CURTAILMENT
Crosse; Crochet d'armature
Nomenclature of Materials
Syn. with REINFORCEMENT CROOK; REINFORCEMENT HOOK

CURTAIN
Rideau
Construction
Retaining wall built at the base of a slope.

CURTAIN OF PILES AND SHEETINGS
Vannage
Foundation
1. The partition of a cofferdam.
2. Provisional dike constructed to dry out a normally wet area.

CURTAIN OF SLUICING
Rideau de vannage
Foundation
A watertight enclosure formed by close piles or sheet piles, inside of which is poured the concrete of foundation (example: the foundation of a pier). The curtain of sluicing is used in watery site or aquiferous ground.

CURVE
Courbe; Pistolet; Arquer
Carpentry; Drawing; Construction
1. Any piece of wood whose surface is curved, on the plan or on the edge.
2. Syn. with MOULD; FRENCH CURVE
3. To curve in the shape of arc a timber piece, a metal bar. Syn. with ARCH; BEND; CAMBER

CURVE (OF ARCH)
Voussure
Construction
Syn. with ARCHING

CURVED ARCH
Arc bombé
Strength of Materials
An arc of circular curvature developing fewer 180°.

CURVED CHANNEL
Cunette
Hydraulic Works; Sanitary Engineering and Drainage
1. A narrowed canal reserved to the water flowing to low rate of flow; for hydraulic tunnels solely.
2. Syn. with DITCH; CUNETTE

CURVED CORNICE
Corniche cintrée
Construction
A curved coping formed by several successive elements.

CURVED PROP
Etai cintré
Temporary Constructions
A curve device used to support the vaults. Syn. with CURVED SHORE

CURVED SHEETING
Tôle courbe
Metal Construction
In the former metal works, cover formed by bent sheet pieces showing a downward concavity and whose generatrixes can be arranged parallel or perpendicular to the longitudinal axis of the work. The filling is executed with concrete.

CURVED SHORE
Etai cintré
Temporary Constructions
Syn. with CURVED PROP

CURVED STEEL PLATE
Virole
Equipment and Tools
The body of a shield; the curved steel plate is formed by bent sheet metals of a length equal to that of the shield.

CURVES OF *TALBOT* OPTIMUM GRAIN-SIZE DISTRIBUTION
Courbes de granulométrie optimum de *Talbot*
Geotechnics
A graphic line resulting from a grain size analysis of a ground and that translates its probable compactness.
The more compact a ground, the greater is its breaking strength. Grounds to maximum compactness are these in order that the size particle spreading is such that the spaces ratio them is minimized at the very least; one tells that these grounds have an optimum grading. According to Talbot, the grading is defined by a curve with the equation:

$$P = 100 \left(\frac{d}{d\max} \right)^n$$

P is the percentage of elements of diameter lower than the considered diameter *d,* namely crossing the sieve of size *d, dmax* is the maximum grain diameter, *n* a varying exponent, following the value of *dmax* between 0.11 and 0.33. One often chooses $n = 0.33$ if $dmax = 25$ mm, and $n = 0.22$ if $dmax = 10$ mm.
This curve presents an upward concavity that replies to the concern to avoid all surplus of fine materials. These elements, even when they do not increase dangerously the relative plasticity, harm to the obtaining of an optimum compactness because they shape afflicted nests, either an exaggerated swelling power or a lower compactness to the average.

CUSHION
Coussin d'air
Equipment and Tools
Syn. with AIR CUSHION; AIR SKATES

CUSTOM-BUILT
Hors série
Contract
Syn. with CUSTOM-MADE

CUSTOM-MADE
Hors série
Contract
Of the works not measurable and payable by the price schedule in use. By extension: of the work which it would be too tiresome to measure with the price schedule and for which are drawn up the schedule of rates or a lump-sum price. Syn. with CUSTOM-BUILT

CUT
Débiter
Metal Construction; Building Materials
1. To cut metal pieces following the ordered dimensions from the construction drawings.
2. To break up a rock into blocks of ordered dimensions. Syn. with TO CUT UP

CUT
Bouchon; Passe; Déblayer; Décaisser; Havée; Haver; Enlevure
Earthwork
1. The central part of the working face. During the boring of a tunnel in rocky ground with explosives, one blasts this cut first to release this first excavation. Then it is widened by the successive blasting of peripheral mine crowns increasingly far from the cut, up to covering the entire section.
2. The ground or rock portion pulled down in only one passage by a working machine.
3. To excavate the ground so as to lower some the level for construction of roads, railway tracks, canals, civil engineering structures, foundations, etc. To be able carrying out the cuttings in all safety, so much the workers that for the work, it is often necessary to strengthen the country rock or excavation walls by appropriate processings (grouting, freezing) or temporary or definitive supporting devices (sheet piles, caissons, diaphragm walls, etc.). Syn. with EXCAVATE
4. A cutting pass carried out by a cutting machine along the working face. Syn. with CHANNEL; TRACK
5. To carry out mechanical cutting. Syn. with TO TRACK
6. The value of thickness of a cutting pass.

CUT
Epincer; Epinceter; Gruger; En déblai
Masonry; Civil Engineering
1. To split the rock with a view to manufacture paving stones, quarry stones, or curbs of sidewalk.
2. To shape quarry stones.
3. To cut very hard stones with a diamond-tipped hammer.
4. Of a channel of communication built by digging a trench through a natural soil elevation or below the natural soil by earthworks in cut.

CUT CORNER
Pan coupé
Nomenclature of Materials
The plane surface of a work, a piece, whose angle is cut down. **See Figure 80**

CUT (OUT) JOINT
Joint refait
Masonry
A joint recut at the time of implementation.

CUT OFF
Araser
Construction and Materials
Syn. with LEVEL

CUT THE CORNER
Ecarner
Masonry
To cut a stone in a manner to suppress its salient angles (quoins).

CUT-AND-COVER
Tranchée couverte
Earthwork
1. An excavation executed to open air, timbered or not, allowing to build since the surface a shallow tunnel. When the surface is free of construction, the cut-and-cover allows to carry out economically little deep tunnels. This process is also advantageous when one lies in the presence of underground water and of a very permeable ground. Profiles carried out usually are rectangular: either a self-supporting framework, or a channel section surmounted by a slab, or a portal frame with sidewalls going down below the level of use. After the digging of a trench with an inclined slope or mostly vertical and supported, the final work is built and embanked. In urban site, to keep the traffic on the surface, the digging can be done safe from a movable floor or final cover slab.
2. A final work carried out by this method.

CUTBACK PASTY PRODUCTS
Produits pâteux fluxés
Materials
A range of tightness materials containing bitumen and a fluidifying product, used in system with tarred or asphaltic felt, to fill in cracks, etc.

CUT HAMMER
Escoude
Equipment and Tools
A quarry worker hammer with sharp edge used to extract stone.

CUTOFF
Masque amont; Masque d'étanchéité; Parafouille
Hydraulic Works; Construction
1. An impermeable mantle of safety covering the facing in contact with the water of an earth-fill dam.
We can distinguish:
- **rigid cutoffs** *(les masques rigides),* formed by reinforced concrete or concrete plates;
- **flexible cutoffs** *(les masques souples),* constituted by bituminous concrete rug, a geomembrane or a geotextile.

Syn. with WATERPROOF FACING
2. Syn. with CUTOFF WALL; SKIRT.

CUTOFF WALL
Parafouille
Construction
An impermeable wall, collar, or other structure built beneath the foundation raft or within the abutments for preventing from seepages, under the foundation raft in particular, the foundations of a work built on a waterway. Cut-off walls may be built of R.C., masonry, or formed by an interlocked sheet piling, piles curtain or grout injected along a line of holes. They are mainly erected upstream from the work and may be interdependent or independent. Syn. with CUTOFF; SKIRT. **See Figure 81**

CUTOUT
Découpe
Masonry
The difference of length fitted in elevation between two consecutive elements of a quoin or an ordinary pier.

CUTTER
Couteau; Haveur; Fraise; Burin
Foundation; Earthwork; Equipment and Tools
1. The bottom sharp part of a foundation box caisson put in place by driving or mechanical cutting.
2. Syn. with SHEARER

3. A tool used to achieve some drillings, notably in the rock and that is formed by a drum furnished by carbide or diamond inserts. This drum is endowed with orifices allowing brought it of a drilling fluid (mud, air or water).
4. A tool equipping some boomheaders and that is formed by a swivel drum on a horizontal axis supplied of wheels or picks.
5. Syn. with BURIN; CHISEL; COLD CHISEL

CUTTING
Abattage; Havée; Havage; Excavation
Earthwork
1. An operation consisting in bringing about the crumbling of a great quantity of excavated materials in order to divide them and to facilitate the excavation of it.
2. Concerning tunnelling, clearing of the ground between the drift and extrados of the vault until the level of springings on a side of the drift. Syn. with STRIKING DOWN; WORKING
3. A volume of ground cut down by a cutting machine an only pass on all the working face.
4. Syn. with SHEARING
5. Syn. with EXCAVATING; EXCAVATION

CUTTING
Débitage. Découpage
Metal Construction; Building Materials
1. Machining that is achieved with the saw, shears or blowtorch.
2. Sawing wood according to required shapes.
3. Breaking up of the rock achieved in quarry in order to obtain quarry stones. Syn. with CLEAVING
4. The cutting into several parts of a stone, a sheet metal, etc., to make some units and apt to construction.

CUTTING
Tranchée; Décaissement; Sciage
Civil Engineering Structure; Work
1. A large excavation whose walls are built or not, delivering the way to one (or several) channel of communication.
2. Syn. with EXCAVATION
3. Syn. with SAWING

CUTTING
Taille; Epinçure; Abattage; Coupe
Masonry
1. The dressing of the faces of a stone according to the facing and dimensions envisaged in the plan. Stones thus worked are intended to the construction bonded walls. There are several types of cutting:
- **smooth dressing** *(la taille adoucie),* which has a united surface with many very fine stripes of a depth about than 0.05 mm. It is achieved from the ground size, while rubbing with the pumice and water;
- **embossed dressing** *(la taille bossagée),* which presents some large spalls of various form and harshness, sow off and on some mark of percussion lengthen and which be achieved striking with a hammer to arris along the edges of the face of a quarry stone or ashlar. The most outstanding harshnesses are rectified with the bolster or pick in limited blows. The final aspect is roughly bulged;
- **axed work** *(la taille bouchardée),* which presents many round points of bruises laid out as squaring encroaching one on the other. The points are summarily aligned parallel at the edges of the face. This cutting is obtained by striking perpendicularly with granulating hammer;
- **bolstered dressing *or* tooled dressing** *(la taille brochée),* in which facing presents long parallel furrows separated by strings in relief of very coarse breaks of bursting. These furrows are generally parallel and than 45° edges. One obtains this cutting while striking with the bolster or pick;
- **chiseled dressing** *(la taille ciselée),* which presents a broadly rough rugged, tooled with chisel possibly to form an edge of face;
- **split-face finish** *(la taille éclatée),* in which facing has a surface area of coarse breaks in relief (this cutting is practised on the limestone quarry stones);
- **ground dressing** *(la taille égrisée),* which has a united surface, covered however of fine stripes of unspecified directions and depth lower than 0.2 mm. The ground dressing is achieved by rubbing the facing with sandstone and water or with an equivalent abrasive;
- **tooled dressing** (la taille layée ou brochée), see BOLSTERED DRESSING;
- **pointed dressing (by lines or by points)** *[la taille pointée (par traits ou par points)],* of which aspect is characterized by large hollows of percussion sown off and on among breaks of bursting in relief and coarse, of a bit lengthened

or round form. This cutting is achieved by striking with the bolster;

- **glazed dressing** *(la taille polie brillante),* which has a united surface, forming mirror; it is achieved from the glazed dressing, while rubbing with the tin dust and water or with an equivalent abrasive very thin (this cutting is in particular carried out on the ashlars);
- **eggshell dressing** *(la taille polie mate),* which has an united surface, practically without apparent stripes, reflecting slightly the light. The eggshell dressing is achieved from the smooth dressing, while rubbing with emery and water or with an equivalent thin abrasive (this cutting is in particular carried out on ashlars);
- **boasted dressing (with teeth or without teeth)** *[la taille ravalée (à dents ou sans dents)],* of which surface is united and is covered with small hollows and stripes of unspecified direction and a depth than 0.5 to 1 mm;
- **rusticated dressing** (la taille rustiquée), in which facing presents fine striations and which is carried out using a cutting edge tool;
- **sawn dressing** *(la taille sciée),* in which facing has a relatively plane surface, covered with small hollows and being able to have small undulations or setbacks. This cutting is achieved by sawing with blade, thread or teeth saw;
- **scabbled dressing** *(la taille smillée),* in which facing presents short scratches, many, oblique and parallel, separated by small breaks of bursting;
- **bush-hammered dressing** *(la taille talotée),* which presents groups of large round points of bruises, variously spaced among breaks of spalls. This aspect is obtained with the bush hammer;
- **rough-chiselled work** (la taille tranchée), which comprises a plane of break not improved, striped by marks of the seating of the wedges which were used to split the block.

Syn. with DRESSING

2. A small piece that comes off a stone during its shaping.

3. In masonry restoration, pulling down in constant, total or partial thickness (example: the demolition of a roll of bricks of a vault). Syn. with STRIKING DOWN; WORKING

4. Shaping of ashlar according to the full-scale working draft.

CUTTING (OF ASHLAR)
Abattage de pierre de taille
Masonry
The elimination of a part of a block before its implementation with axhammer or pickaxe and which lets remain only one plane face, smooth or convex.

CUTTING (OF STONE)
Abattage de pierre
Masonry
The removal of the surplus thickness of a stone standing out in comparison with the rest of the facing.

CUTTING ANGLE
Angle d'attaque, de dégagement, de dépouille, d'un outil
Equipment and Tools
The edge formed by position and arrangement of cut wedges that equip heads of working machines. Syn. with CLEARANCE ANGLE (OF CUTTING TOOL); DISENGAGEMENT; STRIKING

CUTTING BY FUSION
Coupage par fusion
Metal Construction
A process of thermal cutting of metal pieces by local melting of the metal that is evacuated by a jet of gas.

CUTTING CURB
Rouet; Trousse coupante; Couteau
Equipment and Tools
1. Syn. with DRUM CURB; WELL SHOE (SEE CUTTING SHOE)

2. The cutting edge device fixed at the base of a caisson, a tubing or a shield for facilitating the penetration into the ground. Syn. with DRUM CURB; SHOE

CUTTING or DRESSING PLANT
Taillerie
Building Materials
A manufacturing faciliting stones from already squared blocks are dressed.

CUTTING INTO HARD BED
Boudinage
Defects (Geology and Civil Engineering Structure)
Damage encountered in rocky ground, characterized by a cutting into lengths of hard beds in soft levels. It is mostly due to heterogeneousness of the enclosing ground. This defect meets in noncovered tunnels. Syn. with FLANGED(BED)

CUTTING MACHINE
Machine four à genoux
Equipment and Tools
A power-driven machine used to break away rocks in quarry. This machine cuts out horizontally the rock with two drills propelled by an electric motor; it moves on two horizontal rails fixed parallel to the chase to be achieved.

CUTTING OF LIP
Taille de balèvre
Masonry
The recuts of the extra thickness of a stone after its laying.

CUTTING OF SPRINGING
Abattage de retombée
Masonry
The slantwise cut of a stone for being useful as springer. Morever, this stone is used as stop to an arc.

CUTTING OFF
Recépage
Foundation
Syn. with STRIKE-OFF; TRIMMING

CUTTING POINT
Taillant
Equipment and Tools
1. The part of a tool, sometimes brought back, which cuts, disaggregates.
2. The part of a rock drill or drill steel which attacks the material. The cutting edge can be forged in the steel of the drill steel or brought back. There are several types of cutting points:
- **cross (drill) bit cutting edge** *(les taillants dits en croix ou polygonaux),* originally forged and now brought back on the drill steel and which are constituted by tungsten carbide tips;
- **single-chisel (drill) bit** *(les taillants simple-burin),* equipped of a tungsten carbide tip;
- **Hamster (drill) bit** *(les taillants dits Hamster, Ravageurs ou à boutons),* formed by a tray in which are dipped large balls of tungsten carbide;
- **diamond bits** *(les taillants au diamant);*
- **tri-cone bits** (les taillants tricônes), formed by three rollers armed with teeth.

Syn. with (DRILL) BIT CUTTING EDGE; CUTTING EDGE. **See Figure 82**

CUTTING SHOE
Couteau; Trousse coupante
Equipment and Tools
Syn. with CUTTING CURB; DRUM CURB; SHOE

CUTTING SHOE PROCESS
Procédé à la trousse coupante
Foundation
An operation that consists in deepening into loose grounds of the caissons or intubations provided with a cutting shoe.

CUTTING UP
Tronçonnage
Building Materials
Cutting into sections of material in bars (sections, reinforcements, etc.).

CUTTING WHEEL
Molette
Equipment and Tools
1. One of the turning parts in the toothed cone-shaped tool equipping a bore bit.
2. A tool turning freely on an axle shaft interdependent of a drilling head. In the mechanical blasting, the cutting wheel is a disk, which rolls freely on the rock to which it is applied by a strong pressure: the rock bursts on both sides of the chase thus dug. The repeated passage of these tools on the rock, while following focused trajectories, causes the progressive destruction of it.
One routinely uses:
- **disk cutting wheel** *(la molette à disque),* made up of one or several carbide rings set on a roll. It is defined by its diameter (from 150 to 300 mm) and its blade pitch (from 60° to 105°);
- **serrated roller with axial cogs** *(la molette à denture axiale)* appears as a truncated chain assembled on roll. The process of felling is

discontinuous; the start of spalls corresponding to the penetration of each tooth in the rock. This serrated roller is mainly used for trial borings at a great depth and sometimes one meets it close to the axis of rotation of the tunneling machines, where the radius of curvature is too low to enable the use of serrated rollers disk;

- **pick cutting wheel** *(la molette à picots),* a cylinder (or truncated cone) set of small balls of the tungsten carbide; it is primarily a tool for grinding, used where the other types of serrated rollers have failed. It is to be found only in the center of the tunneling machines.

Syn. with SERRATED ROLLER

CUTTINGS
Déblai; Déblais de forage
Foundation
1. All particles of ground rising to the surface by the drilling mud at the time of the creation of piles, trials, etc., with the help of a bore bit.
2. Particles of ground produced in a borehole by a drilling tool that are risen to the surface by this last. The cuttings thus collected are analyzed in laboratory and enable to draw the geological cut of the borehole (the nature of the met grounds, the thickness of the different strata gone through, etc.). Syn. with DRILL CUTTING

CUTWATER
Bec
Construction
The shaped and projecting part of a bridge pile in river intended to favoring the flowing of the water (see UPSTREAM CUTWATER and DOWNSTREAM CUTWATER).

CYANOBACTERIA
Algue bleue
Masonry
Syn. de BLUE ALGA; BLUE ALGUE

CYCLIC ACTION
Action cyclique
Strength of Materials
A repeated single or continuous action, which has a frequently varied intensity; that happens very often and substantially.

CYCLONE CLASSIFIER
Hydrocyclone
Equipment and Tools
An apparatus to remove the bentonitic mud in order to recycle it..

CYCLOPEAN BASEMENT
Orthostate
Construction
Syn. with HEAVY BASEMENT; ORTHOSTATE

CYCLOPEAN BLOCK
Bloc cyclopéen
Building Materials
A stone weighing more a metric ton.

CYCLOPEAN BOND
Appareil cyclopéen
Masonry
A bonding formed by large quarry stones or blocks of irregular ashlar and whose facing is sometimes dressed summarily. This type of masonry mostly presents wide joints that are sometimes fillled with pebbles embedded in the pointing mortar.

CYCLOPEAN CONCRETE
Béton cyclopéen
Building Materials
Syn. with RUBBLE CONCRETE

CYLINDER
Bille
Equipment and Tools
The roll of a compactor roller (steamroller). Syn. with ROLL

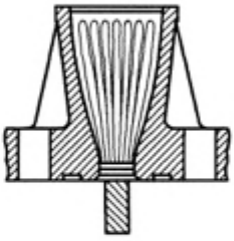
CYLINDER BORE
Alésage
Earthwork Metallurgy and Metal Construction
Syn. with BORING, REAMING

CYMATUM
Cimaise
Architecture
Syn. with OGEE

Figures of the letter

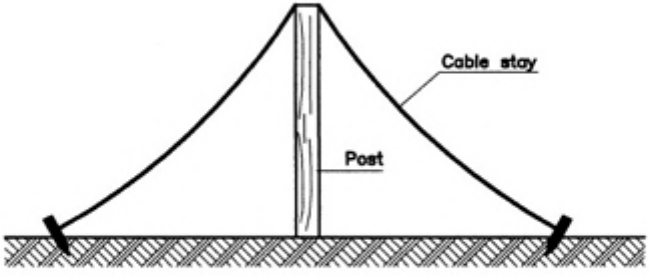


Fig. 1



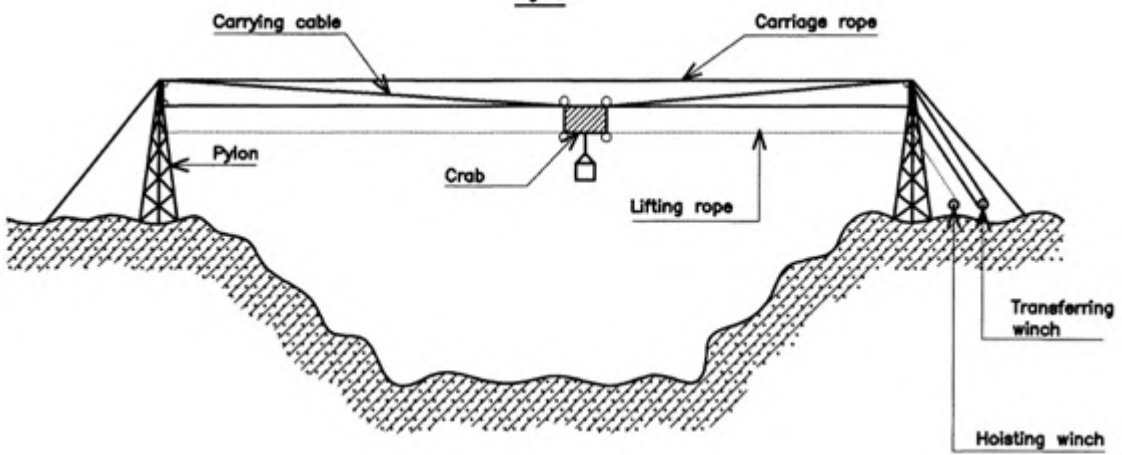
CABLE BOTTOM

Fig. 2



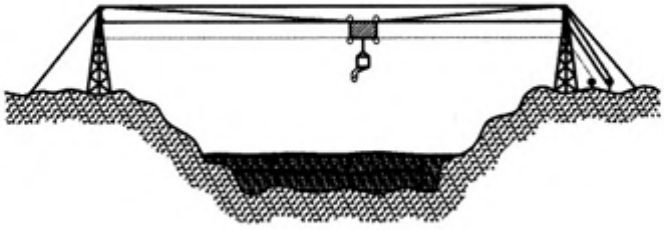
CABLE STAY

Fig. 3



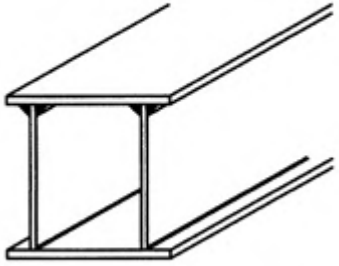
CABLEWAY

Fig. 4



CABLEWAY CONCRETING

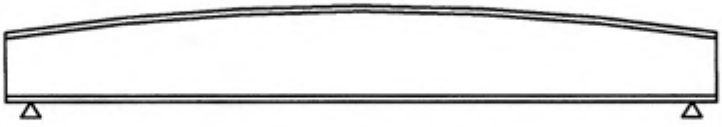
Fig. 5



Caisson with solid web

CAISSON

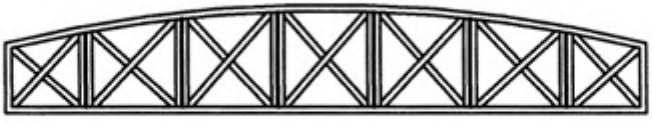
Fig. 6



Lateral camelback truss with web plate

CAMELBACK TRUSS

Fig. 6a



Lateral camelback truss with lattice

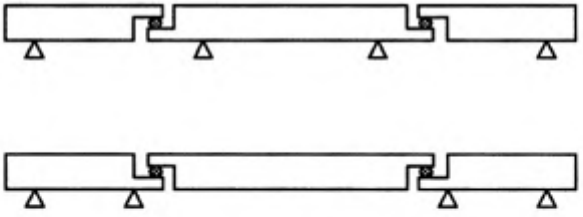
Fig. 6b



Lateral camelback truss with lattice arch

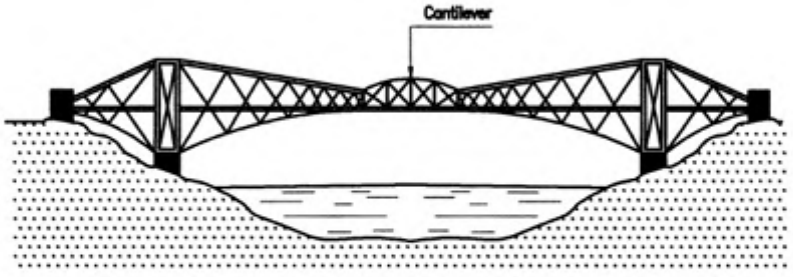
CAMELBACK TRUSS

Fig. 7



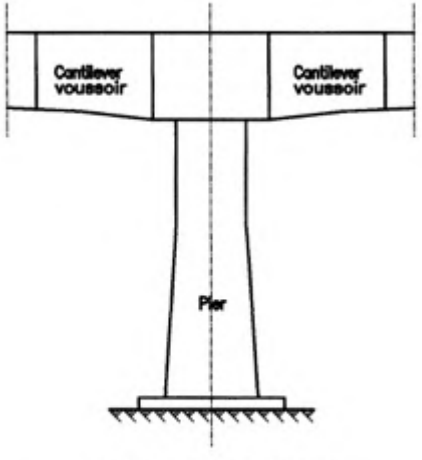
CANTILEVER BEAM

Fig. 8



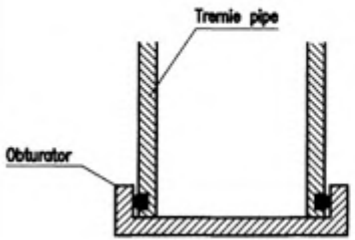
CANTILEVER BRIDGE

Fig. 9



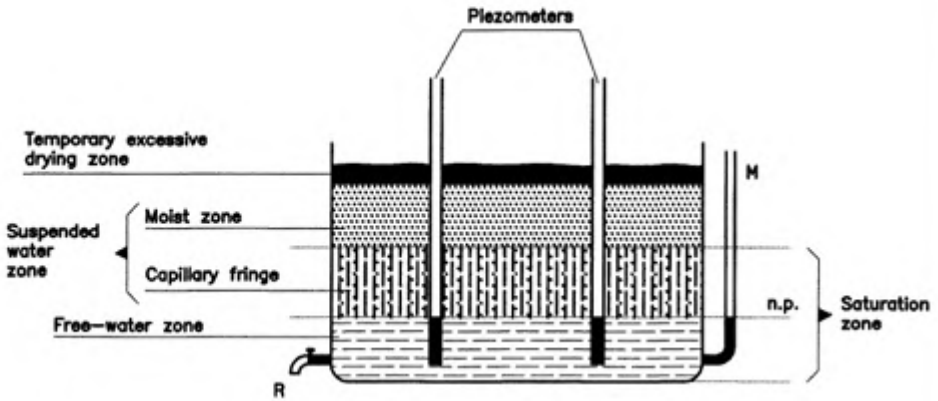
CANTILEVER VOUSSOIR

Fig.10



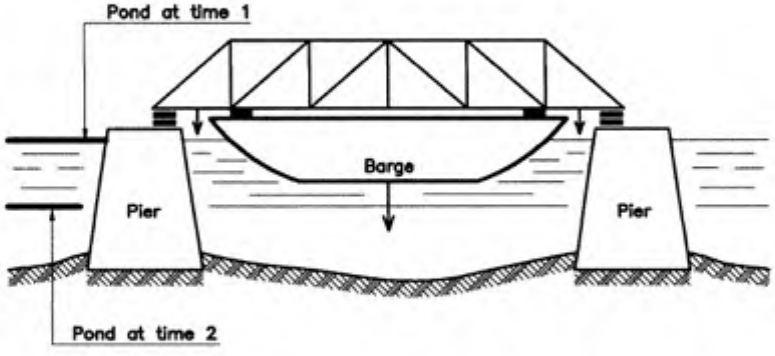
CAP STOPPER

Fig.11



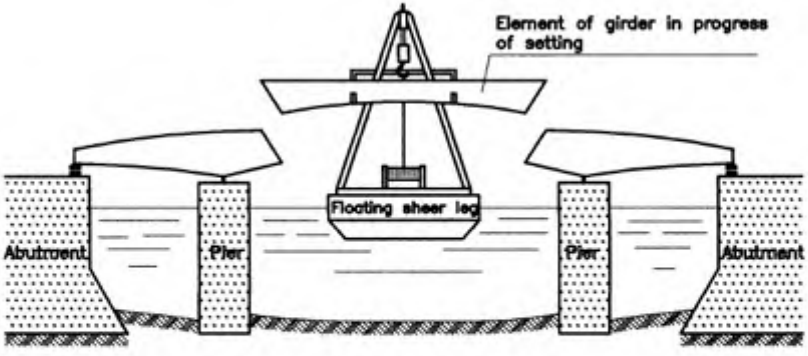
CAPILLARY FRINGE

Fig.12



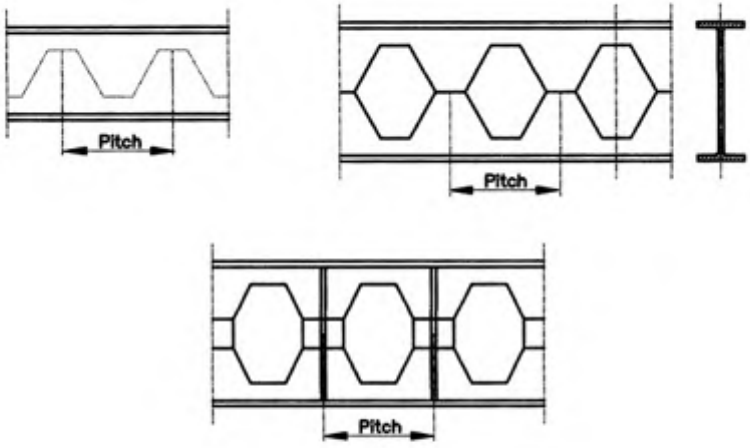
CARRYING UP BY FLOATING PONTOON

Fig.13



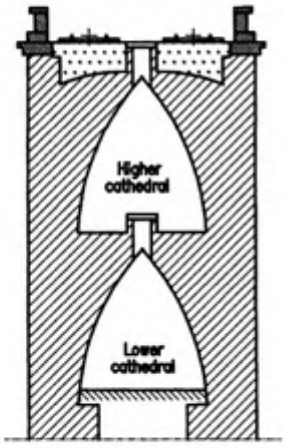
CARRYING UP BY FLOATING PONTOON

Fig.14



CASTELLATED BEAM

Fig.16



Section of abutment with cathedral

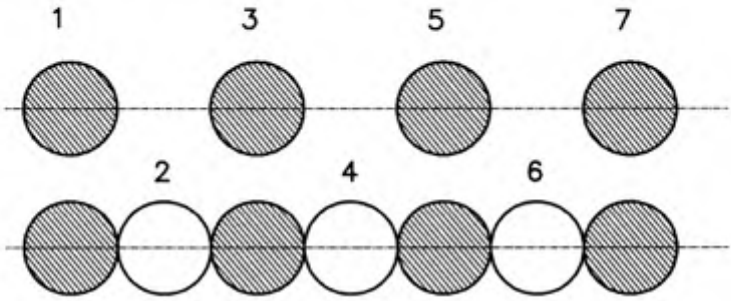
CATHEDRAL

Fig.17



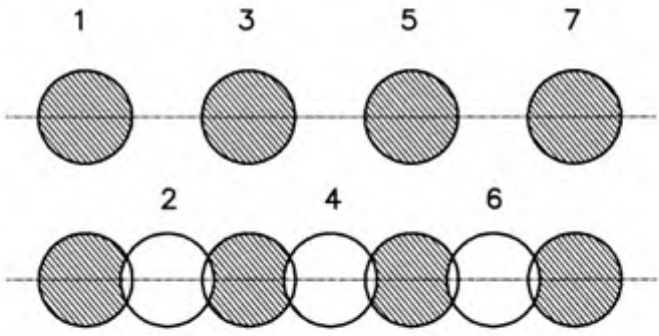
CAULKING TOOL

Fig.15



Butt–jointed piles (principle of execution)

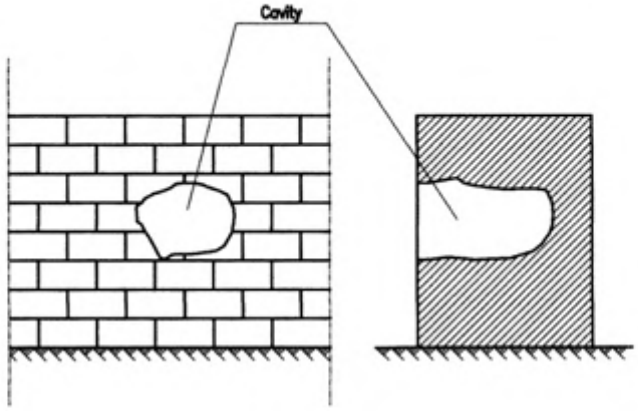
Fig.15a



Cutting piles (principle of execution)

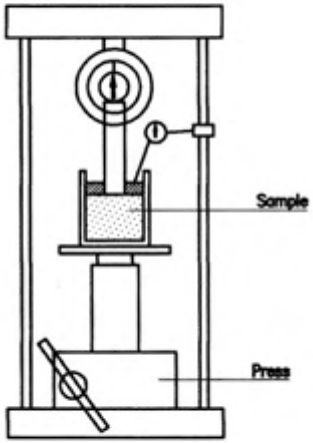
CAST–IN–PLACE CONCRETE PILE

Fig. 18



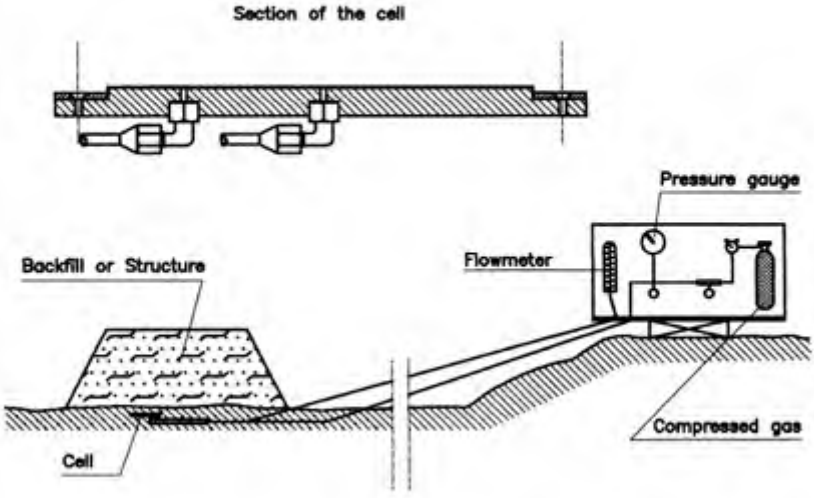
CAVITY

Fig.19



C.B.R. (California bearing ratio)

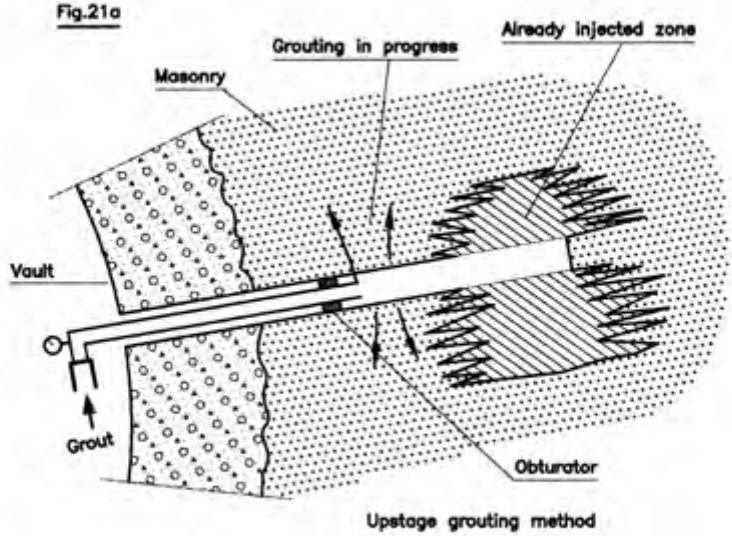
Fig.20



Total pressure sensor

CELL

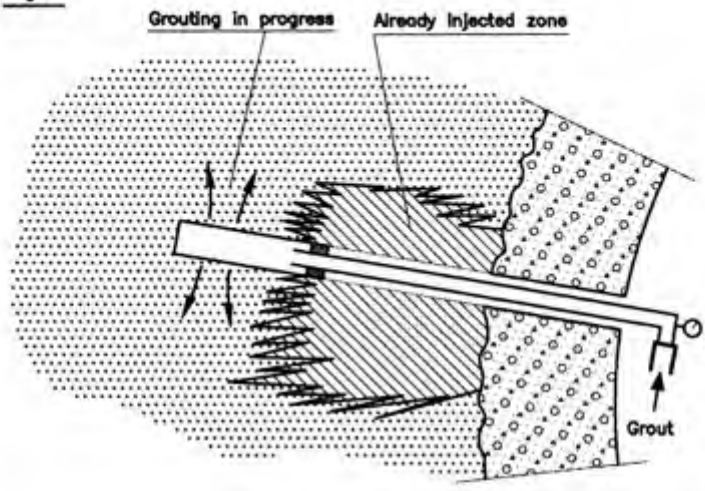
Fig.21a



Upstage grouting method

CEMENTATION

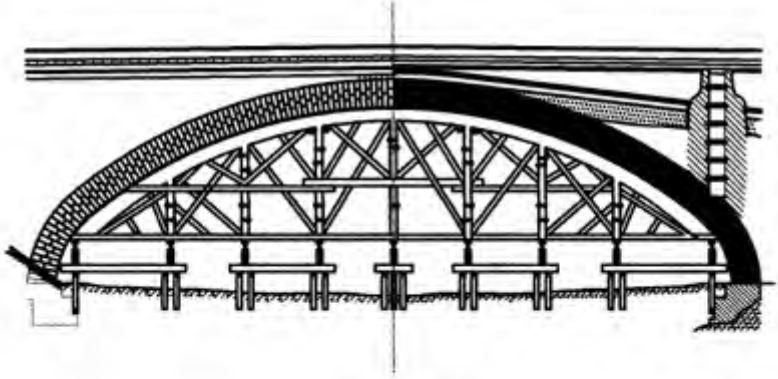
Fig.21



Stage grouting method

CEMENTATION

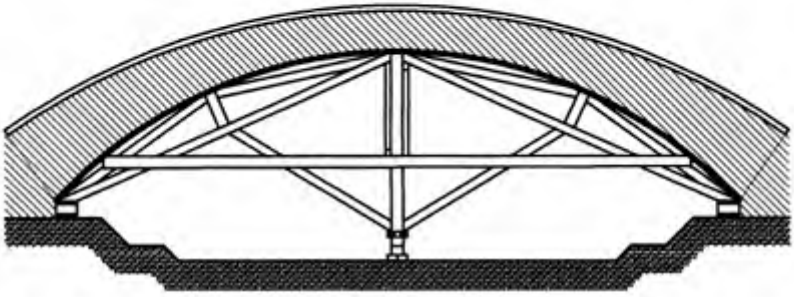
Fig.22



Centering with posts

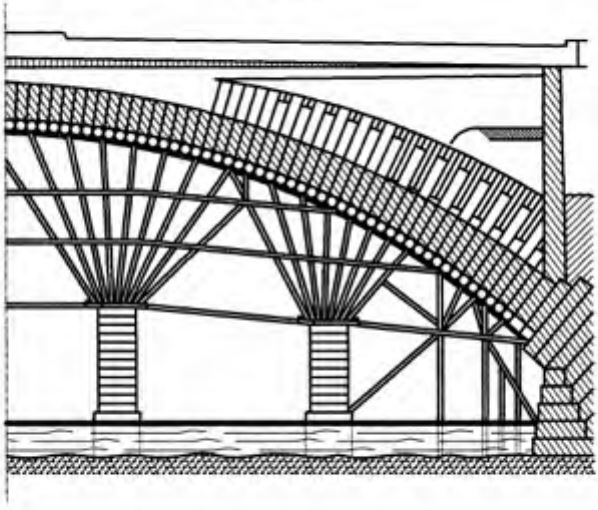
CENTERING

Fig.22a



Centering with posts and raking shores

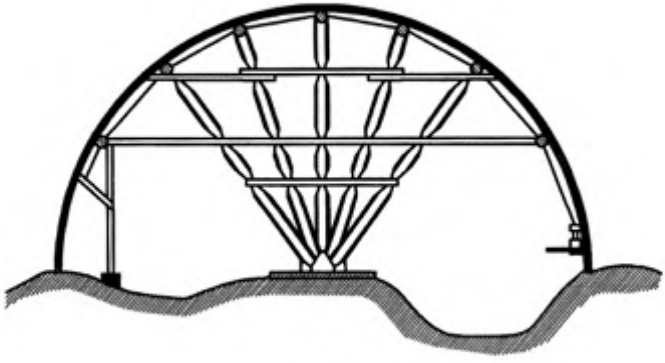
Fig.22b



Centering with rayonnant raking shores

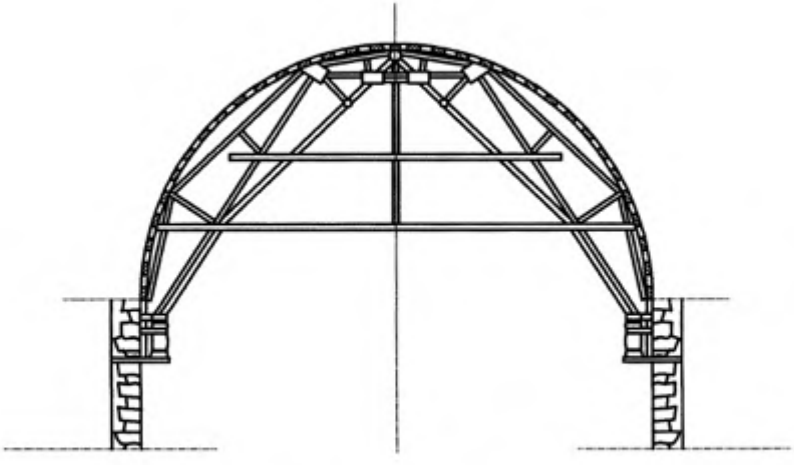
CENTERING

Fig.22c



Spoke centering

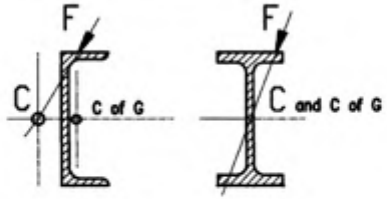
Fig.22d



Timber snub centering

CENTERING

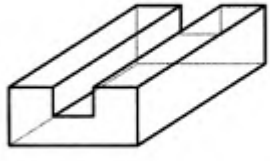
Fig.23



C = Center of bending
C of G = Center of gravity

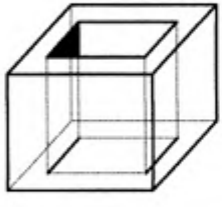
CENTER OF BENDING

Fig.24



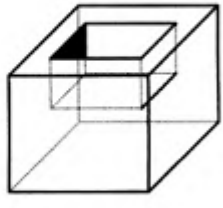
3 preserved faces

Fig.24a



4 preserved faces

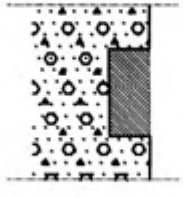
Fig.24b



5 preserved faces

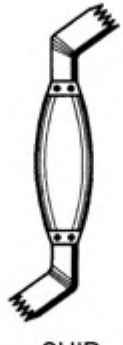
CHANNEL

Fig.25



CHANNELING

Fig.26



CHIP

Fig.27

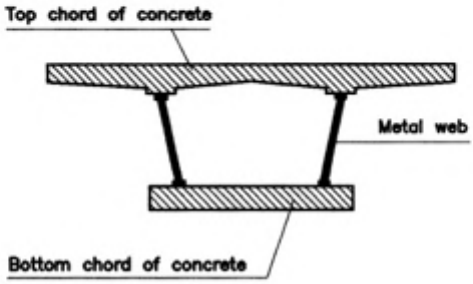


Fig.27a

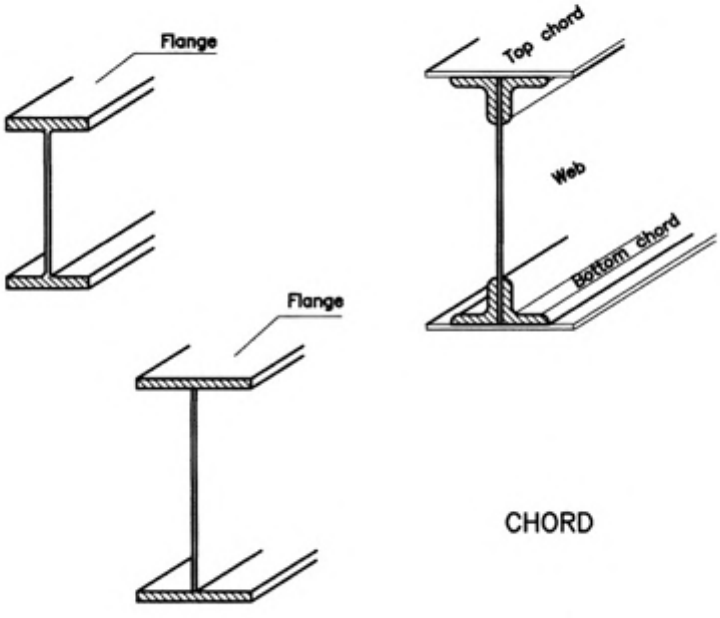
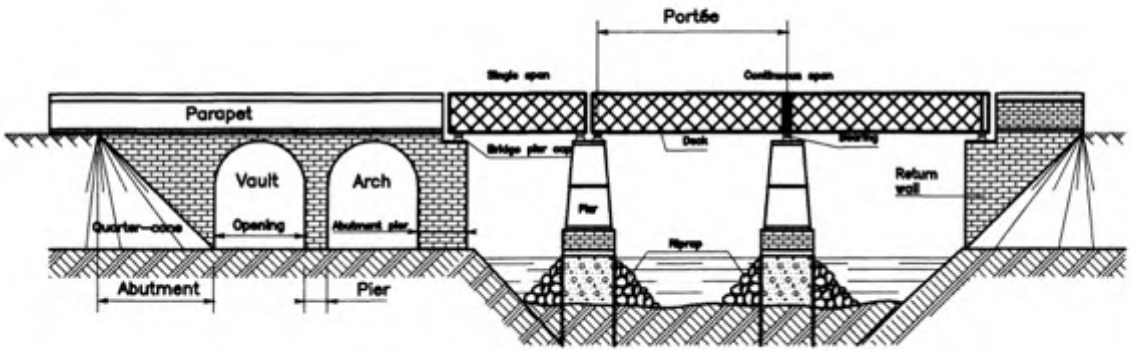


Fig.28



CIVIL ENGINEERING STRUCTURE (Nomenclature)

Fig.28a

1)– Traverse of dip

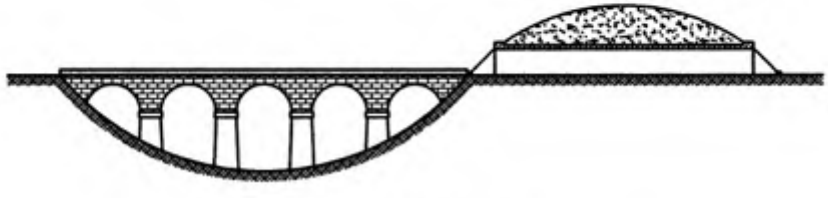


Bridge and Embankment

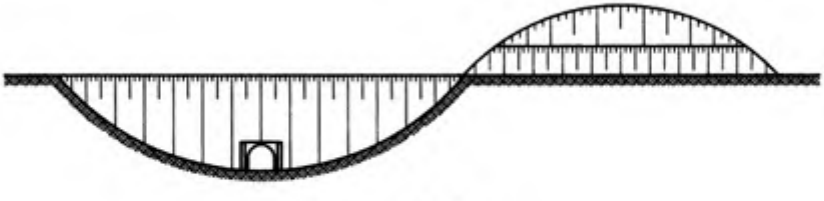


Viaduct

2)– Traverse of undulation



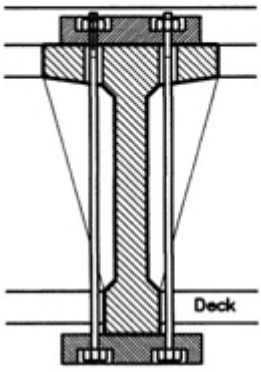
Viaduct and Tunnel



Embankment and Cutting

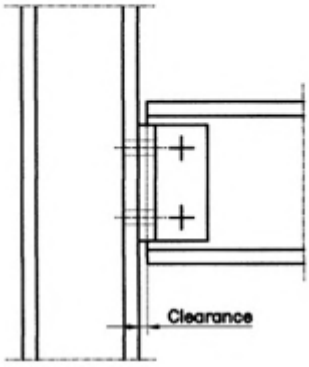
CIVIL ENGINEERING STRUCTURE (different types)

Fig.29



CLAMP STRAP

Fig.30



CLEARANCE

Fig.31



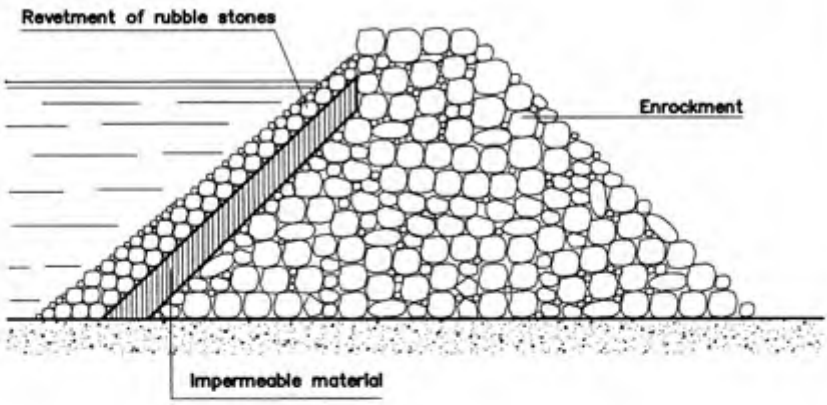
CLIP NAIL

Fig.32



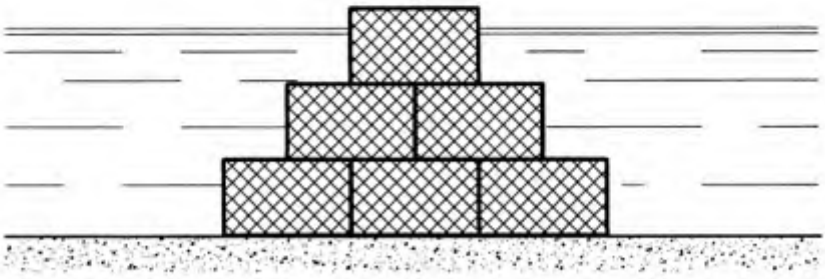
CLOSER

Fig. 33



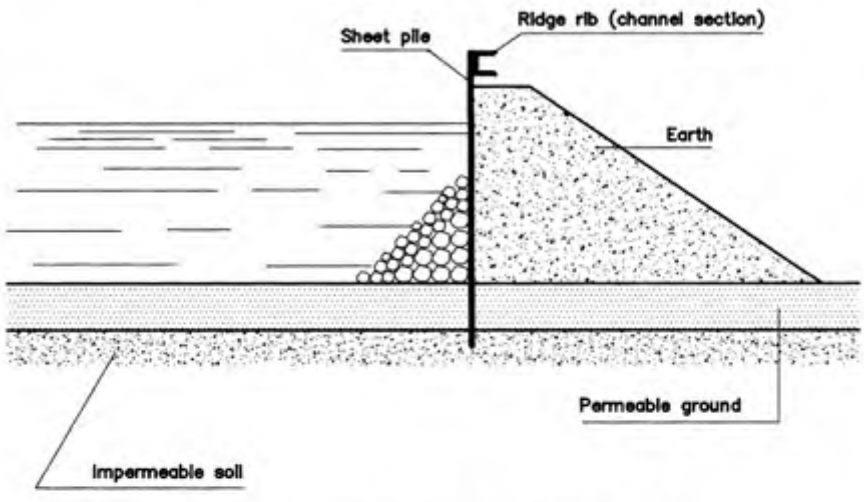
ROCK–FILL CRIB COFFERDAM

Fig. 33a



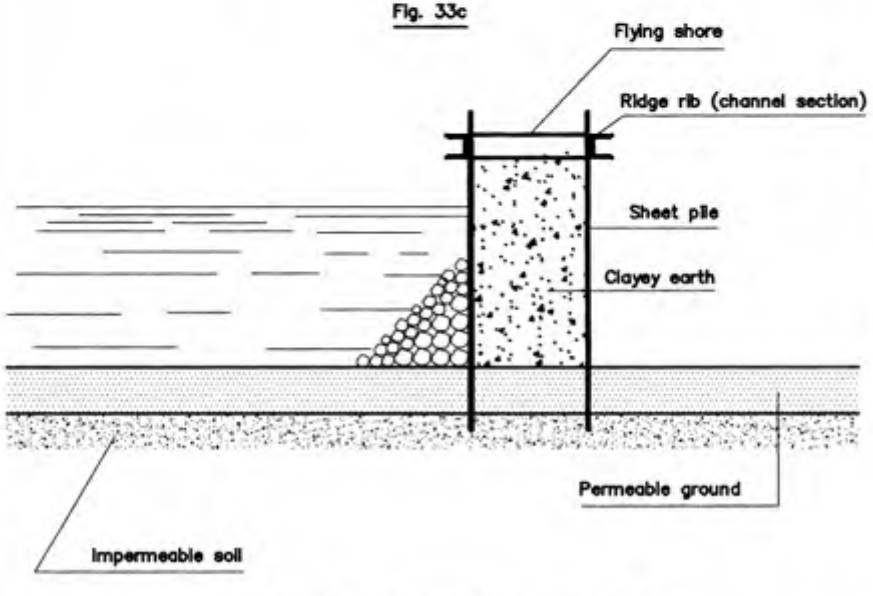
CRIB–TYPE (WATER) COFFERDAM

Fig. 33b



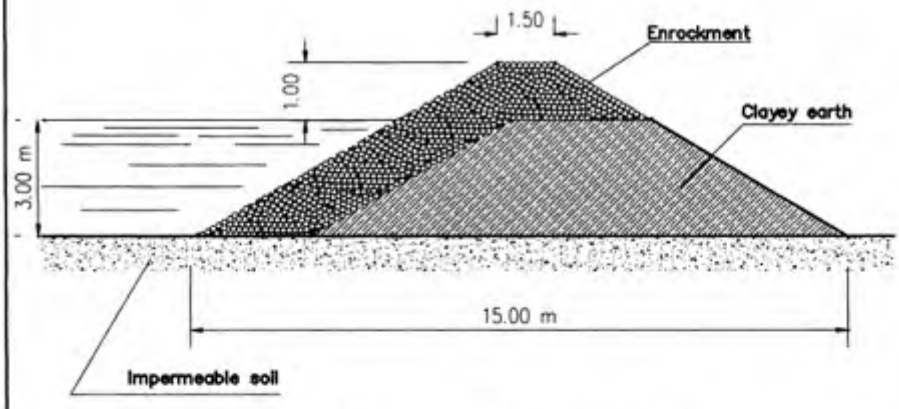
MIXED EARTH AND SHEET PILES

Fig. 33c



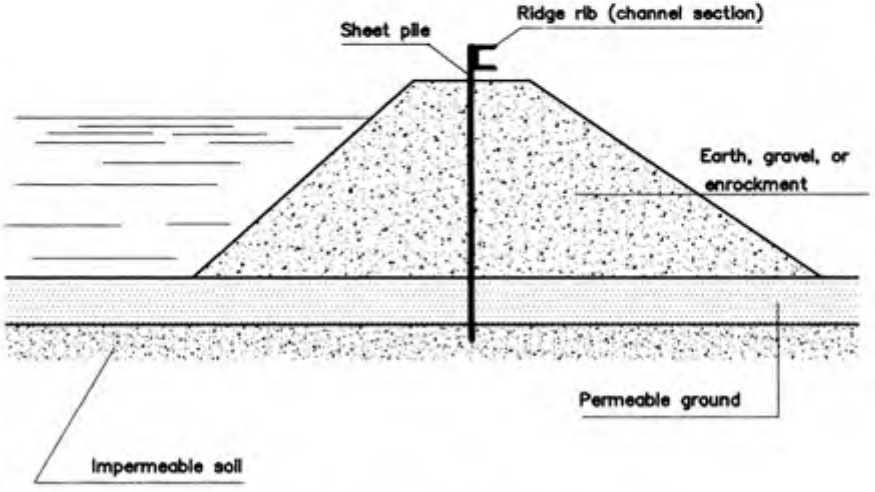
MIXED EARTH AND SHEET PILES

Fig. 33d



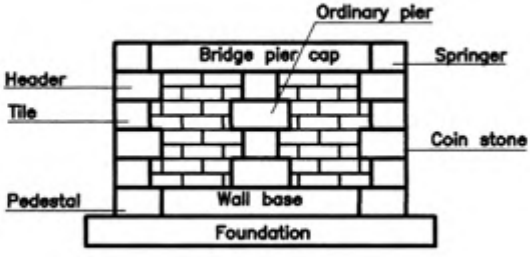
EARTH (DIKE) COFFERDAM

Fig. 33e



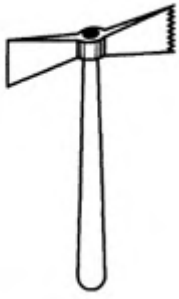
MIXED EARTH AND SHEET PILES

Fig.34



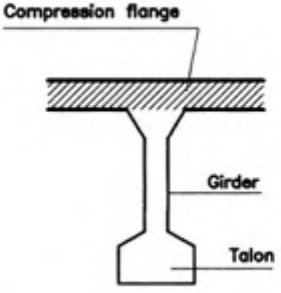
COIN STONE and ORDINARY PIER

Fig.35



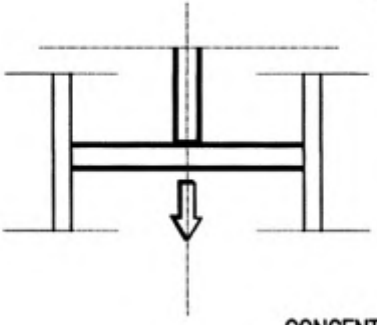
COMB HAMMER

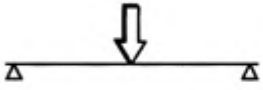
Fig.36



COMPRESSION FLANGE

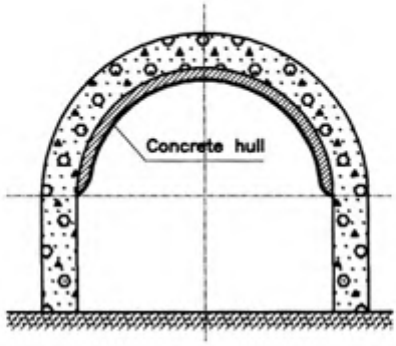
Fig.37





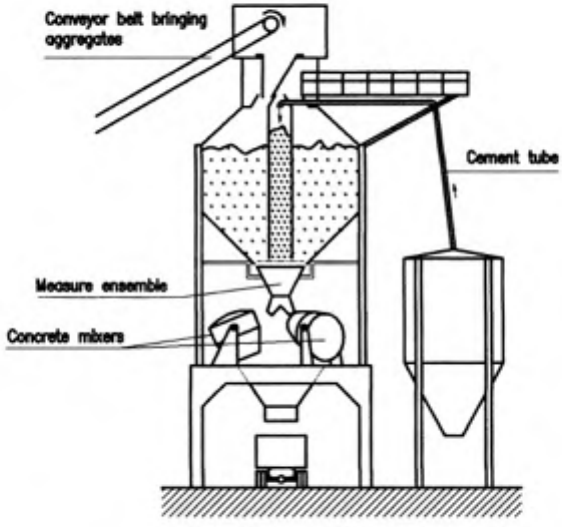
CONCENTRATED LOAD

Fig.38



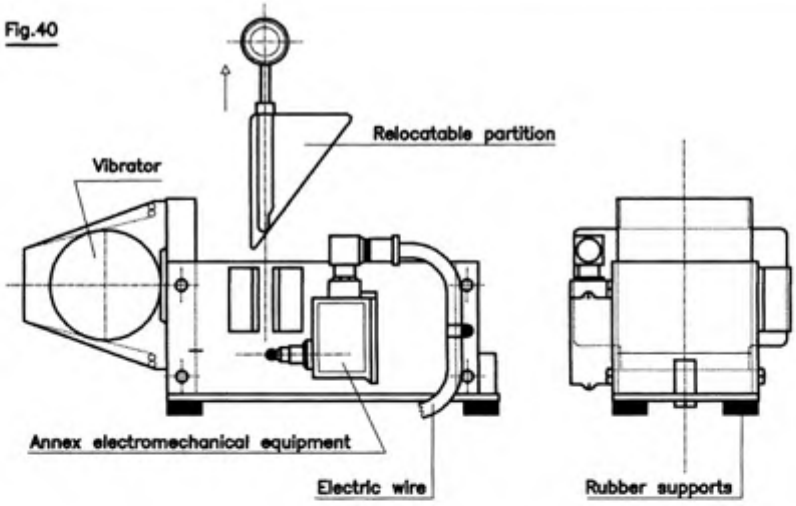
CONCRETE HULL

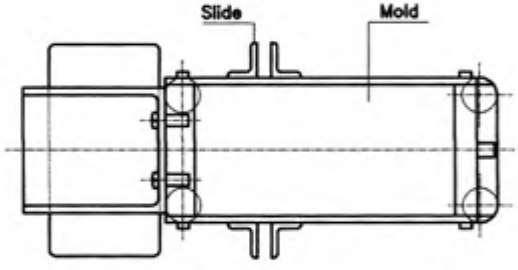
Fig.39



CONCRETE-MIXING PLANT

Fig.40





CONCRETE (or MORTAR) WORKABILITY METER

Fig.41



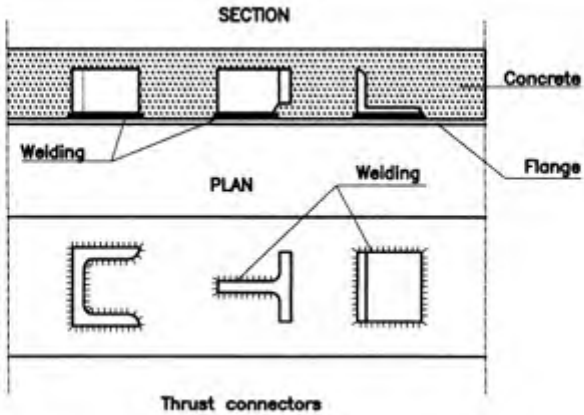
CONCRETING TUBE

Fig.42



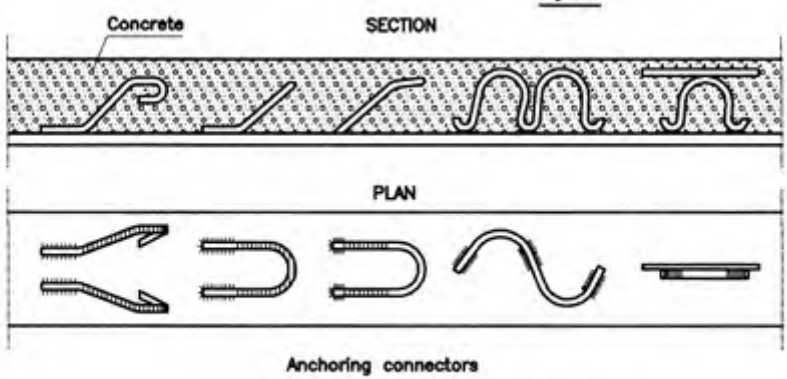
CONE GRIP

Fig.43



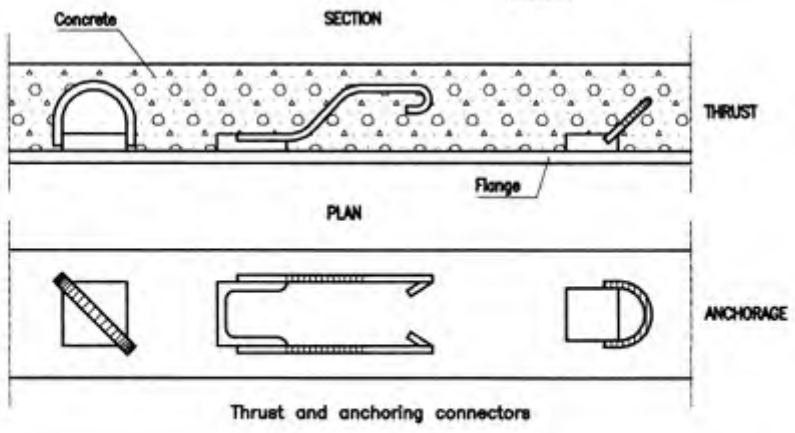
Thrust connectors

Fig.43a



Anchoring connectors

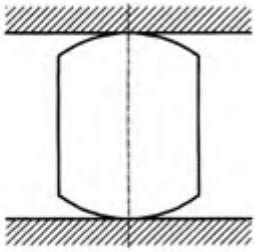
Fig.43b



Thrust and anchoring connectors

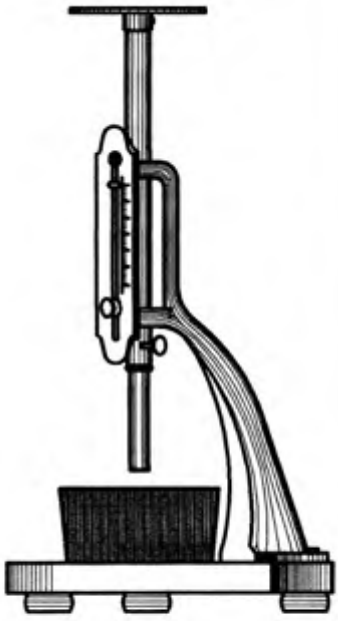
CONNECTOR

Fig. 44



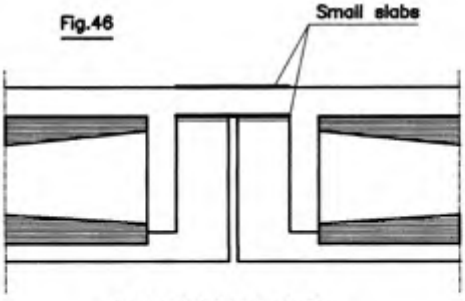
CONSIDERE–CAQUOT
ARTICULATION

Fig. 45



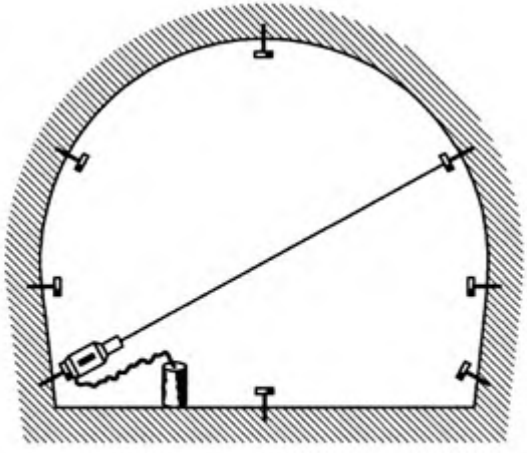
CONSISTENCY PROBE

Fig.46



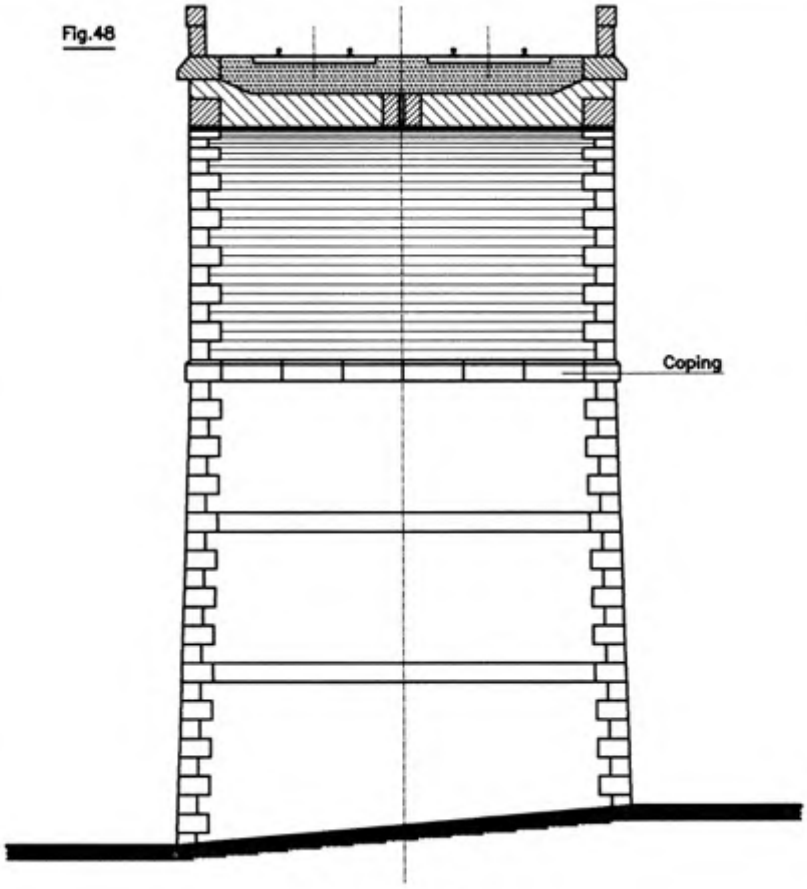
CONTINUITY SLAB

Fig.47



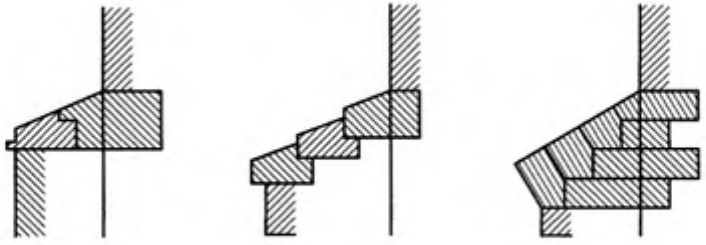
CONVERGENCE METER

Fig.48



COPING

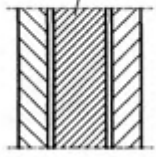
Fig.49



Coping stone of pier

COPING STONE

Fig.50



Core of plywood

CORE

Fig.51

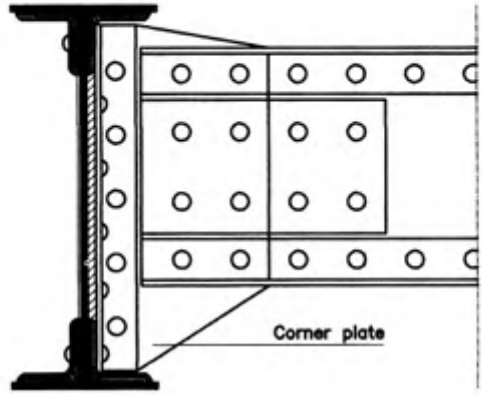
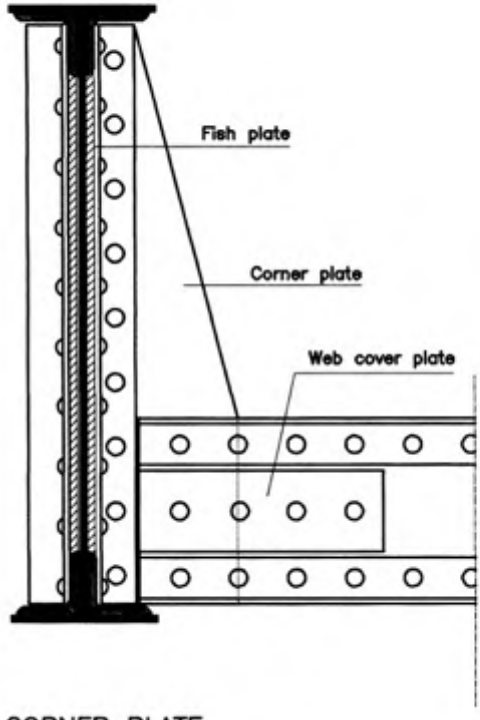


Fig.51a



CORNER PLATE

Fig.52

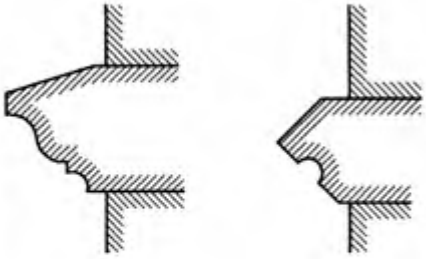
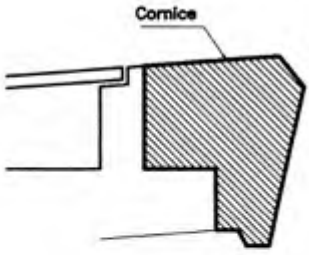
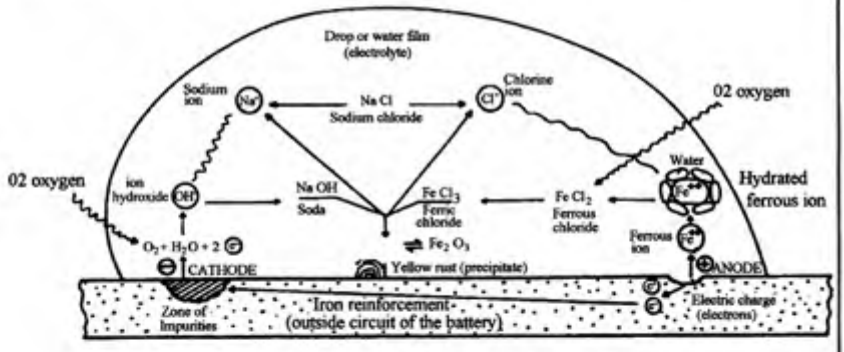


Fig.52a



CORNICE

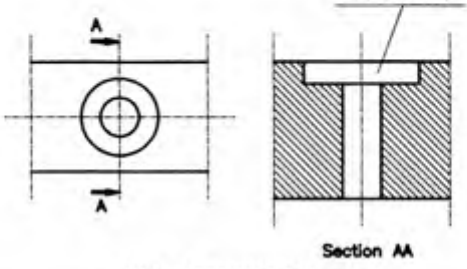
Fig.53



Process of electrolytic corrosion in salt water

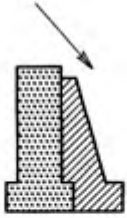
CORROSION

Fig.54



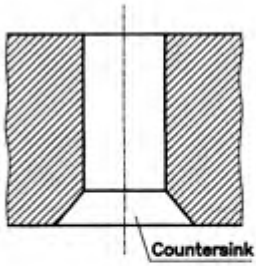
COUNTERBORING

Fig.55



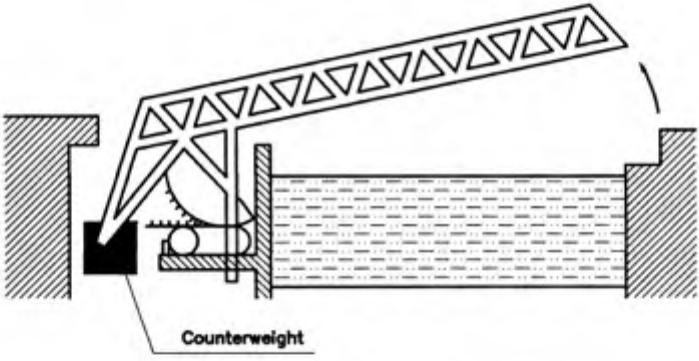
COUNTERFORT

Fig.56



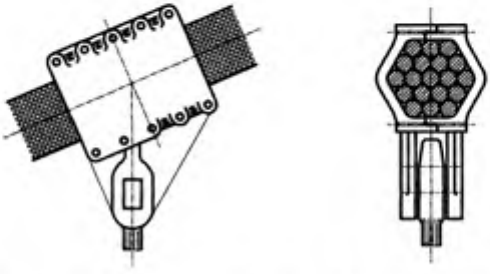
COUNTERSINK

Fig.57



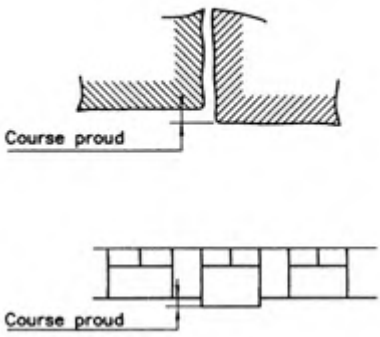
COUNTERWEIGHT

Fig.58



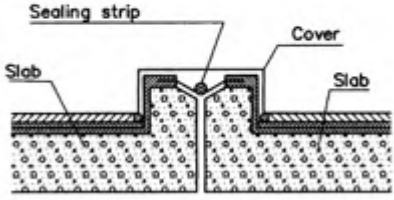
COUPLING SHELL (for tendons of suspension bridge)

Fig.59



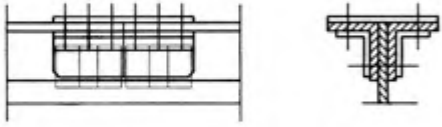
COURSE PROUD

Fig.60



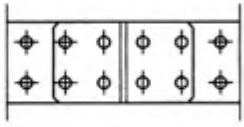
COVER

Fig.61



Cover plate of angle bar

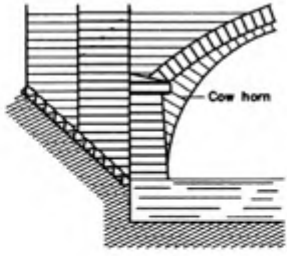
Fig.61a



Cover plate of flanges

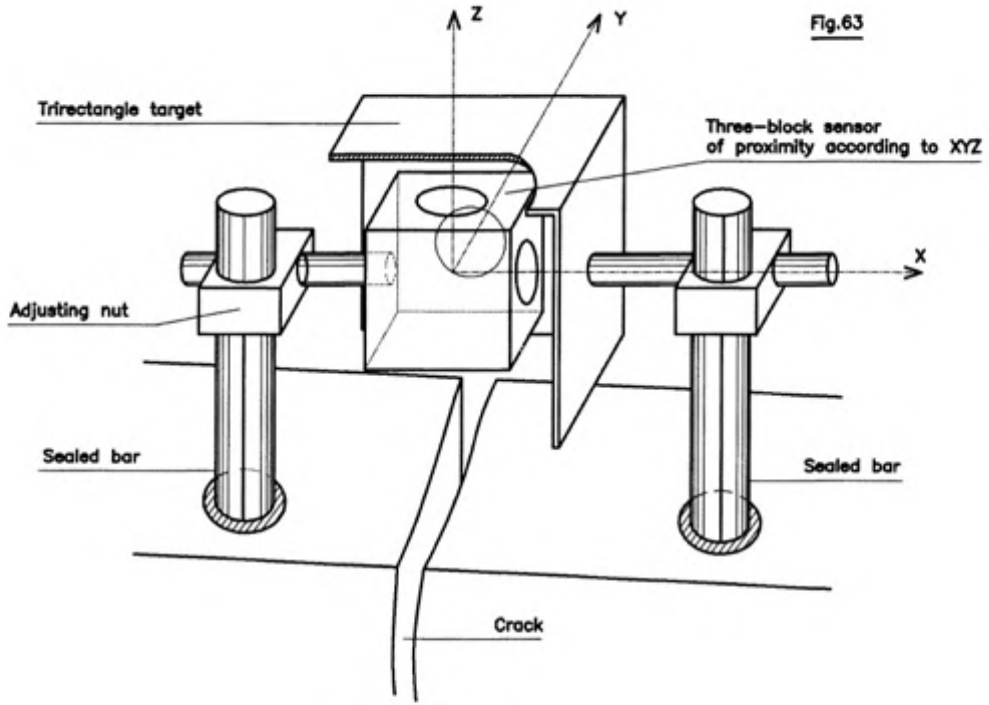
COVER PLATE

Fig.62



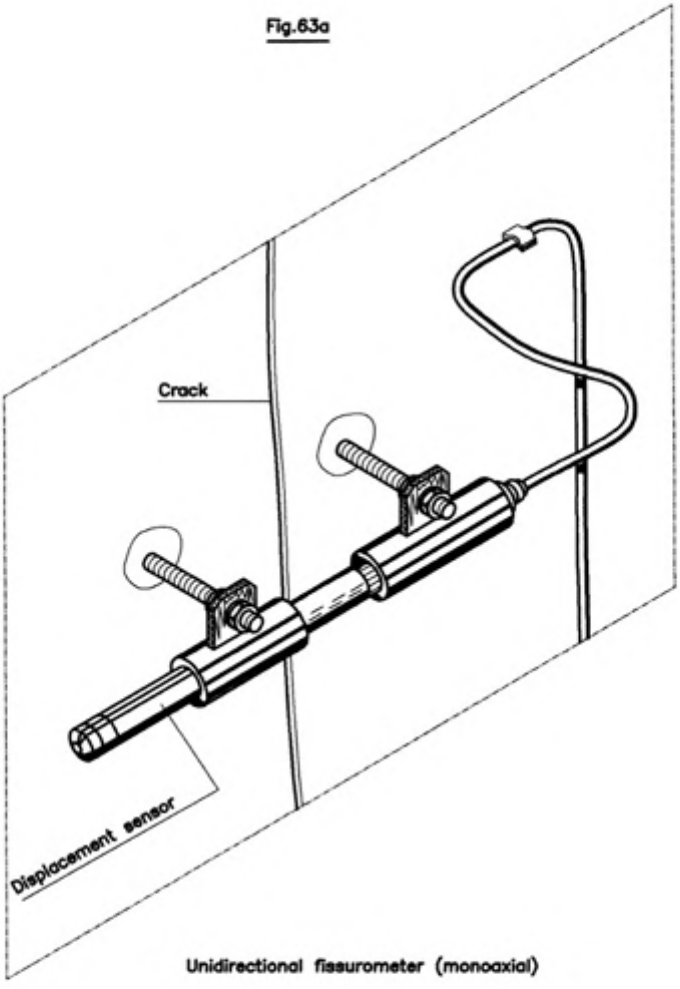
COW HORN (of the bridge)

Fig.63



CRACK MEASUREMENT APPARATUS

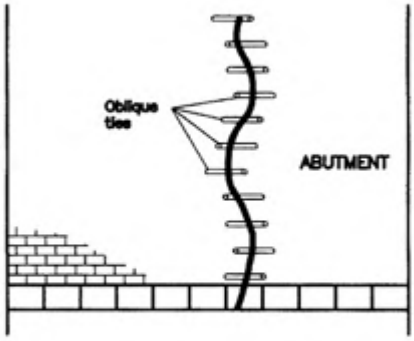
Fig.63a



Unidirectional fissurometer (monoaxial)

CRACK MEASUREMENT APPARATUS

Fig.64

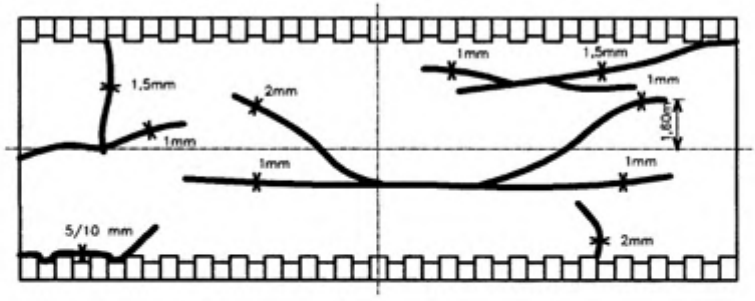


CRACK SEWING

Fig.65

UNROLLED VAULT

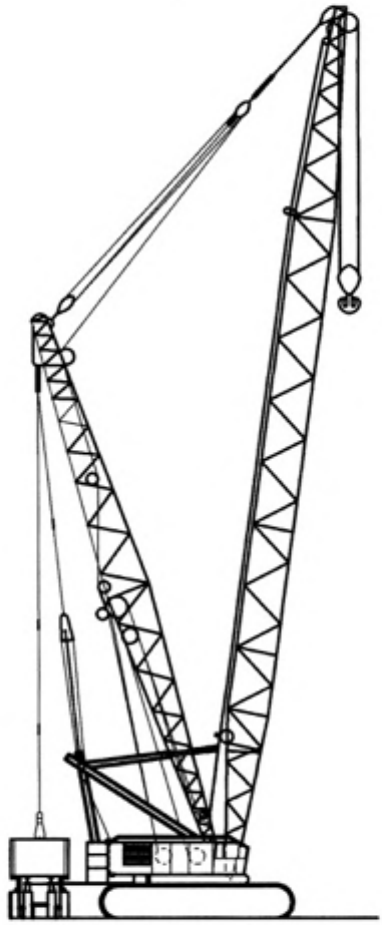
Head side right



Head side left

CRACKING MAP DRAWING

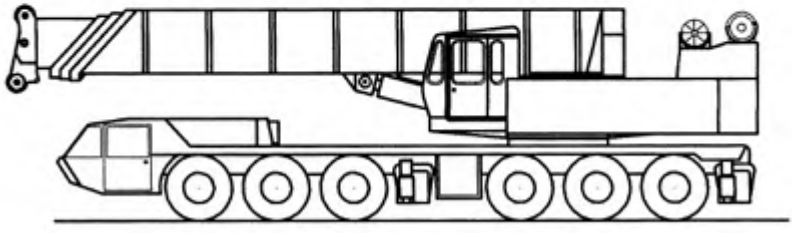
Fig.66



Mobile crane with "sky horse" equipment

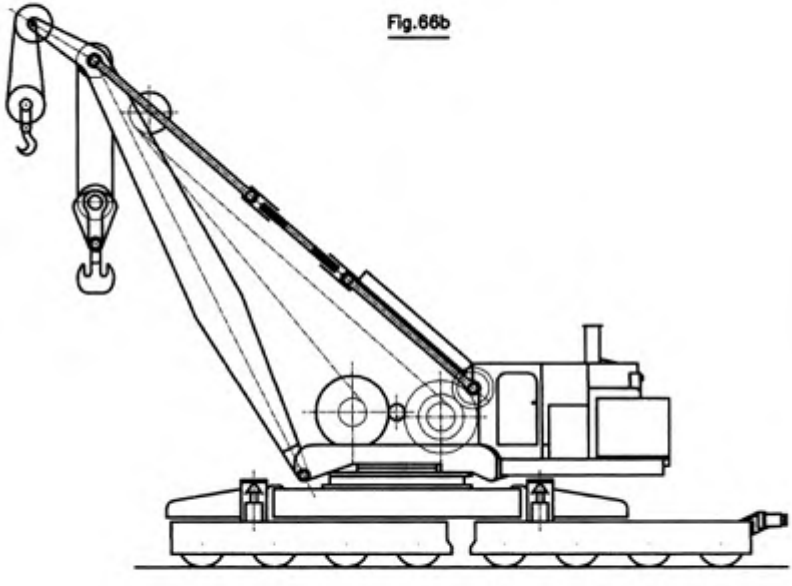
CRANE

Fig.66a



Tractor crane or Mobile crane

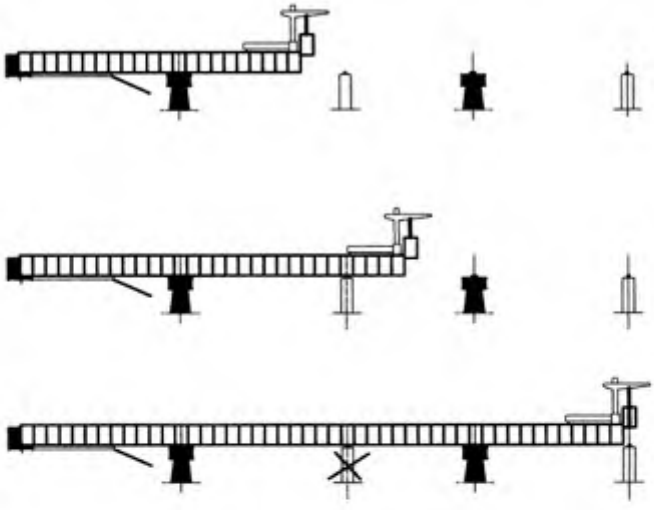
Fig.66b



Railway crane

CRANE

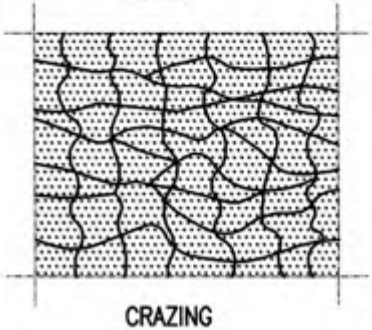
Fig.67



Installation of segments with crane hoist

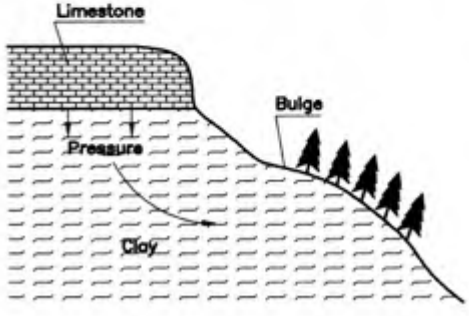
CRANE HOIST

Fig.68



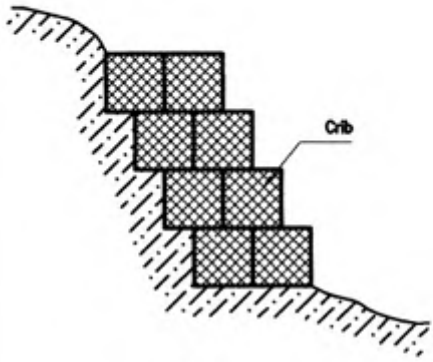
CRAZING

Fig.69



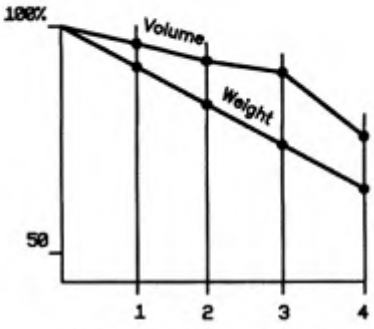
CREEP (Principle of the mechanism)

Fig.70



CRIB

Fig.71



Determination of the critical grain

CRITICAL GRAIN

Fig. 72



Fig. 72a



Fig. 72b



Sections of hydraulic galleries

CROSS SECTION

Fig. 72c

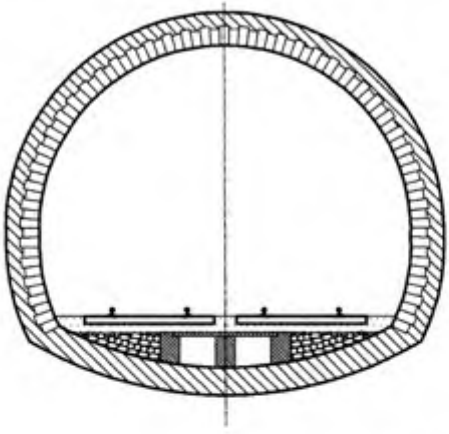
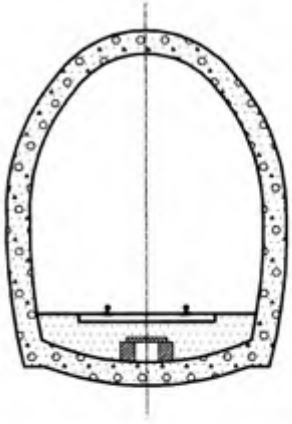
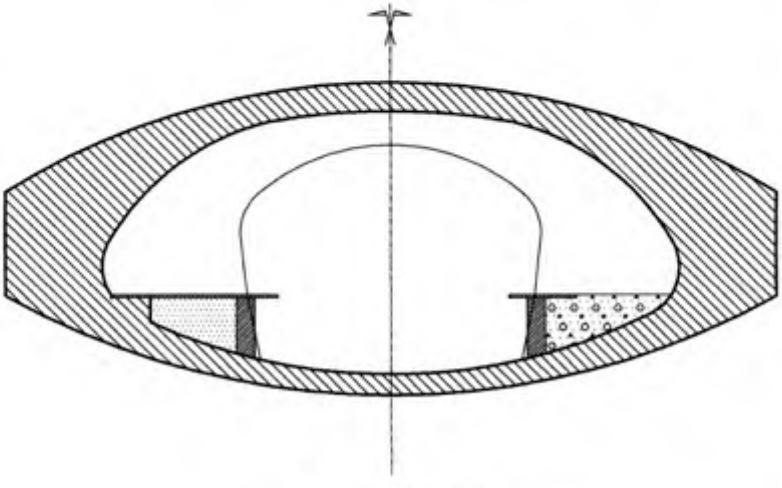


Fig. 72d



Underground sections

Fig. 72e

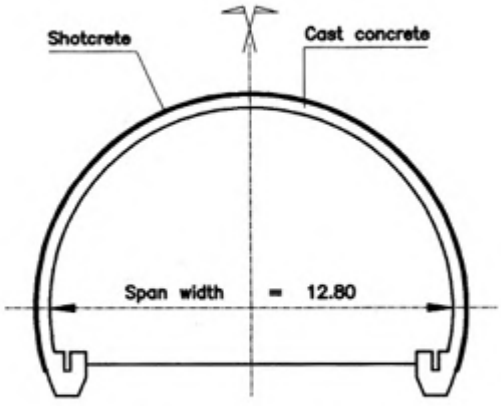


Undergound section

(Section type of an arched station)

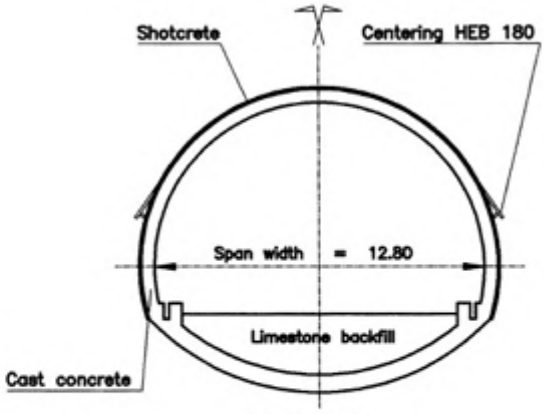
CROSS SECTION

Fig. 72f



Section of motorway tunnel

Fig. 72g

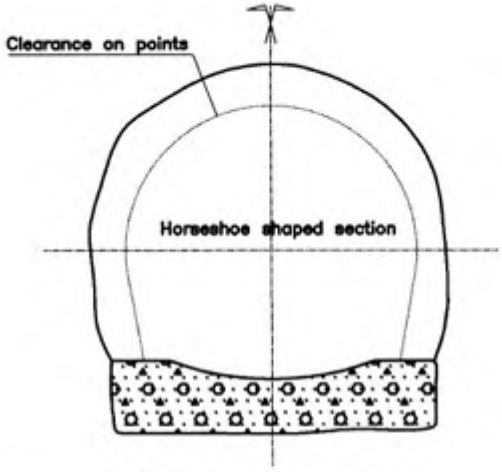


Reinforced type

Section of motorway tunnel

CROSS SECTION

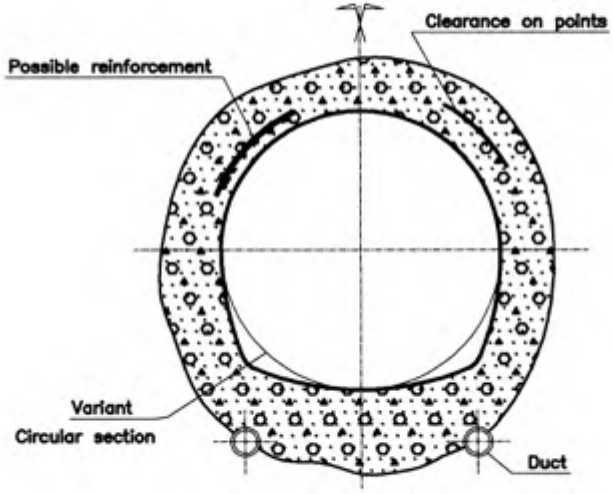
Fig.72h



Section not completely covered
Concreted foundation raft

E.D.F. profile

Fig.72i

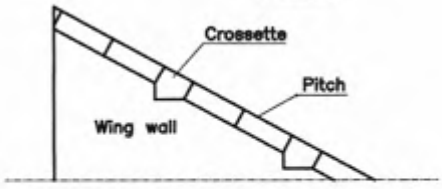


Section completely covered

E.D.F. profile

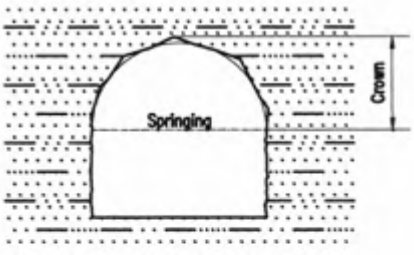
CROSS SECTION

Fig. 73



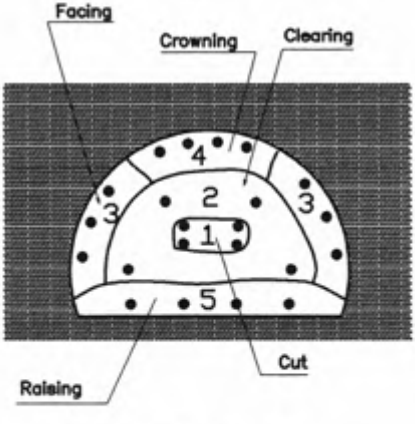
CROSSETTE

Fig.74



CROWN

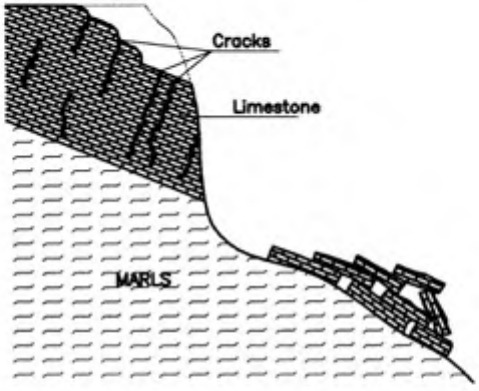
Fig. 75



Heading with explosives

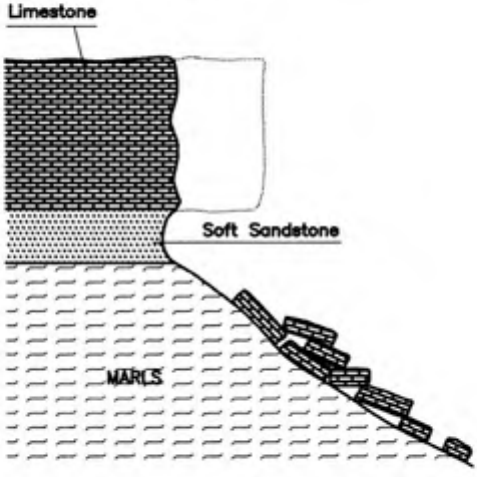
CROWNING

Fig.76



Rocky crumbling associated with a slipping on bed

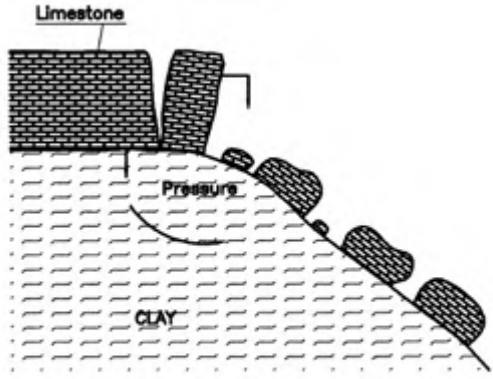
Fig.76a



Crumbling of overhang by underlying layer erosion

CRUMBLING

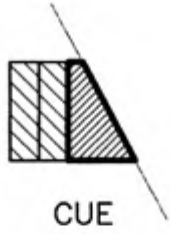
Fig.76b



Crumbling by creep (or slipping) of a soft layer

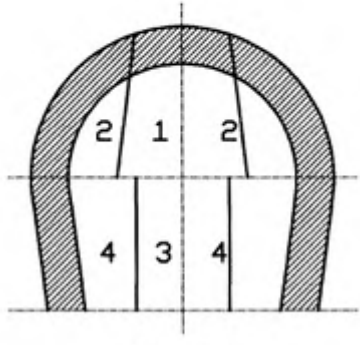
CRUMBLING

Fig.77



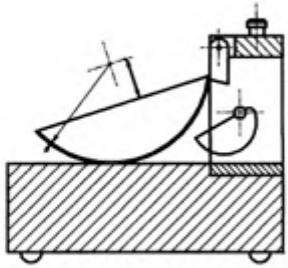
CUE

Fig.78

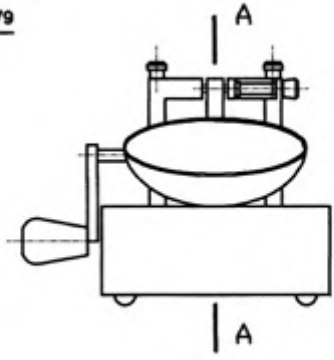


CUNETTE

Fig.79



A A Section



Front view

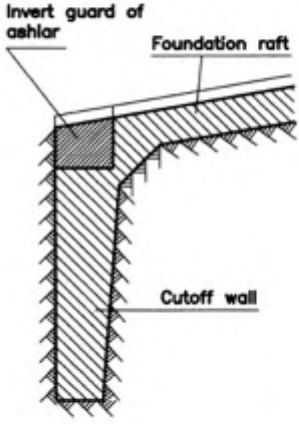
CUPEL OF CASAGRANDRE

Fig.80



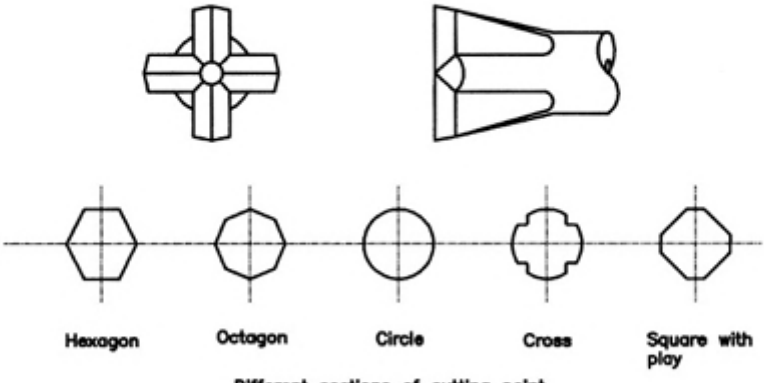
CUT CORNER

Fig.81



CUTOFF WALL

Fig.82



Different sections of cutting point

CUTTING POINT



***D1/D2* SINGLE-SIZED AGGREGATE**
Granulat élémentaire *D1/D2*
Building Materials
A grain that passes fully through the sieve *D2* and that is fully retained by the sieve *D1*; this definition is purely theoretical *(D1* and *D2* being two successive main dimensions in the standardized table).

DADO
Entaille
Nomenclature of Materials
Syn. with NICK; NOTCH; SLOT

DAM
Digue: Batardeau
Temporary Construction and Hydrology
Syn. with COFFERDAM.

DAM
Aboteau; Coupure; Portereau; barrage
Hydraulic Work; Civil Engineering Structure
1. A barrage built to cut off partly the current of a river.
2. Cutoff (cofferdam, sluice, etc.) built on a waterway to stop the flow and temporarily divert the water in order to do construction on dry land.
3. A barrage built through a river to low rate of flow in order to raise the level upstream from a certain distance.
4. Syn. with BARRAGE;WEIR

DAM RESERVOIR
Barrage-réservoir
Civil Engineering Structure
Syn. with STORAGE RESERVOIR

DAMAGE
Endommagement
Strength of Materials
A phenomenon of fatigue and progressive degradation that impairs a structure (or a test specimen) subjected to a variable loading in the course of time and especially, to a cyclic change (periodical). This structure is damaged before breaking. The definition of the injury (or damage) can be, physical and qualitative, or empirical and well defined. On the other hand, the injury of a piece not broken, but having undergone cycles of fatigue, reflects physical property variations of the material, such that it's state of cracking.

DAMAGED
Dégradé
Defects (Masonry)
Syn. with DEFACED

DAMAGED WALL
Mur dégradé
Defects (Construction)
A construction of which a small number of quarry stones or bricks are pulled or damaged.

DAMAGING
Dégradation
Defects (Civil Engineering Structure)
Syn. with DEFACING; DEGRADATION

DAMMING
Faire barrage
Civil Engineering Structure
Action that consists of placing an obstacle in a waterway.

DAMP COURSE
Couche d'étanchéité
Tightness
Syn. with DAMP-PROOF COURSE; WATERTIGHTNESS COAT

DAMP PATCH
Tache d'humidité
Defects
The revelation of presence of water, due to the oozing moisture, the streaming or its circulation. These stains appear on the surface of the facing and shows a more or less large extent.

DAMPNESS
Humidité
Building Materials
The moisture content of a ground, a masonry, etc.

DAMP-COURSE INJECTION
Injection d'étanchement
Works
Syn. with CHEMICAL INJECTION

DAMPPROOF
Hydrofuge
Materials
Syn. with RAINPROOF; WATERPROOF

DAMP-PROOF COURSE
Barrière étanche ; Couche d'étanchéité
Tightness
1. A horizontal sealing strip, generally of flexible material, incorporated into a wall during its construction and aimed at forming a damp-proof course protecting from the rise of humidity by capillarity originating from the ground.
2. Syn. with DAMP COURSE; WATERTIGHTNESS COAT

DAMP-PROOF MEMBRANE
Chape d'étanchéité
Tightness
Syn. with WATERPROOF BLANKET; WATERPROOFING MEMBRANE; WATERTIGHTNESS COPING

DAMPPROOFING
Etanchéité
Tightness.
Syn. with STAUNCHNESS: TIGHTNESS; WATERPROOFING;

DARCY
Darcy ou* Unité de perméabilité *Darcy
Metrology
The permeability rating of a sample 1 cm long, that under a differential pressure of 1 bar, leave to pass per cm^2 of surface, a rate of flow than 1 cm^3/s of a liquid having a viscosity of some poise.

***DARCY'S* LAW**
Débit et vitesse d'écoulement: loi de *Darcy*
Hydrology
A law established in 1856 by Darcy that defines the water velocity in the ground (permeability) by taking account of the water viscosity and the nature of the ground. The underground water rate of flow has been defined the following manner: the flow Q which flows in the unit of time, through a total section of ground A, is function of its permeability K and the hydraulic gradient (or hydraulic loss) I ($Q = KAI$).

DASH OFF
Pocher
Painting
To tap on the strias of a ropiness paint film still fresh to clear them.

DASH-BOND COAT
Gobetis; Couche d'accrochage
Masonry
Syn. with POINTING; RENDERING COAT; ROUGHCAST(ING)

DATUM LINE
Trait
Masonry, Carpentry and Construction
Syn. with LINE

DAY JOINT
Joint de construction
Construction of R.C. and P.C.
A cut of concreting stop that reflects the volume of concrete that it is possible to pour in only one working session. This joint is especially treated for a later concreting resumption.

DAYWORKS
Travaux en régie
Contract
Work performed by a company, paid according to the supplies and number of working hours whose time rate is given, plus a percentage covering the business expenses.

DEACTIVATION AGENT
Désactivant
Materials
A product used in the technique *bottom mold* for concretes with apparent aggregates, having the power to stop the hydration of cements on a certain thickness in order that to demolding a thin layer of concrete easily breaks away from the rest of the mass, leaving appearing aggregates. It is applied on formworks before concreting.

DEAD ABUTMENT
Culée perdue
Construction
Syn. with BURIED ABUTMENT

DEAD END
Bout mort; Brin mort
Construction of P.C.; Equipment and Tools
1. The passive end of a steel prestressing cable which is anchored at the end of a slab, a beam, etc. and that is opposite to the other end of the cable on which the tensioning strain is exerted.
2. The fixed part of a tackled cable.

DEAD LOAD
Charge permanente; Poids propre
Strength of Materials; Buildings Materials
1. Syn. with CONTINUED LOAD; DEAD WEIGHT
2. Syn. with DEAD WEIGHT

DEAD MAN
Ancrage; Corps mort
Construction
1. The fastener of a beam, an unspecified cable at a fixed point taken on a masonry or in the ground.
2. Syn. with BEARING

DEAD MASS
Volume mort
Painting
The volume of paint which is not taken into account in the determination of the thickness of the dry film.
The dead mass on a substrate reflects to the deep-set zone that the paint must initially fill in. Indeed, after abrasive-scoured of a metal surface, the substrate shows, under enlargement, the morphology of a mountainous landscape of unequal peaks separated by chaotic valleys. To cover these surfaces, the paint must in the first place filling in the totality of the deep-set parts to come levelling the peaks except the most salient. It results some a volume of paint which is not taken into account in the determination of the dry film thickness; it is thus called dead mass.

DEAD PERIOD
Période dormante
Building Materials
The time which pass between the end of the concrete manufacture (mortar or grout) and its initial set.

DEAD SHORE
Pointail; Chandelle
Temporary Construction
1. A vertical timber piece used as prop.
2. Syn. with PROP; PILLAR; POST; SHORE; STAY; UPRIGHT

DEAD SOFT STEEL
Acier extra-doux
Metallurgy
An iron and steel product particularly used in wireworks.

DEAD WEIGHT
Charge permanente; Poids propre
Strength of Materials; Building Materials
1. Syn. with CONTINUED LOAD; DEAD LOAD
2. A permanent and fixed weight of a structural element, a material, etc. Syn. with DEAD LOAD

DEADNESS
Matité (d'un film de peinture)
Painting
Syn. with FLATTNESS; MATTNESS

DEADNESS AGENT
Agent de matité
Painting
A substance able to ensure the mattness of paint films or varnishes. Syn. with FLATTING AGENT

DEAL
Quartelot
Building Materials
Poplar or beech balk with a 240 x 54 mm section.

DEATHWATCH (BEETLE)
Vrillette; Anobie; Horloge de la mort
Defects (Building Materials)
Syn. with FURNITURE BEETLE

DEBRIS
Eboulis
Geomorphology
Syn. with MASS OF FALLEN EARTH; SCREE

DEBRIS-COLLECTION FAN
Auvent
Construction
Syn. with FAN; PROTECTION FAN

DEBTOR
Débiteur
Building Materials
In quarry, worker who cuts quarry stones. Syn. with QUARRYMAN

DEBTOR-QUARRIER
Carrier-débiteur
Materials
A worker who performs the first dressing of a stone block.

DECALCIFICATION
Décalcification
Building Materials
Dissolution of the lime (example: by pure waters).

DECANTATION
Décantation
Sanitary Engineering and Drainage
Syn. with SEDIMENTATION; SETTLING

DECARBONATION
Décarbonatation; Décalaminage
Geology and Building Materials; Metallurgy
1.The dissolution process of the limestone due to the action of pure waters (rainwater for example).
2. Syn. with BLAST CLEANING; CARBON REMOVAL; DECARBONIZING; DESCALING

DECARBONIZING
Décalaminage
Metallurgy
A mechanical, thermal or chemical action for removing smithsonite
Processes they most used to decarbonize are either mechanical or thermal for sheet metals and hot-rolled sections (blast cleaning, sanding, Jason hammer, blowtorch), or on the contrary, chemical for the hot-rolled bobbins before cold-rolled. Syn. with BLAST CLEANING; CARBON REMOVAL; DESCALING

DECENTER
Décintrement; Décintrage
Temporary Construction
An operation that consists in removing temporary bearings necessities by the construction and fact intervenes the own strength of the work. The two most common processes are:
- the descent of the centering by the expected machine intermediary to this end during its construction and placed between the base of the centering and bearings (lowering wedges, sand boxes, runner cables, jacks);
- the separating of the two halves of arch with the help of jacks interposed in key which cause the detachment of the centering, in the case of an articulated vault of R.C.

Syn. with REMOVAL OF CENTERING; STRIKING; STRIKING OF CENTERS

DECENTER SAND HOLDER
Boîte à sable pour décintrement
Civil Engineering Structure
A metal cylinder with compressible walls, filled with sand, on which vertical pieces of wood rest and support centerings of a bridge or a tunnel. Orifices made in the bottom of each holder let the sand flow in a uniform manner and, as a result, enable to proceed to the striking of the vault. Syn. with SAND BOX

DECK
Caillebotis; Fléau; Tablier
Construction
1. Syn. with GRATING
2. The front part of the balance of a drawbridge; the deck of a swing or lift bridge.
3. Syn. with BRIDGE DECK; BRIDGE PLATFORM; PLATFORM

DECK CREEPING
Cheminement de tablier
Defects (Construction)
Syn. with DECK TRUDGING

DECK TRUDGING
Cheminement de tablier
Defects (Construction)
A defect characterized by an abnormal displacement of the deck on these bearings; it can be longitudinal or transverse. Syn. with DECK CREEPING

DECKING
Platelage
Metal Construction
A floor covering the metal decks of the railway bridges, roadway bridges and footbridges; when it is made of sheet metal, the decking is riveted or bolted and is used as horizontal wind bracing. Under pavement (roadway), the decking can be of plane sheet metal, embossed sheet metal, corrugated sheet metal, Zorès section, Barlow rails or reinforced concrete. Under track, the decking consists of plane smooth sheet metal or a channeled plate riveted on the beams, the transverse girders, and the central girders. Syn. with BRIDGE COVERING. **See Figure 1**

DECKING OF CENTERING
Platelage
Temporary Construction
A floor which, in the construction of the vaults on centering, prevails over the inner surface (intrados) of the vault and receives the materials. The decking rests directly, or through the channel of running lengthways laggings, on transverse trusses more or less spaced between them.

DECOHESION
Décohésion
Defects (Metallurgy)
The breaking of a metal subjected to a normal stress offering none slipping, therefore practically without bending (out of shape) and that characterizes the basic character of brittle fractures, called *grains,* of a shiny aspect.

DECOMPRESSION
Décompression
Foundation
Syn. with DESTRESSING

DECOMPRESSION WELL
Puits filtrant; Puits drainant; Puits de decompression
Sanitary Engineering and Drainage
A well or drilling carried out below from an earth-fill dam to collect the leakages through its foundation and to reduce the upward pressure.

DECORATOR'S CRADLE
Sellette
Equipment and Tools
Syn. with CRADLE; PAINTER'S CRADLE

DEEP CRACK
Ornière; Crevasse
Defects (Public Works)
1. Syn. with RUT
2. A wide fissure in a facing, a slab, a ground. Syn. with CHINK; CREVICE; SPLIT

DEEP FOUNDATION
Fondation profonde ou élancée
Foundation
A work characterized by a great ratio of the depth/width of foundation.
For this type of foundation two definitions can be retained:

- beyond a certain depth, called *critical depth,* the breaking is essentially due to a repression of the ground in the mass, without that the surface is significantly affected. Then, it is matter of a mechanism of deep foundation (it concerns there the official definition of the deep foundation, but as often as not it is the quoted definition hereafter that is taking in account, notably when one recalls formerly foundations);
- when the ground near of the surface is mediocre, or if one wants to reduce excavations of a shallow foundation and destabilization that it brings about, one has recourse to the deep foundations. These foundations are constituted by piles, pits, or supporting-wall units.

The deep foundation transmits the loads and overloads by the base of the elements (point effect on the load-bearing bed), by thrust reaction more or less mobilized (lateral friction) and transversely, to a degree, by the lateral reaction of ground. Deep foundations technologically divide into two categories:

- fashioned piles in advance,
- piles executed in place, pits, and supporting-wall units. **See Figure 2**

DEEP FREEZING
Congélation des sols
Earthwork
Syn. with FREEZING (OF GROUND); GROUND FREEZING

DEEP PLOW
Défonçage
Earthwork
An operation that consists in turning over the ground.

DEEP TRENCH EXCAVATION
Terrassement en tranchée profonde
Earthwork
A digging of trench whose depth conventionally exceeds 6 m. Two methods essentially are available:

- **excavation with lateral basin** *(le terrassement à cuvette latérale),* see TRENCH;
- **excavation with central basin** *(le terrassement à cuvette centrale)* (rocky grounds), see TRENCH.

DEFACED
Dégradé
Defects (Masonry)
Of a wall of which renderings are fallen, or materials constituting masonry are without bond. Syn. with DAMAGED

DEFACING
Dégradation
Defects (Civil Engineering Structure)
Syn. with DAMAGING; DEGRADATION; WEATHERING

DEFECT
Loup; Défaut
Defects
1. Syn. with BOTCH; FAULT; MISTAKE
2. Syn. with BLEMISH; FLAW; VICE;

DEFECT IN DISCHARGE DEVICES (OF WATER)
Défaut des dispositifs d'évacuation des eaux
Sanitary Engineering and Drainage
A defect having for origin a bad design or an aging and bringing about a nonexistent or impered flow. This defect can result from several causes:

- absence of device which causes the stagnation of waters or their direct streaming onto the parts of the work not expected for that purpose;
- insufficiency of device, gap that brings about the fact that a part of waters escapes to devices of flow;
- bad design of the device which has an ominous effect on the work (waters are not collected at the low points, etc.);
- defect of maintenance of the devices that, although well conceived originally, no longer function as if they would have how, for example, in the aftermath of the obstruction of pipes or their partial disappearance.

DEFECTION WORK
Malfaçon
Defects
A defect, deficiency in the achievement of a work. Syn. with BAD WORKMANSHIP

DEFENSE
Défense
Equipment and Tools
A thick rope of hemp.

DEFICIENCY
Manque
Defects (Metallurgy)
A defect affecting selected castings, that are mostly characterized by lacks of metal due to the air inclusions in the mold.

DEFINITIVE BRIDGE
Pont définitif
Equipment and Tools
A clearing structure built with the purpose of long-term service.
There are several types of definitive bridges:
- **arch bridge** *(le pont en arc),* of which main load-bearing structure is formed by one (or several) arch that exerts onto its abutments thrusts tending to push away the bearings, thus adding a horizontal component to the vertical bearing reaction. It is basically built with compression- resistant materials: stone, concrete, brick, steel; **See Figure 3**
- **portal metal bridge** *(le pont métallique à béquilles),* of which the reinforced concrete deck picks up on metal beams interdependent of the vertical metal piles that pick up on the hinge supports. This type of bridge is also called *bridge with Guillaume beams.* (Recent metal bridges with tilting pier, morphologically look to tilting bridges made of reinforced concrete); **See Figure 3a**
- **reinforced *or* prestressed concrete bridge with leg-frame supports** *(le pont à béquilles en béton armé ou précontraint),* of which the deck is interdependent of the oblique tilting piers that are articulated at their base on the foundation block. Two types are distinguished: the bridge with simple leg-frame supports (most traditional) and the bridge with V-leg-frame supports of which deck is appreciably flat but whose piles (tilting piles or leg-frame supports) presents a V form more or less widened, 2 branches of V meeting at the top level of the foundation; **See Figure 3b**
- **cable bridge** *(le pont à câble),* of which main load-bearing elements are cables. There are several types of cable bridges such as suspension bridges, cable-stayed bridges, composite bridges, and certain particular structures:
  - *Gisclard bridge (le pont Gisclard),* of particular structure, forming by guys to which the deck is hung by suspenders,
  - *cable-stayed bridge (le pont à haubans),* whose deck is suspended by rectilinear oblique cables passing on (or hung) the pylons. These works are usually made of metal, but there also are some of prestressed concrete. Layers of guys can prevail over the two sides of the bridge; in certain works there is a central layer. Points of passage and fastener of the cables on the pylons can be concentrated or well the guys can be parallel between them (harp arrangement). There are also dissymmetrical bridges with one pylon. As yet, one can consider that there has been three generations of cable-stayed bridges made of prestressed concrete.

W*orks of the first generation* were characterized by a limited number of guys spaced of several tens of meters; decks having strong rigidity of bending and an important internal prestressing. In these works, guys took the place of certain bearings of the deck of which establishment was impossible for various reasons. Their static plot was the one of a continuous beam with multiple spans, longitudinally prestressed by guys. The deck working to the bending between its points of suspension was to have a high rigidity and to comprise a complementary longitudinal prestressing. Guys were of large section and their anchorages developed important concentrated strains.
W*orks of the second generation* were formed by multiple cable-stayed bridges distributed with partial suspension, the deck picking up on rigid bearings laid out at the right of each pylon. These works constituted a natural extension of the traditional bridges built by successive corbelings, the cables of the overhanging segments outside to the concrete behaving such as guys and picking up on pylons which ensured their deviation. Their deck was comparable to a beam on elastic bearings, and had a rigidity of moderate bending.
W*orks of the third generation* consist of multiple distributed cable-stayed bridges and with continuous suspension. In these works, guys support the deck over all its length, the latter not picking up on the pylons.
The working of this type of structure is different from the one of a bent beam. Indeed, the deck makes up the compressive frame of a reticulated lattice, of which guys are the taut diagonals and pylon the compressed upright. As a result it is height of the deck, which is almost independent

of its span, may be limited, subject that it resists to the buckling and its longitudinal deformations remain compatibles with the conditions of exploitation of the work, **See Figure 3c**

○ *suspension bridge (le pont suspendu),* of which load-bearing structure of the way (generally a road) is supported by suspenders, themselves hung to cables which pick up, at their high part, on pylons These cables are, in modern bridges, only one length covering the whole of the spans and are anchored at their ends in anchor or pit blocks. Cables of suspension of the suspension bridges exert on the anchor blocks tensions tending to closer bring these extreme bearings. If the work comprises three spans, the pick up of the cables on the intermediate pylons brings about a vertical action that the pylon is in charge to defer in compression up to the foundation blocks. The steel is the material overwhelmingly used: very-high-tensile steel for the cables of suspension, steel also for the deck; as for the pylons, they can be built of steel, or reinforced concrete. The mainline structure of the modern works is basically formed by parallel cables supported by pylons and anchored on outside blocks. On these load-bearing cables are attached the suspenders also of cables, which support by their ends transverse beams called *bridging piece,* receiving a longitudinal decking, support of the roadway. In order to limit the flexibility of the suspended system, two running lengthways beams, called *tie beams,* situated in the plan of the cables and suspenders, make monolithic the end of the bridging pieces, **See Figure 3d**

◌ *self-anchored suspension bridge (le pont suspendu auto-ancré),* in which the load-bearing cables are fastened at their ends to the tie beams. These last are subjected to a normal strain equal to the thrust of load-bearing cables. At the ends of the work, tie beams are connected to the abutments through the channel of rods allowing the dilation and rotation of the beams and transmit to the abutments the vertical component of the tensile stress of the cables. Anchor blocks not having any more to balance that a vertical force of uprising,

◌ *suspension bridge with tie beams without inhaul cable, with anchor block (le pont suspendu à poutre de rigidité sans cables de tête, avec massifs d'ancrage)* in which the load-bearing cables are fixed at their end to anchor blocks transmitting to the ground the tension of the cables. It usually comprises only one span or three suspended spans; in the latter case, the span of the central span is equal to three times approximately the span of an end span. In each span the tie beam is suspended at the load-bearing cable through the channel of suspenders. Cables pick up on the pylons through the channel of expansion saddle or are fixed at the top of pylons which are restrained or articulated at their base,

◌ *suspension bridge with tie beams with inhaul cables, with anchor blocks (le pont suspendu à poutre de rigidité avec câbles de tête avec massifs d ancrage)* which differ from the earlier type only by the addition of guys (or inhaul cables) strongly tended connecting the top of the pylons,

◌ *mixed or combined bridge (le pont mixte),* which constitutes a synthesis of the cable-stayed bridge and the suspension bridge. In this type of construction, the deck is at once supported by guys (on a quarter-length of the span of each span) and by suspenders over all the length,

○ *aerial ferry or ferry bridge (le pont transbordeur),* which allows the crossing of a waterway from a bank to the other by means of a moving basket suspended at a fixed beam. These works have a load-bearing structure identical to a suspension bridge; **See Figure 3e**

▪ **closed frame bridge** *(le pont cadre fermé),* reinforced concrete work formed by a relatively thin slab restrained on the front walls, forming abutments. Abutments are restrained in the foundation raft that distributes the pressures on the soil; **See Figure 3f**

▪ **bridge with a caisson deck of reinforced or prestressed concrete** *(le pont à tablier à caisson en B.A. ou B.P.),* in which the bottom concrete slab is connected with the top concrete slab by shells forming beams. The connection between the webs and concrete slabs is supplemented by gussets. This work may be constituted by a deck comprising one or several caissons (this type of bridge can be indifferently used as road bridge or railway bridge); **See Figure 3g**

▪ **composite bridge** *(le pont composite),* formed by the juxtaposition, in a same crossing, of steel decks and prestressed concrete decks used each one at the best of its possibilities to take account of the characteristics of the breach and site; **See Figure 3h**

- **reinforced *or* prestressed concrete slab bridge** *(le pont dalle en B.A. ou B.P.),* which comprises a deck formed by a slab picking up on piles or abutments. The slab can be solid or comprise cells of lightening; **See Figure 3i**
- **movable bridge** *(le pont mobile),* installed in permanent site, but which the spans lift while tilting, lifting, turning or moving, for releasing one or several navigable passes. There are several types of movable bridges:
  - *counterpoise bridge or bascule bridge or balance bridge (le pont basculant):* see DRAWBRIDGE and COUNTERPOISE BRIDGE, **See Figure 3j**
  - *drawbridge or lift bridge (le pont levant),* whose deck moves by vertical transfer, obtained by hoisting along two pylons (sometimes indicated by the elevator bridge term),
  - *counterpoise bridge or bascule bridge (le pont oscillant):* see DRAWBRIDGE and BALANCE BRIDGE,
  - *jackknife bridge (le pont à volées pliantes),* of which movable flights decks are folded up on themselves with semilength when they are in lifted position,
  - *turn bridge or swing bridge or pivot bridge (le pont tournant),* of which deck moves by rotation around a vertical axis. We can distinguish several types of turn bridges:
    - turn bridge with a span and with a double flight deck *(le pont tournant à une travée et une seule volée),* which allows the crossing of the breach thanks two symmetrical flights decks turning each one around a vertical axis. Back of each flight being ballasted by counterbalance, **See Figure 3k**
    - crane swing bridge *(le pont tournant à une travée et une seule volée),* with counterweight which allows the crossing of the breach by the agency of only one flight deck pivoting around a vertical axis. The balancing of the flight deck is ensured by an overhanging with counterweight forming counterbalance, **See Figure 3l**
    - turn bridge with two spans and with double flight decks *(le pont tournant à deux travées et à double volée);* the swinging of the double flights decks by the agency of a vertical axis set on the central pier allows the crossing of the two spans. The two flights decks being symmetrical, they balance and do require no counterweight; **See figure 3m**
- **girder bridge** *(le pont à poutres),* work having given place in innumerable achievements, with longitudinal and transverse morphologies very various, for example bridges with independent spans (isostatic), continuous spans (statically indeterminate), cantilever bridges, bowstrings. Girder bridges only exert vertical actions on its bearings, if one excludes the horizontal strains created by the braking of the convoys or effects of wind. It is basically built with bending-resistant materials such as wood, steel, reinforced concrete, prestressed concrete (in the girder bridges made of prestressed concrete, beams can be prefabricated or concreted in situ) **See Figure 3n.** There are several types of girder bridges:
  - *bowstring bridge (le pont bow-string):* see BOW-STRING,
  - *cantilever bridge (le pont cantilever):* see CANTILEVER,
  - *bridge with arched girders (le pont à poutre en arc),* of which the load-bearing elements can occupy various positions toward the deck:
    - load-bearing elements (arches) are situated below the deck, which is connected with one or the arch(es) only by some points only,
    - load-bearing elements (arches) are situated above the deck. Two end arches support by means of needles the deck, which is placed at the springings level in the vertical plans of the arches,
    - intermediate position of the deck. In this arrangement, the deck picks up at its ends on the top of the abutment, springings of the arches picking up on the bridge-support apparatus located below the level of the deck. The deck is supported in its central part by suspenders (the deck is mostly situated at the height of the haunches of the arches),
  - *bridge with metal straight beams (le pont à poutres droites métalliques),* formed by the assembly of various pieces, is characterized by the uniform height of its beams. This bridge has a different morphology according to whether it is used as railway bridge or road bridge:
    - in railway bridges the beams can be:
      1°) - lateral with solid webs or lattice, located above the deck. One finds in this category of the tubular works thus called owing to the fact that the lateral beams, of great height, are stayed with their top part by a horizontal wind bracing,
      2°) - lateral with lattice located below the deck,

3°) - under tracks with solid webs or lattice, the number and distribution of the beams being, in this case, variable,
4°) - with caissons and twin girders,
- in road bridges the beams can be:
1°) - lateral with solid webs or lattice located above the deck,
2°) - lateral with lattice located below the deck,
- *twin-girder bridge (le pont à poutres jumelles),* a metal railway bridge with straight beams thus called because each stretch of rails picks up through the channel of sleepers on short distance pieces fixed between two universal beams. These universal beams can be compound (web of sheet metal, flange plates and tables) or of I-sections (this type of work is mostly reserved for the bridges of small span), **see Figure 3o**
- *side girder bridge or lateral girder bridge (le pont à poutres latérales),* a metal railway bridge of which track is supported by central girders (central girders are also called *stringers* or *longitudinal girders)* connecting the distance pieces, themselves supported by the main beams. We can distinguish:
- side girders bridges with upper track *(les ponts à poutres latérales à voie supérieure),* of which track is posed on sleepers in most cases. Sleepers pick up on distance pieces and stringers through the channel of base plates and are mostly fixed by hook bolts. Beams are mostly straight with a solid web or lattice. Most of the bridges comprise a sheet metal decking. Some decks do not have stringers; the sleeper is then posed on distance pieces which are very neared,
- side girders bridges with lower track (les ponts à poutres latérales à voie inférieure), for which, in most cases, the track is posed on sleepers. The deck comprises stringers, distance pieces, these last being fixed on the beams. This bridge can be one or two tracks. Beams can be straight or variable height. Some decks of great spans with a track comprise tubular beams which are very high; they are stayed and braced on their top parts. Some rare decks with two tracks comprise three beams whose one central,
- *metal bridge with girders under roadway (le pont métallique à poutres sous chaussée),* which consists of two or more stayed beams. Distance pieces are connected between them by brick jack arches, by a concrete slab resting on a pressed plate; sometimes it is a reinforced slab that supports the pavement (roadway). When the work comprises several spans, the intermediate bearings are formed by masonry piles, or by bents in steel column, or by cast-iron columns. Some decks constituted by interdependent beams of the pillars pick up on hinge supports; they are called *portal bridge,*
- *bridge under roadway with metal lateral beams (le pont sous chaussée à poutres latérales métalliques),* of which beams can be straight or variable height, with a solid web or lattice. The roadway picks up on brick jack arches connecting the distance pieces or, sometimes, on a reinforced concrete slab,
- *bridge with main girders under track (metal railway bridge) (le pont à poutres principales sous voie),* of which main beams are located under the track. Two cases are distinguished:
a) - beams are in the axis of the rails; they are then stayed and braced vertically and the footpath is supported by consoles. The track is fastened on sleepers or crossties. In the first solution the sleepers pick up on the top tables of the beams and are bolted by vertical bolts crossing these ones. Sometimes also the sleepers are fixed on the beams by ties and hook bolts and are laterally kept by angle-irons. These works comprise a metal decking. Beams can be straight or arched,
b) - beams are not in the axis of the rails and work comprises then more than two beams. They are the bridges with slab of reinforced concrete, of girders encased with concrete, composite iron-concrete,
- *ballasted bridge with U-girder by underneath (le pont ballasté à poutre en U par dessous, dit bac à fleur),* of which metal frame comprises two lateral beams with inclined webs to allows the maintenance between decks and of the lower distance pieces of T-sections welded on the bottom flange connecting the two webs. Distance pieces are coated with concrete, the bottom flange forming formwork. The track is posed on crossties and ballast;
- **bridge with girders encased in concrete *or* cased composite beam bridge** *(le pont à tablier à poutrelles enrobées):* see DECK; **See Figure 3p**
- **bridge with rails encased in concrete** *(le pont à tablier à rails enrobés),* in which the deck is constituted by rails aligned longitudinally toward the traffic stream and which is fully coated with concrete. Rails are stayed between them by rods

crossing the web of the rail. This kind of deck is solely used for culverts;

- **portal metal bridge** *(le pont portique métallique);*
- **portal bridge** *(le pont en portique),* whose structure is formed by one or several crossties restrained on stanchions;
- **open portal bridge** *(le pont portique ouvert),* reinforced concrete work, formed by a relatively thin slab restrained on the front walls forming abutments. It picks up on a foundation adapted at the nature of the ground and strains to be begun again; **See Figure 3q**
- **composite bridge** *(le pont à structure mixte ou pont mixte)* for which two well distinct definitions is to be considered:
  - work which can concurently receive the road and railway traffic,
  - bridge made of a metal structure and slab of R.C., and in which this slab, closely associated with the metal structure, does not play only the role of cover, but also takes part in the strength and the general bending; **See Figures 3r to 3w**
- ***Séjourné*** **bridge** *(le pont Séjourné),* composite bridge which is formed by two arched twin works of masonry of reduced width, built abreast, located at a certain distance one of the other and joined together by a reinforced concrete deck; **See Figure 3x**
- **bridge on ring centerings built into the vaults** *(le pont sur anneaux-cintres incorporés dans les voûtes),* made up by centerings formed with rails (or corner irons assembly) curved according to the shape of the intrados and embedded in the concrete. The ring centering thus carried out is afterward covered with a normal concrete vault worked out by successive rolls;
- **box (girder) bridge** *(le pont tubulaire),* a metal work formed by elements forming a hollow beam of a rectangular section.

DEFINITIVE RETAINING WORK
Ouvrage de soutènement définitif
Civil Engineering Structure
A construction built where one wants reducing the right of way of a natural slope or added to allows the construction of a channel of communication, a building, or a structure.

DEFINITIVE WORKS
Ouvrage définitif
Civil Engineering Structure
Any work made of sheet piles that provides in a definitive way a load-bearing strong function or of supporting by itself, or because it is built into a definitive work in its total function. Syn. with PERMANENT WORKS

DEFLATION
Déflation
Geomorphology
One of the two forms of wind abrasion that is characterized by a materials and dust sweeping that, carried by the wind, are going to accumulate in the dips running along the deserts where they constitute special formations (regs, playas, etc.).

DEFLECTED BUCKLING
Flambement dévié
Strength of Materials
The buckling of a slender piece under a load not passing by the center of gravity of the section where it is applied.

DEFLECTING
Déviateur
Construction of P.C.
Syn. with DEVIATOR

DEFLECTING SUBSTITUTE
Raccord de déviation
Equipment and Tools
A drilling tool machined with a precise angle of deviation compared with the bore bit and which allows to change the incline of a drilling. Syn. with OFFSET SUB

DEFLECTION
Flèche; Fléchissement
Strength of Materials
1. Syn. with SAG; SPAN-TO-DEPTH RATIO
2. Syn. with YIELDING (OF GIRDER)

DEFLECTOMETER
Déflectomètre; Fleximètre
Equipment for Measure and Control
1. An instrument for measuring the horizontal relative displacement of two rock layers for example. The equipment is introduced into a drilling and the deflectometer records any displacement perpendicular to the axis of this drilling. Syn. with FLEXURE METER

2. An instrument for measuring sags and counter-sags suffered by a work as the effect of overloads. Syn. with FLEXURE METER

DEFLOCCULATING AGENT
Agent défloculant
Materials
A product that brings about the repulsion between the particles of a colloid.

DEFLOCCULATION
Défloculation
Materials
The dissociation of the particles or grains of a colloid.

DEFLUVIATION
Défluviation
Hydrology
The desertion by a waterway of its original bed for another.

DEFORMATION
Déformation
Strength of Materials
Syn. with BUCKLING; DISTORSION; STRAIN

DEFORMETER
Déformètre à bille mécanique
Equipment for Measure and Control
An instrument for measuring the evolution of cracks and whose principle is the following: on the either side of the crack of which it is necessary to follow the evolution, one pastes two balls on which is posed a mechanical comparator. This one measures the distance between the two balls and this first reading will serve as reference for ulterior measurements. Syn. with MECHANICAL-BALL STRAIN GAUGE

DEGASIFICATION
Traitement de dégazage
Metallurgy
A thermal operation consisting of carrying and keeping a metal at an adequate temperature to allow the release of the occluded hydrogen without modifying its structure. Done in particular after an electrolytic coating operation or a scouring. Syn. with DEGASING

DEGRADATION
Dégradation
Defects (Civil Engineering Structure)
A localized or general deterioration of a construction usually due to the aging of materials or to exterior causes (pollution, climatic actions, inopportune interventions of the man, etc.). Syn. with WEATHERING; DAMAGING; DEFACING

DEGRADE
Renformer
Masonry
To degrade the pointings of masonry on a former facing.

DEGREASING
Dégraissage
Metallurgy and Welding
A surface cleaning method which is hot-realized in alkaline solution and that clears the surface of metal pieces of all fat bodies. This work is always achieved before a galvanization or welding operation.

DEGREASING FLUIDS
Produits de dégraissage
Welding
Products for clearing greasy substances from the surface of the elements to be inspected before application of the penetrating fluid.

DEGREE OF CALCIFICATION
Degré hydrotimétrique (T.H.)
Hydrology
A number expressing the water hardness, i.e. its magnesian and calcic salts content expressed in mg/l on the basis of the milliequivalent per liter.
We can distinguish the total degree of calcification, content in calcium and magnesium salts, calcic total hardness, salts of calcium content, permanent total hardness, sulfate, calcium and magnesium chloride content, and the temporary hardness, bicarbonate, calcium and magnesium carbonate content. One measures the degree of calcification of a sample, whose pH was brought to a value depending the total harness to be known by adding of soap until a persistent froth was obtained, or by colorimetry.
Drinking ordinary waters present a degree of calcification lower than 30. Prominent waters

60° are inappropriate for any use. Syn. with TOTAL HARDNESS

DEGREE OF SATURATION
Degré de saturation
Geotechnics
The ratio between the volume of the interstitial water and the volume of the spaces of a soil.

DELAMINATION
Décollement de parement; Délaminage
Defects
1. In stonework or brickwork constructions, pulling off between the facing and the body of the masonry. The detachment brings about by a swelling of the facing, the emission of a hollow sound at the time of the sounding with the hammer, or by at once. Syn. with FAILURE OF ADHESION
2. The splitting of the layers of a geomembrane, a plywood, etc.; example: splitting of the plies of a multi-ply geomembrane or materials associated of a compound geomembrane.

DELIVERY
Débit
Hydrology
The quantity of water which passes in a given section in a given time. Syn. with RATE OF FLOW

DEMETALLIZATION
Démétallisation
Metal Construction
The clearing by a suitable way of the metallic coating covering a piece having undergone metallization treatment.

DEMOLDING
Démoulage du béton
Construction of R.C. and P.C.
The removal of formworks (wall forms or others) having served during concreting. We can distinguish two practices, being: the immediate form striking and differed form striking. In the first case the form striking takes place as early as the end of the placing while, in the second, the form striking is only executed after complete hardening of the concrete; the latter case is the most frequent. Syn. with RELEASE FROM THE MOLD; STRIKING THE FORM

DEMOLDING AGENT
Démoulant
Construction of R.C. and P.C.
A liquid or pasty product whose are coated the formworks before concreting so as to facilitate the form striking of the poured elements. The application of the product is made with a spray or a paint brush.

DEMOLISHER
Tombeur
Work
Syn. with BREAKER; DEMOLITION WORKER

DEMOLITION
Démolition
Civil Engineering Structure
The cutting, the intentional destruction of a work or a portion of work.
Besides traditional demolition methods (peak, rock breaker, sledgehammer, etc.), we can distinguish not least:
- **chemical demolition** *(la démolition par voie chimique),* a nonexplosive process using a powder to be diluted into water. The mixture is poured into holes carried out in rock or concrete. Hardening, the product dilates and breeds large and deep fissures. The material thus treated can then be effortlessly cleared with the jack hammer, the mechanical digger, etc. This demolition process is silent, it does not bring about stone ejection, vibrations, dusts, or gaseous release;
- **blasting with explosives** *(la démolition à l'explosif),* a process using explosive substances, asking many precautions. The method consists in drilling a certain quantity of holes into which are placed the bursting charges. Bursting charges are connected between they in order that their action is simultaneous. Their principle of functioning is the following: explosives are chemical bodies able to get decomposed highly quickly throught the agency of an external stress; they give then birth successively to a shock wave that acts onto the material cracking it, then to the release of a greater gaseous volume that go into fissures, widens them bringing about real fractures that brings about to the dislocation of the material. In the domain of the demolition, explosive called *high explosive* or *explosives,* and particularly, the dynamite, nitrated products and nitrate fuel

explosives, are most used. Their speed of detonation is greater (from 2000 to 8000 m/s);

- **demolition by microwaves** *(la démolition par micro-ondes),* based on the action of hyperfrequency waves. Throught the agency of the radiation, the capillarity water and crystallization water are volatilized, bringing about thus microfailures inside the material by an action a bit analogue to frost on rocks. The concrete thus treated going very fragile and just to blow it slightly for breaking it.

DEMOLITION OF CONCRETE BY CONTROLLED CRACKING
Démolitiondu béton par fissuration contrôlée
Construction in R.C. and P.C.
A cutting and demolition method that consists in creating a cracking in the structure of the concrete with jacks laid out to steady gaps so as to obtain blocks of dimensions and weight defined.

DEMOLITION WORKER
Tombeur
Work
Syn. with BREAKER; DEMOLISHER

DENDROCHRONOLOGY
Dendrochronologie
Building Materials
The science of the dating from the study of annual growth rings of trees.

DENSE CONCRETE
Béton plein; Béton lourd
Building Materials
1. Syn. with VOIDLESS CONCRETE
2. Syn. with HEAVY CONCRETE; HEAVYWEIGHT CONCRETE

DENSE FLOW
Flux dense
Materials
Concerning the wet shotcreting practice, propulsion of the wet mix by the action of a concrete pump whose conduct does not transport air.

DENSE ROCK
Roche compacte ou consolidée
Geology
A stone with dominant cracks (limestone, sandstone, basalt, granite) that sometimes contains pores whose role is not negligible (oolitic limestone or chalk). The compact carbonated rock, such as limestones, dolomitic limestones, and dolomites, shows at the origin obstructed or closed cracks. When the chemical (dissolving of carbonates) and mechanical action of waters was important, cracks are widened until to form underground cavities.

DENSIFICATION
Densification
Civil Engineering
A ground improvement process being designed to increase the cohesion of sandy, muddy or clayey, moist or saturated grounds. Any very viscous mortar and to a highest angle of friction was introduced into the ground. An injection under pressure is carried out from drillings distributed according to primary, secondary, and tertiary hole patterns. The maximal pressure is calculated to limit at the very least the rupture by shear of the ground treated. Injected quantities correspond at the slighest proportion of the volume of ground treated (fewer than 5%).

DENSIMETER
Densimètre
Equipment for Measure and Control
An equipment used for studying sedimentology.
See Figure 4a

DENSITOMETRY
Densitométrie
Building Materials
A measuring process of the density of wood that is determined in comparison with water. The density has a great influence on the mechanical strength of the wood and it is not the even according to the considered moisture content. It ranges from 0.05 (balsa) to 1.40 (gaiac). In general terms we can distinguish: very soft woods ($d < 0.50$), soft (d contained between 0.51 and 0.60), medium-hard woods, hard or heavy ($0.70 > d < 0.90$) and very hard or very heavy woods ($d > 0.90$).

DENSITY
Masse spécifique
Building Materials
The quotient of the mass of a body by its volume that is expressed in g/cm^3, kg/dm^3, or in t/m^3.

(One should not confuse density with specific weight.)

DEOXIDATION
Désoxydation
Metallurgy
Syn. with BLEACHING

DEOXIDIZE
Désoxyder
Metallurgy
To clear by appropriate ways the oxide covering a metal piece.

DEOXIDIZER
Désoxydant
Metallurgy
A product used to clear oxide.

DEPOSIT
Gisement; Gîte
Geology
1. A location where a given geological material is accumulated. This place is defined by three spatial coordinates: longitude, latitude, and depth. The material will be, according to cases, metal (metalliferous deposit), oil (oil field), water (aquiferous field), materials, etc. Syn. with BED; LAYER; VEIN
2. The general organization of the sets of eruptive rocks which constitute bodies of very variable dimensions, contrasting on the formations where they are steep-sided, and in which can join very often varied rocks, but in genetic relation. Syn. with LAYER

DEPOSIT
Sédimentation
Painting
Fall of the pulverulent matters of a pigmented product within the medium of suspension through the agency of the gravific field, bringing about the concentration of these matters at the lower part of the container.

DEPOSIT RATE
Coefficient de dépôt
Welding
The mass of metal laid down by a welding electrode, in given conditions, by ampere per minute.

DEPOSITED METAL
Métal d'apport
Welding
A material brought by a welding rod or a soldering wire at the time of the achievement of a nonautogenous weld.

DEPOSITION EFFICIENCY
Rendement global effectif
Welding
For a coated electrode, ratio of the metal mass deposited in standardized conditions to the total mass of a consumed given electrode, to the exclusion of falls.

DEPOSITS
Allaise
Hydrology
The temporary deposit of sand or silt onto the bed of a river generally following upon to a flood. Syn. with INCREASE; SANDBANK

DEPRESSION
Flache; Enfonçure
Defects; Geomorphology
1. The localized concave difference in level of a parapet, a railing, that can be the sign of a subsidence of foundation.
2. A lack of flatness of a rendering characterized by a localized concavity. This defect is usually due to a lack of thickness of mortar at this place.
3. The localized subsidence on the surface of a pavement (roadway).
4. Dip, in general.

DEPTH OF COURSE
Hauteur d'assise
Masonry
The vertical distance that separates two consecutive beds. When depths of course are equal, it is said that the construction is bonded by regular courses. Syn. with THICKNESS OF COURSE

DEPTH OF FOUNDATION
Profondeur de fondation
Foundation
The vertical distance measured from the base of the foundation to the surface of ground. **See Figure 4**

DEPTH OF JOINT
Profondeur de joint
Masonry
The measured distance between the open face and the bottom of a joint.

DEPTH OF FILM
Epaisseur d'une peinture
Painting
The measured value of a coat or a system of paint coats. Syn. with BUILD

DERIVED TRUSS GIRDER
Poutre triangulée dérivée
Construction
A simple triangulated element in which has been created secondary panel points on some chords or triangulation elements, panel points joined between them or to the primary panel points by means of additional bars. **See Figure 5**

DERRICK
Ecoperche
Handling
A timber piece erected to support a pulley in order to raise and lower loads.

DERRICK CELLAR
Avant-puits
Earthwork
A circular excavation of a large diameter but small depth, carried out at the beginning of the drilling and intended for receiving the machines and apparatuses of which exceeding in height could be awkward toward the work platform of a drilling machine. Syn. with PREBORING

DERRICK CRANE
Derrick
Equipment and Tools
A lifting and handling appliance essentially formed by a mast and a boom articulated at the foot of the mast, of bread-and-butter use on the great assembly building sites of the steel frame.
It suit to distinguish two essential types of derricks:
- **guy poles *or* guy derricks** *(les derricks à haubans),* used to fixed position;
- **movable derrick crane** *(les derricks autostables, mobiles),* displacing on a way of roll.

These two basic types are stemming of variants such that:
- *derrick with auxiliary boom*;
- *heightened derrick* whose often horizontal boom is articulated in a point of the mast other than the base;
- *derrick biboom or quadriboom.*

See figures 6 and 6a

DERRICK JIB
Bras
Equipment and Tools
The movable horizontal part of a tower crane that is used to lift and move loads. Syn. with JIB. BOOM

DESCALING
Désécaillage; Décalaminage
Metallurgy
1. The removal of the smithsonite or scales of oxide that cover some metals before the application of a protective coating. This operation can be executed by mechanical (sanding, blast cleaning, needle gun), chemical (acids) or thermal means (blowtorch).
2. Syn. with BLAST CLEANING; CARBON REMOVAL; DECARBONIZING;

DESCRIPTION
Descriptif; Fiche signalétique
Contract; Contract and Work
1. A schedule document to a work order letter that specify the conditions of performance, used materials, the methods and standards to be respected.
2. A document which gives the particulars and description inherent to do recognize a work, part of work, etc.

DESICCATION
Dessiccation
Geology
The physical alteration of a rock by loss of water on its surface, notably by the evaporation under a high temperature. Under the influence of this dehydration, the rock can decrease of volume and split up according to the shrinkages, or desiccation cracks. Syn. with DRYING SHRINKAGE

DESIGN
Projet; Projeter; Etude
Contract; Drawing; Civil Engineering Structure
1. All the paperworks (principle and working plans, detailed estimate, location and block plan, quantitative survey pilot, preliminary estimate, etc.) where all necessary information is included, allowing to lead to the construction of a private or public work, whatever its nature and importance. Syn. with PROJECT
2. To study a construction project.
3. A drawing to the scale of 0.005 or 0.01 executed freehand with a view to the development of the sketch.
4. A work of architectural research, of stability design, of financial numbering of a construction, repair, or strengthening project. Syn. with EXAMINATION (or STUDY) OF A SCHEME

DESIGN GROUTING TEST
Epreuve d'étude de coulis de ciment (pour injection de gaines)
Test of Materials
A test for determining the grout mix design and especially the optimal ratio water/cement. The design also takes an interest in the fluidity and exudation fluctuations according to the water content, that are made by measurements of shrinkage and mechanical strength.

DESIGN LOAD
Sollicitation de calcul
Strength of Materials
The value of a given stress, taken into account in the strength design of an element of structure and deduced from the real values of the whole of the stresses taken into account concurrently, affected by proper balancing coefficients.

DESIGN MINUTES
Note de calcul
Strength of Materials
A document arranged to justify with the help of static balance design as the resistance and stability of the works under the service loads and various actions.

DESIGN MIX
Etude de composition
Building Materials
A preparatory work for defining the batching of materials going into the concrete proportions.
This job is realized for verifying if the concrete is adapted to the conditions of manufacture and implementation on the site and could possess characteristics conform to the prescriptions of general conditions.
The mix design must specify especially the :
- category of the studied concrete;
- grading curves and the source of aggregates;
- nature, grade of the cement, and the adopted batching;
- quantities of aggregates in weight for a cubic meter of concrete in use compacted to refusal;
- water batching on dry materials;
- consistency of the fresh concrete to be obtained from the manufacturer;
- density of the hardened concrete;
- nature and batching of admixtures, as the entrapped air percentage if need be.

The design must mention also the work or the part of work to which the concrete is designed, means of transport and implementation of the concrete as the density of reinforcements.

DESIGN MIX TEST
Epreuve d'étude de béton
Test of Materials (Concrete)
A test fully achieved in laboratory with concrete ingredients that will be used to the site, with intent to determine the optimal mix design of the studied concrete, considering asked characteristics and conditions of implementation.

DESIGNATION
Composition des bétons
Building Materials
Syn. with MIX DESIGN; PROPORTIONS

DESIGNER
Projeteur
Drawing
A project manager or technician that studies a project; responsible for this project.

DESQUAMATION
Desquamation
Defects (Masonry)
Damage of stones that appears by crusts or plates detachment (from tenths of millimeters to several centimeters) in damp zones of works. Underneath this detachment, the stone disintegrate into powder. They are cyclic

alterations of which symptomatology appears more fluctuating than that alveolizations. Syn. with PEELING; SCALING

DESTABILIZE
Déconsolider
Civil Engineering Structure
To implicate the stability, resistance, staying power of a work by the withdrawal of materials (opening of an excavation, removal of the main elements of a structure, etc.).

DESTRESSING
Décompression; Relaxation
Foundation; Earthwork; Strength of Materials
1. A drop of pressure recorded inside an immersed caisson at the time of work in aquatic site. This drop of pressure can be intentional or unintentional (escapes). Syn. with DECOMPRESSION
2. Decreasing of the underlying or country rock stresses following to the opening of an excavation, etc., the demolition of a construction or the leveling of a hillock. This decreasing is more or less noticeable following the nature of the soil. The destressing can have disastrous effects on works situated at the surroundings of an excavation, effects that can go until ruin of a work. Syn. with LOSS OF GROUND
3. Syn. with STRESS RELAXATION

DESTRESSING
Détension des câbles
Defects (Construction of P.C.)
A defect which impairs the suspension bridges or the cable-stayed bridges which is due to an insufficiency of tension of a cable, that can go until complete destressing and that can appear by:
- an abnormal sag,
- the loose of a vertical suspender of a guy,
- an apparent play at the level of the anchorage or fastener pieces.

DESTRESSING BREAK
Rupture de décompression
Earthwork
The detachment, sometimes of explosive nature, of quarters of rocks stripped during an earthwork.

DESTRUCTIVE BORING
Sondage destructif
Geotechnics
A means of geotechnical investigation of the grounds which allows to achieve a hole collecting the elements of destroyed soils (cuttings) to check over them *de visu,* and possibly to identify them in laboratory. This hole can allow to carry out to various tests into the drilling to determine the mechanical characteristics of the soil.

DESTRUCTIVE DRILLING
Forage destructif
Work
A boring for collecting disturbed samples that will serve to identify the soils. Drillings are carried out with the auger (mechanical or to hand), the shoe-nosed shell with valve or the grab bucket.

DESTRUCTIVE TEST
Essai destructif
Test of Materials
A test that consists in taking samples from a material, a work, so as to subject them to different tests (example: core drilling).

DETACHMENT
Décollement de structure
Defects (Civil Engineering Structure)
The pulling off of two parts of a normally interdependent work, with spacing of one toward the other. This damage is frequent between two parts of rigidity, constitution or different functioning. These detachments appear by a significant and marked fissure.

DETAILED INSPECTION
Inspection détaillée
Civil Engineering Structure
A meticulous inspection of all the parts of a work and immediate surroundings. It can comprise destructive drillings, measurements (leveling of bearing, rise measurement), etc. Each detailed inspection is the subject of an official report. When the work comprises immersed parts, they give place to periodic subaquatic inspections.

DETAILED DRAWING
Dessin de détails
Drawing
A large-scale representation, giving the precisions of construction or a more exact representation of the shapes and profiles.

DETECTION TEST
Essai de détection
Test of Materials (Concrete)
A test for ensuring of the regularity of the concrete manufacture and for verifying if the prescribed mechanical characteristics are well reached, but in operating in the less rigorous conditions than those specified by the standards relative to the control and inquiry tests.

DETECTOR NET
Filet détecteur (pour suivi des parois rocheuses)
Equipment for Measure and Control
An installation formed by a wire mesh with meshes relatively close or a network of wire regularly spaced that detects the rock falls and acts on an adapted signaling in order to stop the road or railway traffic. The detector net is carried out using an isolated electric conductor, laid out in order to provide a number of hairpins parallel the ones to the others. These layers can be laid out vertically or horizontally. The breaking of the conductor wire brings about the alarm by the drop of a relay. **See Figure 7 to 7d**

DETENTION TANK.
Bassin dissipateur d'énergie
Hydrology
Syn. with WATER CUSHION

DETERIORATED JOINT
Joint dégradé
Masonry
Pointings of masonry whose general state is altered by the aggressiveness of the ambient environment (aggressive water, wind, rain, etc.).

DETERIORATION
Altération
Defects (Construction in R.C. and P.C. and Masonry)
Syn. with ALTERATION

DETERMINATION OF RATIO WEIGHT AGGREGATE/WEIGHT MORTAR
Détermination du rapport poids de mortier/poids des granulats
Test of Materials (Concrete)
An operation for verifying the good proportions of some concrete and that makes often following the measurement of the density. The process consists in taking and placing the mortar under watering in a rotary trommel with sieve of 5 mm for separating it aggregates, then to weigh the different constituents.

DETERMINATION OF REACTION MODULUS
Détermination du module de réaction dit *module de Westergaard*
Geotechnics
A study method of the compactness and the reaction of soils in which one supposes that the ground is replaced by a plurality of independent elastic small springs. A reaction modulus then are measured. This measurement is made in situ.
When the ground is constituted by elements higher than 20 mm, one uses this method based on the sagging or giving away of the ground under a given load. One places on the soil a 75-cm-diameter metal plate that will keep its shape. After it having well seated, it is loaded to a pressure of 0.7 kg/cm², by the agency of an hydraulic cylinder picking up under a frame. One measures then in centimeter the medium sinking e *of the slab with the help of comparators at the hundredth of millimeter. By definition, the Westergaard modulus, evaluated in kg/cm³ is:*

$$K = \frac{0,7}{e}.$$

Syn. with WESTERGAARD MODULUS

DETERMINATION TEST IN TENSILE OF ORGANIC POLYMER-BASED MATERIALS
Test de détermination en traction des matériaux à base de polymères organiques
Test of Materials (Polymers)
A test for determining the tensile characteristics of organic polymer-based materials, notably these used in watertightness or for the repairings and stickings of concrete structures, in focused conditions of preliminary treatment, temperature, and tensile velocity. The test consists in

imposing a longitudinal drawing to the material at a constant speed, and in measuring the resulting deformations and corresponding forces.

DETONATE
Faire canon
Explosives
Referring to a blasthole, to detonate without dislocating the terrain.

DETONATING FUSE
Cordeau détonant
Explosives
An artifice of mine that instantaneously transmits from a distance, to one or several charges, the violent shock produced by a detonator. Syn. with CORDTEX; PRIMACORD

DETONATOR
Amorce; Amorce détonante; Détonateur
Explosives
1. A small mass of an explosive sensitive to the shock, the flame or more to the electrical spark and intended for bringing about the explosion of a powder or explosive charge.
2. An artifice of firing including a metal envelope and the beginning explosive which is placed there.
Syn. with BLASTING CAP; DETONATOR CHARGES; FUSE; PRIMER
3. A device that turn the flame, or the heat due to the Joule effect of the electric current, into mechanical effect (violent shock) through the channel of the explosive charge that it contains. Syn. with CAP; EXPLOSIVE CAP. **See Figure 8**

DETONATOR CHARGE
Amorce; Amorce détonante; Détonateur
Explosives
Syn. with BLASTING CAP; DETONATOR; FUSE; PRIMER

DETRITAL
Détritique
Geology
Of what is formed by remains. (Example: a detrital rock is formed by spalls of another rock, cemented at a later date by silica or calcite.)

DETRITAL ROCK
Roche détritique
Geology
A material coming from the breaking up or alteration or carriage of the constituents of others formations.

DETRITAL-ORGANIC ROCK
Roche organo-détritique
Geology
A carbonated sedimentary rock stemming from the accumulation of chalky skeletons of alive beings (example: chalk).

***DEVAL* TEST**
Essai *Deval*
Tests of Materials (Building Materials)
A test executed on the aggregates so as to study their abrasion resistance.
The equipment of the test is constituted by a set of metal cylinders of 20 cm diameter and 34 cm inclined length at 32° on an horizontal axis of rotation. These cylinders turn to a speed contained between 30 and 33 rpm. The number of rotations is 10,000. The test can be carried out to dry or in the presence of water, on a sample of 5 kg constituted of 44 aggregates going to the ring of 7 cm. The criterion retained is the loss of weight by abrasion of aggregates passed to the sieve of 1.6 mm. The Deval coefficient is by definition:

$$D = \frac{400}{U}$$

with U = *mass (in grams) of elements lower than 1.6 mm created in the Deval apparatus, per kg of tried material. This coefficient exceeds 20 in the case of good natural aggregates.* Syn. with ABRASION RESISTANCE TEST

DEVELOP
Développer
Drawing
To figure on a drawing the different faces of an element (example: a segment), turned down on the same plan.

DEVELOPED ELEVATION
Elévation développée
Drawing
The graphic representation in plane of several contiguous vertical faces of a work, turned down on the same plan.

DEVELOPER
Produit révélateur
Welding
A substance that absorbs the penetrating product retained in the discontinuities, while reinforcing the indications by increase in contrast. Syn. with TRACER SUBSTANCE

DEVELOPMENT
Développement
Nomenclature of Materials
1. The necessary length of a bar, sheet metal, etc., to carry out a bending or a cutting to the finished sizes of the piece to be achieved.
2. The developed length to flat of a piece showing curvatures, etc.

DEVIATION
Ecart
Metrology
The algebraic difference between a dimension (effective, maximal, etc.) and the corresponding nominal dimension.
Three types of deviation are available:
- **effective** *(l'écart effectif)* which corresponds to the algebraic difference between the effective dimension and the corresponding nominal dimension;
- **inferior** *(l'écart inférieur)* which corresponds to the algebraic difference between the minimal dimension and the corresponding nominal dimension;
- **superior** *(l'écart supérieur)* which corresponds to the algebraic difference between the maximal dimension and the corresponding nominal dimension.

DEVIATION MEASUREMENT
Mesure de déviation
Works
Syn. with HOLE DEVIATION LOGGING

DEVIATOMETER
Déviatomètre
Equipment for Measure and Control
An equipment that allows to determine the vertical drilling profiles giving the azimuth of the deviation in several points. Some deviatometers are equipped with a television camera.

DEVIATOR
Déviateur
Construction of P.C.
Concerning the strengthening of prestressed concrete works, device fixed on the web or the top slab intended for ensuring the guidance of the steel prestressing cables in the case of a polygonal line. Two types esentially are available:
- *bossage type* which is formed by a reinforced concrete block, *nailed* by prestressing on the existent structure;
- *upright type* which is formed by uprights made interdependent to the webs by high-tensile steel bars embedded with resin in the webs of the work.

Syn. with DEFLECTING

DEVIL FLOAT
Nu; Repère; Traînée de ciment
Masonry
1. A projection executed onto a wall, serving as basis for the achievement of renderings and gauge for their finish facing (dressing). Syn. with NAIL FLOAT; REFERENCE. **See Figure 9**
2. A dab of mortar with dressed surface, stand out on a facing needed to be coated, which is used as basis for leveling as indicator for the thickness of the rendering to be executed. **See Figure 9a**
3. A reference for guiding the dressing of renderings.

DEVIL'S CLAW
Louve
Equipment and Tools
A hoisting and handling appliance of the ashlars formed by a kind of counterwedge placed in a dovetail-shaped tuck-in achieved in the stone. Syn. with LEWIS; LEWISSON; STONE LIFT BOLT. **See Figure 10**

DEVIL'S PITCHFORK
Harpon
Equipment and Tools
Syn. with ROPE SPEAR

DEVONIAN
Dévonien
Geology
A system of the Palaeozoic era.

DEW POINT
Point de rosée
Building Materials - Painting
The temperature to which the humid air subjected to a cooling reaches the saturation; there are then the appearance of thin droplets and condensation onto the support.

DEW POINT HYGROMETER
Hygromètre à point de rosée
Equipment for Measure and Control
An instrument that determines the temperature of appearance of water droplets onto a polished surface cooled in contact with air to be studied. At a temperature $\leq 0°C$, the same equipment determines *the frost point.*

DEWATERING
Epuisement; Exhaure; Rabattement de nappe; Rabaissement de nappe aquifère
Sanitary Engineering and Drainage; Foundation
1. An operation that consists in draining the waters so as to be able working to dry, when, in the process of work (earthwork notably), aquiferous grounds are reached and that water comes occupying the bottom of cut, what constricts the good procedure of work. The dewatering gets executed manually (buckets, bailers, etc.) or mechanically (pumps, etc.). Syn. with BAILING WATER; PUMPING
2. The pumping out of seepage waters during underground work. Syn. with PUMPING OUT
3. Syn. with DEWATERING; SINKING OF GROUNDWATER

DEWATERING CONDUIT
Vidange de fond
Construction
An outlet of which opening is controlled by a sluice situated at the base of the barrages, and which allows to drain the water of the storage and the accumulation deposits. Syn. with BOTTOM OUTLET

DEWATERING INSTALLATION
Installation d'exhaure
Sanitary Engineering and Drainage
All the pumps which ensure the dewatering of seepage waters at the time of underground work.

DEWICK MAN
Accrocheur
Handling
In drilling (or trial boring), worker especially in charge of the joining end to end of the drill rods.

DIABASE
Diabase
Geology
An eruptive rock of the diorite family in which amphibolite is replaced by pyroxene and that which sometimes contains quartz; it is used as material of metalling.

DIAGENESIS
Diagenèse
Geology
The process of transformation of sediment into a sedimentary rock.

DIAGNOSIS
Diagnose
Petrography
The characteristic description of a rock that allows to distinguish it from other rocks.

DIAGONAL BRACE
Echarpe
Temporary Construction and Construction
1. Wind brace realized by a bar placed on the diagonal and connecting two or several posts of a piling. Syn. with CROSS BRACE
2. A board positioned at an angle on a panel formed by vertical boards assembled and that ensures a good rigidity of the whole.

DIAGONAL HINGED PIER
Béquille
Construction
Inclined pier of concrete (or metal) interdependent of the deck but articulated at its base on the foundation block. Syn. with TILTING PIER

DIAGONAL STRUT
Diagonale
Construction
Bar placed obliquely in panels of a truss girder or of a triangulated construction in general. Syn. with DIAGONAL TIE; INCLINED MEMBER.
See Figure 11

DIAGONAL TIE
Diagonale
Construction
Syn. with DIAGONAL STRUT; INCLINED MEMBER

DIAGONAL TRUSS
Bielle
Construction
A bar which, in some lattice trusses, can be compressed, or in tension.

DIAMETRICAL STRESS *or* DIAMETRICAL COMPRESSION
Pression diamétrale *ou* Compression diamétrale
Metal Construction
The stress of maximum pressure on the wall of the hole of an axle, shank of a bolt, shank of a rivet, when the joined pieces undergo opposite tensile stress. It is expressed:

$$\sigma_{ds} = \frac{T}{De}$$

D = diameter of the shank,
e = thickness of the piece solicited by the force T
σ_{ds} = diametrical stress
See Figure 12

DIAGRAM
Abaque
Drawing
Syn. with CHART; GRAPH; NOMOGRAPHY

DIAMOND
Diamant; Carbonado
Mineralogy; Materials
1. A crystallized pure carbon, very hard but brittle. Diamond is the hardest mineral known.
2. Natural abrasive of a matchless hardness. Finely ground, it is compressed to realize millstones. It is also used to equip drilling tools.

DIAMOND CONE
Cône de diamant
Equipment and Tools
A carved diamond impressor that equips the metal hardness test machines for the achievement of Vickers and Rockwell tests.

DIAMOND HEAD
Pointe de diamant
Masonry
A faceted bossage tooled on quarry stones or ashlars.

DIAMOND-POINT CHISEL
Marteau grain d'orge
Equipment and Tools
A stonecutter's axe of which cutting edges present large pointed teeth. Syn. with PARTING TOOL; VICE TOOL

DIAMOND TIP REDUCING
Réduction en pointe de diamant
Defects (Metal Construction)
The reducing of the rivet heads in pyramidal form owing to differential corrosion.

DIAPHRAGM
Diaphragme
Metal Construction
1. In box metal bridges, stiffening sheet metal (often elegy for enabling the passage of a man) placed transversely in the box and whose objective is to ensure the rigidity of the structure.
See Figure 13
2. Full web panel replacing the lattice in head and at the base of a metal lattice stanchion.
Syn. with MEMBRANE; PARTITION

(WATERTIGHT) DIAPHRAGM
Ecran interne d'étanchéité
Tightness
Syn. with INTERNALTIGHTNESS DIAPHRAGM

DIAPHRAGM WALL PRACTICE
Percement par la méthode de la paroi moulée
Earthwork
A technique used to create galleries that consists in boring by successive slices two trenches, which will be of use as formwork for the sidewalls of the underground, and filling them at once of bentonite to support them. This operation is followed by the installation of the reinforcements and concreting (by recovering the bentonite that is driven back by concrete). After set of the concrete, it is carried out to the clearing of the site of the cover slab up to a slightly lower level of the top surface of the diaphragm walls. A horizontal formwork is laid out on the ground between and at the top surface level of the two

diaphragm walls, follow-up of the installation of the bar setting. The cover slab is afterward concreting in situ by picking up on the diaphragm walls; it more but does not remain to excavate in underground and to construct the foundation raft. (This practice is frequently used in urban sites.)

DIATOMACEOUS EARTH
Terre d'infusoires; Kieselguhr
Geology
An ultrafine-grained siliceous earth as appears of white powders, hard and light, stemming from fossil stones that constitute the carapaces of diatoms and others diatomaceous. Syn. with KIESELGUHR

DIATOMITE
Diatomite
Geology
A soft siliceous sedimentary rock to higher porosity. It is formed by the accumulation of the shells of tiny seaweeds called *diatoms.* This rock, after finest grinding, provides an excellent abrasive.

DICHROIC GOLDEN BROWNING
Mordorage
Painting
A range of superficial finish of a film sometimes studied by a particular formulation, producing a dichroic effect.

DIE
Dé
Construction
1. Ashlar of great dimensions that sometimes ends a guardrail for protecting it from shocks. **See Figure 14**
2. Concrete or stone block placed at the end of a parapet for protecting it from shocks. **See Figure 14a**

DIE STAMPING
Matriçage; Estampage
Metallurgy
Syn. with DIE WORK; STAMPING

DIE WORK
Matriçage; Estampage
Metallurgy
A technique for manufacturing pieces of which shape and dimensions are close to much those the final machined piece. Die work consists in giving to a metal mass, beforehand heated, a determined shape by forcing it, by shock or fast pressure, between tools (dies) that comprise a hollow die stamping of the piece to be obtained. Syn. with DIE STAMPING; STAMPING

DIFFERENCE OF DYE ON A LARGE SCALE
Différence de teinte à grande échelle
Construction of R.C. and P.C.
A color defect exclusive to concrete facings, drawn to scale of the panel of formwork. We can distinguish construction joint, contrasted zones of geometrical form, rings (deepened and clear fringes), large marbling scale, smoothing.

DIFFERENCE OF DYE ON A SMALL SCALE
Différence de teinte à petite échelle
Construction of R.C. and P.C.
A color defect exclusive to concrete facings, localized or extensive, but with drawn dye variations of the to-scale of aggregate. We can distinguish the transparency of aggregates (aggregates appear, some deepened on clear bottom or conversely), traces of rust (which result in the no elimination of tie irons in bottom of formwork or to the metallic hold use), marblings on a small scale, run of laitance, linear or punctual halos (which result in escapes of laitance).

DIFFERENTIAL PULLEY BLOCK
Moufle
Equipment and Tools
Syn. with (BLOCK AND) TACKLE; PULLEY BLOCK

DIFFERENTIAL SETTLEMENT
Tassement différentiel
Foundation
The unequal sinking of foundation due to the difference of compressibility of the soil under the foundation or of the unequal distribution of loads onto the foundation.

DIFFERENTIAL SETTLEMENT OF SUPPORTS
Dénivellation d'appui
Defects (Civil Engineering Structure)
Syn. with UNEQUAL SETTLEMENT OF SUPPORTS

DIFFERENTIAL THERMAL ANALYSIS
Analyse thermique différentielle
Test of Materials (Construction of P.C. and P.C.)
A method of quantitative mineralogical study applied to the hardened concretes.
The process consists in heating concurently the sample to be studied and a model which one is sure that it will not undergo any transformation during the test. Each event intervening in the sample: allotropic transformation, reaction between constituents, decomposition, melting, are accompanied by absorption or a release of heat that brings about in a gap between the temperature of the sample and that of the model. This gap is detected with the assistance of two thermocouples of similarly nature, assembled in opposition. The temperature to which is occurred event is measured by a third independent thermocouple.
Temperatures to which occur some events, just as the amplitude and direction of the associated heating effect, are related to the physicochemical properties of minerals and, in a some measure, these effects are characteristic of these ones. It results from it, leastways in theory, the possibility of carrying out the identification of the mineral species from DTA.

DIFFERENTIAL WEATHERING
Erosion différentielle
Defects (Masonry)
The uneven removal gnawing the soft parts of a stone and leaving in relief the harder parts, therefore less sensitive to the phenomenon.

DIFFICULTY OF CUTTING
Difficulté de taille
Test of Materials (Building Materials)
A comparative test for fixing the remuneration of stonecutters. It consists of make testing on three samples of the stone, both axed work and ground dressing; by three different workers and to compare the time required by each in executing the same work on hardest and softest pans than the stone tested.

DIFFLUENT
Diffluent
Hydrology
The secondary branch of a waterway stemming of the original branch.

DIFFRACTION
Diffraction
Test of the Materials
The deviation of the direction of the propagation of a radiation, determined by the undulatory nature of this one, and occuring when waves are limited by obstacles. The X-ray diffraction is used notably in the study of soils and hardened concretes.

DIFFUSE RUNNING
Ruissellement diffus
Geomorphology and Hydrology
A water runoff on the surface of the ground in the guise of joined fillets or water film, following violent showers. Syn. with SHEETWASH

DIFFUSION PROCESSING
Traitement de diffusion
Metallurgy
A thermal operation being designed to provoke the diffusion of elements prospectively introduced into surface toward the inside of the metal.

DIGGER
Pelle rétrocaveuse mécanique
Equipment and Tools
Syn. with BACKACTER; BACKHOE; DRAG SHOVEL; TRENCH HOE

DIGGING CABLE
Câble de tête
Construction
Syn. with INHAUL CABLE

DIGGING FACE
Front d'attaque ou Front de taille
Earthwork
Syn. with FACE

DIGGING MACHINE
Excavatrice
Equipment and Tools
A light excavator that is generally used to dig trenches up to 2.50 m depth and narrow (from 0.35 to 0.60 m). The digging machines dig vertically and tip out the excavated materials on the either side of the trench. Syn. with DREDGING MACHINE; EXCAVATING MACHINE

DIGGING MACHINE BY UPWARD REAMING
Machine de creusement par alésage montant
Equipment and Tools
A machine for boring wells, blind pits, and chimneys.
In order to do the job, the machine must have one access at the base of the future work. One starts by boring a pilot hole in the axis of the work throughout its length. After boring of the pilot hole, the drill string is endowed with a serrated roller reamer that enlarges the pilot hole while going up by traction on the rods since the surface.

DIGGING WORK
Travail en fouille
Earthwork
An excavation method which consists in digging the soil at a level lower than that of the power shovel or crawler excavator machine (opposite knoll digging work).

DIGITAL GROUND MODEL
Modèle numérique du terrain
Topography
A system of representation of a geographical area using three-dimensional coordinates.

DIGLYCIDYL ETHER OF BISPHENOL *A*
D.G.E.B.A.
Polymers
Epoxydic resins of which raw materials come from the rich fractions in propylene of the steam-cracking of oil.

DIKE
Digue; Fossé; Levée
Hydrology; Sanitary Engineering and Drainage; Public Works
1. A natural obstruction preventing water flow. Syn. with DAM
2. Syn. with DITCH; DRAIN; GRABEN
3. Syn. with LEVEE; MOUND

DILATANCY
Dilatance
Materials
The property that possesses some bodies to increase volume under the action of a state of simple shear stress.

DILATION
Dilatation
Strength of Materials
Syn. with EXPANSION

DILATOMETER
Dilatomètre
Equipment for Measure and Control
An instrument supplied of a comparator whose objective is to measure the differences in length at the time of the study of the phenomena of expansion. Syn. with EXPANSION METER

DILUENT
Diluant
Painting
Syn. with THINNER

DILUTE
Détremper
Painting
To partially dissolve a binder of paint already dry by the application of a new coat. Syn. with DISTEMPER

DILUTED FLOW
Flux dilué
Materials
Concerning shotcrete, in the practice of mechanical application by a wet process, the propulsion of the wet mix by a compressed air jet (in the conduct). The mixture is then in suspension in the wave of air (the flow is diluted).

DILUTED GROUT
Coulis dilué
Materials
A particularly liquid preparation that provides, thanks to its fluidity, a perfect filling of the cavity into which it is injected.

DILUTION ZONE
Zone de dilution
Welding
The part of the parent metal which has melted with weld metal during welding.

DIMENSION
Dimension
Metrology
Syn. with SIZE

DIMENSION LINE
Ligne de cote
Drawing
A line whose each end is equipped with an arrow and above which is registered the dimension of the element which it delimits.

DIMENSIONAL SKETCH
Croquis coté; Relevé
Drawing
1. The representation of an object by its projection on a horizontal plan (plan), with the indication of the dimensions and quotation of its points, or also by its projection on a vertical plan (elevation), with the indication of the dimensions.
2. Syn. with SKETCH

DIMENSIONAL STABILITY
Stabilité dimensionnelle
Building Materials
The property of a material or an element to preserve its morphology and its dimensions in normal conditions of use.

DIMENSIONAL STRENGTH
Equarrissage
Metal Construction
All the characteristics of dimensions and strength relating to the section of a section, a beam, a member. Syn. with SPECIFICATION OF THE SECTION

DIMINISHING
Diminution; Galbe
Construction
The progressive diminishing of the diameter of the shaft of a column from the base toward the top.

DIORITE
Diorite
Geology
A dark-colored, coarse-grained eruptive rock. It is a syenite in which the amphibolite replaces the quartz and the mica. This material is used in enrockment or for metallings.

DIP
Pendage; Dérocter; Dérocher
Stratigraphy; Masonry and Earthwork
1. The angle in degrees formed by the line of the greater slope of a rockbank in comparison with the horizontal. A dip ranges from 0° (horizontal stratum) to 90° (vertical stratum). Syn. with INCLINAISON; PITCH. **See Figure 15**
2. To pulling down masonry or carry out rock excavation work.
3. Syn. with PICKLE

DIP HEADING GALLERY
Descenderie
Earthwork
A gallery whose slope is such that traditional boring methods have not been able to be used.

DIP PIPE LAYING
Pose en dépression
Sanitary Engineering and Drainage
A technique of installation of piping into trench that allows, thanks to an artifice of laying, to reverse the direction of the forces of friction (directed downward in mainline laying), so that acting now upward, they lead to notable alleviation of the filling overhanging the piping. The actual laying is carried out in a traditional way on the undisturbed soil. A first phase of backfilling by perfectly compacted successive layers is achieved up to a height that it is advisable to calculate. An excavation of width equal to the external diameter is opened at the plumb of the pipe, then filled with a compressible material more deformable than the adjacent filling (example: bundle of straw). Lastly, the backfilling continued up to the projected height. Thanks to this technique, the loads being exerted on this pipe are divided by three or four. **See Figure 16**

DIP TUNNEL
Descenderie
Earthwork
An inclined gallery serving as intermediate attack at the time of the heading of a long tunnel.

DIPLODOCUS
E.P.T.V.F. (Engin poseur de travures pour voies ferrées); Diplodocus
Equipment and Tools
Army plant designed to handle and implement bridge decks (temporary or definitive). This machine circulates solely on railroad ways and is formed by:
- a crane with two foldaway symmetrical booms, installed on a turning underframe. This set pivots

on a fixed underframe that picks up, through the channel of two swan necks, on four bogies with three axles;
- two trucks with bogies for carrying booms of the crane;
- a truck used as counterbalance;
- a temporary bearing truck for carrying out the wedging (if necessary) moreover to be of use as counterbalance. **See Figure 17**

DIPMETER
Pendagemètre
Equipment for Measure and Control
Instrument for determining the dip of geological strata and which records three or four resistance curves by means of microequipment similar to a microlaterlog.
Equipment is placed on insulating skates pressed on the wall of the trial boring. Measuring points are located in the same perpendicular plan to the trial boring axis. The three or four resistance curves recorded concurrently are then correlated to know the vertical mismatches which determine the dip. The calculation asks for moreover the knowledge of all the parameters defining the position of the measuring probe: the depth, incline in comparison with the vertical and orientation of the axis of the probe towards the north, orientation of one of the measuring devices in comparison with north, diameter of the trial boring. All this information is concurrently recorded

DIPMETRY
Pendagemétrie
Stratigraphy
A technique of determination of the dip of the geological strata with a drilling probe or a dipmeter.

DIPPER
Godet
Equipment and Tools
Syn. with BUCKET; DREDGE BUCKET; SCOOP

DIRECT PULLING TEST ON POLYMERS
Essai de traction directe sur polymères
Test of Materials (Polymers)
A test for testing resins efficiency used to glue freshly mixed concrete on hardened concrete or hardened concrete on hardened concrete. The direct tensile test is carried out on cylinder of 16/32 cm sawn in its medium according to a median plane perpendicular to the direction of the generatrixes and reconstituted by a freshly mixed concrete adding, or by sticking with the resin of the hardened concrete half-cylinder.

DIRECT TRACK LAYING
Pose directe
Civil Engineering Structure
The setting up of railway track directly onto a deck, i.e. without interposition of ballast.
When the height one has does not allows to lay the track on ballast one carries out the direct rail laying on the deck by interposing between them plates or concrete crossties (interdependent of the deck of the work). There are various types of direct track laying, adapted each one to the type of the work to be treated.
There are several types of direct track laying:
- **D-type track laying** *(la pose type D dite Monaco),* whose attachment unit includes two bearing plates. The rail is fastened on the upper bearing plate. The lower bearing plate is stuck on the slab by filling of an epoxydic resin mortar that allows to perform the leveling of the track, and fastened moreover by two also stuck bolts. A rubber plate 22 mm thick separates the two bearing plates;
- **Arcueil-type track laying** *(la pose R.A.T.P. type Arcueil),* in which fixing comes true by indirect fasteners having great permissibility (important tightening stroke). Only one metal bearing plate picks up on the slab. A rubber plate 20.5 mm thick is inserted between the flange of the rail and the bearing plate;
- **F4-type track laying** *(la pose S.N.C.F. type F4),* in which the rail is fastened on an intermediate bearing plate posed on a rubber plate 22 mm thick that picks up directly on the concrete. Two independent side stops ensure the maintenance of the geometry of the track and facilitate its adjustment. The vertical maintenance of the bearing plate is ensured by two springs leaning on the side stops;
- **G3-type track laying** *(la pose S.N.C.F type G3),* in which the constructive principles are similar to those of installation the F4-type track laying, herewith close the spring is removed and that the side stops have a special shape;
- ***STEDEF* practice track laying** *(la pose STEDEF),* in which the rails are fastened in a

mainline way on concrete crossties. Crossties pick up on the slab with interposition of a plate in very elastic special rubber and a harder rubber slipper.

DIRECT-FINISH CONCRETE
Béton brut de décoffrage
Building Materials
Any concrete whose facing has not been treated (smoothing, etc.). The quality of the facing depends on the formwork, that is used, that can be sawing boards, plywood with marked veins, etc. Syn. with OFF-FORM CONCRETE

DIRECTING CURVE
Directrice
Construction
Curve that defines the profile of extrados of a vault in the transverse plan.

DIRECTIONAL DRILLING
Forage dirigé
Work
Drilling of the ground in which one has to reach an objective which is not situated upright the drilling plant. Syn. with GUIDED DRILLING

DISCHARGE
Décharge; Dégorger
Construction; Sanitary Engineering and Drainage
1. A work or element being of use in distributing a surplus of stresses.
2. To open obstructed piping.

DISCHARGE CULVERT
Aqueduc d'évacuation
Civil Engineering Structure
An arched (or not) structure having an opening in the lock chamber upstream from downstream gates of the lock and downstream from these ones, allowing emptying the lock chamber during the operations of closing the locks in.

DISCHARGING ARCH
Arc de décharge
Construction
Syn. with DOORWAY ARCH;; SAFETY ARCH

DISCOLORING
Discoloration
Defects (Building Materials)
The change of the color of wood due to alteration by an organic agent (dry rot). Syn. with FADING

DISCONNECTED CRACK
Fissure marbrée
Defects (Welding)
All the cracks of various orientations affecting a weld bead or its immediate surroundings.

DISCONTINUITY
Discontinuité
Geology
Of all physical interruptions of a rocky mountain that are characterized by weak tensile strength perpendicularly to their plan and by conditions of the shear that they enable parallel their plan. Among discontinuities are breaks, joints, and stratification joints.

DISCONTINUITY VEIN
Limés
Defects (Building Materials)
A defect affecting chalky stones which results in the presence of irregular cracks filled with compact matter, but nonadherent.

DISCONTINUOUS GRAIN SIZE
Granularité discontinue
Building Materials
The dimensional grain distribution of an aggregate of which grading curve comprises one or several meaningful stages. Syn. with GAP GRAIN SIZE

DISCONTINUOUS GRAIN-SIZE (or GRADING) CONCRETE
Béton de granularité discontinue
Building Materials
A material composed of a maximum number of large aggregates and a minimum of sand. Syn. with GAP GRADING CONCRETE

DISCORDANT
Discordance
Geology
A situation presented when two layers are not parallel. (Term notably used in geology.)

DISENGAGEMENT
Angle d'attaque, de dégagement, de dépouille, d'un outil
Equipment and Tools
Syn. with CLEARANCE ANGLE (OF CUTTING TOOL); CUTTING ANGLE; STRIKING

DISFLUSH
Désaffleurer
Works
Syn. with PROUD

DISGUISE
Déguiser
Painting
To apply a thin paint coat onto a substrate after sanding so as to better make show the subsisting defects to eliminate them.

DISINTEGRATE
Se déliter
Geology and Building Materials
Syn. with EXFOLIATE

DISINTEGRATED STONE
Pierre moulinée
Defects (Building Materials)
A stone dropped off by the humidity action. Syn. with MILLED STONE

DISINTEGRATION
Effritement; Délitage
Defects
1. Damage characterized by the disintegration of concrete that has too weak a binder or in the use of altered cement, shown especially in the effect of frost on fresh concrete or in the dissolvent action of runoffs. Syn. with CRUMBLING
2. Syn. with EXFOLIATION; SPLITTING

DISINTEGRATION (OF STONE)
Effritement
Defects (Masonry)
Damage demonstrated by disintegration of the stone into dust. This alteration can be superficial or deep.

DISINTEGRATOR
Désintégrateur
Equipment and Tools
At the time of the execution of a (dredged) berth, equipment put in the front of a dredger intended for disintegrating the bottom and thus facilitating the removal of materials. The disintegrator is often constituted by a rotary blades system.

DISJOINTING
Disjointoiement
Defects (Masonry)
The disappearance of the mechanical bond (joint) in masonry, consecutive to the alteration or to the disappearance of the material that constitutes it. Causes can be chemical or physical origin or the two both. Disjointing can be localized or large. Syn. with DISPOINTING

DISK DEBTOR
Débiteuse à disques ou à lames
Equipment and Tools
Device used for mechanical cutting in a quarry.

DISLOCATED GROUND
Terrain disloqué
Geology and Earthwork
A soil whose of which was sufficient at a given moment, but which lost this quality because of intervention of the man. This type of ground meets above the former pits not or badly backfilled, mining grounds, former rubbish tips.

DISLOCATION
Dislocation
Defects
1. Damage that can be considered as a disorganization of bonds of masonry and that is often the consequence of a shock to the structure or on a part of the work. It occurs especially in carrier structures in ancient masonry that, by loss of cohesion or mechanical strength, disorganize and dislocate. The dislocation can lead to the ruin of a work.
2. The breaking of bond leading to the ruin of one or several parts of a construction in plain, reinforced or prestressed concrete. This damage can be accidental (shock, breaking of cable), the consequence of a sickness of the concrete (concrete cancer for example), underwashings, etc.

DISLODGE
Déboiter
Work
To separate an assembly.

DISORGANIZATION
Désorganisation
Defects (Civil Engineering Structure)
The suppression of the monolithism of a part of work by much disappearance concerning the connections notably load-bearing structures in an important part, or even in their whole. This defect can lead to the dislocation, ruin, and collapse of the work.

DISPERSAL AGENT
Dispersant
Painting
A product facilitating the dispersal of grains of solid elements in a medium of paint suspensions.

DISPERSION
Amortissement
Work and Materials
Syn. with BREAKING

DISPERSION MEDIUM
Milieu de dispersion
Painting
A medium of suspension of which liquid phase is continuous and, consequently, in which the discontinuous phase is exclusively formed by solid particles.

DISPLACEMENT
Désenrobage
Defects (Construction in R.C. and P.C)
Syn. with STRIKING; STRIPPING

DISPOINTING
Disjointoiement
Defects - Damage (Masonry)
Syn. with DISJOINTING

DISSOLVING
Dissolution
Defects
Separating of the elements from a matter by a liquid or a gas. In the alteration of grounds, the water plays a dissolving role reaching saline beds such as gem salt, gypsum, far more common and, to the favor of the carbon dioxide contained in the water, limestone. This dissolving initiates settlings, karsts, etc.

DISSYMMETRICAL PREPARATION
Préparation dissymétrique
Welding
A preparation in which the profile of the joint and that of the adjacent parent metal do not have a common axis of symmetry passing between the two elements.

DISTANCE BETWEEN CENTERS
Empattement
Construction
The center-to-center distance of the posts of a sway frame.

DISTANCE PIECE
Distancier; Entretoise
Equipment and Tools; Construction
1. A device designed to maintain at the required space two formworks panels or wall forms placed in opposite each other. The distance piece consists of dowel screw crossing formworks and a tubular distance piece; the internal formwork facing resting against on each extremity of the distance piece. Butterfly nuts ensure the tightening of panels. Syn. with SEPARATOR; SPACER
2. Syn. with BRIDGING PIECE; CROSS BEAM; TRANSVERSE GIRDER

DISTANCING UNIT
Distancemètre
Equipment for Measure and Control
1. An electronic measuring device of the distances from which we can distinguish two main models:
- **tellurometers** *(les telluromètres),* which calls upon the electromagnetic waves, usually centimetric, with main station and responder station;
- **geodimeters** ***or*** **geodetic distance meter** (*les géodimètres),* electro-optical instruments which allow to measure the distances; they in general use light waves (including laser beam) or of the close infrared returned by reflectors.

2. An instrument for measuring the convergence which uses an invar (wire) subjected to a constant tension by an electric motor. The wire is connected to the measuring device (electric motor) and to a plot embedded in the opposite to

the apparatus. The reading is done by digital display of a rev counter to the hundredth of millimeter.
Syn. with DISTOMAT

DISTEMPER
Détremper
Painting
Syn. with DILUTE

DISTILLED WATER
Eau distillée
Materials
A natural water whose mineral salts have been eliminated by distillation. This water has the same characteristics as those of pure water.

DISTOFOR ™ **APPARATUS**
Distofor
Equipment for Measure and Control
An equipment for measuring axial displacement of one or several points in country rock and the facing of a work along of a drilling. It consists of a cane supporting oscillatory electrical circuits coupled with metallic anchorages fixed to the wall of the drilling. All displacement is translated into a modification of the frequency of the oscillatory circuit. Measurements are executed with a frequency meter that utilizes a table of conversion (frequency/length).

DISTOMAT
Distancemètre
Equipment for Measure and Control
Syn. with DISTANCING UNIT

DISTORTED WOOD
Bois tranché
Building Materials
1. Wood whose grains are not parallel to its surface.
2. Wood whose knots disunite fibers.

DISTORTION
Déformation
Strength of Materials
Syn. with BUCKLING; DEFORMATION; STRAIN

DISTRIBUTED ANCHORAGE
Ancrage réparti
Work
A mode of fixing of supporting bolts which are interdependent of the rock over all their length (contrary of *punctual anchorage*).

DISTRIBUTED LOAD
Charge répartie
Strength of Materials
A load that, in practice, can be:
- **uniformly distributed** *(uniformément répartie),* namely with a constant intensity, throughout the length of a beam; **See Figure 18**
- **partial uniformly distributed** *(partiellement uniformément répartie),* namely with a constant intensity, but on a part only of the length of a beam. The usage tells: partially distributed load; **See Figure 18a**
- **triangular-distributed** *(répartie en triangle),* symmetrically or dissymmetrically, throughout or part of the length of a beam; **See Figure 18b**
- **trapezoidal-distributed** *(répartie en trapèze),* symmetrically or dissymmetrically, throughout or part of the length of a beam. **See Figure 18c**

DISTRIBUTION BEAM OF FOUNDATION
Longrine
Construction
A reinforced concrete beam forming a chain bond in a shallow foundation and whose aim is to preserve this one from possible differential settlements. This beam is also intended for taking the unequal load distributions on the work. Syn. with SILL; WALL PLATE

DISTRIBUTOR
Distributeur
Equipment and Tools
A device, which generally laid out below a storage capacity (hopper, silo), is intended for ensuring a regular and controlled debit, sometimes a shorter transport, of pulverulent or granulous matters. The distributors allow to proportion and measure the quantity of distributed product and are thus called *distributor-batchers.* They also ensure the closing of the hopper. Syn. with SPREADER

DISTURBED
Jectisse
Earthwork
Of a ground which was excavated, stirred up.

DISTURBED GROUND
Terre jectisse
Earthwork
A ground which was excavated, stirred up, thrown with the spade.

DISUNITING
Dévêtissement
Work
The free space allowing the presentation, approach, installation of a piece in a bid to its assembly. **See Figure 19**

DITCH
Cunette; Fossé; Rigole
Construction; Sanitary Engineering and Drainage
1. In a bridge or viaduct with gallery vaults located above of the piers, horizontal part slightly curved situated in the fork at the right of the pier and that collects waters so as to channel them toward waterspouts or drainage channels. **See Figure 21**
2. A gutter to the open air of a small section mostly semicircular often arranged at the base of sidewalls and whose aim is to collect seepage or flow waters and to drain them by gravity toward the outside or toward a pumping station. Syn. with CUNETTE; CURVED CHANNEL
3. A tank dug lengthways to facilitate the streaming waters flow from a road platform, railway platform, slope, and that flow into a river, a basin, etc. Syn. with DIKE; DRAIN; GRABEN; TRENCH. **See Figure 20**
4. Syn. with GULLY

DITCH THROW
Jet de fossé
Earthwork
Ground or sludge extracted from a ditch at the time of an operation of cleaning out and which is thrown on the bank to form a windrow.

DITCHER
Trancheuse
Equipment and Tools
A tracked or pneumartic-mounted machine, generally equipped with a bucket line chain and used to dig small width trenches. Syn. with TRENCH EXCAVATOR; TRENCHER

DIVERSION CUT
Cunette de ceinturage
Sanitary Engineering and Drainage
Syn. with BYE-CHANNEL; GARLAND DRAIN

DIVIDE (THE STONE)
Rader
Quarry and Masonry
To split a block of stone with a chisel making two channels set one on the top face and other to the bottom face.

DIVISION
Partage
Test of Materials
A sampling method in a sand heap. It is a traditional operation whose the most mainline method is the quartering. The quartering consists in separating into four equal parts a symmetrical conical heap according two perpendicular vertical plans recutting itself at the centre of the heap, then to unite two opposite quarters. Another method of division is the use of the dividers with corridors which is much faster.

DOG
Clameau; Rappointis
Carpentry; Temporary Construction
1. A lengthened U-shaped steel clamp with two points which is used to interlock between they members or timbers of temporary bearings. Syn. with CRAMP. **See Figure 22**
2. A pointed metal part for tacking the foot of sloped shores.

DOLERITE
Dolérite
Building Materials
A sort of basalt of thinnest visible grains used as metalling or construction material.

DOLINE
Doline
Geomorphology
A closed depression of karstic origin. Syn. with SINKHOLE

DOLINE n.f.
Doline; Sinkhole
Géomorphologie
Dépression fermée d'origine karstique.

DOLLY
Tas de rivetage; Tas à l'abattage; Casque de battage; Avant-pieu; Fardier
Equipment and Tools; Foundation; Handling
1. A kind of small anvil comprising an imprint of rivet head into which comes to lodge itself the first head rivet. This tool is designed to keep up a rivet in its position during the formation of the second head. Dollies used generally have a pneumatic jack or a screw. Syn. with HEAD CUP. **See Figure 23**
2. Syn. with CRASH HELMET; DRIVING CAP; DRIVING HELMET; HEAD; PILE HELMET
3. A member (generally a wooden piece) placed on the head of a wood pile with intent to allow its complete driving in.
4. A low-wheeled wagon used to carry heavy loads on a site: blocks of stones, cement bags, etc.

DOLLY KEEPER
Teneur de tas *ou* Teneur d'abattage
Metal Construction
In a team of riveters, worker in charge to seize the hot rivet (brought close to him by team of heating) by means of a pincer, to pass it into the hole and to support the head of the rivet pressed against the sheet metal, either with a head cup dolly, or with a lever dolly.

DOLOMITE
Dolomie
Geology
A sedimentary rock formed mainly by dolomite mineral, double carbonate of calcium and magnesium. Dolomite is used as building stone, especially in the chemical industry. Syn. with DOLOMITE SPAR

DOLOMITE LIMESTONE
Roche dolomitique
Geology
Syn. with DOLOMITE ROCK

DOLOMITE ROCK
Roche dolomitique
Geology
A material formed by dolomite (double magnesium and calcium carbonate) and calcium carbonate whose hardness index is higher than that of the chalky rocks (from 3.5 to 4). Of gray or cream color, its structure is very variable (compact, schistose, oolitic, vacuolar). The vacuolar dolomite is called *Cargneule.* Syn. with DOLOMITE LIMESTONE

DOLOMITE SPAR
Dolomie
Geology
Syn. with DOLOMITE

DOLPHIN
Duc-d'albe
Construction
Rigid or supple mooring implanted in a waterway or in the ocean. Rigid devices consists of circular piers or of a group of piles connected at the top by a concrete block. In general, these dolphins must resist mooring forces. A supple dolphin consists of a group of tubular piles or flexible metallic sheet piles embedded in the ground and interdependent in their displacement thanks to a frame that connects them in head. Syn. with PILE CLUSTER

DOME
Coupole; Dôme; Cloche
Construction; Defects
1. A construction in the form of a spherical cap realized on a circular or polygonal plan.
2. The internal surface of a dome.
Syn. with CUPOLA
3. A surface of revolution generated by any meridian curve turning around a vertical axis. Horizontal sections are circular rings and the dome picks up on its bearings by a circular belt.
4. Syn. with CAVITY; OPEN; POT HOLE

DOME-SHAPED DAM
Barrage-coupole
Civil Engineering Structure
Arch dam with double curvature, in which consoles have a particularly curved form. It can be built of concrete or masonry.

DOMERIAN
Domérien
Geology
A formation of the lower Jurassic (Lias).

DOORWAY ARCH
Arc de décharge
Construction
A vault built-into the thickness of a masonry intended for relieving the construction situated beneath distributing the loads of the wall onto support points located at the springings of this arc; it is extradossed. Syn. with RELIEVING ARCH; SAFETY ARCH

DOPING
Dopage; Dope
Materials
1. The addition of active products with others.
2. A product that added to a binder, is used as connection between this one and aggregates and that is used when the binder presents no affinity for the aggregate.

DOSING EQUIPMENT
Doseur
Equipment for Measure and Control
Syn. with BATCHER

DOSOMETER
Dosomètre
Equipment for Measure and Control
An automatic ordering instrument of weighing intended for supplying in constant amounts of materials apparatuses functioning uninterrupted.

DOT AND DASH
Trait mixte
Drawing
A line formed by a succession of small lines stopped and separated by points, serving in marking the axis and plans of symmetry. When it ends by two solid lines, the dot and dash makes materialize the mark of a section plan.

DOUBLE DOVETAIL
Aronde
Carpentry and Masonry
A cramp for assembling two structural members or two stones. This cramp is thus called owing to its conformation in double dovetail.

DOUBLE MEMBER
Moise
Construction
Timber or metal pieces twinned and assembled so as to grip tightly and to keep up the different one. In a steel structure the double members are assembled by bolts or welds. **See Figure 26**

DOUBLE NAIL
Conduit
Materials
A nail with two U-shaped sharp pointed tips that serves in tacking the wire or wire netting on a wooden support.

DOUBLE PRESTRESSING
Double précontrainte
Constructions of R.C. and P.C
1. Prestressing successively applied in the longitudinal direction and in the transverse direction to a piece of concrete.
2. Of a slab or a prestressed slab part that is not included in the norms of simple prestressing.

DOUBLE REFRACTION
Biréfringence
Strength of Materials
Syn. with BIREFRINGENCE

DOUBLE SUPPORT
Appui double
Strength of Materials
A bearing which develops reactions according to all directions of a plan.

DOUBLE-BEVEL PREPARATION
Préparation en K
Welding
A preparation in which the edge of only one piece is chamfered on the two edges, so that the profile of the joint forms a K. The preparation can be equal or unequal, with flat part or heel not exceeding 3 mm. Syn. with K PREPARATION

DOUBLE-DOVETAIL MASONRY TIE
Agrafe
Masonry
A metal piece that connects two courses of stones. Syn. with CLAMP IRON; MASONRY TIE; METAL CRAMP; WALL TIE. **See Figure 24**

DOUBLE-GIRDER CRANE
Bipoutre
Temporary Construction
A temporary steel construction for handling materials (cages of reinforcements, segments,

etc.) in the construction of deck by corbelling. The principle is the following: two parallel lattice girders assembled on pilings pick up between the bearings of the future deck. On the top frames moves the materials transportation gantry. **See Figure 25**

DOUBLE-GROOVE PREPARATION
Préparation à double ouverture
Welding
A preparation in which the faces to be welded open on the two sides.

DOUBLE-J PREPARATION
Préparation en double J
Welding
A preparation in which the edge of only one of the elements is prepared on the two edges so that the profile of the face to be welded forms two opposed J, more or less opened. The preparation can be equal or unequal, with flat part or heel not exceeding 3 mm.

DOUBLE-POINTED PICK
Pic
Equipment and Tools
Stonecutting tool used to obtain a split face finish and which comprises at least a pointed end. The quarry worker's pick with two points is used to attack stone benches and to be done notches intended for receiving the wedges or point tools. The pick to one point and square head is also called a *point tool.*

DOUBLE-ROLLER APPARATUS
Appareil à cylindre double lisse
Equipment and Tools
Apparatus being designed to the manufacture of pit sands and whose fragmentation is obtained by crushing between two cylinders turning in invert directions (100 to 180 rpm). Cylinders are furnished with hoops in extrahard special steel.

DOUBLE-SEGMENTATION ROLLER APPARATUS
Appareil à cylindres à doubles segmentations
Equipment and Tools
Apparatus being designed to the development of sands and gravel of pit and whose manufacture is obtained by crushing. Cylinders are covered with steel segments fixed by metallic wedges around a number of disks with notches.

DOUBLETTE BOARD
Doublette
Building Materials
A balk in oak 0.054 m thick and 0.325 m of wide.

DOUBLE-U PREPARATION
Préparation en double U
Welding
A preparation in which the edges of the two elements are prepared on the two edges so that the profile of the joint forms two opposed U, more or less opened. The preparation can be equal or unequal, symmetrical or dissymmetrical, with flat part or heel not exceeding 3 mm.

DOUBLE-V PREPARATION
Préparation en X
Welding
A preparation in which the edges of the two parts are chamfered on the two edges, so that the profile of the joint forms two opposite V. The preparation can be equal or unequal, symmetrical or dissymmetrical, and with or without flat part or heel, the latter not exceeding 3 mm.

DOUBLE-WEBBED BEAM
Poutre à caisson
Construction
Syn. with BOX BEAM; BOX GIRDER; HOLLOW-WEB GIRDER

DOUBLE-Y PREPARATION
Préparation en double Y; Préparation en X partiel
Welding
Syn. with PARTIAL-X PREPARATION.

DOUBLING PIECE
Doublier
Building Materials
An insertion that doubles something in thickness.

"DOUM THE HOLE" HAMMER (DRILL)
Marteau fond de trou
Equipment and Tools
A smooth cylindrical punching tool that bores a hole of a sufficient diameter to ensure the passage to it. This hammer can carry out holes of great depth sinking, thanks to the push of a stand of drill pipe, progressively to the boring.

DOVETAIL
Adent; Queue d'aronde
Carpentry; Construction
1. A notch executed in a timber piece that allows an assembly (term especially used by carpenters). Syn. with JOGGLE
2. Trapezoidal-shaped assembly used in carpentry or mechanical fitting formed by a male part and a female part encasing one into the other.

DOWEL
Cale; Goujon; Goujonner
Masonry; Building Materials; Work
1. In the temporary strengthening of masonry, small beveled piece of hard wood. This piece is intended for being inserted into largely opened and deeply dismantled joints of stoneworks in wait of repointing operations or during these ones. Syn. with BONING PEG; WOOD BLOCK
2. A metal or wooden piece for linking two members, two ashlars, two concrete road slabs through the joint, a pole and the pedestal that is used to it as base, etc., and that is usually fixed by sealing. Syn. with COCK; SET-SCREW
3. To connect with dowels wooden pieces, stones, etc. Syn. with GUDGEON; JOGGLE; PIN

DOWEL ACTION
Effet de goujon
Construction of R.C. and P.C.
A phenomenon that results when the reinforcements of the reinforced concrete work perpendicularly to their axes.

DOWEL HOLE
Enlaçure
Carpentry
A hole realized in a wooden pieces assembly, into which has been sunk a slightly truncated stud, intended for immobilizing the two pieces. Syn. with PEGHOLE ASSEMBLY

DOWEL SCREW TO BE WELDED
Tige filetée à souder
Building Materials
A round bar partially threaded and whose one of the ends is especially prepared in the interest of to be assembled by welding with another part.

DOWELED JOINT
Joint
Construction
A device or material connecting two parts initially separated; by extension, structural space. Example: pavement joint, expansion joint, etc. Syn. with EXPANSION JOINT; HINGE; etc.

DOWELING
Goujonnage
Work
An assembly carried out with dowels.

DOWNFALL
Ruine
Strength of Materials
The critical state of a work, which is regarded as such not only when there are collapse or reversal of the unit, but also when the displacement or unrecoverable deformation of an element is sufficiently important on the ground that compromise the conservation of the work or continuation of its exploitation. Syn. with DECAY

DOWNSTREAM CUTWATER
Arrière-bec
Construction
The cutwater of a bridge pier located downstream side to facilitate water flow and to move away floating bodies. **See Figure 27**

DOWNSTREAM FLOOR
Arrière-radier
Construction
A masonry work built in foundation and downstream from a work in order to protect it from underminings.

DOWNSTREAM SIDE
Aval
Tightness
Of a sealing complex when the water meets it after having crossed the structure of the work.

DOWNSTREAM WATER
Aval
Hydrology
The side toward which a river flows.

DOWNTIME
Période d'inutilisation
Equipment and Tools
The space of time during which an earthmover is not used on a building site during a working session.

DRAFT
Ciselures relevées; Relever
Nomenclature of Materials; Masonry
1. Regular rims done with a chisel to mark off the side to be dressed and that remain marked on the head of stones in place. Syn. with DRAFTED MARGINS; MARGIN DRAFT
2. To cut with the chisel the surround of a stone facing. (One also says *to do carvings*.)

DRAFTED MARGINS
Ciselures relevées
Nomenclature of Materials
Syn. with DRAFT; MARGIN DRAFT

DRAG
Dragueur
Equipment and Tools

DRAG
Riper; Dragueur
Masonry; Equipment and Tools
1. To dress a facing with the chip. Syn. with TO POLISH; TO SCRAPE
2. Syn. with DREDGER

DRAG BUCKET
Benne
A tool equipping certain cranes to execute dredgings or to take loose materials. **See Figure 28**

DRAGGING
Retroussis; Ripage
Earthwork; Masonry
1. The stripping of a soil whose earths are staked in windrow and, arguably, in slope.
2. Syn. with POLISHING; SCRAPING

DRAGGING-OUT
Délayage
Hydraulic Binders
Syn. with MIXING; TEMPING

DRAGLINE
Dragueur
Equipment and Tools
1. Earthmoving plant notably used in aquatic site, constituted by an excavator whose one has changed the boom and the bucket. Its bucket is to permanent walls solely manipulated by cables: suspension and reminder cables pass over pulleys at the extremity of the boom; the bucket is emptied when the traction cables are released, causing its swinging. Syn. with DRAGLINE EXCAVATOR
2. Bucket of supplies carried by a boom and pulled by a cable, used to lift aggregates to a stocking area.

DRAGLINE EXCAVATOR
Dragueur
Equipment and Tools
Syn. with DRAGLINE

DRAGON TIE
Lierne
Carpentry
A timber piece parallel to the ridge, which is assembled on the king posts and connects the trusses between them.

DRAG SHOVEL
Pelle rétrocaveuse mécanique
Equipment and Tools
Syn. with BACKACTER; BACKHOE; TRENCH HOE; DIGGER

DRAIN
Gargouille ; Baqueter ; Epuiser
Construction; Earthwork
1. Syn. with SPOUT
2. To remove the water of an excavation with a bailer.

DRAIN
Drain ; Drainer ; Carnet; Fossé, Noc
Sanitary Engineering and Drainage
A work of small diameter, nonworth visiting for harnessing the water circulating in the ground or the masonry. The drain can be plated to the rock or masonry, embedded in the bottom of chase or formed by drillings of great length.
Different drains are:
- **French** (*le drain à la française*), characterized by a trench approximately 1 m deep and 0.60 m

wide, partially fillled with a porous material through which passes a pipe that is porous or to open joint; **See Figure 31**

- **concrete socket pipe *or* concrete porous pipe** (*le drain en béton poreux*), a drainage device placed at the stern of abutments or various walls and that is constituted by honeycombed slabs in porous concrete fitted with dry joints on an horizontal draining base;
- **Canadian** (*le drain canadien*), consists of a coated board channel and furnished with a series of layers of draining materials to increasing grading down and up, and thus of continuation on several thicknesses;
- **French *or* rubble** (*le drain en pierres sèches*), which consists of a well-finished stacking of stones placed at the stern of walls and abutments or again grounds;
- **sand pile *or* vertical (sand) *or* sand** (*le drain de sable*), formed by a vertical drilling filled with filtering sand; **See Figure 32**
- **subhorizontal** (*le drain subhorizontal*), embankments drainage device formed by perforated plastic tubes that are placed horizontally in the slope to be sanitized; **See Figure 30**
- **vertical** (*le drain vertical*), terrain drainage device that uses drillings or a vertical well fillled with filtering materials. Drained water is pumped, leaving a bed with an artificial outlet (subhorizontal drain or aqueduct) or natural (sandy terrain, permeable in general) at the base of the drilling or the well.

2. To clear a terrain of excess water or to divert and catch the water in a work.
3. A gutter accommodated in the raft of a gallery to drain off waters. **See Figure 29**
4. Syn. with DIKE; DITCH; GRABEN; TRENCH
5. Syn. with CHANNEL
6. Syn. with SEWER

DRAIN FOLLOWING THE HILLSIDE
Baradine
Sanitary Engineering and Drainage
A ditch dug in sling on the side of the mountains to take delivery the stormwater and the flows in order to avoid the streaming on the walls and thus to head off gullying.

DRAINAGE
Drainage; Assainissement; Ecurement
Sanitary Engineering and Drainage
1. A process of impounding or diverting the waters that percolate through the ground or masonry, with the help of a system of drains and to direct them to an outlet (ditch, drainage channel, etc.).
2. In general, a system of drains.
3. Action of draining.
Syn. with DRAINING, LAND DRAINAGE
4. A device for cleaning up a support, a ground, while harnessing the streaming or seepage waters (drainage, anti-polluting lays, etc). Syn. with SWEETENING; SANITATION
5. System of furrows for facilitating the flowing of water.

DRAINAGE BLANKET
Tapis drainant
Sanitary Engineering and Drainage
A bed realized with filtering materials, located at the back of an earthfill dam or a cofferdam and intended for draining seepage waters coming from the basement.

DRAINAGE CHANNEL
Barbacane; Saignée; Emissaire d'évacuation
Construction; Sanitary Engineering and Drainage
1. A narrow opening fitted out or bored in a brickwork, stonework, or concrete construction. It allows the flow of waters drained at the back of the masonry of abutments, return walls, wing walls or retaining walls, and the evacuation of the gases amassed inside the embankment. By extension, water discharge pipe. Syn. with DRAINAGE OPENING; WEEPHOLE. **See Figure 33**
2. In bridges and masonry work, perpendicular or slant groove in comparison with the longitudinal axis of the work, dug in the masonry and intended for collecting waters coming from country rock (usually through the channel of appeal drillings).
3. A small channel accomodated in places, in the heightened shoulder of a road, to drain off toward a ditch waters collected on the carriageway banks. Syn. with DITCH; TRENCH
4. A work (duct, aqueduct, box culvert, etc.) for draining mud-laden waters. Syn. with OUTLET

DRAINAGE CHIMNEY
Cheminée
Sanitary Engineering and Drainage
Syn. with DRAINAGE TRENCH

DRAINAGE COLLECTOR
Collecteur drainant
Sanitary Engineering and Drainage
A buried device for collecting and flowing zenithal waters and, possibly, internal waters. Its lower part is tight while its upper part is permeable (splits, holes, etc.).

DRAINAGE COUNTERFORTS
Contreforts drainants
Sanitary Engineering and Drainage
Syn. with DRAINAGE TRENCHES

DRAINAGE CURTAIN
Masque drainant
Sanitary Engineering and Drainage
A work for draining and sinking a continuous groundwater at the back of a slope and constituted of successive layers of draining materials placing onto the slope. We can distinguish three types of drainage curtains: triangular, trapezoidal, or constant thickness. **See Figures 34 to 34b**

DRAINAGE DITCH
Caniveau; Caniveau d'assainissement; Colateur; Rigole
Sanitary Engineering and Drainage; Construction
1. A drainage work that consists of an open aqueduct or covered with removable slabs, built in masonry of stones or concrete, and usually of rectangular or trapezoidal section. These aqueducts can be prefabricated. Syn. with DITCH; GULLY; GUTTER
2. A drain laid out crosswise under the roadway or railway platforms to drain and dry the embankments and slopes.
3. A sewerage ditch.
4. Syn. with CATCH DRAIN

DRAINAGE DIVERSION
Diversion de drainage
Hydrology
The change of bed of a waterway that pours over an obstacle in the aftermath of the obstruction of its normal course by a natural fact (slipping of terrain, etc.).

DRAINAGE GALLERY
Galerie drainante ou filtrante
Sanitary Engineering and Drainage
A deep trench dug parallel to the course of a river for collecting seepage waters coming from the waterway. Syn. with DRAINAGE TRENCH

DRAINAGE LAYER
Couche drainante
Sanitary Engineering and Drainage
In a drainage, bed for decreasing the water pressure before to drain off them.

DRAINAGE OPENING
Barbacane
Construction
Syn. with DRAINAGE CHANNEL; WEEPHOLE.

DRAINAGE SPUR
Eperon drainant
Sanitary Engineering and Drainage
A draining vertical wall, parallel to the line of the greater slope and that is built to harness the discontinuous or punctual water infiltrations in a slope. The drainage spur has a stabilizing double function: it lowers the groundwater and improves the resistance to the slipping by friction on vertical facings. **See Figure 35**

DRAINAGE TRENCH
Tranchée drainante; Paroi drainante; Cheminée; Nause; Galerie drainante
Sanitary Engineering and Drainage
1. An excavation from which extracted materials are replaced by others to grading studied. This trench is dug to drain and lower the underground water at the back of a final cutting slope or to drain in-depth the foundation supporting an embankment. The draining material consists of coarse sand or gravels enveloped in a nonwoven geotextile. The width of the trench is from 0.80 to 1.80 m. Its depth depends on the geohydrological conditions of the site considered, but it is limited to 4 m.
There are several types of drainage trenches:
- **deep** *(les tranchées drainantes profondes),* dug on the natural slopes uphill from platforms in a bid to close waters of slope; **See Figure 37**

- **perpendicular to the channel of communication** (*les tranchées drainantes perpendiculaires aux voies de circulation*), intended for:
  - flowing toward the outside water of the boat bottom in the embankments,
  - stopping the water longitudinal flow under the channel of communication of a cut toward an embankment at the transition of these two works;
- **superficial on natural slopes** (*les tranchées drainantes de surface sur pentes naturelles*), cutting slope and slope of embankment.

These little deep trenches are intended for collecting waters on the slopes where springs are observed, oozings at the time of the rains. The draining material consists of dry stones, on beating raft, in steps.

2. A narrow and more or less deep trench, executed according to the same principles that the traditional diaphragm wall by successive or alternated panels, or round the clock. The fluid of excavation is a biodegradable fluid. The filtering block is realized by pouring various materials according to a well-defined order. This process is in particular used to drain important slopes. Syn. with DRAINAGE WALL. **See Figure 36**

3. In the drainage of underground works, chase of a large section filled up with dry stones. Chimneys are built inside masonry or inside country rock or inside both. Syn. with DRAINAGE CHIMNEY

4. A very broad and deep ditch intended for water draining.

5. Syn. with DRAINAGE GALLERY

DRAINAGE TRENCHES
Contreforts drainants
Sanitary Engineering and Drainage
Deep drainage trenches dug according to the gradient of slope or cut-and-fill works and endowed with a raft arranged in below of the slip surface, with the result that the work has, not only a sewerage hydraulic action, but also a mechanical action. Syn. with DRAINAGE COUNTERFORTS. **See Figure 38**

DRAINAGE WALL
Paroi drainante
Sanitary Engineering and Drainage
Syn. with DRAINAGE TRENCH

DRAINAGE WELL
Puisard
Sanitary Engineering and Drainage
Syn. with CATCH PIT; SOAKAWAY

DRAINAGEWORK
Ouvrage d'assainissement; Ouvrage drainant
Sanitary engineering and Drainage
1. A device for allowing the water flow collected by drains or all similar systems.
We can distinguish in particular:
- **longitudinal drainage works** (*les ouvrages dits d'assainissement longitudinal*), which collect streaming waters from the platform, slopes, as seepage waters at the level of the bottom of foundation structures. These works ensure the transit of this water toward an outlet;
- **transverse hydraulic works** (*les ouvrages hydrauliques transversaux*), which allow the transit of waters of the natural basins and the longitudinal purifications.

2. A cleansing construction which is intended:
- for draining and lowering a sheet of water or punctual water infiltrations in the cutting slopes (breakwater, drainage trench, or drainage curtain);
- for sanitizing in-depth the soil supporting a filling (drainage trench);
- for protecting the slopes from the erosion or the frost susceptibility (curtain of protection).

DRAINING
Assèchement; Drainage; Vidange
Sanitary engineering and Drainage
1. Syn. with DRYING
2. Syn. with DRAINAGE; LAND DRAINAGE
3. A small ditch dug along a road and intended for water flowing.

DRAINING TRAP
Bétoire
Sanitary Engineering and Drainage
A kind of cesspool intended for receiving storm water.

DRAINOMETER
Drainomètre
Equipment for Measure and Control
A device for measuring the drainability and percolation degree of some materials.

DRAPERY
Draperie
Defects (Painting)
A surface defect of a paintwork, characterized by runnings on the substrate reminiscent the drapery. Syn. with SAGGING

DRAUGHT
Tirant d'eau
Hydrology
The distance separating the open surface from the lowest point of the section of a waterway. Syn. with WATER DEPTH

DRAW
Trusquiner
Metal Construction
To carry out a tracing. Syn. with SCRIBE

DRAW A LINE
Battre une ligne
Topography and Masonry
To draw a line onto a surface by means of a line impregnated by a colored powder. The line is tensioning then is loosened nimbly, thus shingling surface by leaving a colored trace there.

DRAW CABLE
Aiguille de tirage
Equipment and Tools
A wire in standby inside a conduct, an underground sheath that facilitates (or will facilitate) the drawing of feeding cables (electric, telephone, etc.) fixing to the one of its ends the cable to be passed. Syn. with DRAW WIRE

DRAW CUTTING
Mouler une pierre
Masonry
To draw the panels of cut on the surface of a stone block. This job is executed by the stonecutter.

DRAW WIRE
Aiguille de tirage
Equipment and Tools
Syn. with DRAW CABLE

DRAWBRIDGE
Pont-levis; Pont basculant; Pont oscillant
Civil Engineering Structure
A movable bridge whose deck moves by swinging around a horizontal axis by means of an upper equalizer to which it is connected or by roll on a toothed circular quadrant.
Among the counterpoise bridges we can distinguish in particular the Scherzer bridge, which is a type of bridge with upper or lower counterbalance formed by a flight deck and overhanging of counterweight. The flight deck of the clearing structure is formed by a decking and lattice girders or a girder with a solid web. The overhanging of counterweight constitutes the frame of operation equipped:
- of a ballast of balancing,
- either above the roadway and releasing the road clearance,
- or below the roadway and moving into a pit. This ballast can be fixed or articulated on the overhanging of counterweight,
- of a toothed circular quadrant engaging on two roll racks interdependent of masonries,
- of swivels of articulation, in the center of the circular quadrant, on which act of the operating machinery which can be:
- hydraulic equipment,
- mechanical equipment hydraulically or electrically ordered (the balancing ballast crate can be used as a distance piece of twist between the two segmental beams of the overhanging of counterweight).

DRAWER
Extracteur
Building Materials
Worker who ensures the extraction of loose parts in a stone quarry.

DRAWER PIPE
Arrache-tube
Equipment and Tools
A tool used in drilling to extract the drill rods jammed in a hole during a boring. Syn. with BULLDOG SPEAR; PIPE CATCH

DRAWING
Plan; Dessin; Epure
Drawing
1. The horizontal projection of an object, a work.
2. All the drawings defining a work, including elevations, sections, dimensions, levels and all the different views necessary to realize the job in the field.

Syn. with PLAN
3. A representation that defines of a complete manner the works or pieces taking account if necessary, of the successive phases of execution. Syn. with SKETCHING
4. Syn. with FULL SCALE WORKING; LINE DRAWING; LINEAR DIAGRAM

DRAWING
Soutirage; Traçage
Earthwork; Work
1. A void intake which can bring about, for example, the creation of an underground cavity due to a karstic erosion. Deprived of their support, the sublying formations collapse. When this erosion is carried out to small depth, one speaks about suffosion rather than drawing.
2. An operation which consists in drawing according to a plan on a piece to be machined, in cutting outlines of its final shape.

DRAWING DEVELOPMENT
Développement
Drawing
The drawing of plans, sections, and elevations of all faces of a work.

DRAWING GAUGE
Profileur
Equipment and Tools
A kind of template used by the designers that allows to plot on the paper the road or railway track profiles.

DRAWING (OUT) OF METAL
Etirage
Metallurgy
A cold forging method which consists in pulling a bar through a drawplate to obtain another, of more small section and a more great length. Syn. with COLD DRAWING

DRAWING UP (OF WATER)
Puisage
Sanitary Engineering and Drainage
The water extraction from a ground saturated with water by means of any process (pumping, wellpoint, etc.).

(LOW) DRAY
Binard
Handling
Syn. with LORRY

DREDGE BUCKET
Godet
Equipment and Tools
Syn. with BUCKET; DIPPER; SCOOP

DREDGE OF SAND
Désensabler
Work
To remove the sand that obstructs a piping, a work, etc.

DREDGER
Drague
Equipment and Tools
A floating plant formed by a shell serving as support for the earthmoving device. It is used to dredge aquatic site. Its component are :
- **scoop dredgers** *(les dragues à cuillère),* constituted of an excavator fitted for knoll digging work and that is installed on a floating landing stage;
- **clamshell (bucket) dredgers** *(les dragues à benne preneuse),* which are excavator fitted on floating landing stage or on a barge;
- **bucket dredges *or* ladder dredges *or* dipper dredges** *(les dragues à godets),* which are real floating diggers;
- **hopper dredges *or* suction dredgers** *(les dragues suceuses),* which are installed on floating landing stages or barges and that suck the excavated materials with through pipes.

Syn. with DRAG

DREDGING
Dragage; Fouille
Earthwork; Building Materials
1. Excavations executed underwater, in which bottom material is removed by means of dredgers, similar to bucket dredges. Dredgers can be installed on the bank or assembled on pontoons, boats, etc. Dredging is also an operation that consists of extracting granular materials from the bed of waterways such that sands and gravel so they may be used as aggregates in the manufacture of mortar or concrete.
2. Syn. with PIT

DREDGING MACHINE
Excavatrice
Equipment and Tools
Syn. with DIGGING MACHINE; EXCAVATING MACHINE

DREDGING OF SAND
Désensablement
Work
The removal of the sand that obstructs a piping, aqueduct, waterway, etc.

DRESS
Repiquer; Dresser une pierre; Dresser; Corroyer; Blanchir
Masonry; Work; Building Materials
1. To hack the surface of a masonry or concrete facing to facilitate the bond of a rendering which must be applied there.
2. To cut a stone while smoothing its faces. Syn. with TO HEW
3. To execute an operation of dressing. Syn. with FACE; TRIM; STRAIGHTEN
4. Syn. with ROUGH PLANE; TRIM
5. To dress square-edged the faces of a timber piece.

DRESSED STONE
Morceau taillé
Building Materials
Syn. with BUILT STONE

DRESSED TIMBER
Bois corroyé
Building Materials
Syn. with ROUGH-PLANED WOOD; SURFACED TIMBER

DRESSING
Taille apparente; Chaîne d'angle
Masonry; Construction
1. Stone worked to the desired shape, usually with a smooth face and sometimes containing a molding. It is generally used around opening at corners of buildings.
2. Syn. with COIN STONE; QUOIN; QUOIN STONE.

DRESSING BEAM FINISHER
Vibrolisseuse
Equipment and Tools
A device used to vibrate superficially and to smooth concrete. Syn. with DRESSING BEAM FINISHING MACHINE; DRESSING SCREED FINISHER

DRESSING OF BANK
Dressement de talus
Earthwork
The brought or withdrawal of materials for dressing a slope or an embankment in order to make even the surface.

DRESSING PLATE
Marbre à dresser
Equipment and Tools
A rigid metal plate for planing sheet metal.

***DREUX* FORMULA**
Formule de *Dreux*
Building Materials
Empirical formula for the duration of vibration of reinforced concrete: the diameter of the vibrator in millimeters, slump with the cone, granular coefficient, volume in liters of concrete to be vibrated, and the coefficient of the bar setting.

DRIER
Siccatif
Painting
1. A preparation containing metal or organometallic components, endowed with catalytic properties and which, mixed to relatively little doses in oils, varnishes, paints, fatty coats, start their own drying power (driers accelerate the absorption of ambient oxygen by binder, allowing it to dry more quickly). The most frequently driers used are naphthenates and octoates of cobalt, lead, manganese, zinc, zirconium, calcium. They must be soluble in the binders to which they are mixed.
2. A matter which, applied in thin layer, is able to evolve in an irreversible way of the liquid state into a solid state by self-polymerization through the agency of air and, possibly, of light. The linseed oil, the wood oil of China, the dehydrated castor oil are wetting oils. Syn. with QUICK DRYING; SICCATIVE

DRIFT
Galerie; Galerie d'avancement; Atterrissement; Broche
Civil Engineering Structure; Earthwork; Geohydrology; Materials
1. A work executed to open air and that is filled up afterward (pedestrian crossing, road or railway galleries, etc.). Usually, horizontal or slightly sloped underground channel of communication. Syn. with DRIVE
2. A small narrow underground dug in the axis of the future channel of communication. It is the first operation executed at the time of the heading of a tunnel. The gallery is usually set at the top of the section to be bored. Syn. with HEADING
3. Syn. with ACCRETION; SETTLINGS
4. Syn. with BROACH

DRIFT
Mandrin; Chasse; Mandriner; Dépôt
Equipment and Tools; Work; Defects
1. A punch for boring metals made red-hot. Syn. with MANDREL
2. Syn. with PUNCH
3. To punch with a drift.
4. A wood defect characterized by an excrescence due to a punctual sap affluence.

DRIFT BOLT
Broche
Equipment and Tools
A steel rod used to do coincide the holes of pieces in the process of assembly and immobilizing them in wait of their bolting or riveting. Syn. with RIVETING PIN

DRIFT FOR COLLECTING WATER
Albraque
Construction
A sewerage gallery used as water tank, this one being pumped toward the surface after decantation. Syn. with SUMP

DRIFT INDICATOR CLINOMETER
Inclinomètre
Equipment for Measure and Control
Syn. with CLINOMETER; INCLINOMETER

DRIFT METER
Clinomètre
Equipment for Measure and Control
Syn. with INCLINOMETER

DRILL
Sondeuse; Sonde; Mèche; Foret; Tarière; Perce
Equipment and Tools
1. A machine assembled on truck or towed, which is used to produce drillings. It is formed by a tilting boom guiding the stand of drill pipe; an engine actuates the boom moreover ensures the rotation (or rotary-percussion) of the stand of drill pipe which can be equipped with a core drill for samplings. The drill can be provided with a device to graphically write down the parameters of drilling (logs). Three models essentially are available:
- **pneumatic drilling machine** (*la sondeuse à air comprimé*), soil survey equipment whose source of energy is compressed air provided by a compressor; it can be used as well in percussion, thanks to a pneumatic hammer, as in rotation, thanks to a compressed-air engine. The injection pumps of the cooling liquid are also supplied with compressed air;
- **hydraulic drill** (*la sondeuse hydraulique*), whose operation is ensured by hydraulic circuits, allowing to carry out trial borings of large diameters and in a great depth with rapid operations (nowadays, these drills replace mechanical drills and present the interest to be more polyvalent and powerful);
- **mechanical drill** (*la sondeuse mécanique*), for performing fine geological survey of large diameters or at a great depth and for taking undisturbed samples needed to be subjected to laboratory trials.

Syn. with BORING MACHINE
2. An equipment that allows to examine the nature of the soil or to take samples there. Syn. with CORE DRILL
3. A tool for drilling loose grounds. Syn. with DRILL BIT
4. Helical tool with sharp (edged) head used to bore wood, metal, etc.
5. Syn. with AUGER
6. Syn. with BORER; PUNCH

DRILL BIT
Mèche
Equipment and Tools
Syn. with DRILL

DRILL CARRIAGE
Jumbo
Equipment and Tools
Syn. with JUMBO

DRILL COLLAR
Maîtresse-tige; Masse-tige
Equipment and Tools
Syn. with MAIN DRILL ROD; MAIN ROD

DRILL CORE
Carotte
Civil Engineering Structure and Geotechnics
Syn. with BOREHOLE SAMPLE; CORE; CORE SAMPLE

DRILL CUTTING
Déblai
Foundation
Syn. with CUTTINGS

DRILL EXTRACTOR
Cloche de repêchage
Equipment and Tools
Syn. with HORN SOCKET; OVERSHOT

DRILL FEED
Poussoir
Equipment and Tools
A device exerting a hydraulic or pneumatic push onto a hammer drill during boring.

DRILL HAMMER
Marteau pneumatique
Equipment and Tools
Syn. with PNEUMATIC HAMMER

DRILL HEAD
Tête de forage
Equipment and Tools
The punch situated at the end of a drilling tool and in which fits the bore bit.

DRILL HOLE RING
Eventail de sondages
Foundation
Set of trial borings that allows to distinguish a volume of ground from a unique site of the drilling machine.

DRILL LOG
Coupe de sondage
Geology
Figure representing the profile of a ground-field cut by a trial boring, showing its various geological and sometimes geotechnical and hydrogeological characteristics. Syn.of BORE HOLE LOG

DRILL ROD
Barre creuse de foration
Equipment and Tools
A metallic rod, generally of hexagonal section, with a central hole down its middle enabling the injection of a drilling fluid (water, air, etc.) down to the drilling head. Rock drills are generally equipped with these tools when used on masonry or concrete.

DRILL SET
Garniture de forage
Equipment and Tools
A complete set forming a stand of drill pipe (drill rods, drill collars, pipe couplings, etc.).

DRILL STEEL
Barre de foration; Fleuret
Equipment and Tools
1. Syn. with KELLY
2. Syn. with BORER; JUMPER BAR; MASONRY DRILL

DRILL STEEL SHANK
Emmanchement
Equipment and Tools
The end of the jumper bar of a rock drill which undergoes the striking (heel) and to which one has given a polygonal form to helve into the piston that transmits it a rotation during its return movement.

DRILL STRING
Train de sonde; Train de forage
Equipment and Tools
Set constituted by drill rods and the tool (trepan or other).

DRILL THE SOIL
Sonder un sol
Geotechnics
To explore in depth the soil by drilling to determine the nature of its various strata or to detect the presence of water, ores, etc.

DRILL(ING) PIPE
Tige
Equipment and Tools
The transmission system of the rotational movement of a drilling tool, formed by a rangy solid or hollowed steel piece. Syn. with DRILL(ING) ROD

DRILL(ING) ROD
Tige
Equipment and Tools
Syn. with DRILL(ING) PIPE

DRILLED STONE
Pierre louvée
Masonry
A stone equipped with a hole in its middle to allow its setting up with a lewis.

DRILLER
Foreur
Work
A worker in charge of the drilling of blasthole, in the ground, etc.

DRILLING
Forage; Percement; Foration; Perforation; Perçage
Work
1. A hole of a relatively small diameter in comparison with its length or its depth, resulting from the boring of a soil or masonry.
2. The operations allowing the vertical or horizontal hole boring into the ground or into works and that allows the various grout injection to reinforce foundations, grounds, basement survey, to strenghten the masonry, to investigate masonry, etc. Syn. with BORE HOLE; BORING
3. Syn. with BORING; PUNCHING
4. The boring of a hole into the soil, a work or a material, with a suitable tool (drilling machine, auger, bore bit, etc.). Syn. with PERFORATION
5. Syn. with BORING

DRILLING
Sondage
Test of Materials
An operation that consists in drilling, digging a hole in a material to extract from it a sample (ground, concrete), to auscultate the inside of it (endoscopy, camera, etc.) or to carry out to a physical or mechanical measurement. Syn. with BORING; CORE DRILLING

DRILLING BARGE
Ponton de forage
Equipment and Tools
A floating platform on which is installed the drilling equipment.

DRILLING BARREL (or BORING)
Canon de perçage
Equipment and Tools
A hollow cylinder intended for guiding a drill to prevent it from deviating.

DRILLING BIT
Trépan
Equipment and Tools
Syn. with BORE BIT; TREPAN

DRILLING FLUID
Fluide de forage
Materials
A product used to drill in the soils. The drilling fluid is constituted essentially by water, compressed air, a suspension of clay in water or a special product (bentonite). While ascending the cuttings of drilling, the drilling fluid has a cooling function of the tricone rotary bit, to support walls inside the hole and to prevent it from crumbling thanks to hydrostatic pressures that it exerts sideways, and finally, to retain fluids that can be found in the rocks. Syn. with DRILLING MUD in the case of bentonite.

DRILLING GRAB
Chape de forage
Equipment and Tools
A tool being used to the soil surveys and the researches of good soils for foundations. It is also used to come through the dry layers and also in the drilling under a groundwater table in the zone reflecting at the water table level of the such manner that the necessary valve for the

drilling of alluvia under the water table could work under 1 m of water.

DRILLING MACHINE
Perforatrice
Equipment and Tools
Syn. with HAMMER DRILL; PERCUSSION DRILL; ROCK DRILL; ROTARY DRILL

DRILLING MUD
Boue de forage
Materials
Intimate mixture of clay, water, and sometimes admixtures that is injected continuously by orifices made in the drilling tool. In general, the mud possesses thixotropic properties and is used for 4 goals:
- to maintain walls of the drilling by the formation of a cake;
- to cool the drilling tool;
- to lubricate the tool;
- to ascend the cuttings.

Syn. with MUD FLUSH

DRILLING PARAMETERS
Paramètres de forage
Geotechnics
All the measurable sizes provided by an instantaneous logging at the time of the achievement of a drilling. Measured parameters mainly are variations of drill feed, changes of hummed, variations of pressure and losses of fluid.

DRILLING PLATFORM
Plate-forme de foration
Equipment and Tools
A metal platform that can be setting nearby the front to be drilled, and on which are laid out boring tools.

DRILLING PROGRESS
Avancement d'un forage
Earthwork
The number of meters drilled per unit of time.

DRILLING (CRAWLER) RIG
Motofore
Equipment and Tools
A drilling device mounted on a self-propelled vehicle (usually tracked) used for boring for injection, needlings, etc. Syn. with ROTARY-HAMMER DRILL CRAWLER RIG

DRILLING ROTARY-METER WITH PHOTOELECTRIC CELL
Micromoulinet de forage à cellule photoélectrique
Equipment for Measure and Control
Instrument for measuring the upward speed of water in a drilling in the aftermath of its displacement from a first groundwater table toward another, under a phenomenon of the artesian effect or under a seepage phenomenon. The upward speed is proportional to the rotation speed of a propeller. This propeller, located in a carcass comprising a recording device, is moved into a drilling at various levels and gives the values various speeds of water at these levels. One thus defines the differences in permeability of soil horizons.

DRILLING TO THE DRIVING
Forage au battage
Work
A process used to drill at small depth that consists in driving into the ground a sharp heavy tool by vibration that disintegrates the ground. Cuttings are later gone back up with a baller.

DRILLING TOWER
Tour de forage
Equipment and Tools
A pyramidal-shaped metal frame construction that allows the operations of the stand of drill pipe.

DRILLING WITH INSTANTANEOUS LOGGING.
Forage avec enregistrements des paramètres; Sondage destructif contrôlé
Work
Syn. with DRILLING WITH RECORDINGS OF PARAMETERS

DRILLING WITH INTACT SAMPLING
Forage avec prélèvement d'échantillons intacts
Work
An opening carried out in trial boring, that allows the extraction of soil or masonry samples without modifying some, prima facie, the state

and structure. This type of drilling is realized with core drills.

DRILLING WITH RECORDINGS OF PARAMETERS
Forage avec enregistrements des paramètres; Sondage destructif contrôlé
Work
A process that consists, as they advanced of the furtherance of the drilling, in recording a number of indications such that the drill feed, pressure exerted on this one, pressure of the drilling fluid, losses of fluids, etc. Syn. with DRILLING WITH INSTANTANEOUS LOGGING.

DRILLING WITH WORK TUBE FOR BORED PILES
Forage à l'abri d'un tube de travail récupéré pour pieux forés
Foundation
A process that consists in sinking by vibration, driving or mechanical cutting into the ground of metal tubes open at their base. Tubes are, been gone down as they advanced of the drilling tool, slightly in advance or late on this one according to the grounds, is directly gone down at the final level of the pile toe.
There are several methods:
- **drilling bailer bit *or* drilling grab bucket** *(l'ensemble trépan-curette ou benne preneuse),* a mechanical cutting process that consists in executing the drilling with a shoe-nosed shell with valve, or with a cable cylindrical grab bucket, or with a hammergrab (grab bucket ballasted that allows at once to disintegrate the ground by percussion and to go back up the excavated materials), inside a work tube going down under its own weight or helped by driving;
- ***Benoto* process** (*le procédé Benoto*): this method differs from the earlier, whose it is stemming, by the utilization of the taking for sinking the work tube. There exists a variant which consists in use sinker-extractors that endows at the going down system a total independence in comparison with the system of drilling whose motor element can be a crane likely to maneuver tools as various as bore bit, shoe-nosed shell with valve, hammergrab, hydroelectrical or mechanical grab bucket;
- **driven open tube** (*le tube ouvert battu*), which consists in implementing the work tube before carrying out to the actual drilling operation. The column is driven-in with the help of rammers or vibrating hammers up to the level of expected anchorage and the ground thus carved is then extracted in an once with the help of already tools evoked above;
- **vibrodriven open tube** (*le tube ouvert vibrofoncé*), whose principle of implementation is similar to the previous method and that uses the vibro-percussion to sink the steel column.

DRILLING WITHOUT WORKING TUBE FOR BORED PILES
Forage sans tube de travail pour pieux forés
Foundation
A drilling process that is used in the coherent grounds where risks of landslide of the drilling wall are practically null. In this process it is advisable to distinguish the bored piles under mud drilling of these carried out without particular supporting of drilling wall, namely mostly without water (to dry), or exceptionally under clear water.
There are several types of drillings:
- **drilling with bentonite mud without circulation** (*forage avec boue bentonitique sans circulation*): in this process, the mud is poured into the drilling in proportion of the progress of the tool and it is then recovered by pumping in the process of concreting, as they advanced of the rising of the concrete. This mud, that cannot be regenerated of continuous manner, weighs gradually of sediments and must therefore to be renewed in the process of drilling whenever that proves necessary;
- **drilling with bentonite mud by direct circulation** (*forage avec boue bentonitique par circulation directe*): in this process, the water, or the mud, is reversed with the help of a powerful pump by the inside of the drilling tubes and goes back up in the annulus existing between these rods and the wall of the hole. This method allows the continuous recylcing of the mud in course of operation. Techniques of perforation linked to this method are:
  - *jetting* under water pressure in the order from 0.5 to 1 MPa in thick grounds and for diameters from 30 to 70 cm. The tool interdependent of the hose is constituted by one or several nozzles installed on a gauger nozzle holder (crown with stellited teeth),

rotation to the roller bit or to the core drill for every other types of ground up to 120 cm diameter;

- **drilling with bentonite mud by reverse circulation** (*forage avec boue bentonitique par circulation inverse*): this process consists in raising the charged bentonite through the channel of the axial recess of the holder-tool rods; the drilling mud being poured in the annulus, that contained between these drill rods and the drilling wall. This central rising of the mud charged by sediments is obtained by aspiration since the surface or by injection of compressed air at the base of the stand of drill pipe. The upward speed thus obtained allows to go back up in totality the materials ground by the tool; **See Figure 39**
- **drilling with limpid water** (*le forage avec eau claire*): carrying out of the drillings with limpid water only constitutes a particular case of the general drilling method under bentonitic mud;
- **dry drilling** (*le forage à sec*): a technique that uses non drilling fluid and that is mainly used in coherent grounds not saturated with water.

DRIP
Larmier; Goutte d'eau ; Coupe larme
Construction
1. A groove accommodated at the underface of a plinth, a cornice, a slab, intended for causing the fall of the water drops and for avoiding their streaming on the facings of a work. Syn. with DRIPSTONE; DROP OF WATER; THROAT; THROATING; WEATHER MOLD. **See Figure 40**
2. A crown molding of a cornice or a cap.

DRIP FILLET
Bec
Construction
The fillet of a drip molding.

DRIPPING MOISTURE
Eau de condensation
Building Materials
Syn. with CONDENSATION WATER

DRIPSTONE
Concrétion; Pierre à filtrer; Larmier
Defects (Civil Engineering Structure); Building Materials; Construction
1. Syn. with CONCRETION
2. Coarse sandstone used for water filtration. Syn. with FILTER STONE
3. Syn. with DRIP; WEATHER MOULD.

DRIVE
Galerie; Foncer
Civil Engineering Structure; Foundation and Earthwork
1. Syn. with DRIFT
2. To carry out to the driving. Syn. with PUSH; SINK

DRIVE (PILES)
Piloter
Foundation
To set up into the ground piles for serving as foundation to a work.

DRIVE IN
Ficher
Foundation
Syn. with PLANT

DRIVE PIPE
Tubage d'un forage
Work
Syn. with TUBING

DRIVE WITH PILES
Vergner
Work
To support with a retaining bank.

DRIVEN PILE
Pieu foncé, battu, *ou* **vibré**
Foundation
A precast pile or section jacked, hammered, or vibrated into the ground. This operation comes true mostly with powerful jacks, pile hammer, etc.

DRIVING
Fonçage; Battage; Vibrage
Earthwork
Syn. with PIPE JACKING; PUSHING; SHAFT SINKING

DRIVING (TUNNEL)
Percement
Earthwork
An operation to excavate the soil in situ at a certain depth to replace it with a determined

structure such as the creation of tunnels, underground, etc.

Boring can be hand-driven, mechanical, or with explosives. For that there are many methods from which we can distinguish in particular:

- **mechanical presplitting** (*le prédécoupage mécanique*), which consists in carrying out a succession of shearing chases of determined thickness, whose line follows the theoretical profile of the extrados of the vault to be built;
- **several drifts method** (*les méthodes à sections divisées*), which comprise a division of the execution, as well earthwork as of the covering, and whose most known are:
  - *Franco-Belgian method (la méthods franco-belge),* in which the operation begins by the opening of a drift on the higher part, followed transverse fellings. The clearing of the centre core only takes place after the construction of the vault, **see Figure 41**
  - *German method (la methode allemande),* which consists in carrying out basic drifts (directly below of each sidewall), whose one is the pilot drift, followed of the building of sidewalls. A centre heading driven in the upper section, widened by lateral fellings, allows to build the vault by sitting it directly on the sidewalls. The heading ends by the earthwork of the centre core and performance of the invert, **see Figure 41a**
  - *Belgian practice (la méthode beige),* which consists in carrying out a center monkey drift in the upper section (pilot drift), which is then widened by side fellings; the building of the vault is carried out. The earthmoving of the work continues by the clearing of the cunette (lower center section) which is then widened by side fellings. The execution of sidewalls come true then in underpinning until the junction with the vault carried out as a preliminary, **see Figure 41b**
  - *modern method with several drift (la méthode moderne à section divisée),* whose execution comes true in the following way:

- excavation of the upper section, a supporting being set up as they advanced of the heading,
- concreting of the vault.

After achievement of the upper section, the performance of the lower section is undertaken; it comprises the preexcavation of the center core, the execution of the sidewalls by alternate sections and is ended by the construction of the invert to the heading and concreting of the sidewalls between the sections.

Every these practices require the use of supportings that can be carried out by metal centerings, timberings, etc.; **See Figure 41c**

- **full-face work practice *or* full-face tunneling practice** (*les méthodes à pleine section*), which consists in excavating in an only one operation, or very neared successive operations, the full section of the underground. The most known methods are:
  - *Austrian method* (*la méthode autrichienne*), which consists in opening a heading drift at the lower section, followed of the excavation of the upper half-section of the work with fan-shaped supporting piking up on a main cross-member pressed against the grounds. Side parts are then excavated and sheeted up at the level of the invert. The building of the full section is then undertaken,
  - *English method (la méthode anglaise),* in which the earthwork of the tunnel is carried out in three successive steps, that the high being the most advanced, being followed the sheeting of grounds. The excavation ended, the bonding of masonry is carried out starting by sidewalls, the vault being bonded round the clock. The operation of heading possibly ends by the execution of the invert, **see figure 41d**
  - *shield method with lining of metal segmental rings (la méthode au bouclier avec revêtement en voussoirs métalliques),* whose principle is as follows: under the protection of a metal cylinder (the shield) sunk into the ground, the ground is excavated at the front part of the shield steady by the supporting that is set up at the back part (the tail of the shield) as four (or more) elements of segmental rings per ring. The width of ring from 80 to 120 cm. At the time of the forward pushing, the shoving jacks pick up on the last ring installed. Immediately the supporting came out of the shield, a stopping with mortar of the annular passage is carried out in order to avoid settlements of country rock,
  - *shield method (la méthode au bouclier),* in which the job is carried out using machines provided by a hood cutting edge, of a steel shell safe from which the ground is excavated on the full section or by parts; masonry is bonded to the progress,
  - *full-face tunneling machine method (la méthode à la machine excavatrice pleine*

section), which consists in carrying out directly to the full section an underground of circular shape by the means of a powerful machine of a large diameter covering the entire section of the work to be bored. This machine is formed basically by a huge rotary excavator constituted by a disk of the diameter of the tunnel to be dug, and whose front face is supplied with cutting tools. This rotary excavator is pushed and guided by jacks that pick up on the concrete or precast segments set up immediately at the back. Excavated materials are collected on the disk by buckets which pour them on a conveyor to be in charge to evacuate them backward;

- **sinking of caissons** (*le fonçage de caissons*): see DRIVING

Syn. with HEADING (OF TUNNEL)

DRIVING BAND
Cerce
Construction
Hooping, steel drive band grip tight lying the head of a wooden pile for avoiding its bursting during the driving. Syn. with PILE HOOP; PILE RING

DRIVING CAP
Casque de battage
Equipment and Tools
Syn. with CAPE; CRASH HELMET; DOLLY; DRIVING HELMET; HEAD; PILE HELMET

DRIVING FORMULAE
Formules de battage
Foundation
Numerical expressions allowing calculating the bearing capacity of piles (admissible maximum load).
Two formulae essentially are available:

- **static** *(les formules statiques)* allow to evaluate the strength of a pile according to the design of the grounds made one's way through. This design can be executed by means of equipment which allows to measure separately the toe strength and lateral strength of a pile of small diameter sunk by means of a jack, in the ground where have to be used the piles. These measurements are suitable to different depths so as to inform of the resistance offered by underlying strata. Strengths to expect for the piles in true magnitude are calculated by application of sameness rules to the strength measured with the equipment;
- **dynamic** (*les formules dynamiques*), use results of the driving in the course whose one measures the sinking by blow. They have been arranged taking into account that energy *Ph* produced by a rammer of weight *P* falling of a height *h* is equal to the sum of three terms:
  - energy used to drive in the pile,
  - energy lost to the blow,
  - energy transformed into elastic deformations of the pile and ground.

Formulae used differ following that they make intervene or not the last two terms. The most known is Dutch's formula, but many others exist (Hiley, Redtenbacher, Delmag, Crandall, etc.).
Syn. with PILE (DRIVING) FORMULAE; PILING FORMULAE

DRIVING HELMET
Casque de battage
Equipment and Tools
A device for protecting the heads of piles, for avoiding the revival of the rammer (or the hammer) and allowing the best distribution of energy of striking on the entire section of the profile to be driven. In cast steel, its top part comprises an accommodation intended for receiving a slightly compressible fittings called *martyr* or *packing.* It can be supplied by ears-guide sliding between the guide piles. For sheet piles, the helmet is constituted of wooden blocks jointed to a metal device that fits exactly the form of the sheet pile. Syn. with CAPE; CRASH HELMET; DOLLY; DRIVING CAPE; HEAD; PILE HELMET;. **See Figures 42 and 42a**

DRIVING MALLET
Mailloche
Equipment and Tools
A wooden mallet used by the builders to bed quarry stones or bricks. Syn. with BEECHWOOD MALLET

DRIVING RECORD
Carnet de battage
Foundation
Syn. with PENETRATION RECORD

DRIVING-IN
Battage
Foundation and Earthwork
A drilling carried out with a bore bit subjected to a backward and forward motion by a striking in bottom of the hole.

DROMOMETER
Dromomètre
Equipment for Measure and Control
An instrument for measuring long distances (in surveying, etc.) composed of a wheel, a telescopic sleeve and a meter.

DROP
Goutte; Retombée
Welding; Constrution
1. A local excess of penetration.
2. Overhang directed toward the bottom of an end of slab.

DROP BALL
Drop-ball
Equipment and Tools
Secondary cutting method in quarrying that consists in enabling a large steel ball of approximately 2 tons to fall on the rock to be fragmented. The ball is suspended from a cable of a jib crane.

DROP-BOTTOM BUCKET
Benne à béton à fond ouvrant
Equipment and Tools
Syn. with BOTTOM-OPENING SKIP

DROP HAMMER
Mouton; Enfonce-pieux
Equipment and Tools
Syn. with RAMMER; PILE HAMMER; PILING HAMMER

DROP OF WATER
Goutte d'eau; Larmier
Construction
A small groove of which one side is rounded, dug or accommodated at the underface (or the intrados) of a plinth, a band course, a deck, etc., and intended for facilitating the water runoff outside the facings. Syn. with THROAT; THROATING; DRIP

DROP OFF
Mouliner
Defects (Building Materials)
Speaking about of a stone, to drop off under the influence of the atmospheric agents.

DROPPED CURVE
Bateau de porte
Construction
Syn. with ENTRANCE (to garage where pavement slopes down).

DROPPED GIRDER
Retombée
Construction
1. The height of the projection formed by a beam under a concrete slab. By extension: height of a beam, gauge reflecting this beam. **See Figure 43**
2. The part of a beam, a truss, located above its zone of bearing, so much on a wall, a post or any other form of bearing.

DROPPING STONE
Poul
Defects (Buildings Materials)
Syn. with FALLING STONE

DROVE
Ciseau
Equipment and Tools
Syn. with BOLSTER; STONE CHISEL

DROWNED CULVERT
Aqueduc noyé
Civil Engineering Structure
A structure in which the level of the upstream water surface is set above its entry opening.

DRUM
Tronçon; Tambour; Tronc; Fût; Dévidoir
Construction; Welding
1. Each element composing the shaft of a column.
2. Speaking about of a column, syn. with SHAFT
3. Syn. with REEL; WINDER

DRUM CURB
Rouet
Equipment and Tools
Syn. with CUTTING CURB; WELL SHOE

DRUM CUTTING
Tambour de machine d'abattage
Equipment and Tools
A roll on which are laid out the cutting tools and whose axle of rotation is in the prolongation of the load-bearing arm or perpendicular to this one.

DRUM WALL
Tambour
Construction
A circular sidewall supporting a dome-shaped vault.

DRY
Etuver; Siccativer
Building Materials; Painting
1. To subject a material to the drying operation. Syn. with TO STOVE; TO STEAM
2. To mix a drier.

DRY COMMERCIALY
Commercialement sec
Building Materials
Of the woods having a moisture content between 18% and 20%. Syn. with AIR-DRY

DRY CONCRETE
Béton sec
Building Materials
A product whose quantity of mixing water is voluntarily or not reduced. Any dry concrete emphasizes the difficulties of working and mostly presents after form striking defects such that *honeycombings.* Syn. with DRY MIX

DRY CONNECTION
Liaison à sec
Work
Amalgamates materials without binder.

DRY CORROSION TEST
Essai de corrosion sèche
Metallurgy
See THERMOGRAVIMETRY

DRY DENSITY (OF SOIL)
Densité sèche
Geotechnics
The weight of a dry material contained in the unit of volume of a soil.

DRY DEVELOPER
Produit révélateur sec
Welding
An absorbent powder used to obviousness the discontinuities of surface being able to concern a welding. Syn. with DRY TRACER SUBSTANCE

DRY EXTRACT
Extrait sec
Materials
The residue obtained by evaporation of a sampling of product (paint, varnishes, or assimilated preparations) in experimental conditions fixed by the method (temperature and possibly duration and/or dip) so as to eliminate some volatile matter. By extension, designates the result of the preceding operation, expressed by the ratio (in %) of the mass (weight dry extract) or the volume (volumic dry extract) of the residue to that of the sampling: in this last case, it concerns the volumic rate of dry extract.

DRY FACING
Bajoue
Masonry
Syn. with FACING OF EMBANKMENT

DRY FACING MASONRY
Blocage
Masonry
A dry stone facing covering the surface of some slopes.

DRY FILM
Feuil sec
Painting
A paint film arrived at maturity by evaporation of solvents, by polymerization, or also by oxidation.

DRY JOINT
Joint de dilatation
Masonry
Syn. with EXPANSION JOINT

DRY JOINTS
A joints vifs
Masonry
Of an ashlar construction laying dry, without bond mortar.

DRY MASONRY
Macéria
Masonry
Any dry masonry built with large blocks of stones.

DRY MIX
Mortier industrial prêt à l'emploi; Béton sec
Building Materials
1. Syn. with READY-MIXED MORTAR
2. Syn. with DRY CONCRETE

DRY MIXTURE
Mélange sec
Building Materials
A mortar or concrete whose components are dry-mixed and thus introduced into the air-placing machine. Water is mixed at the jet pipe, or slightly above from the jet pipe.

DRY PRACTICE
Méthode sèche
Welding
A check process by the magnetic-particle inspection using the ferromagnetic particles as dry powder.

DRY ROT
Champignon; Pourriture sèche
Defects (Building Materials)
1. Syn. with DECAY; FUNGAL DECAY; FUNGUS; ROT
2. A wood alteration that makes it friable and brittle.

DRY ROTTEN WOOD
Echauffé
Defects (Building Materials)
Of a wood altered by dry rot, but not completely rotted.

DRY RUBBLE FILLING
Remplage
Construction
A rubble work of dry stones build between the extrados of two consecutive vaults going from the base of the fork up to the level on the top level of the extrados. **See Figure 44**

DRY SET
Poser à sec
Masonry
Syn. with SET WITHOUT BINDER

DRY SHOTCRETING
Projection par voie sèche
Buildings Materials
See CONCRETE

DRY SOIL VOLUMETRIC MASS
Masse volumique d'un sol sec
Geotechnics
The mass equal to the quotient of the solid particles mass per the total volume of the soil.

DRY STONE BLOCKING
Blocage de pierres sèches
Masonry
Stones handmade arranged, without mortar between them. One uses dry stones between the tympans above the topping, in jacket defers of the abutments and return or wing walls, in filling up of the well of abutments (when they are not covered by vaults) and in filling between the roughcast masonry and the country rock in certain tunnels, bridges, breast walls.

DRY STONE DUCT
Pierré
Sanitary Engineering and Drainage
A conduit made of dry stones intended for water draining.

DRY STONE WELL
Pierrier
Sanitary Engineering and Drainage
A well dug that one afterward fills with dry stones and which is intended for taking delivery the superabundant seepage or streaming water. Syn. with FILTER WELL

DRY STONES SUPPORTING
Dame
Construction
A supporting carried out of dry stones or by stacking of timbers, used during the heading of some undergrounds.

DRY TRACER SUBSTANCE
Produit révélateur sec
Welding
Syn. with DRY DEVELOPER

DRY-BOND ADHESIVE
Adhésif de contact
Adhesive
A product which, once dryness, allows to join under pressure surfaces on which it was applied beforehand. Syn. with CONTACT-BOND ADHESIVE

DRYING
Séchage; Siccativation; Etuvage; Assèchement
Painting; Building Materials; *Sanitary Engineering and Drainage*
1. All the physical and/or physicochemical and/or chemical transformations which bring about the change to a paint film from a liquid state into a solid state.
Paints, according to their nature, can dry and harden according to three following phenomena:
- *by evaporation of solvents and thinners (bituminous, cellulose, with chlorinated or isomerized rubber, acrylic, vinyl paints, etc.);*
- *by evaporation of solvents and polymerization of siccative oils (fat-oil paints and oil-alkyd paints);*
- *by polymerization, polycondensation or polyaddition of the thermosetting resin, reactions occurring hot or cold. In this category going into most of paints containing artificial or synthesis resins with one or two components.*

2. The hardening of a paint film due to the presence of a drier. Syn. with SICCATIVATION
3. The submission of a fresh concrete to the action of a saturating water steam so as to accelerate its hardening. This process is notably used in precasting. Syn. with STEAM CURING
4. A wood treatment with steam to improve its conservation life or with the purpose to soften it to facilitate operations such as bending, slicing, etc. Syn. with STEAMING; STOVING
5. An operation which consists in depriving of water a ground, a masonry, etc. Syn. with DRAINING

DRYING ANOMALY
Anomalie de séchage
Defects (Painting)
An initial deficiency characterized by abnormal importance of the drying duration. Anomalies of drying can have an origin:
- *intrinsic,* such as defect of formulation, loss of drying power, etc.;
- *extrinsic*, such as chemical interplays with the substratum (moisten) or with the substrate.

The main anomalies of drying lead to ripplings, crawlings, etc.

DRYING METER
Siccomètre
Equipment for Measure and Control
Instrument for measuring the drying velocity of a paint.

DRYING PERIOD
Durée de séchage
Painting
The length of time required for a fresh film of paint to reach the dry film state.

DRYING POWER
Siccativité
Painting
The property of a paint film to be dried thanks to the presence of a product favoring drying (drier).

DRYING SHRINKAGE
Dessiccation
Geology
Syn. with DESICCATION

DRYING STOVE
Etuve
Equipment and Tools
Syn. with KILN; STEAMROOM

DRYNESS
Siccité
Various
The state of what is dry.

DUAL-PURPOSE PENETRATIVE AGENT
Pénétrant mixte
Test of Materials
A product comprising compatible colored and fluorescent tracers and which allow to carry out the inspection in daylight and/or ultraviolet light.

DUB OUT (A WALL)
Renformir
Masonry and Earthwork
To level a surface applying a roughcasting.

DUCKBOARD
Caillebotis
Construction
A light decking element mainly formed by metal flats on edge in tight grid layout, of sections or twisted bars, used to cover some bridges (walkways, pedestrian bridges, movable bridges, etc.). Syn. with DECK

DUCT
Gaine; Caniveau; Bâche; Buse; Duit; Canalisation
Construction; Civil Engineering Structure; Hydrology; Work
1. A space delimited by the longitudinal partitioning of a part of a tunnel vault (example: main service duct, air duct).
2. Syn. with CABLE CONDUIT; CABLE TROUGH
3. An aqueduct having an opening less than 0.60 m.
4. Syn. with CANALIZATION; CONDUIT; PIPE; PIPELINE; PIPING
5. Bed created artificially with the help of dikes for a waterway that wandered.
6. Syn. with BARREL; CHANNEL TUBE; PIPE CULVERT; SLEEVING

DUCT FORMER
Réservation
Construction of R.C. and P.C.
Syn. with BLOCKOUT; BOX OUT

DUCTILE
Ductile
Building Materials
Of a material that can undergo lengthening stress without breaking

DUCTILE IRON
Fonte a graphite sphéroïdal
Metallurgy
Syn. with SPHEROIDAL GRAPHITE CAST IRON

DUCTILITY
Ductilité
Building Materials
Ability of a material to deform easily under stress of temperature, pressure and speed; especially, ability of a metal to stretch easily. Ductility is characterized by a weak elastic limit and significant lengthening. (Example: The ductility of bituminous products is measured by lengthening a test specimen of determined form that is stretched at a standardized speed and temperature to the precise instant of its breaking.) Syn. with MALLEABILITY

DUCTILITY MACHINE
Ductilomètre
Equipment for Measure and Control
A device used to determine the ductility of a material. Syn. with DUCTILOMETER

DUCTILOMETER
Ductilomètre
Equipment for Measure and Control
Syn. with DUCTILITY MACHINE.

DULL
Sourde
Painting
Of a dye of paint without brightness, drab.

DULL-EDGED WOOD
Bois flacheux
Defects (Building Materials)
A wooden piece badly squared whose edges still have their wanes after the operations of sawing or planing. Syn. with FLITCH; WANEY WOOD

DULLING
Emoussage
Masonry
The removal by brushing, washing, etc ., of the moss covering a masonry.

DUMB BARGE
Barge
Handling
Syn. with BARGE

DUMMY JOINT
Faux-joint; Joint diapason; Joint; Faux-appareil
Construction; Masonry
1. A joint not reigning on all the thickness of the slab of a concrete roadway. Syn. with CRACK INDUCER.
2. An imitation of the masonry pointing on a concrete facing.

3. The simulated representation on a rendering of the joints of a bonding. Syn. with FALSE BOND

DUMP
Décharge
Earthwork
A place where wastes are transported. Syn. with RUBBISH DUMP

DUMP TRUCK
Dumper; Benne
Equipment and Tools
1. Earthmoving equipment that resembles a large truck mounted on very large tires.
This vehicle is composed of a cabin very much like that of a classic truck and a skip with widened racks, but it is far more sturdy than an ordinary truck and can be driven on practically any kind of terrain. The back end can be tilted downward to unload the excavated materials through an opened tailgate.
The elevator dumper, a variant of the dumpers employed in earthwork serves mainly to carry concrete to sites whose access by truck mixers is difficult. It can pour concrete directly into forms or feed the skip of another means of transportation (overhead cableway, crane, etc.).
Syn. with HAULER
2. Syn. with DUMPING BUCKET

DUMPER
Dumper
Equipment and Tools
Syn. with DUMP TRUCK

DUMPING BUCKET
Benne
Equipment and Tools
A tilting case of which are equipped many trucks. Syn. with DUMP TRUCK

DUMPLING
Témoin; Taquet; Merlon
Earthwork
1. A heap constituted by the excavated grounds, cleared, to be able evaluating extracted quantity of it. Syn. with OUTLIER.
2. A part of terrain contained between the two digging faces of a trench, a subterranean gallery, etc., coming in the prolongation one to the other and that must to meet. (The name *merlon* is given to this part of terrain only when the distance separating the junction from the two digging faces only is a few meters.)

DUPLEX Ni PROCESS
Nickelage duplex
Metallurgy
A nickel plating process on steel that consists in electrolytically covering two successive layers of nickel.

DURABILITY OF A PAINT FILM
Durabilité d'un film de peinture
Painting
The power that possesses a paint film to withstand various more or less aggressive agents of its environment during its aging. Syn. with PAINT DURABILITY

DURAMEN
Duramen
Nomenclature of Materials
The heartwood, i.e., the part of the tree trunk that does not contain the sapwood. Syn. with HEARTWOOD

DURAMENIZATION
Duraménisation
Building Materials
The variation in coloring that distinguishes the sapwood from the heartwood.

DUST
Poussière; Fleur
Building Materials; Nomenclature of Materials
1. In grading, elements of size between 2 and 50 µ.
2. Syn. with FLOOR

DUST PROOFER
Antifarinage
Painting
Syn. with ANTIDUSTING AGENT

DUST REMOVAL
Dépoussiérage
Work
A cleaning of surfaces to be painted or metallized that consists in clearing them of the dust thin layer likely to cover them. This job can be achieved with a brush or compressed air. Syn. with DUSTING

DUST SHOT
Cendrée
Hydraulic Binders
A hydraulic binder formed by a mixing of fly ashes and cement or lime.

DUSTING
Poussiérage; Farinage; Laitance
Defects; Construction in R.C. and P.C.; Painting
1. A defect that impairs the concrete works characterized by the appearance of thin and porous materials on the surface of the hardened concrete and which can have as a consequence a reduction in the surface strength of the concrete.
2. Defect of a painting whose tone lightens and that loses its glossy. Under the action of atmospheric agents, one or more of the constituents of the paint film is altered to a state of fine dust with little adhesion. This dusting most often occurs with the combined actions of three essential natural elements, oxygen, water and UV radiation.
3. Syn. with CEMENT GROUT; LAITANCE; MILK
4. Syn. with DUST REMOVAL

DWARF STUD
Potelet
Construction
A post of small dimensions having to bear the only one restricted or localized load. Syn. with SMALL POST

DWARF WALL
Muret; Murette
Construction
1. A low wall, mostly of dry stones, which can be built at the base of a slope or a fill to retain the grounds for example.
2. A low wall mostly made up of a foundation and a body of wall.

DYE
Colorant
Painting
A substance of vegetable, mineral or synthetic origin that appears in liquid or powder form and that is mixed to a paint to endow it the wanted dye. Syn. with COLORING AGENT

DYNAMIC
Dynamique
Strength of Materials
A geometrical figure used in a static graph to establish a funicular of forces. The dynamic constitutes adjacent triangles having a common summit called the *pole*.

DYNAMIC CONSOLIDATION
Consolidation dynamique
Work
A ground improvement method by surface ramming, rammers being characterized by weights from 10 to 20 metric tons and height of falls ranging from 12 to 30 m.
The impact creates various wave trains:
- a compressive wave train *P* quick enough (3000 m/s), displacing into the liquid phase of the soil and causing an increase of the interstitial pressure as well as a dislocation of the granular structure;
- a shear S wave train less rapid, displacing in the solid phase of the soil;
- a shear double wave train, propagating under the soil surface (Raleigh waves).

Shear waves have for effect to rearrange the grains in a more dense state. Syn. with GROUND BASHING; VIBROCOMPACTION

DYNAMIC INSTABILITY
Instabilité dynamique
Strength of Materials
A breaking phenomenon of certain elements of a construction having for origin the self-amplification of certain vibrations when such or such conditions between the mass and stiffness of the aforesaid elements are met.

DYNAMIC PENETRATION *A* TIP
Essai de pénétration dynamique *A*
Test of Materials
The determination of the resistance of a soil that consists in driving in this one, by driving of a continuous manner, a stand of drill pipe supplied, at its lower part, of an overhanging point, while injecting drilling mud between the wall of the trial boring and rods and in writing down the number of knocks' *n* necessary to do penetrating into the ground the point of height *h* 10 cm. The aim of the injection is to suppress the lateral friction of the rods in the soil. This type of test applies on the fine and granular soils whose

medium dimension of the elements does not exceed 60 mm. The depth of the test is limited a depth of 30 m Results of this test allow to evaluate an order of magnitude of the foundations bearing capacity.

DYNAMIC PENETRATION *B* TIP
Essai de pénétration dynamique *B*
Test of Materials
The determination of the resistance of a soil that consists in sinking in this one, by driving of a continuous manner, a stand of drill pipe supplied, at its lower part, of an overhanging point, and in writing down the number of blows *n* necessary to make penetrating into the ground the point of height *h* 20 cm, while in checking the importance of the possible friction strains on the stand of drill pipe. This type of test applies on the fine and granular soils whose medium dimension of the elements does not exceed 60 mm. The depth of the test is limited a depth of 15 m. Results of this test only allow to direct the designer toward a certain choice of the type of foundation.

DYNAMIC SUBSTITUTION
Substitution dynamique
Civil Engineering
Soils improvement process which consists in setting up a granular column by tamping and repression of the soil.

DYNAMIC TESTING
Sonnage
Test of Materials (Building Materials)
Syn. with SOUNDING

DYNAMIC VISCOSITY
Viscosité dynamique
Rheology
The characteristic coefficient of a fluid, equal to the force necessary to the displacement of plane unit of area of the fluid, with a speed unit, in comparison with another plane surface of the same fluid which is parallel to a distance unit.

DYNAMICS
Dynamique
Strength of Materials
Branch of mechanics that studies the motions of material bodies under the action of given forces. The suitable dynamics call out accelerations and phenomena of inertia.

DYNAMITE
Dynamite
Explosives
A mechanical explosive that is a nitroglycerine-based mixture.

DYNAMOMETER
Dynamomètre
Equipment for Measure and Control
An instrument for measuring the tensile strength and the breaking elongation of some materials.
Two models essentially are available:

- **dynamometer with vibrating cords *or* sonic detectors** (*le dynamomètre à cordes vibrantes; Témoin sonore*), a device measuring the forces and stresses, based on the fact that the resonance frequency of a cord varies with the tension that is applied to it.
- **hydraulic dynamometer** (*le dynamomètre hydraulique*), a tensile equipment which measures the constant speed of adhesion, wrench, deformation and break for all products on support.

DYNAMOMETRIC TENSILE GAUGE
Cale dynamométrique
Equipment for Measure and Control
A measuring system used to control the anchoring rods.
Before their tensioning, tie rods are supplied of this shim that is interposed between the supporting plate and anchoring head. This shim, to definitive character, allows a permanent control of the tension of the tie rod by direct reading of the value of this stress.

DYNAMOMETRIC WRENCH
Clef dynamométrique
Equipment and Tools
A tightening tool supplied of an indicator device of the exerted action and allowing limiting the tightening torque to a beforehand defined value. The adjustment takes modifying the position of a pawl, liberating when the required torque is reached. This type of wrench is notably used to bolt nuts of the high-strength friction grip bolts.
Syn. with TORQUE WRENCH

***DYNAPLAQUE* APPARATUS**
Dynaplaque P&C
Equipment for Measure and Control
Device of roadway sounding which generates impulses applied to the ground to auscultate the

intensity and duration of a dynamic stress analogous to that provoked by the passage of an axle of 13 tons moving at 40 mph, by means a mass coming across a crown of springs fixed on a plate resting on the ground. The ratio of the height of rebound of the mass to its initial fall height is called the restoration coefficient. For the sounding and the reception of roadway platforms, this coefficient is applied directly. A curve of standardization enables the coefficient of restoration to be translated to a dynamic modulus.

DYNSTAT APPARATUS

Dynstat

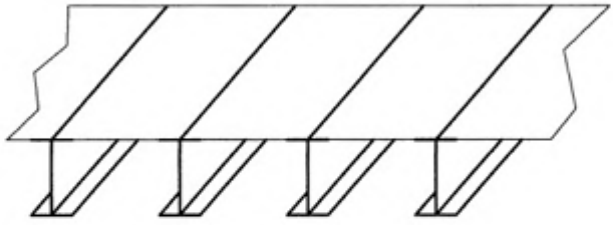
Equipment for Measure and Control

A dynamic and static measuring device designed to evaluate the strength of a solid body to resist shock and bending.

Figures of the letter

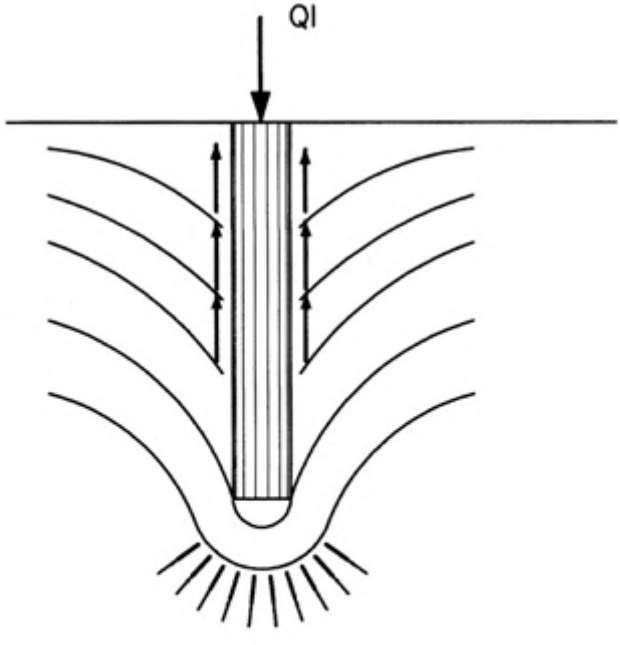


Fig. 1



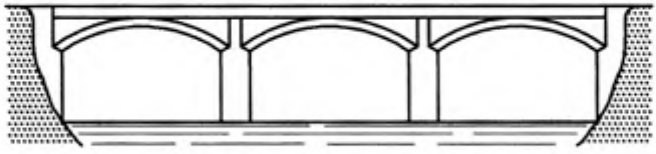
DECKING

Fig. 2



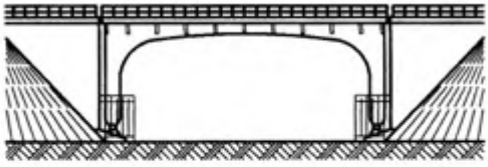
DEEP FOUNDATION

Fig. 3



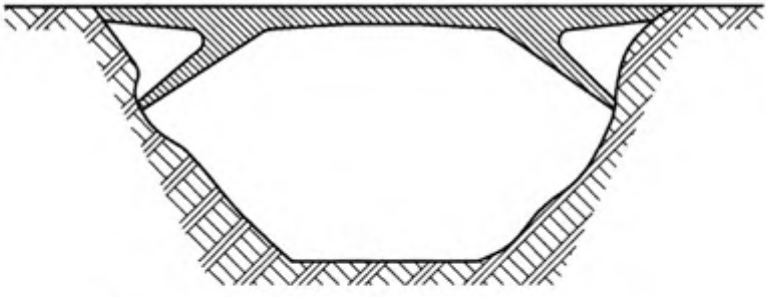
Arch bridge

Fig. 3a



Portal metal bridge

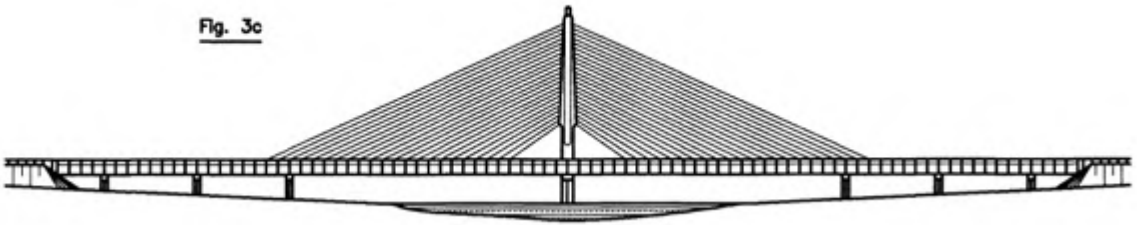
Fig. 3b



Reinforced concrete bridge with tilted leg–frame supports

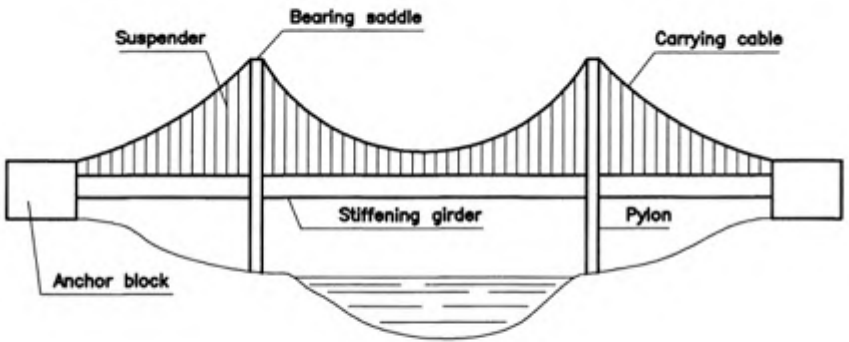
DEFINITIVE BRIDGE

Fig. 3c



Cable–stayed bridge

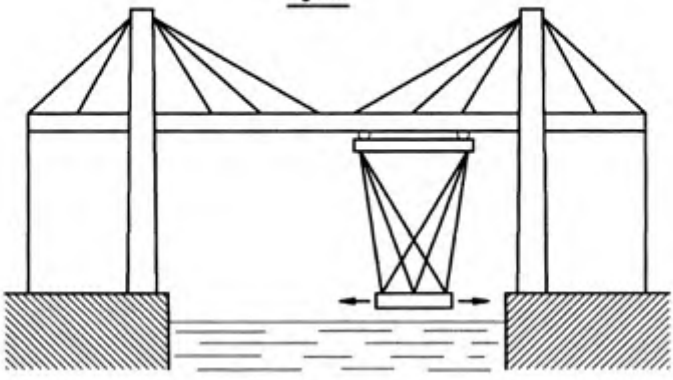
Fig. 3d



Suspension bridge

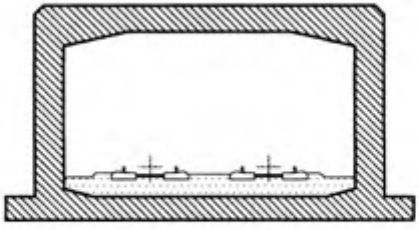
DEFINITIVE BRIDGE

Fig. 3e



Aerial ferry

Fig. 3f



Closed frame bridge

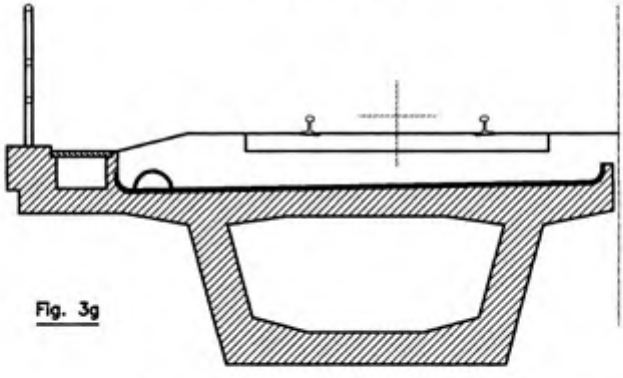
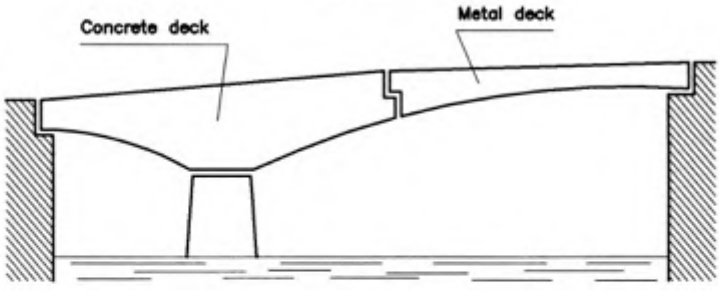


Fig. 3g

Bridge with caisson of prestressed concrete

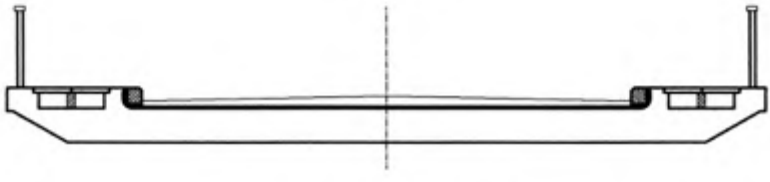
DEFINITIVE BRIDGE

Fig. 3h



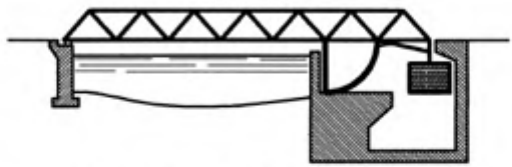
Composite bridge

Fig. 3i

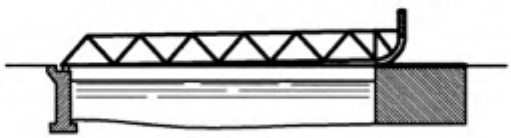


Bridge with R.C. full slab

Fig. 3j



Movable bridge – Counterweight bridge

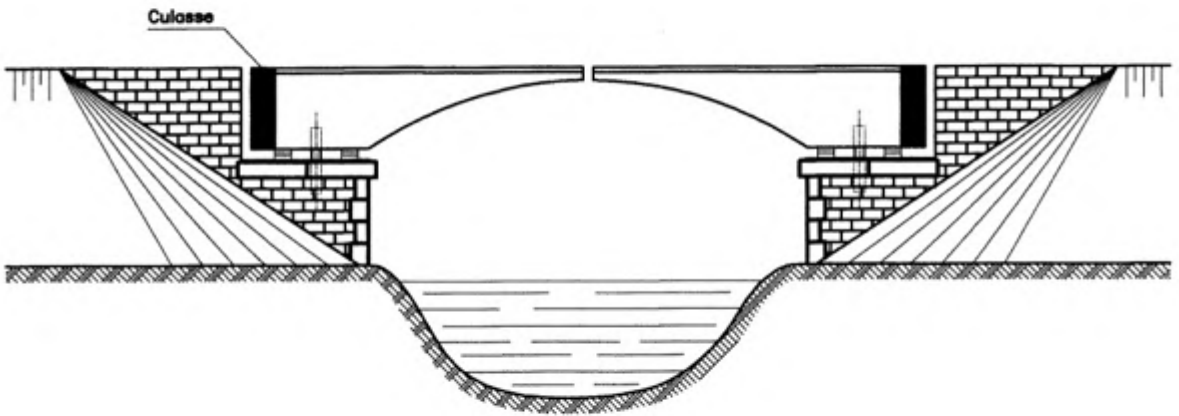


Drawbridge

"Scherzer" counterweight bridge

DEFINITIVE BRIDGE

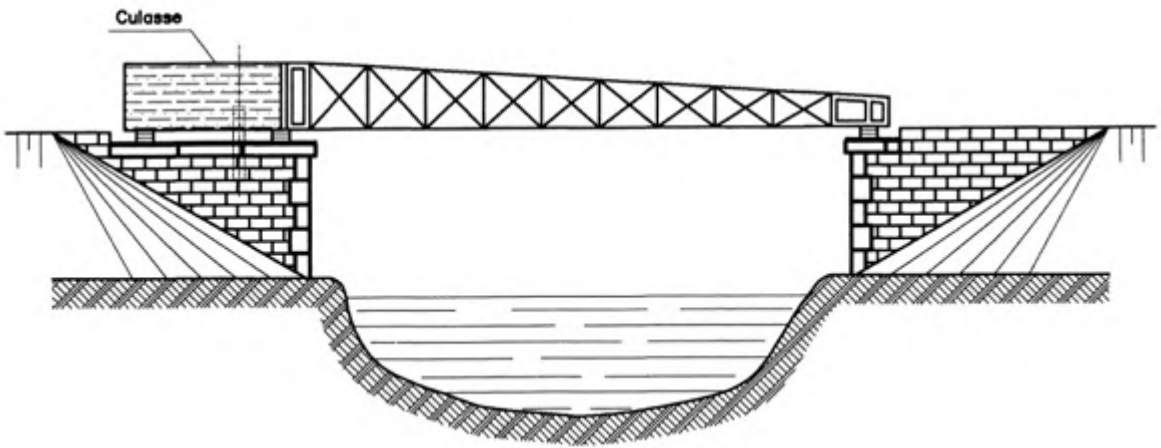
Fig. 3k



Turn bridge with double flight deck

DEFINITIVE BRIDGE

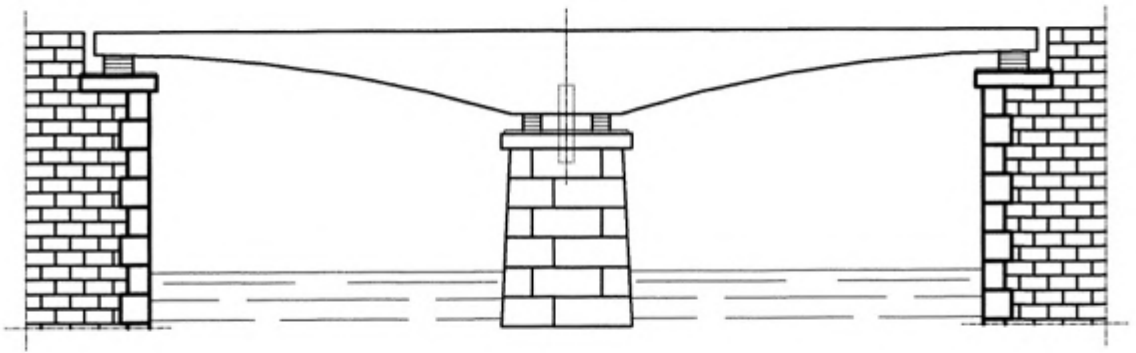
Fig. 3 1



Crane swing bridge

DEFINITIVE BRIDGE

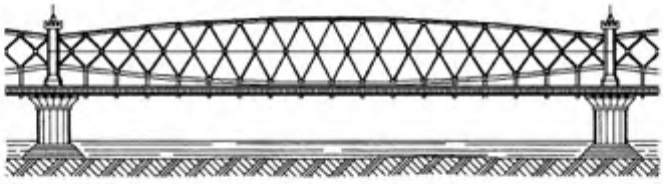
Fig. 3 m



Turn bridge with two spans

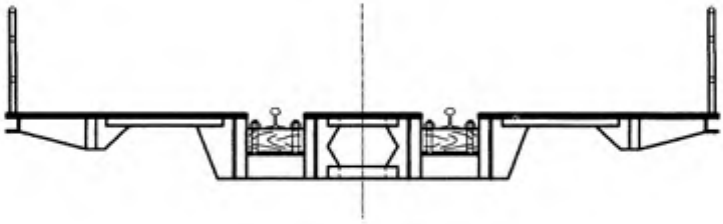
DEFINITIVE BRIDGE

Fig. 3n



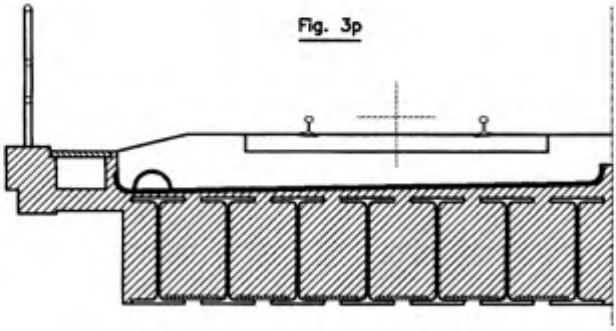
Bridge with lattice girder "Schwedler"

Fig. 3o



Twin–girder bridge

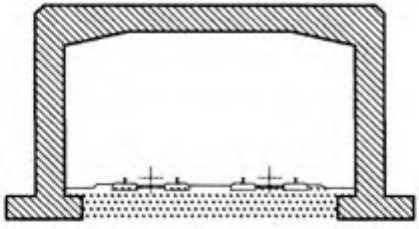
Fig. 3p



Bridge with girders encased in concrete

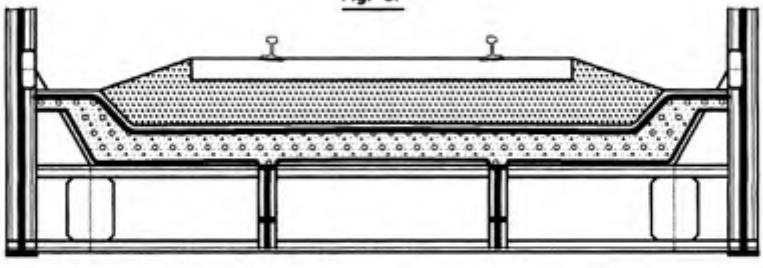
DEFINITIVE BRIDGE

Fig. 3q



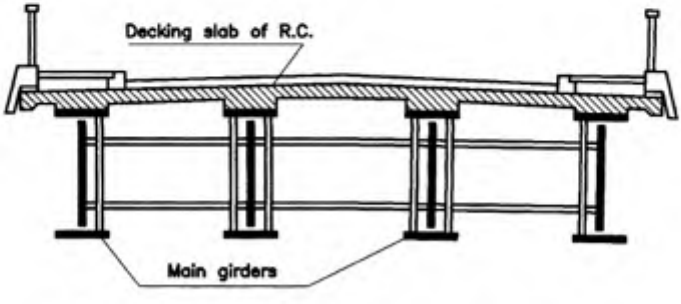
Portal bridge of R.C.

Fig. 3r



Composite railway bridge with deck of R.C.

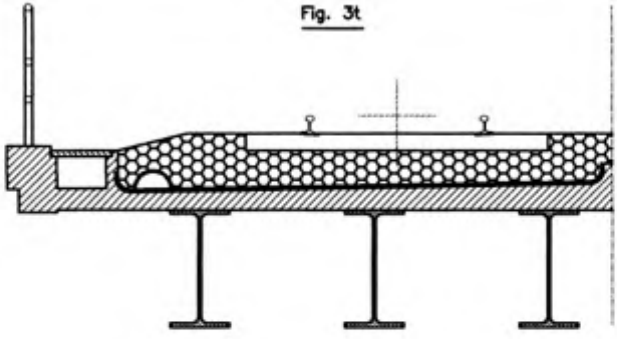
Fig. 3s



Composite road bridge with girders under carriageway

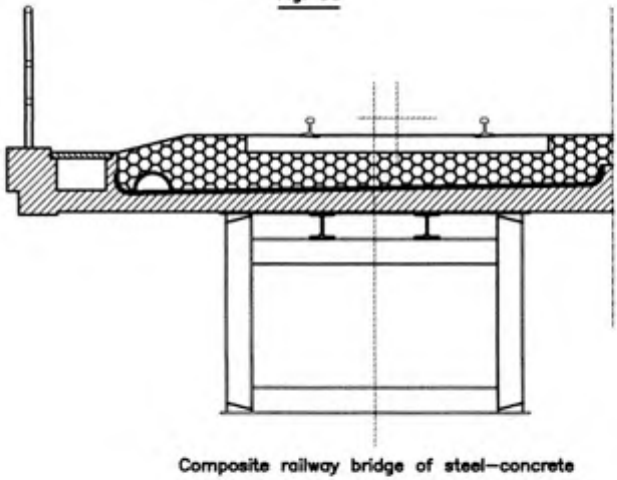
DEFINITIVE BRIDGE

Fig. 3t



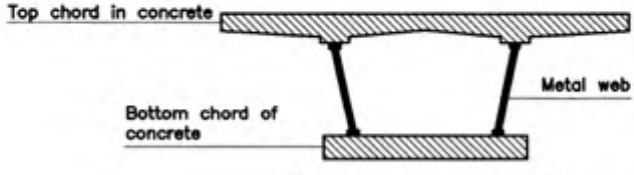
Composite railway bridge of steel–concrete with girders

Fig. 3u



Composite railway bridge of steel–concrete

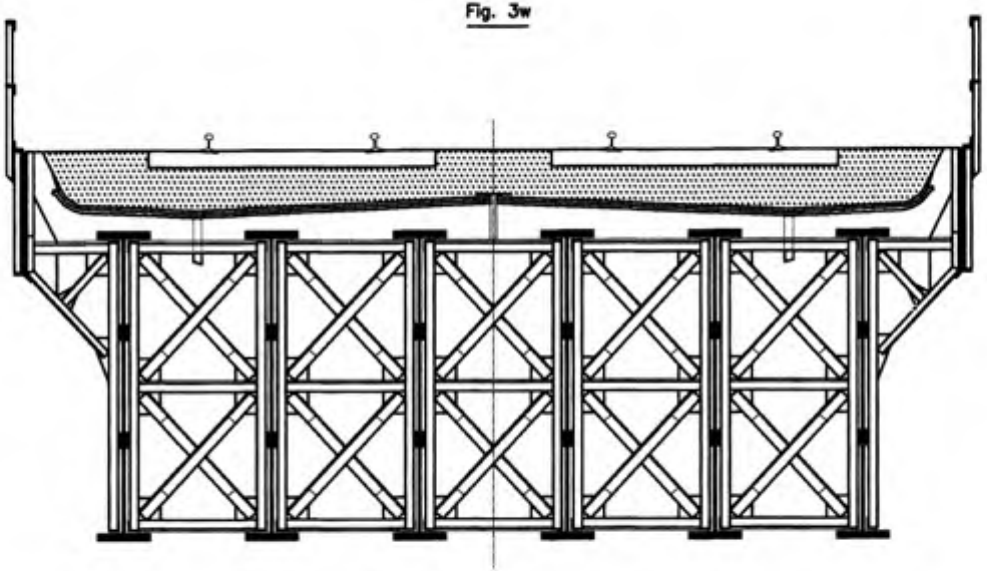
Fig. 3v



Steel–concrete composite bridge

DEFINITIVE BRIDGE

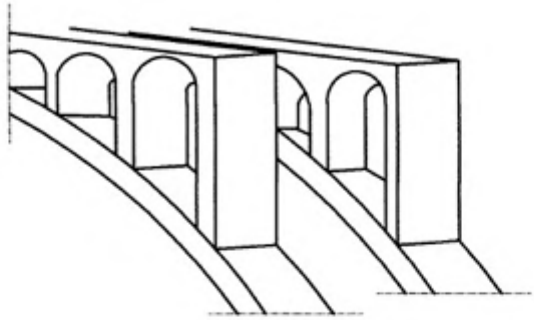
Fig. 3w



Composite railway bridge with compound girders

DEFINITIVE BRIDGE

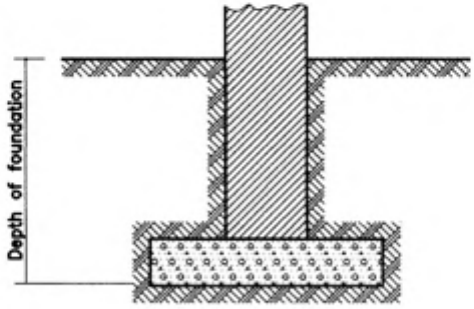
Fig. 3x



Séjourné bridge (Annulars bridge)

DEFINITIVE BRIDGE

Fig. 4



DEPTH OF FOUNDATION

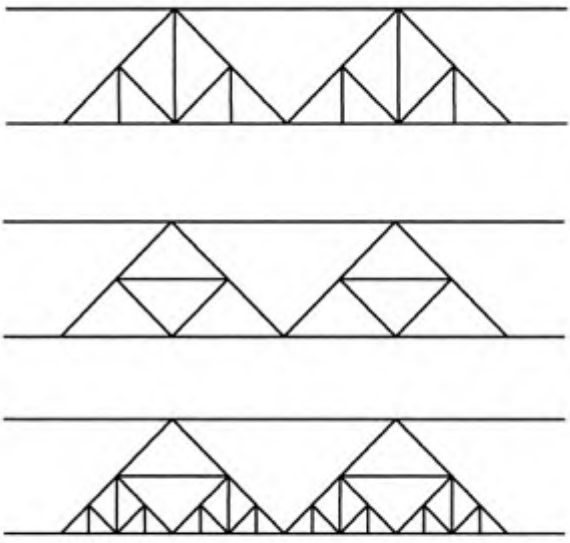
Fig.4a



(LE CHATELIER–CANDLOT)

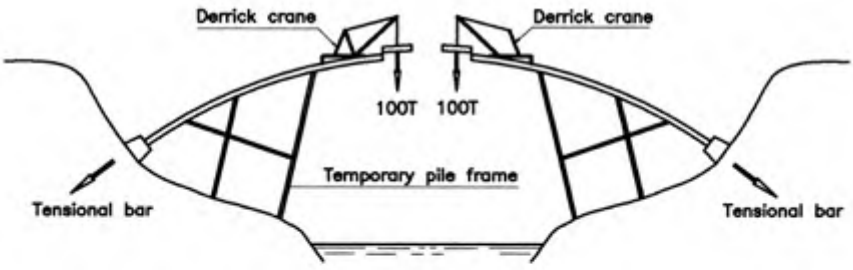
DENSIMETER

Fig. 5



DERIVED TRUSS GIRDER

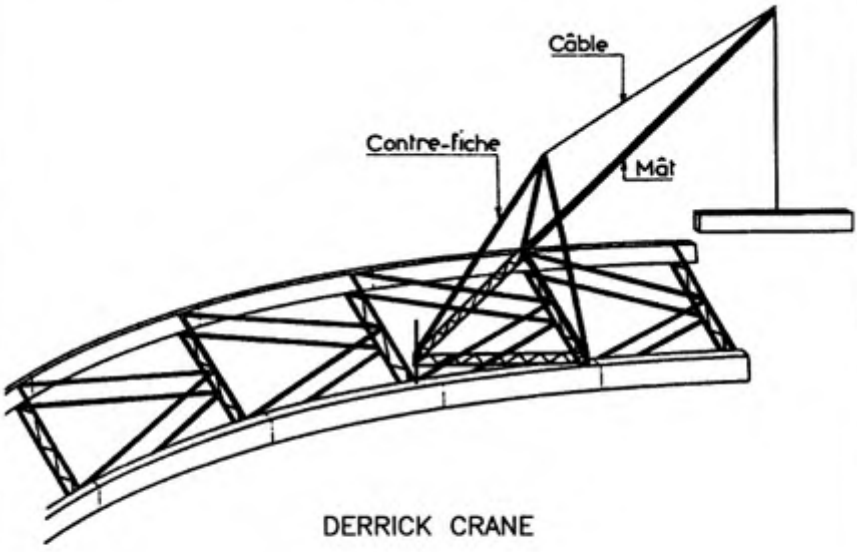
Fig. 6



Bridge in arch built by cantilever with the help of two simple derrick cranes

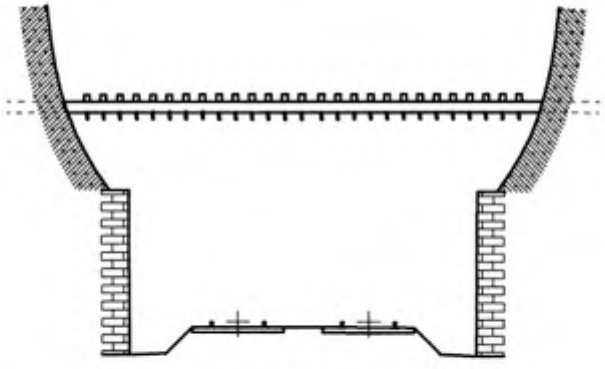
DERRICK CRANE

Fig. 6a



DERRICK CRANE

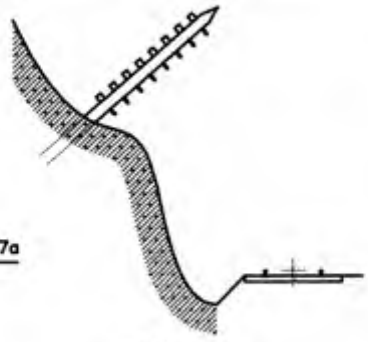
Fig. 7



Horizontal net covering entirely the railway

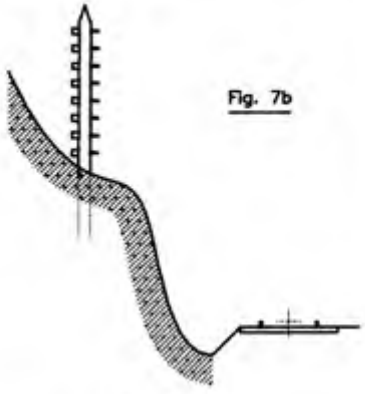
DETECTOR NET

Fig. 7a



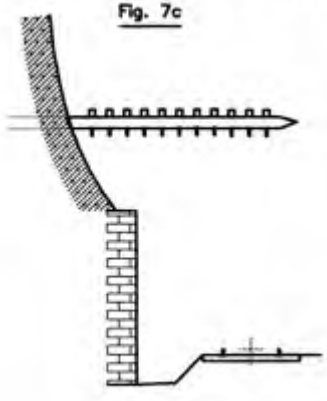
Oblique net

Fig. 7b



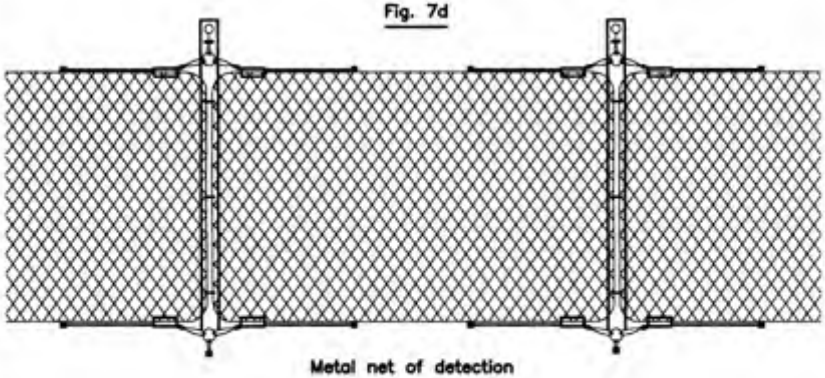
Vertical net

Fig. 7c



Horizontal net

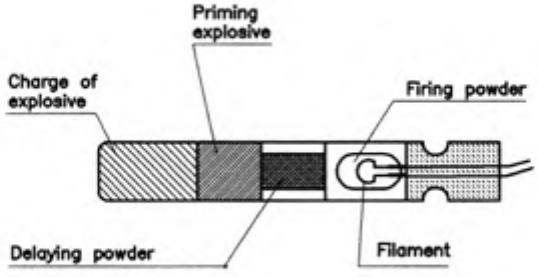
Fig. 7d



Metal net of detection

DETECTOR NET

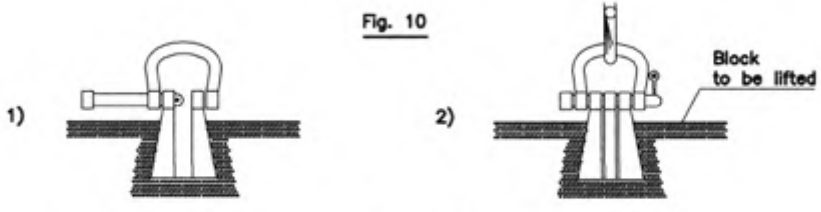
Fig. 8



Section of a detonator

DETONATOR

Fig. 10



DEVIL'S CLAW

Fig. 9

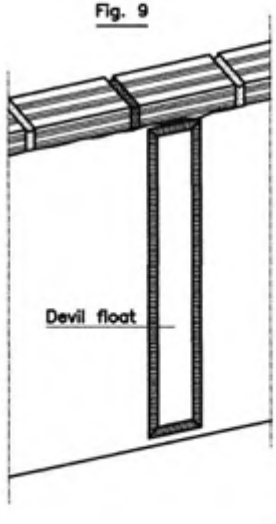
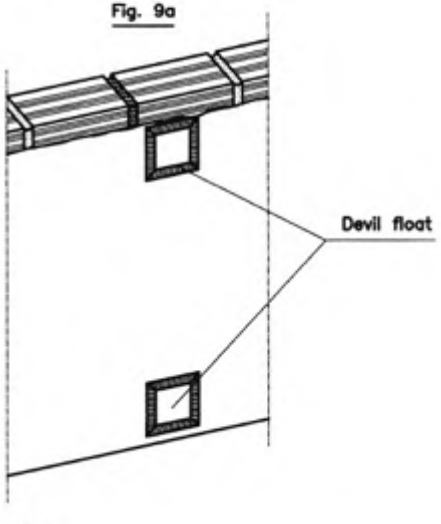
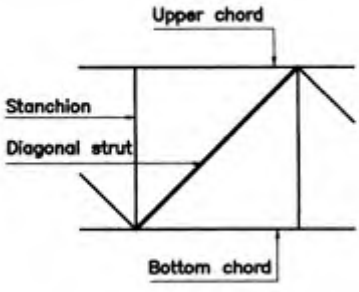


Fig. 9a



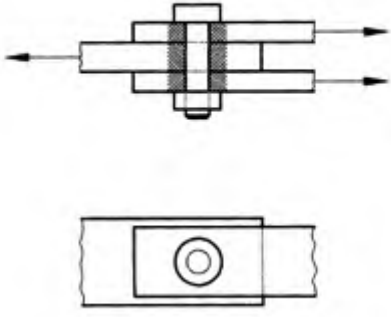
DEVIL FLOAT

Fig.11



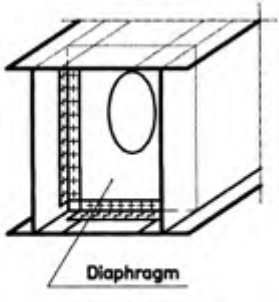
DIAGONAL STRUT

Fig. 12



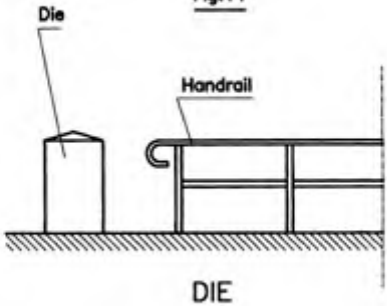
DIAMETRICAL STRESS

Fig.13



DIAPHRAGM

Fig.14



DIE

Fig.14a

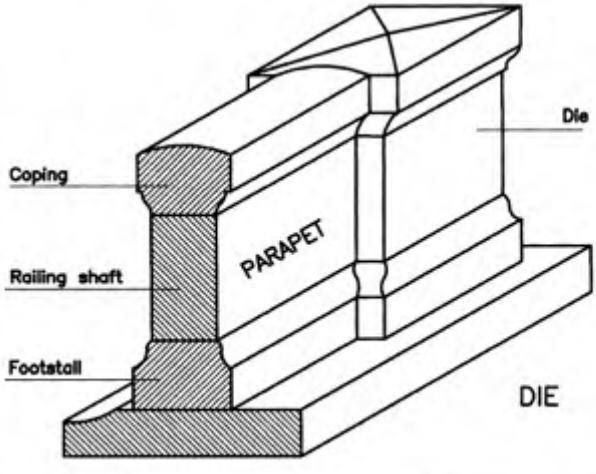
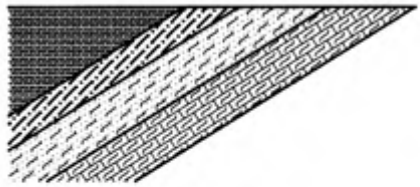


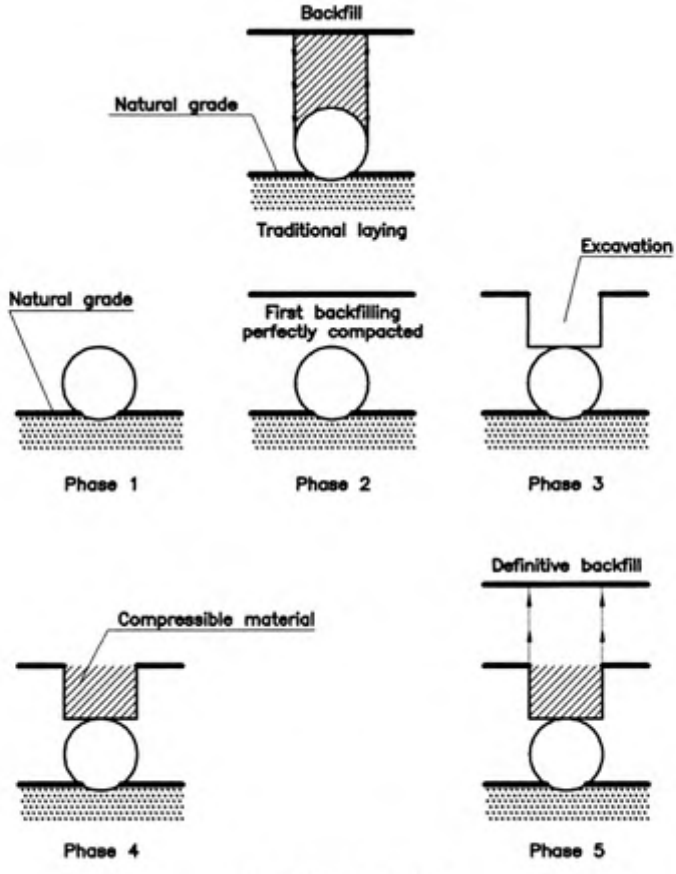
Fig.15



Sloped beds

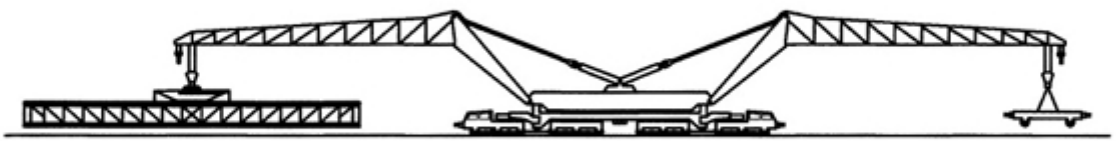
DIP

Fig.16



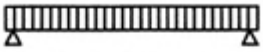
DIP PIPE LAYING

Fig.17



DIPLODOCUS

Fig.18



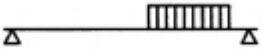
Uniformity–distributed load

Fig.18b



Triangular–distributed load

Fig.18a



Partial uniformity–distributed load

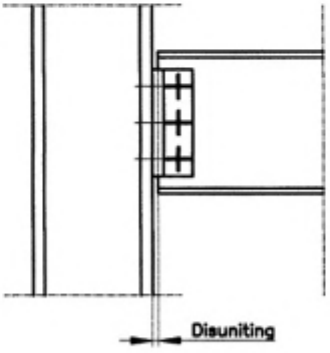
Fig.18c



Trapezoidal–distributed load

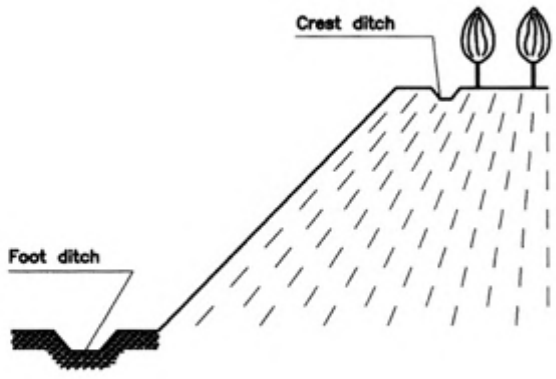
DISTRIBUTED LOAD

Fig.19



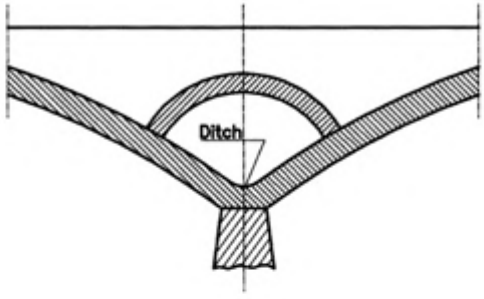
DISUNITING

Fig.20



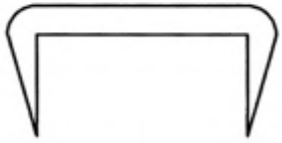
DITCH (crest and foot)

Fig. 21



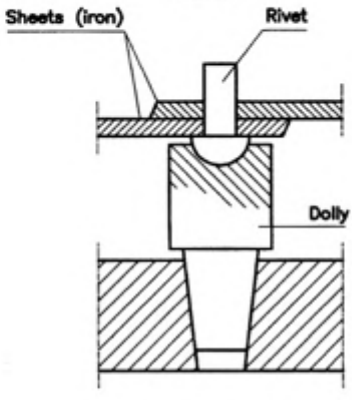
DITCH

Fig.22



DOG

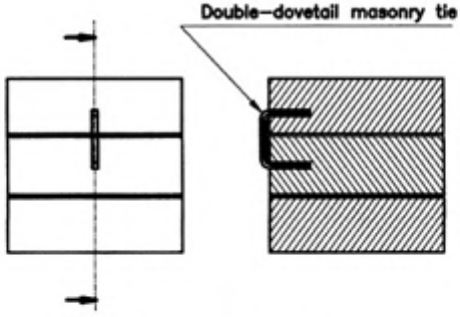
Fig.23



Dolly with tail

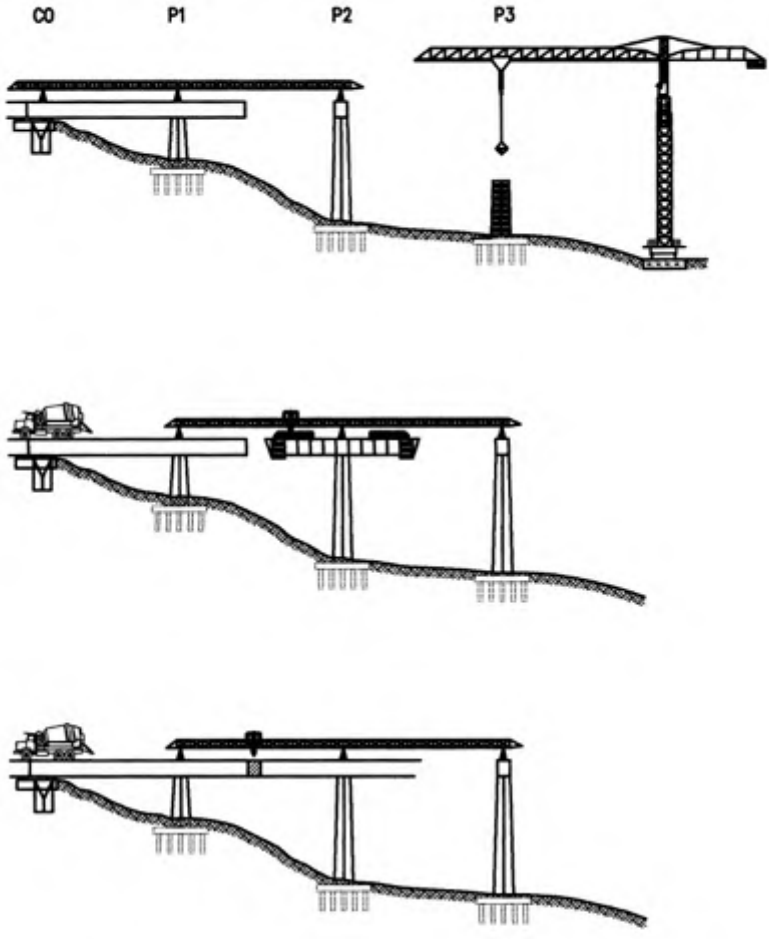
DOLLY

Fig.24



DOUBLE-DOVETAIL MASONRY TIE

Fig.25

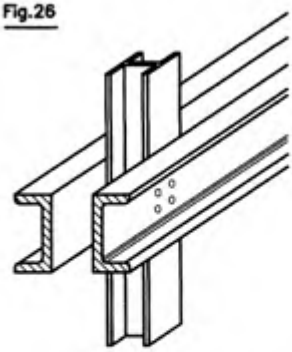


1. Formwork and concreting P3
2. Sliding along the double–girder crane on bearing P1, P2, and P3
3. Formwork and concreting of cantilever voussoir segment P2
4. Formwork and concreting of the segment of keying P2

Kinematics of construction with a double–girder crane

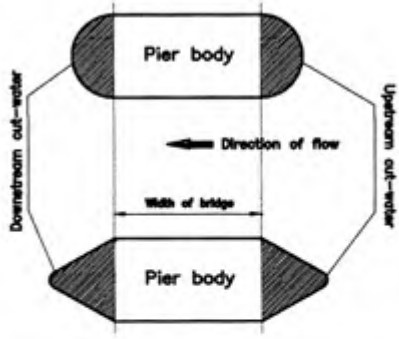
DOUBLE–GIRDER CRANE

Fig.26



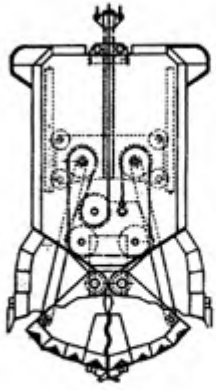
DOUBLE–MEMBER

Fig. 27



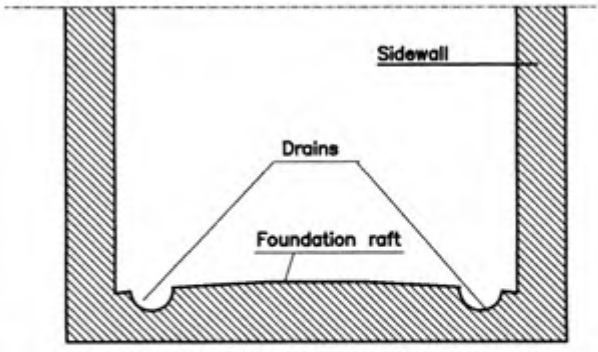
DOWNSTREAM CUT–WATER

Fig.28



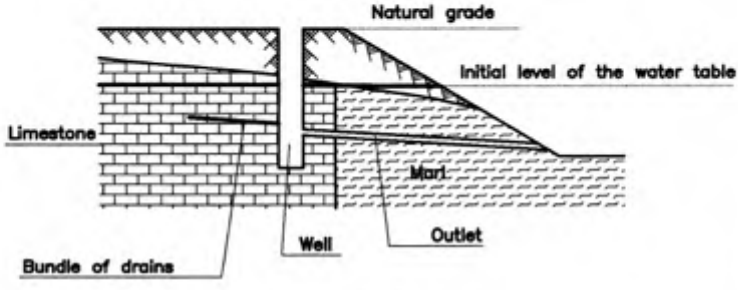
DRAG BUCKET

Fig.29



DRAIN

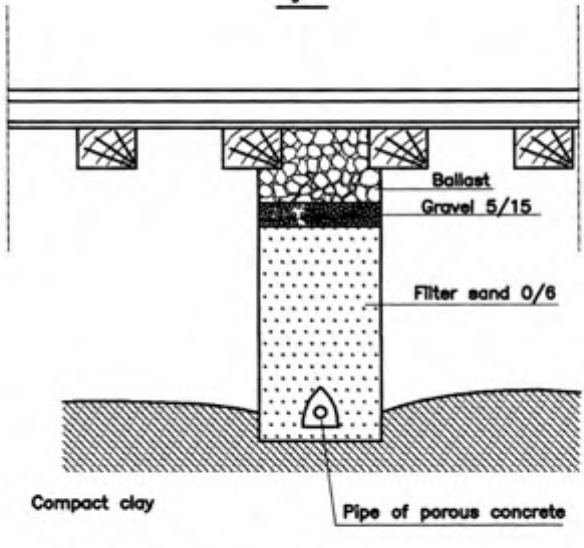
Fig. 30



Well and subhorizontal drain

DRAIN

Fig.31



French drain

DRAIN

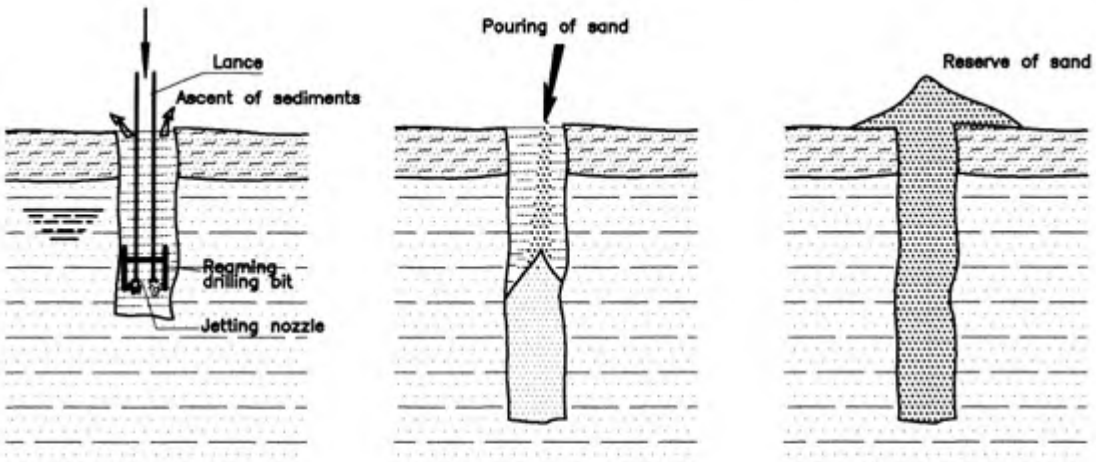
Fig. 32

Stage of carrying out

1. DRILLING

FILLING WITH SAND. THE WATER OVERLOAD SUPPORTS THE OPEN DRILLING

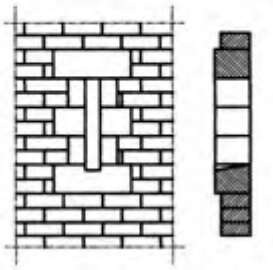
3. FINISHED DRAIN. THE SAND IN RESERVE FLOWS SLOWLY



Sand pile

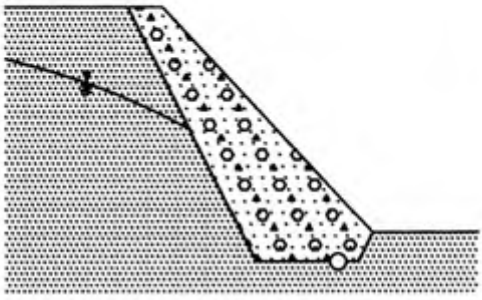
DRAIN

Fig.33



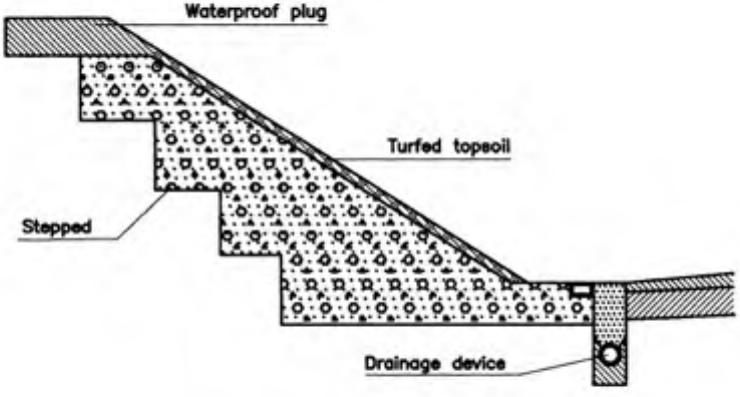
DRAINAGE CHANNEL

Fig.34



DRAINAGE CURTAIN

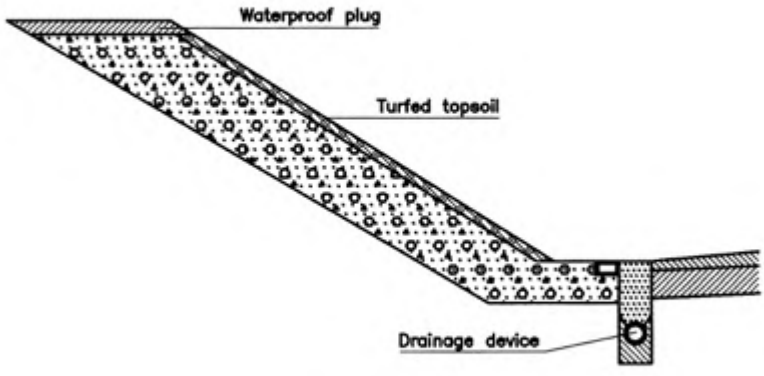
Fig.34a



Drainage curtain "weight"

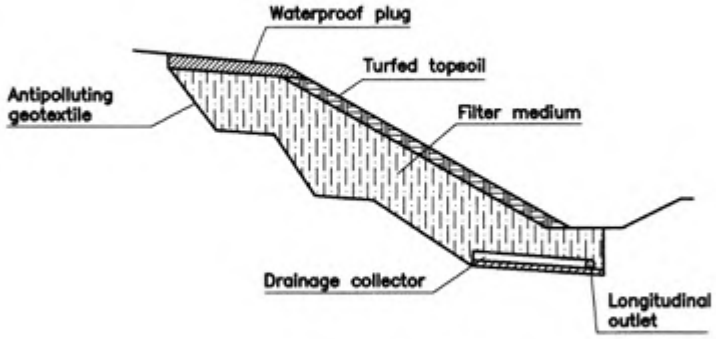
DRAINAGE CURTAIN

Fig.34b



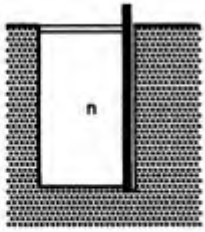
DRAINAGE CURTAIN

Fig.35



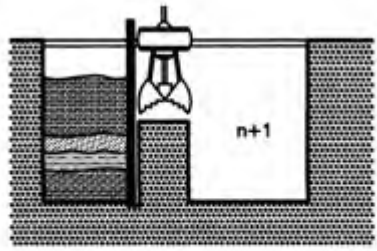
DRAINAGE SPUR

Fig.36



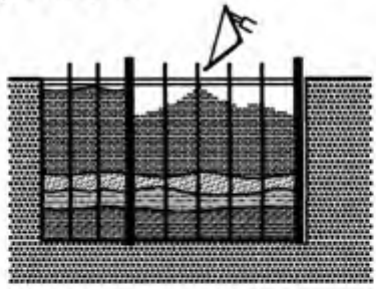
1

– Excavation of panel n
– Installation of retaining temporary formwork of the filter at the extremity of the panel



2

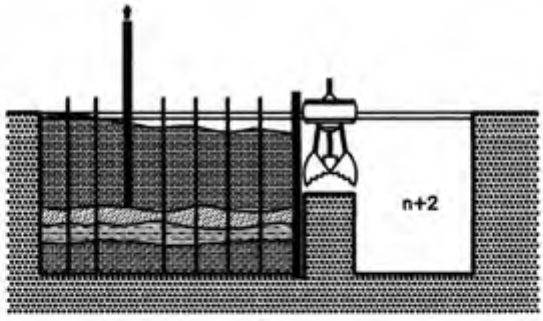
– Putting into place filtering mass in the panel n
– Excavation of panel n+1



3

– Installation of a temporary supporting formwork of the filter at the extremity of panel n + 1

– Installation of the filtering mass in panel n+1

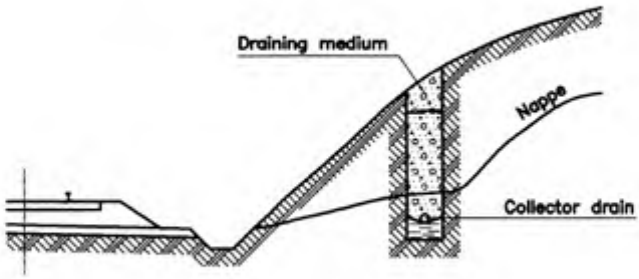


4

– Extraction of the formwork of panel n
– Excavation of panel n+2

DRAINAGE TRENCH (carrying out phases)

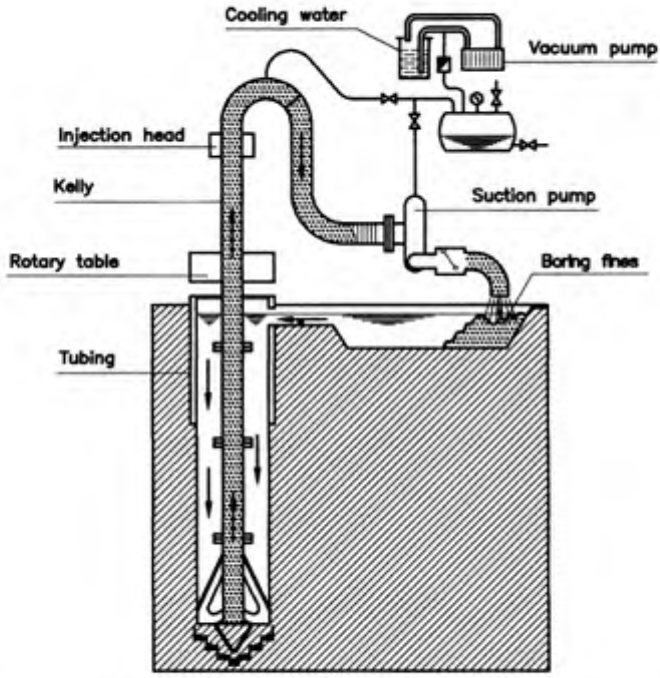
Fig.37



Deep drainage trench

DRAINAGE TRENCH

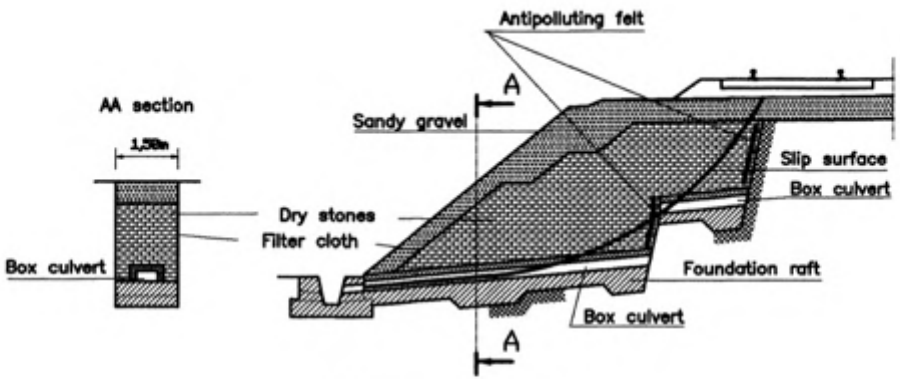
Fig.39



Drilling with bentonite mud by reverse circulation

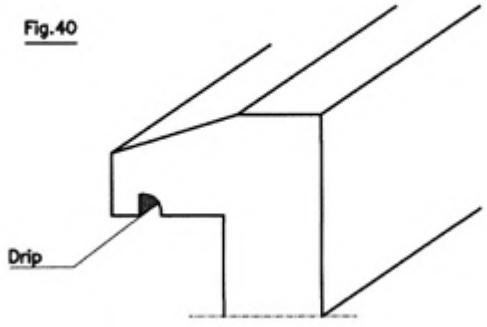
DRILLING WITHOUT WORKING TUBE FOR BORED PILES

Fig.38



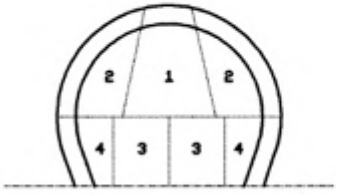
DRAINAGE TRENCH

Fig.40



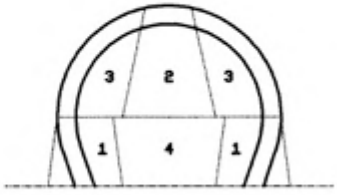
DRIP

Fig.41



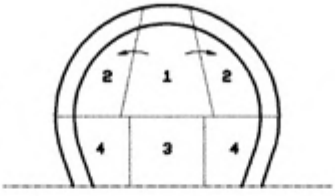
Franco–Belgian method

Fig.41a



German method

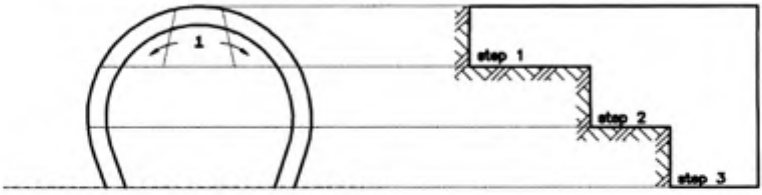
Fig.41b



Belgian method

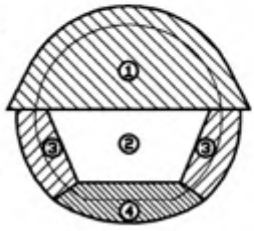
DRIVING or HEADING

Fig.41d



English method

Fig.41c

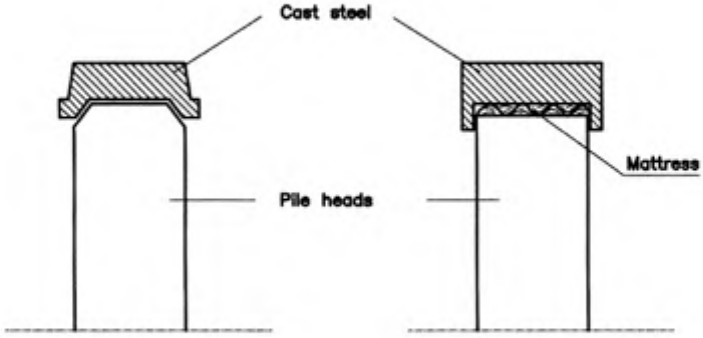


1) 1/2 upper section
2) Core
3) Sidewalls
4) Invert

Modern practice with several drifts

DRIVING or HEADING

Fig.42

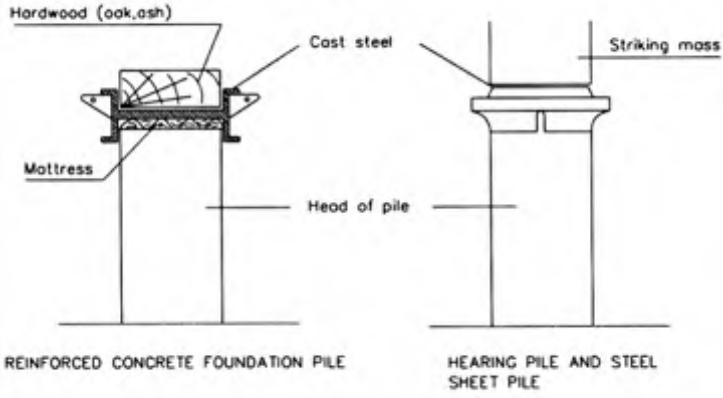


WOODEN FOUNDATION PILE

CONCRETE FOUNDATION PILE

DRIVING HELMET

Fig.42a

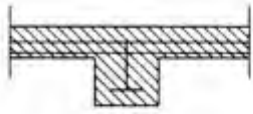


REINFORCED CONCRETE FOUNDATION PILE

HEARING PILE AND STEEL SHEET PILE

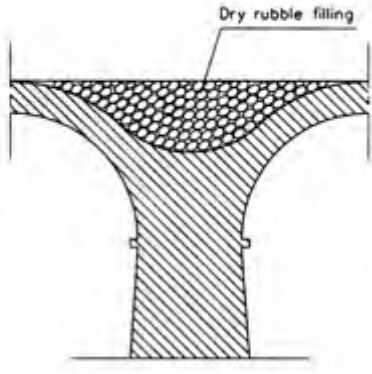
DRIVING HELMET

Fig.43



DROPPED GIRDER

Fig.44



DRY RUBBLE FILLING



EAGLESTONE
Pierre d'aigle
Geology
A hollow stone, inside of which is set another stone which is detached from it and that sounds by agitation.

EARTH
Terre
Geology
1. The matter constituting the surface layer of the sphere where grow the vegetables and considered especially in its nature, composition and consistency.
2. The name given to the metallic oxides that had been formerly looked such as the elements having for primary characters to be dry, fixed, odorless, insipid, insoluble in water, such as yttria, alumina, silica.
Syn. with GROUND; SOIL

EARTH COHESION
Cohésion des terrains
Geotechnics
The property that characterizes the homogeneity of a soil and that is equal by the necessary tangential strain to make slipping the ground following the plan where exerts said it strain. There exists two types of cohesion:
- **real (***la cohésion réelle),* due to the attraction of grains of thin materials;
- **apparent** *(la cohesion apparente),* brought about by the capillarity phenomena.

EARTH FLANGE
Bourrelet
Earthwork
Any earth rising on a recent filling left over or put in place in the expectation of the normal settlement of this filling. Syn. with WASTE

EARTH PRESSURE
Poussée des terres
Geotechnics
A horizontal pressure exerted by a solid mass of ground on the vertical walls or vaults (retaining walls, sidewalls, etc.).
On a vertical wall, the thrust is not horizontal like would be a hydrostatic pressure, but tilted downward according to the angle of friction of the wall, with for maximum, if it has considerably ruggedly, the angle of the internal friction of the soil.
A screen leaning against a solid mass of ground is subjected on behalf of this one to some

actions, that one can replace by their resultant *P*. The screen remains in balance as long as it will be likely to exert at least a reaction *P'* equal and opposed to *P*. If the value of *P* is such that the screen itself move, either by slipping on its base or by swinging on its lower edge, the balance of solid mass will be break and a corner of earth itself will break away, determining a breaking surface passing by the foot of the screen. Along this breaking surface, the ground remaining in place will exert strains of friction directed toward the free surface and tending to be opposed at the going down of the earth corner. At the moment which is preceding the failure, the earth corner is in balance under the influence of three actions:

- its own weight *Q,*
- the reaction *P'* of the screen,
- the resultant *R* of the reactions exerted on the earth corner by the ground.

This state is known as of *inferior balance limits.* The action exerted by the earth on the screen is called *active thrust* or *thrust.*

The intensity of the horizontal component of the unit thrust depends on the density of the ground, the overload, the angle of friction on the screen, the angle of the internal friction and height where it is calculated. Syn. with GROUND THRUST.

See Figure 1

EARTH PRESSURE *or* OROGENIC PRESSURE
Pression des terres *ou* Pression orogénique
Geotechnics
During tunneling, pressure resulting from the modification of the stresses in the overlying grounds that makes that the grounds or rocks have tendency in fill in the cavity thus carried out.

EARTH RAMMER
Batte
Equipment and Tools
A navvy's tool comprising a wooden mass being designed to beat the earth or to drive small piles into the soil. Syn. with MALLET

EARTH SLIDE
Glissement de terrain
Geomorphology
Syn. with LANDSLIDE.

EARTH SLIP
Frane
Geomorphology
A typical landslide affecting the slopes of hills or clayey embankments subjected to longer periods of dryness.

EARTH (FILL) STRUCTURE
Ouvrage en terre
Civil Engineering Structure
A construction formed by a cut or by a reinforced or not filling. Syn. with EARTHWORK

EARTH SUSPENSION
Accoulin
Sanitary Engineering and Drainage
Syn. with ACCRETION

EARTHFLOW
Débourrage
Defects (Civil Engineering Structure)
Syn. with SAND FLOW

EARTHMOVER
Bouteur
Equipment and Tools
An earthmover (tracked or pneumatic-mounted) that is used to move earth on short distances. It is fitted with a concave metal shield (or shovel that always acts pushing) that is perpendicular to the longitudinal axis of the tractor and that is hydraulically controlled. Syn. with BULLDOZER

EARTH-PRESSURE LOAD
Charge des terrains
Geotechnics
The pressure that exert the grounds on a supporting, walls of a tunnel, etc.

EARTHQUAKE
Séisme
Geology
A (earth) tremor generating horizontal and vertical alternative accelerations. Accelerations acting on each mass of a structural component create uprising and reversal strains sometimes even of a master twist.

For the same intensity, strains are all the higher since the:

- subgrade is loose or muddy,

- peculiar vibratory period is slight,
- damping is low and the variations of inertia between some levels are significant.

Syn. with SEISM

EARTHWORK
Terrassement; Ouvrage en terre
Earthwork; Civil Engineering Structure
1. All operations that aims in modifying the lie of the land in a bid of the construction of buildings or civil engineering structures, of the establishment of railways, roads, fluvial channel of communication, galleries or trench digging intended for receiving pipings ensuring the distribution of various fluids or the evacuation of industrial or domestic residues.
The most elementary earthwork comprises three phases: cutting or extraction, transportation or evacuation,backfilling or dump.
For ordinary earthworks, power shovels, rippers, loaders, earthmovers, scrapers, graders, compactors as well as trucks or tipcarts are used for the carriage of the grounds. For very large earthworks, one calls upon the dragline excavators with skates and wheel or multibucket excavators.
2. Syn. with EARTH (FILL) STRUCTURE.

EARTHWORK BY SUCTION
Terrassement par aspiration
Earthwork
An earthwork process which consists in breaking up the ground with a compressed air jet and in evacuating excavated materials by aspiration and carriage owing to a pressurised fluid. The initial phase at first consists in cutting out the revetments and removing the first layers of excavated materials by mainline means: pneumatic hammer, spade, etc. Immediately the depth is such as the handling of the traditional tools is not more in recognition of the section of voluntarily reduced opening, the breaking of grounds, except for rocks and some compact clays, is done using a blow gun which is a kind of jumper bar in hollow steel tube, fed in compressed air of 7 bars. Crumbled grounds and excavated materials of any caliber aspired by a flexible of a compatible diameter, connected to an aspiration unit by means of a decantation tank. **See Figure 2**

EARTHWORK CONTRACTOR
Terrassier
Earthwork
Syn. with LABORER; NAVVY

EARTHWORK DOUBLE-PROBE
Double-sonde terrassements
Equipment for Measure and Control
Instrument that enables gamma radiation to sound, to a specific depth, up to 16 cms, the thickness of the material being probed.

EARTHWORK SUPPORT
Blindage
Temporary Constructions
Syn. with SHEATHING; SHEETING; TIMBERING.

EARTHWORK WITH SLOPED WALLS
Terrassement à parois talutées
Earthwork
An excavation to leaning walls.

EARTHY INCLUSION
Molasse
Defects (Building Materials)
A defect observed in some stones and that appears such as earthy veins which, dissolving, decrease the strength of the stone and compromise its lifetime.

EARTHY INSERTION
Moie; Moye
Defects (Building Materials)
A soft matter, mostly earthy, included inside a stone. This substance must be eliminated before the bonding of the stone.

EARTHY STONE
Pierre moyeuse
Defects (Building Materials)
A stone that contains a lot of earthy insertion.

EATING
Erosion
Building Materials
Syn. with EROSION

ECCENTRIC
Excentrique
Defects
Thin protuberance of calcite that is formed by crystallization and which is due to seepage. It rarely exceeds 20 cm and develops in all directions of thin rays or small translucent fans form.

ECCENTRICITY
Excentricité
Strength of Materials
The case where the application point of a load agrees with the axis of inertia of its support; distance separating these two geometrical elements (example: intentional (or not) alignment defect of axes of two sections of a pole, at the level of a joint). **See Figure 3**

ECCENTRICITY OF A PILE
Excentricité d'un pieu
Foundation
The distance between the point of application of the load and the axis of the pile.

ECHAILLON
Echaillon
Building Materials
A French name used to designate a hard chalky stone, with a very tight grain, used in construction.

ECHO METHOD
Méthode par écho
Test of Materials (Foundation)
A system used to sound the piles and diaphragm walls in order to detect the presence of clean discontinuities; it also allows verification of the homogeneity of the pile or the diaphragm wall (such as, the presence of fissures, bentonite or earth pockets, variations of section, etc.).
Principle: if the top of a pile receives a mechanical shock, an elastic wave develops along its axis. When it arrives at the bottom, if the coefficient of reflection of the interface concrete - ground is nonzero, it will be cast back and its return vibration can be read on the surface by a vibrations probe. If the speed is known, with the help of an oscilloscope to measure the length of time it takes for a wave to travel from top to bottom and back again, the real height of the pile can be deduced.

ECLOGITE
Eclogite
Geology
A rock consisting of granular aggregate of green pyroxene and red garnet, often containing cyanite, silvery mica, quartz, and pyrite.

ECOULEMENT
Ecoulement
Hydrology
Syn. with FLOW; OUTFLOW; RUN-OFF

EDDY FLOW
Ecoulement turbulent
Geohydrology
Syn. with TURBULENT FLOW

EDGE
Chant; Arête
Nomenclature of Materials
1. The narrower side following the length of a squared piece.
2. A brick or a timber is *on edge* when placed on its narrower face.
3. Syn. with ARRIS; GROIN

EDGE
Can; Cant; Champ; Chant
Carpentry
The smallest face of a structural timber piece.

EDGE
Rive
Metallurgy
1. The edge of a flat product.
2. The tip or side rim of a plate, sole plate, wing, in a bar, a simple part or a compound frame. **See Figure 4**

EDGE BEAM
Poutre de rive
Construction
Syn. with AUXILIARY GIRDER; END GIRDER

EDGE BEDDING.
Pose à contre-lit; Pose en délit
Masonry
Syn. with FACE BEDDING

EDGE DISTANCE
Pince
Metal Construction
The measured distance from the edge (transverse edge distance) or the end (longitudinal edge distance) of a piece to the axis of the nearer rivet or bolt. Syn. with END DISTANCE (LONGITUDINAL). **See Figure 5**

EDGE PREPARATION
Préparation des bords
Welding
An operation that consist in giving at the ends of pieces to be welded the shape inherent allowing or facilitating the achievement of a healthy weld with the wanted penetration.
The preparation depends on the conditions imposed by the nature of metal, thickness of pieces, positions, processes and methods of welding. The main shapes used are:
- **square edge preparations** (*les bords droits*), perpendicular to the surface of the pieces, which spacing from range zero to several millimeters;
- **flanged preparations** (*les bords relevés*), where one at least of two sheet metals underwent a folding (fallen edge) close to the edge to be welded;
- **flushed flanged preparations** (*les bords relevés affleurés*), in which the flanged parts break down at the time of the weld, to feed the bead;
- **subsisting flanged preparations** (*les bords relevés subsistants*), where there remains an edge fallen after weld;
- **chamfered edges preparations** (*les bords chanfreinés*), where one at least of the edges underwent, by flame cutting or mechanical manufacturing, a removal of matter, to shape it.

EDGE RIVETS
Rivets de bordure
Metal Construction
In a parcel of flat irons assembled by riveting, rivets of a longitudinal file that adjoin each slice of the parcel.

EDGE WELD PREPARATION
Préparation sur chant à bords droits
Welding
A preparation in which the surfaces of edges of elements are in the same plan, the weld being afterward carried out along the line of the edge junction.

EDGE-GRAINED WOOD
Bois maillé
Building Materials
Syn. with COMB-GRAINED WOOD; RIFT-GRAINED WOOD

EDGEWISE
Canter; Posée de can
Carpentry
1. To position on edge a piece of frame.
2. Syn. with SET ON EDGE

EDIOGRAPH
Ediographe
Drawing and Topography
A pantograph for mechanical copying of the countours of land on any desired scale.

EFFECTIVE DIMENSION (OF A PIECE)
Dimension effective (d'une pièce)
Nomenclature of Materials
The dimension of a piece such that it is realized.

EFFECTIVE LENGTH
Longueur de flambement
Strength of Materials
The dimension that allows to determine the mechanical slenderness ratio of a compressed part, obtained multiplying the free length of this one by a coefficient that depends on the nature of the connections at the ends of the part.

EFFECTS OF THE FIRST CLASS
Effets du premier ordre
Strength of Materials
Phenomena happening under the action of forces applied on a structure considered not deformed. They are such that:
- in the plastic field, deformations — or displacement — are proportional to the forces applied; consequently, an independence beside the succession in which these forces are applied if there some is several;
- in the pure plastic field, deformations grow rapidly under constant forces as soon as the elasticity limit is exceeded. It then generally produces a new distribution of stresses in structures;

- in the cold-hammering plastic field, deformations, although important, are halted by a consolidation phenomenon due to the cold-hammering of the metal.

The phenomenon is in some leaves enslaved. It is created generally in the frame a new distribution of stresses, with the result that the brutal ruin of the work does not produce, safe releasing of an effect of the second class in another place of the construction. Examples of effects of the first class: direct tension, pure or combined bending without possible sloping, direct twist, direct compression.

EFFECTS OF THE SECOND CLASS
Effets du second ordre
Strength of Materials
The result of the action of forces on a structure deformed by these same forces.
In these conditions, the principle of the superposition of forces is inapplicable and displacements are not proportional to applied forces but grow far more rapidly. The phenomenon increases and, if forces are not suppressed or considerably decreased immediately, it ends in a brutal collapse of the element or the construction considered. Common examples are buckling and sloping of the construction.

EFFICACIOUS DIAMETER
Diamètre efficace
Geotechnics
Syn. with *HAZEN'S* DIAMETER

EFFLORESCENCE
Efflorescence
Defects (Masonry and Construction in R.C. and P.C.)
Syn. with BLOOM

EFFLORESCENT SALTS
Sels efflorescents
Defects
Salts which generally bring about efflorescences (blooms, scums) on the surface of masonries and whose primary rank in the following way:
- sulfates;
- chlorides, nitrates and carbonates;
- other salts, mainly those coming from chromium and molybdenum, iron, manganese, vanadium combinations.

EFFLORESCING
Effleurissement
Defects (Masonry)
The dusty superficial deterioration of a stone.

EFFUSIVE ROCK
Roche effusive
Geology
A volcanic stone comes onto the surface in melting state and vented at the air or beneath the sea.

EGG-SHAPED REINFORCED CONCRETE
Ovoïde en béton armé
Civil Engineering Structure
Syn. with OVOID REINFORCED CONCRETE

EIGHT-EIGHT RAFTER
Huit-huit
Building Materials
A rafter of 8 x 8cm.

EKE PIECE
Alaise
Carpentry
Syn. with EXTENSION; LIPPING

ELASTIC BITUMEN
Elatérite
Materials
A variety of elastic bitumen. Syn. with ELATERITE

ELASTIC BRIDGE BEARING
Appui élastique
Strength of Materials
Of a bearing if and when the reaction which it exerts onto a beam is proportional to the subsidence of this bearing.

ELASTIC COUPLE
Couple élastique
Strength of Materials
A couple created in a section resulting from the internal stresses of tension and compression at the time of flexion in the elastic area. At most, in a lattice girder, the product of equal and opposite stresses in the chords (those with unequal sections) multiplied by the distance from their respective centers of gravity. The maximal stress at the maximal bending moment, from the starting of the elastic couple, has the same value

as the maximal stress found in one of the two chords by the Cremona method if the lattice is in *N* or *V*. If the lattice is in *X*, equality is produced in the two chords.

ELASTIC CURVE
Ligne élastique
Strength of Materials
The locus of the layouts on the bending plan of the neutral axis of the sections of a bent beam in pure bending; the elastic line thus follows neutral fiber. It is not different from the longitudinal neutral axis after deformation. In oblique bending, there is an elastic line for each of the two components, mostly orthogonal, of the strains, the resulting line in space offering only little interest.

ELASTIC DESIGN
Calcul élastique
Strength of Materials
A design method of the elements of a reinforced or prestressed concrete construction that rests on the premise of the proportionality of stresses to the deformations, stresses being limited to the values tells *allowable.*

ELASTIC HINGE
Rotule élastique
Strength of Materials
A local diminishing, systematically drawn, of the stiffness of a bar of framework by diminishing of the height and inertia and which can undergo an angular deformation very limited (since the stresses must remain very lower than the elastic limit taking into account the phenomenon of fatigue) but however sufficient to allow a distribution of the bending moments, so that in the hinge the local moment is weak. It thus plays the role of a semihinge (for example, semihinged arch at the key).

ELASTIC LIMIT
Limite élastique
Metallography
The value of the stress from which a metal passes from the elastic field to the plastic field. This limit is often delicate to be appreciated, because the change into a plastic state is very progressive. Therefore, mostly chooses one a conventional elastic limit that corresponds at a tension creating a definite permanent lengthening for example to 0%.2 or 0.02%. Syn. with YIELD LIMIT

ELASTIC MASTIC
Mastic élastique ou à comportement élastique
Materials
A product that broadly resumes its initial shape after elongation, compression or deformation.

ELASTIC PLASTICITY
Elastoplasticité
Metallurgy
A phenomenon observed in some metals such that, after having been subjected to stresses slightly above a certain level, the metal does not resume its original dimensions after return to rest. At low temperatures, this permanent deformation depends upon the duration of the stress.

ELASTICITY
Elasticité
Strength of Materials
The property of some deformed bodies to recover, at least partially, their initial form after suppression of the force which provoked the deformation. Syn. with SPRING

ELASTIC-PLASTIC COATING FOR CONCRETE WATERPROOFING
Revêtement élasto-plastique d'imperméabilisation des bétons
Tightness
A system of polymer-based products in aqueous dispersion, used to waterproof the vertical walls of concrete works and that forms a skin to elastoplastic behavior likely to ensure the waterproofing of the support not fissured. (It also fulfills this function despite the possibility appearance of hairline cracking.)

ELASTIC-PLASTIC LINING FOR CONCRETE TIGHTNESS
Revêtement élasto-plastique d'étanchéité des bétons
Tightness
A product formed by flexible and adherent systems having for function only to ensure the watertightness of the vertical walls (or leaning to 30° at more in comparison with the vertical), despite the stresses whose it can be the object and, in particular, the formation, posterior with

the application, of cracks. Such as the waterproofing coating, it is polymer-based product in aqueous dispersion, and has moreover a reinforcement of textile glass or nonwoven with continuous filament or discontinuous fibers. The reinforced complex thus obtained has, besides one perfect adherence, the ability to freely let breathe the underlying substrate.

ELASTOMER
Elastomère; Caoutchouc de synthèse *ou* artificiel
Building Materials
1. A macromolecular matter which possesses a long domain of elasticity associated with an aptitude for great deformation. Natural rubber, synthetic rubbers (obtained by polymerization) and rubbery plastics are elastomers. They are notably used in pavement joints, bearings, and waterstops in the expansion joints of below-grade structures.
2. Syn. with SYNTHETIC RUBBER

ELASTOMER BEARING
Appareil d'appui en élastomère non fretté
Construction
A device of connection and transmission of actions to the elements of bearing that is made up of contiguous simple strips from 1 to 2 m long, laid between a pier cap and deck. **See Figure 6**

ELASTOMER COLLARED BEARING
Appareil d'appui en élastomère fretté
Construction
Device of connection and transmission of actions to the elements of bearing that is made up of a number of elastomer plates separated by hot-pasted metallic bands. Syn. with REINFORCED ELASTOMER BEARING.

ELASTOMETER
Elasticimètre
Equipment for Measure and Control
An instrument for measuring slight stretching.

ELATERITE
Elatérite
Materials
Syn. with ELASTIC BITUMEN

ELCOMETER
Jauge magnétique du type elcomètre; Elcomètre; Elcotest
Equipment for Measure and Control
Instrument for measuring the layer of the paint films whose there are several models. The standard type allows to measure by direct reading, a thickness of coating from 0 to [illegible] µm. The reading is done on a dial where a pointer indicates the thickness.

ELECTRIC ARC
Arc électrique
Welding
A luminous spindle surrounded by gas and colored flames produced by the partial combustion of the elements of the coating and the metal of the web of the electrode volatilized with oxygen from the air. Syn. with VOLTAIC ARC

ELECTRIC (BLASTING) CAP
Détonateur électrique
Explosives
Syn. with ELECTRICAL DETONATOR

ELECTRIC GLUE GUN
Pistolet à colle
Equipment and Tools
A tool mostly using sticks of glue that get fluid at the touch of a heating resistance. The paste flows by a nozzle and is deposited in cord onto objects to be glued.

ELECTRICAL DETONATOR
Détonateur électrique
Explosives
An ordinary detonator crimped to residence on an electric primer head that occupies the site intended for the match. The filament, crossed by the current, reddens and inflames the igniting pearl of which it is coated. The suitable flame detonates the nitrogen of lead, very sensitive explosive that transmits the explosion to the penthrite, explosive little sensitive but very powerful. In delay electric cap or to millisecond delay electric detonating cap, a cord of powder, whose length varies with the number of the delay, is inserted between the igniting pearl and the nitrogen of lead.
We can distinguish:

- **instantaneous electrical blasting cap *or* instantaneous (electric) detonating cap** *(le détonateur électrique instantané),* which explodes 2 to 3 ms after the launching of the current in the electrical circuit;
- **delay (electric) blasting cap *or* ordinary (electric) detonating cap** (*le détonateur à retard ordinaire*), of which each detonator of the same series is intended of a number and functions with a gap of a half-second in comparison with the neighbor number;
- **millisecond delay electric detonating cap** *(le détonateur à microretard, encore appelé à court retard);* its functioning is based on the same principle as the ordinary (electric) detonating cap but the gap is only 20 to 25 ms.

Syn. with ELECTRIC (BLASTING) CAP

ELECTRICAL LOGGING
Carottage électrique; Sondage électrique
Geotechnics; Geophysics
1. The study of the section of ground made one's way through by a borehole, by means of electric currents passing by electrodes that one going down at the end of a cable into the hole. One records the graphs of resistance and porosity of the ground.
2. A geophysical method of soil survey based on the resistance of the basement; the latter is determined placing into the soil electrodes connected to a measuring box. The resistance of the same bed being relatively constant and being able to get measured itself, variations recorded at the time of the tests inform about the thickness of the studied beds of known resistance. This method is particularly interesting in the search of water, of aggregate deposits.

ELECTRICAL WELD
Electrosoudure
Welding
A weld carried out using the heat coming from electrical sources (electrical weld).

ELECTRICAL-BALL STRAIN GAUGE
Déformètre à bille électrique
Equipment for Measure and Control
An instrument whose use is identical to the mechanical-ball strain gauge but in which the reading been made by a digital display with any precision to the 1/1000.
There exists two versions:
- complete with printing on a printer,
- light with visualization of the digital display.

ELECTROCHEMICAL PASSIVATION
Passivation électrochimique
Construction of R.C. and P.C.
An operation that consists in passivating the steels of a former work of reinforced concrete having undergone the aggression of carbonation and/or chlorination. The process consists in connecting the existing reinforcements to a coated electrode (welded wire mesh) by a layer of fibers sprayed on the facing of the work. There occurs then an electrochemical reaction causing a realkalinization and a dechlorination of the concrete. At the end of the processing (that lasts about five weeks), the electrode and its coating are withdrawn.

ELECTROCHEMICAL SURFACE PROCESSING
Traitement de surface électrochimique
Metallurgy
An operation intended for protecting metals or alloys from corrosion.

ELECTROCONCRETE
Electrobéton
Construction of R.C. and P.C.
Concrete which is electrically heated after its pouring so as to avoid adverse effects of the cold. This processing accelerates its hardening in all weathers.

ELECTRODE
Electrode
Welding
A stick or wire of metal which releases an arc when a power is passed through it and contacts another electrical piece. The electrode serves both as brought of current and weld metal.
Among the main types of electrodes are:
- **bare wire** (*le fil nu*), used especially in semiautomatic or automatic welding;
- **covered (or coated) electrode** *(l'electrode enrobée),* made of a weblike metallic rod of similar nature to the metal being soldered and contained in a coating which constitutes the sheath. Each part plays a different role in the beginning, the fusion, and the solidification:

- *an electrical role* wherein an ionizing action is produced which appreciably reduces the tension

of the beginning of the arc. It halts, in addition, any secondary arcs which might begin; finally, it produces on the smelted metal an action important director that facilitates the operation of the soldering: the projection of liquid droplets in the direction of the axis of the electrode;

– *a metallurgic role:* the coating gives birth to an incandescent gas sheath (the flame) composed primarily of hydrogen and an oxide of carbon that, similar to the slag that it produces, protects the smelted metal against the corrosive effects of the air by preventing the dissolution of oxygen and nitrogen;

– *a physical and mechanical role:* the temperature of fusion of the coating is greater than the metallic web; it results some that the region of the contiguous arc to the electrode is protected by a sill, and that the smelted metal is protected by the slag. Among coated electrodes there are mainly:

- *electrodes with an acidic coating* (*les électrodes à enrobage acide)* that contain the oxide of iron, natural silicates and denitriding and deoxidizing iron alloys. They are endowed with a high speed of fusion but their use is limited to steels presenting a good weldability,
- *electrodes with a basic coating* (*les électrodes à enrobage basique),* made by calcium or manganese carbonates mixed with denitriding and deoxidizing products and fluxes that lower the temperature of fusion. These electrodes provide a ductile weld metal and high impact resistance. The electrodes most used in engineering work are:
- *electrodes with cellulose coating (les électrodes à enrobage cellulosique),* of average thickness, that contain a great quantity of volatile products (wood or cotton cellulose). The metal deposited by electrodes with cellulose coating is refined and its characteristics are good;
- *electrodes with thick coating* (*les électrodes a enrobage épais),* whose ratio between the external diameter and that of the web is equal to or higher than 1.8;
- *electrodes with thin coating* (*les électrodes à enrobage mince)* whose ratio between the external diameter and that of the web is less than 1.4;
- *electrodes with oxidizing coating* (*les électrodes à enrobage oxydant),* whose thick coating is composed mainly of oxides of iron, silica, or natural silicates. These electrodes are especially used in position to flat or in gutter, or on soft steel when a beautiful appearance is researched. Their mechanical characteristics are weak, but the metal is not fissile;
- *electrodes with rutile coating (les électrodes à enrobage rutile),* which enable an assembly of good quality. The coating, of average thickness to strong, contains a great proportion of rutile (natural titanium oxide up to approximately 95%) or ilmenite (iron and titanium oxide) and refining and active elements such as iron alloys and natural silicates. Their advantages are a beautiful weld seam, excellent workability, and good mechanical characteristics;
- *electrodes with semithick coating* (*les électrodes à enrobage semi-épais)* whose ratio between the external diameter and that of the web is equal to or higher than 1.4 but less than 1.8;
- *high recovery metal powder electrode (les électrodes à haut-rendement),* a coated electrode whose ratio between mass it deposited metal and the consummated web mass is higher than 1.2;
- *metal powder electrode (les électrodes à rendement),* also coated, whose ratio between mass it deposited metal and the mass of web consumed (nominal output 1.6.22) is higher than 1.1 and less than or equal to 1.2;
- *electrode with double covering (les électrodes double-enrobage),* also coated, whose coating is constituted of two concentric layers of different compositions;
- **consumable electrode** (*l'électrode fusible)* which contributes by its fusion to the elaboration of the welding and can be naked, coated and/or crammed;
- **nonconsumable electrode** (*l'électrode réfractaire),* naked, that is resistant to very high temperatures and can be composed of tungsten with or without the addition of graphite or copper oxides.

ELECTRODE COATING

Enrobage d'une électrode

Welding

The matter that surrounds the wire of an electrode whose role is triple:

- electrical,
- metallurgic,
- mechanical.

Among the different types of coating for welding electrodes, there are:

- **acid covering** *(l'enrobage acide),* a coating containing besides the oxide of iron and/or the oxide of manganese, a high percentage high enough ferromanganese and/or other deoxidizers. The metallic character of this coating is acid;
- **basic covering** *(l'enrobage basique),* a coating containing notable quantities of carbonate of calcium or other carbonates as well as of the fluorspar. The character of this coating is basic;
- **cellulose covering** *(l'enrobage cellulosique),* a coating containing a great quantity of combustible organic substances (combustible) whose decomposition in the arc produces in abundance a protective gas;
- **graphite covering** *(l'enrobage graphitique),* a coating containing mainly graphite; it can also contain carbonates, fluorides, iron ore, and iron alloy;
- **oxidizing covering** *(l'enrobage oxydant),* a coating containing mainly oxide of iron with or without oxide of manganese;
- **rutile covering** (*l'enrobage rutile),* a coating containing a great quantity of rutile or a derivative body of oxide of titanium and being able to contain cellulose products;
- **rutile basic covering** *(l'enrobage rutile-calcique),* a coating containing both important quantities of rutile or a derivative body of oxide of titanium, carbonates of calcium or other basic carbonates.

Syn. with COAT

ELECTRODE HOLDER
Porte-électrode
Welding
A welder's tool which carries an electrode to which it transmits the current.

ELECTRODE PENETROMETER
Pénétromètre-électrode
Assaying Equipment
A soil survey casual apparatus equipped in the following way: an electric current source, kept to a constant tension, feed, on the one hand, a fixed electrode and, on the other hand, through a galvanometer, the head of the penetrometer. This equipment allows to run a current into the soil and to measure the intensity of this current. This measurement provides immediately a picture of the relative values of the electrical resistance of the stratums successively made one's way through by the penetrometer. **See Figure 7**

ELECTRODEPOSITION
Electrodéposition; Dépôt électrolytique
Metallurgy
1. A process used to obtain a deposit or a thin piece by electrolysis.
2. A protection process for steels which is similar to the galvanoplasty. Instead of the metal, it is a resin which is deposited onto the surface to be protected. Under the action of the electrical field, particles migrate toward the surface to be painted and settle as a film.
3. A coating obtained by an electrolytic deposition of a metal or alloy onto the basic metal placed in cathode during the electrolysis.

ELECTRODISSOLUTION
Electrodissolution
Materials
The decomposition of the matter of an electrode (anode) by electrolysis.

ELECTRODRILLING
Electroforage
Work
A drilling executed with an electric motor placed in end of the stand of drill pipe. In this process, an electric motor communicates the rotating movement to the bore bit.

ELECTROFRACTURE
Electrofracture
Construction of R.C. and P.C.
A method of concrete demolition using the heating of the material by dielectric losses.
This equipment is essentially composed by a high-frequency generator and two electrodes fixed on a large jaw that is itself fixed on an arm ordered by hydraulic cylinders. The block of material to be disintegrated is tight in the jaw and one applies a high-frequency voltage to it during some instants (2 to 3 minutes) tightening the jaw. Under the simultaneous effect of heating due to the dielectric losses and the mechanical strain, the material is disintegrated.

ELECTROGALVANIZING
Electrozingage
Metallurgy
The electrodeposition of a coat of zinc onto another metal. One says also *electrolytic zinc plating.* Syn. with ZINC PLATING

ELECTROLYSIS
Electrolyse
Materials
A process in which solution chemically decomposed by an electric current.

ELECTROLYTE
Electrolyte
Materials
A liquid solution being able to be decomposed by an electric current. Syn. with ELECTROLYTIC CONDUCTOR

ELECTROLYTIC CONDUCTOR
Electrolyte
Materials
Syn. with ELECTROLYTE

ELECTROLYTIC POLISHING
Polissage électrolytique
Metallurgy
An anodic process for metal surfaces that allows to obtain plane surfaces free from microgeometrical defects and to eliminate the surface cold-worked coats by mechanical polishing, for example.

ELECTROLYZER
Electrolyseur
Equipment and Tools
A device for realizing an electrolysis.

ELECTROMAGNETIC COVER METER
Pachomètre
Equipment for Measure and Control
Syn. with COVER METER; PACHOMETER

ELECTROMAGNETIC GAUGE
Jauge éléctro-magnétique
Equipment for Measure and Control
Instrument for measuring the thickness of paint films. The layer measured is from 0 to 500 µm
A bipolar probe and an indicator with dial allow fast and reliable measurements.

ELECTRONIC BATCHER WITH FLOWMETER
Doseur électronique à débitmètre
Equipment for Measure and Control
A volumetric device used notably for feed of admixtures in a concrete mixing plant. The degree of error of these devices is 1% to 2% (or accuracy is 98-99%). The equipment is composed of centrifugal pump controlled by a volume meter. A flowmeter located below delivers the quantity of wanted product. **See Figure 8**

ELECTRONIVELLE
Electronivelle
Equipment for Measure and Control
Instrument for measuring angles in comparison with the vertical.

ELECTRO-OPTIC DISTANCE METER
Distancemètre électro-optique
Equipment for Measure and Control
An instrument enabling long-distance sighting and providing direct, immediate measured distance in numerical form.

ELECTRO-OSMOSIS
Electro-osmose
Civil Engineering and Foundation
An electrical precipitation of colloidal matters in suspension which allows to obtain a drying, or an acceleration of settlement, due to the progressive consolidation of argillaceous grounds as the effect of a load.
These results are obtained making pass a direct current between two electrodes, one is constituted by a series of metal probes sunk into the soil, and the other is formed by earth connections of the different metal of probes. The difference of potential which is established between the two terminals, being added to the capillarity, favors the rising of the water. The electro-osmosis is used in some argillaceous grounds for the launching of piles. The electro-osmosis allows to moisten strongly thin beds of ground around the pile; it results in some diminishing of the skin friction being able minimizing of a third the strain of piling. The electro-osmosis is also used to proceed at the drainage of walls.

ELECTROPLATING
Galvanoplastie
Metallurgy
All electrodeposition techniques of a coating on a metal on another matter (on steel generally). Syn. with GALVANOPLASTY

ELECTROSTATIC SPRAYING
Projection électrostatique
Work
An application of divided matters (powder, fog) onto a solid object, carried out using the electrical field. It is related to electrostatic precipitation; the ionization of the air containing solid particles is carried out by a wire, or some points, or a tube presenting a sharp edge, in the vicinity of the charged draft with material to be laid down, the objects to be covered representing the counterelectrode to the earth. If the material is liquid (paint), one can concurrently carry out the pulverization and load of the droplets carrying to high tension the nozzle by which it escapes. In many cases, a gaseous stream takes part in the carriage of the material to be laid down. This technique is used to protect and decorate metal objects (paint and powdering). The electrical charge allows to make adherent to the object a coat of pulverulent plastic, until its melting and its polymerization.

ELEMENT
Elément
Materials
A simple body, considered irresolvable.

ÉLÉMENT n.m.
Element
Matériaux; Geomorphology
1. Corps simple, considéré comme indécomposable.
2. In a landslide, the fraction of the slipped mass located between two scarps.

ELEMENTARY CHEMICAL ANALYSIS
Analyse chimique centésimale ou élémentaire
Geotechnics
An operation that consists in working out the quantitative composition in oxides (or elements) of a soil sample. By extension, one designates under this term the chemical composition itself.

ELEMENTARY VOLUMES
Volumes élémentaires
Building Materials
Absolute volumes of the various subunits of the mortars or concretes, contained in the unit of apparent volume of the mixture, at once after use.

ELEVATED CABLEWAY CRANE
Blondin
Handling
Syn. with BLONDIN; CABLEWAY; FUNICULAR CRANE; OVERHEAD CABLEWAY

ELEVATED GRILLAGE ON PILES
Plate-forme
Foundation
Syn. with GRILLAGE

ELEVATING PLATFORM
Plate-forme élévatrice
Equipment and Tools
1. A lifting appliance equipped with a tray of which the lift is ensured by hydraulic or electrical systems fixed on a chassis. It is used to lift loads or personnel.
2. A motor vehicle equipped with one or several unfoldable arms (telescopic or not) supporting at the end a basket being able receiving the personnel; it is intended for the inspection or work of maintenance of permanent structures.
Syn. with ACCESS PLATFORM WITH TRUCK ELEVATING PLATFORM

ELEVATION
Elévation
Drawing
The representation of a work, a piece, viewed by an observer located in face.

ELINVAR
Elinvar
Equipment and Tools
The iron, nickel, chromium alloy and a some measure of tungsten, to null thermoelastic from - 50°C to + 100°C.

ELKYSOMETRY
Elkysométrie
Test of Materials
Science of the measurement of tension forces.

ELM
Orme
Building Materials
A tree of the leafy trees family whose wood of a brown reddish color is solid, full, resistant, flexible, binding, and hard. This wood is mostly used to build works of short lifetime, like

centerings for example, because it is sensitive to attack from worms.

ELONGATED CAVITY
Soufflure allongée
Defects (Welding)
An important nonspheroid blowhole whose main dimension mirrors the axis of welding.

ELONGATED HOLE
Trou oblong; Boutonnière
Construction
An opening constituted by two circular holes similarly diameter, secant, tangent or moved away, joined by two parallel faces isolated of the value of the diameter. Occupied by a bolt and nut with crenels and three washers whose one elastic (for example: Belleville spring washer), the oblong hole allows a relative displacement of the parts to tighten in only one direction. (Do not to confuse oblong hole and oval hole.) Syn. with OBLONG HOLE.

ELONGATION
Allongement
Metallography
The variation of gauged length between marks, at a given moment of the tensile strength test on steel.
The remanent elongation percent *is the variation in length between marks of the test specimen subjected in the first place to a prescribed unit stress, then unloaded; this variation is expressed as a percentage initial length between marks. The symbol of this lengthening is supplemented by an index expressing the prescribed unit stress.*
The lengthening percent after rupture *is the remanent elongation gauged length after rupture* Lu-Lo, *expressed as a percentage of* Lo.
(Lo: initial length between marks; Lu: ultimate length between marks).
The lengthening of constriction *is the report of the ultimate variation of the cross section produced by* So-Su *test with the section after the* Su *rupture. It is expressed as a percentage.*
(So: initial section; Su: section after rupture).
Syn. with EXTENSION

ELUTRIATION
Elutriation
Geotechnics and Building Materials
Grain-size analysis method of the thinnest elements of a granular material. The process consists in classifying the thin particles following their speed of fall into a rising liquid stream to laminar flow.

ELUVIAL
Eluvionnaire
Geomorphology
Syn. with ELUVIAL DEPOSIT

ELUVIAL DEPOSIT
Eluvionnaire
Geomorphology
That relates to eluvia. Syn. with ELUVIAL

ELUVION
Eluvion; Eluvium
Geomorphology
Syn. with ELUVIUM

ELUVIUM
Eluvion; Eluvium
Geomorphology
An accumulation of rock remains eroded by atmospheric agents (rain, wind, frost, etc.) and which have remained on the spot or carried on very slight distances, contrary to alluvia. Syn. with ELUVION

EMBANKMENT
Digue; Digue fluviale
Hydraulic Work
1. A construction established to contain waters or to protect their effects. **See Figure 9**
2. Syn. with BREAKWATER; FLOOD BANK

EMBANKMENT
Talus; Berge
Civil Engineering Structure; Hydrology
1. A slanted ground surface which limits a fill, a cut or a ditch. Slope can be of a natural origin or has been created at the time of earthworks. The incline of the natural or artificial slopes is contingent on the characteristics of the ground (cohesion, natural angle of internal friction). Slopes are limited on their top by slope crest and on their base by the foot of slope. Syn. with BANK; NATURAL SLOPE; SLOPE
2. Syn. with BANK; SLOPE
3. Syn. with BANK; MOUND

EMBEDDED LENGTH
Fiche d'un poteau de blindage
Temporary Constructions
Syn. with BURIED LENGTH

EMBEDDING
Reprise par encastrement
Masonry
The replacement by inlaying, isolated or by small surface, of a part of brickwork or stonework by other quarry stones or bricks of similar dimensions.

EMERY
Emeri; Corindon
Materials
1. A natural abrasive which is corundum and magnetite mixing.
2. Syn. with CORUNDUM

EMPTY
Vide
Construction
An open space in a construction not occupied by constructive elements and which can be voluntarily accommodated or the object of an accidental absence of matter.

EMPTY-CELL PROCESS
Procédé à cellules vides
Building Materials
A wood impregnation process by the combined action of the pressure and vacuum, inside an autoclave, into three successive phases. Syn. with OPEN-CELL PROCESS

EMSIAN
Emsien
Geology
A formation of the lower Devonian.

EMULSIFIED PASTY PRODUCTS
Produits pâteux émulsionnés
Materials
A range of tightness materials formed by bitumen, water, and emulsive.

EMULSIFYING AGENT
Emulsionnant; Emulsifiant
Materials
Of an agent apt to facilitate and sometimes stabilize an emulsion.

EMULSION
Emulsion
Materials
The dispersion of a liquid into another not miscible and whose stability is generally obtained with the help of an *emulsifier.* The emulsion is an anionic character if in the phenomenon of electrophoresis particles directed to the anode and to cationic character if particles directed to the cathode.

EMULSION GRAVEL
Grave-bitume
Building Materials
A material formed by mostly crushed aggregates coated with bitumen and used in base course in the achievement of road constructions. Its function in the roadway is to take the loads due to the traffic and rolling loads, and most uniformly possibly to distribute the constraints forced by the traffic to bring back them to an admissible standard for the foundation. It can be used for the same reasons in the base course of industrial floors. Syn. with BITUMEN GRAVEL

ENCASE
Cacheter
Civil Engineering Structure
To carry out sealing operation.

ENCASED
Encastrement
Carpentry
Syn. with BUILDING IN; SCARFING

ENCASEMENT
Cachetage
Civil Engineering Structure
An operation that consists in embedding into the mass of the structure in performing a channel, the heads of tie rods, anchorage heads of the steel prestressing cables, etc., and protecting them from corrosion by filling the channel with thin mortar.

ENCLOSED ROTTEN KNOT
Malandre
Defects (Building Materials)
The hidden rot inside wood.

ENCLOSING
Ceinturage; Encrèchement
Construction; Foundation
1. In repairs of masonry works, gripping tightly of a work or a part of work (example: a pier) with the help of a structure, generally closed in framework or in ring. The enclosing has a role of surface protection from the shocks, erosions, and various mechanical effects, as from atmospheric or hydraulic aggressions. It has also a role of hooping of the existent masonry and can contribute ensuring a best stability of the work. When the hooping role is predominant, the strengthening work can be called a *corset.* Syn. with CORSET
2. An enclave made of sheet piles or of piles surrounding a foundation erected in aquatic site and that is intended for protecting it from underwashings. Syn. with PILES OR SHEET PILE ENCLOSING

ENCRUST
Incruster
Masonry
To replace or add punctually (in search) a defective or lacking brick or quarry stone. Syn. with INLAY

ENCRUSTMENT
Incrustement
Masonry
A localized replacement in a brickwork or a stonework, of an isolated element, defective parts of course or complete courses by new materials. Syn. with INLAYING

END
About; Scellement; Bavure
Masonry; Work; Defects
1. The vertical plan that limits at the end the various stones of a parapet. Syn. with BUTT; GRAFT. **See Figure 10**
2. Syn. with ANCHORING
3. Syn. with FLASH

END (OF SHIELD)
Queue
Equipment and Tools
The back part of a shield under the cover of which is achieved the cast-steel lining of a tunnel (putting up of segments).

END (OF SLAB *or* GIRDER)
About (de dalle *ou* de poutre)
Construction
The extremity of a beam or a slab. Syn. with END STOPPING (BEAM OR SLAB). **See Figures 11 and 12**

END BALANCE
Talon
Construction
The back part of the equalizer of a drawbridge, supporting the counterweight.

END BLOCK
Bloc d'ancrage
Construction
A confined concrete excrescence, fitted out at the ends of a deck, a beam, and into which is embedded the anchorage head of a steel prestressing cable.

END DISTANCE (longitudinal)
Pince
Metal Construction
Syn. with EDGE DISTANCE

END DRAIN
Chaussette
Sanitary Engineering and Drainage
Syn. with FILTER CAP

END FOOTING
Empatture
Work
The joining end to end of two pieces by means of an assembly or connection iron bands.

END GIRDER
Poutre de rive
Construction
1. The outside piece of the shoulder of a steel deck, which mostly supports the railing. Syn. with AUXILIARY GIRDER; EDGE BEAM
2. In a multiple-beam bridge, each of the two beams the most distant from the longitudinal axis of the bridge.

END PLATE
Plaque d'about
Construction
A precast concrete piece placed at the ends of the beams or prestressed caissons to ensure the diffusion of the prestressing.

END RESTRAINT
Encastrement
Construction of R.C. and P.C.
A bond resulting from the solidarity of the concrete between the extremity of an element and the whole of the structure which it belongs, such that it develops there a bending moment, without there being displacement, under the influence of applied actions.

END SPAN
Travée de rive
Construction
Span located at each end of a work which comprises several of them.

END STOPPING (BEAM OR SLAB)
About (de dalle *ou* de poutre)
Construction
Syn. with END (of SLAB *or* GIRDER).

END-GRAIN WOOD
Bois de bout
Building Materials
A piece whose section is perpendicular to the grain.

ENDOGENETIC ROCK
Roche endogénique
Geology
Syn. with ENDOGENIC ROCK

ENDOGENIC ROCK
Roche endogénique
Geology
A material having originate inside the sphere, such the basalts come from the magma, and expelled at the time of volcanic eruptions; it is a volcanic rock. Syn. with ENDOGENETIC ROCK

ENDOHYDROMORPHY
Endohydromorphie
Sanitary Engineering and Drainage
A natural defect of drainage of the grounds which can result either from the natural topographic conditions (dips and basins without outlet) or artificial, either the lack of infiltration of the soil (very clayey texture or very muddy) in surface or to some decimeters of depth.

ENDOREIC
Endoréique
Hydrology
Of a region whose its rivers, although showing permanent activity, do not pour into the sea.

ENDOSCOPE
Endoscope
Equipment for Measure and Control
A tubular optical instrument allowing to observe and control directly the inside of boreholes, inclinometer tubings, cavities of all sorts and their evolution, fissures, etc. Two models essentially are offered.

- the **classic endoscope** *(l'endoscope classique)* consists of a rigid metal tube containing optical system and the electrical feeding device. In an extremity is the device of illumination and the objective which gives of the observed surface an image which is transmitted to an ocular through optical relays. Extensions allow to carry the useful length of the instrument from 1 to 12 m. On the ocular a camera can be fixed. This equipment is provided with viewfinders to axial or radial aiming;
- the **endoscope with optical fibers *or* fiberscope** (*l'endoscope à fibres optiques),* in which optical fibers are used solely to carry the light of lighting, the transmission of images making through classic optical relays. In comparison with the classic endoscope, this type of instrument presents the inconvenience of a sounding length really limited, in the order of 1m approximately.

Syn. with BORESCOPE; FIBERSCOPE

ENDOSCOPY
Endoscopie
Equipment for Measure and Control
The internal examination of the empties of a construction, a drilling or cavities with the endoscope.

ENDURANCE FAILURE
Rupture par fatigue
Strength of Materials
Breakage occurring in some parts subjected to strong vibrations. This breaking can occur at the end of a certain time of service if the amplitude of the stresses is too high. Syn. with FATIGUE FAILURE

ENDWISE PURLIN
Cours de pannes
Carpentry
Syn. with PURLIN COURSE

ENGAGE
Enlier
Masonry
Syn. with TO BOND

ENGAGED PIER
Pied-droit
Construction
Syn. with PIER

ENGINEERING BRICK
Brique à résistance garantie
Building Materials
Syn. with GUARANTEEDSTRENGTH BRICK

ENGINEERING WORK
Ouvrage d'art
Civil Engineering Structure
Syn. with CIVIL ENGINEERING STRUCTURE; STRUCTURE

ENGLISH BENT
Palée anglaise
Temporary Construction
A dismantled provisional metal piling that is constituted from standard elements being able to be set up quickly.
Elements are assembled between them by bolts. An English bent is intended for supporting provisional bridges, bressumers and temporary bridges, and is also used as support of service floor, of sliding along or launching piling of decks not built on their final site, for the consolidation of structures, the raising of decks, various repairs.
We can distinguish two types of English bents:
- *light standard;*
- *heavy standard.*

See Figure 13

ENGLISH BOND
Appareil simple
Masonry
Masonry construction containing only one bonded material rank.

ENGLISH HAMMER
Masse anglaise
Equipment and Tools
A hammer with throats on both heads, used for cutting hard quarry stones.

ENLARGING BIT
Elargisseur
Equipment and Tools
A special bore bit which serves to widen a well or a drilling to a greater diameter. Syn. with HOLE OPENER; UNDERREAMER

ENROCKMENT
Enrochement
Foundation
Stacking of rocks or concrete blocks at the base of foundations of permanent structures established in aquatic sites, so as to prevent underwashing. Syn. with BEDDING; PITCHING; RIPRAP; ROCKFILL

ENSILAGE
Silotage
Materials
The conservation of products in a silo.

ENTABLATURE
Entablement
Construction
A band course of great dimensions crowning a facade. **See Figure 14**

ENTABLATURE WITH OGEE MOLDING AND DRIP
Capucine
Construction
Syn. with CAPUCHIN

ENTRANCE (to garage where the pavement slopes down)
Bateau de porte
Construction
The lowering of the curbs at the right of an entry. Syn. with DROPPED CURVE. **See Figure 15**

ENTRAPPED AIR
Air occlus
Hydraulic Binders
Air bubbles which are developed inside a concrete under the influence of an admixture mixed during of concrete manufacture. This

formation of air bubbles allows to increase the concrete's resistance to the frost.

ENTRY OF WORMHOLE
Trou d'entrée
Building Materials
The opening penetration of full-grown insects of scolytes and platypes visible on the surface of the wood. It is by these holes that the adults reject sawdust resulting from their drilling.

ENVELOPE
Habillage
Construction
Secondary work of sheet metal workshop or steel joiner's workshop or any other materials, covering a construction in an ornamental purpose or to hide bars or assemblies of a metal frame or reinforced concrete. Syn. with EXTERNAL CLADDING; HAUNCHING; TRIM

ENVELOPE OF GRADING
Fuseau de référence
Building Materials
A range arranged to situate sands and gravels of the grading viewpoint.

EOCENE
Eocène
Geology
The first part of the Tertiary era.

EOLIAN ABRASION
Abrasion éolienne
Geomorphology
Syn. with WIND ABRASION

EOLIAN SAND
Sable éolien
Geology
A granular material of a whichever origin torn off by the wind and that settles in dunes form; grains are very rounded, have a dull aspect and a uniform and thin grain size.

EPIDERM
Epiderme
Construction; Nomenclature of Materials
1. A continuous and supple film, adhering on a support and forming a coating of which thickness cannot be lower than 400 µm. Syn. with SKIN
2. The outside envelope of the bark of a tree.

EPIDIASCOPE
Epidiascope
Equipment for Measure and Controls
An instrument based on the projection by transparency for measuring the porosity of some materials porously reputed.

EPIGENY
Epigénie
Hydraulic Binders
The progressive replacement of a mineral by another from a common crystallographic plan that can be considered like the plane transposition of the syncrystallization. The couple calcite ($CaCO_3$) portlandite ($Ca(OH)_2$) gives place at this phenomenon in the concrete.

EPOXIDE
Epoxyde
Polymers
A term that designates the internal ether oxides which, between two atoms (position 1 – 2), possess an available oxygen atom. It is this body that is called *resin.* When this one is mixed with a hardener that contains atoms of hydrogen, a reaction takes place. It is a chemical reaction that asks precise ratios (in weight and in volume) between the epoxydic resin and the hardener. This reaction is irreversible.

EPOXY
Epoxy
Polymers
The diminutive of epoxide or epoxydic.

EPOXY RESIN
Résine époxy
Polymers
Syn. with EPOXYDE RESIN; EPOXYDIC RESIN

EPOXIDIC
Epoxyde
Polymers
Is said what contains epoxy grouping.

EPOXYDE RESIN
Résine époxyde
Polymers
A synthetic product of the thermoplastics group obtained by a chemical process. It is a macromolecular substance formed by

polymerization or polyaddition. The *epoxyde resin* term causes confusion because it is allotted as well to the not hardened resins, often called *bases* and characterized by the presence of at least two cycles oxyranes by molecule, as with the resins hardened by reaction of these cycles with substances containing of the atoms of active hydrogen called *hardeners* or *crosslinking agents.* In conclusion, the *resin* term is rather reserved for the base. Syn. with EPOXY RESIN; EPOXYDIC RESIN

EPOXYDIC RESIN
Résine époxydique; Résine époxyde
Polymers
Syn. with EPOXY RESIN; EPOXYDE RESIN

EQUAL DOUBLE-GROOVE PREPARATION
Préparation à double ouverture égale
Welding
See EQUAL PREPARATION

EQUAL FORCES
Forces égales
Strength of Materials
Of two forces when, applied successively on the same body, to the same point and in the same conditions, they produce the same effect. Any simply, one said in practice, that they are equal when they have the same intensity.

EQUAL PREPARATION
Préparation égale
Welding
A double-opening preparation in which the profile of the joint and that of the adjacent parent metal have a common axis of symmetry crossing the two elements.

EQUALIZING BAR
Balancier
Construction
Syn. with BALANCE

EQUIALITY
Equialité
Topography
Of topographic lines of which points have same altitude.

EQUILIBRIUM OF A FORCE SYSTEM
Equilibre d'un système de forces
Strength of Materials
A force system applied to a material point is in balance when the rest or movement state of the material point is not modified by the application or withdrawal of this force system.
Principle of the balance of forces:
- *two equal forces, in the same direction, applied on the same point and acting in opposite direction are balanced;*
- *if a force system is in balance, one can add it or take away the forces in balance without modifying its state.*

This principle is frequently used for research of some stresses.

EQUILIBRIUM PROCESSING
Traitement d'équilibre
Metallurgy
A thermal operation which includes homogenization and the annealing.

EQUIVALENT THICKNESS OF A DECK
Epaisseur équivalente d'un tablier
Construction
The thickness of a slab of rectangular section having the same concrete volume and same useful surface as the considered deck.

EQUIVALENT THICKNESS OF A ROADWAY
Epaisseur équivalente d'une chaussée
Civil Engineering
An imaginary dimension determined by allocating the thicknesses of the different layers that constitute the roadway by coefficients allowing assimilating it to a lonely layer of bituminous coated materials of determined quality, for the design of its strength.

ERA
Ere
Geology
All periods (or systems) constituting the most extensive division of geological times. An era differs from the precedent by great orogenic upheavals and important modifications of the flora and fauna.
Four eras are available:
- **The Primitive era** (*l'ère archéenne, primitive ou précambrienne*), while the shallow part of the

globe is solidified to constitute the primitive earth's crust. Terrains of this period are formed by crystalline rocks (granite, granulites, syenites) and foliated metamorphic rocks (gneiss, micaschists). This era precedes the Primary era and cover about 3500 to 600 million years;

- **The Primary era *or* Paleozoic era (Paleozoic)** *(l'ère primaire (paléozoïque)),* during the life appears on continents (ferns, reptiles). This period is between 600 and 240 million years. By order of antiquity, we can distinguish in the primary era:
  - the *Cambrian period,* the most ancient: sandstone, conglomerates, mica-bearing schists,
  - Ordovician,
  - Silurian,
  - Devonian,
  - Carboniferous,
  - Permian;
- **The Secondary era *or* Mesozoic era** *(l'ère secondaire (mésozoïque)),* marked by important orogenic movements and the formation of the marine chalky. This era is between 240 and 65 million years. We can distinguish in the secondary era, by order of antiquity:
  - the *Triassic period (la période triasique):* multicolored sandstone, conchiferous limestones, marls,
  - the *Jurassic period (la période jurassique):* marls of Lias, oolitic limestones,
  - the *Cretaceous period (la période crétacée):* marls, compact limestones, chalks;
- **The Tertiary era *or* Cenozoic era** *(l'ère tertiaire (cénozoïque)),* during which are unfolded great geological events such that the appearance of the alpine mountain, the meeting of Europe and Asia. This era extends between 65 and 2 million years. One distinguishes the four next periods in the Tertiary era :
  - the *Eocene period (la période éocène):* gypsum, coarse limestone,
  - the *Oligocene period (la période oligocène):* supragypsous marls, limestones of Brie and Beauce, Fontainebleau's sands,
  - the *Miocene period (la période miocène):* Sologne's sands, Touraine's faluns,
  - the *Pliocene period (la période pliocéne):* sands to bones, marls and sands of Bresse, volcanic cinerites of the Cantal;
- **The Quaternary era** [*l'ère quaternaire (ou période pléistocène)*], it is the period that knows currently the globe since 2 million years.

ERECT
Eriger
Construction
To raise, build a structure.

ERECTOR
Erecteur
Handling
1. A device of which tunneling machines are equipped and that is intended for placing segments (construction of tunnel).
2. A telescopic machine used to pose steel arches in tunnel.

ERODABILITY
Erodabilité
Materials and Civil Engineering
The specificity of a soil, a material, to be sensitive to erosion.

ERODE
Eroder; Corroder; Affouiller
Materials and Civil Engineering; Hydrology
1. To gnaw of a slow manner (the rust erodes the metal).
2. To subject to the agents of erosion.
3. Syn. with CORRODE; WEAR AWAY (metal, stone, etc.)
4. Syn. with LAY BARE; UNDERMINE; WASH AWAY;

EROSION
Erosion; Usure; Corrosion
Building Materials; Painting; Defects
1. The removal of matter by natural wear. Syn. with EATING
2. The deterioration of a film characterized by the detachment of the film that leave appearing the substrate and affecting more or less extensive ranges.
3. The gravel wrenching from a concrete foundation raft, of the immersed parts of the drowned piers or a hydraulic work, by the erosive action of water.
4. Syn. with CORROSION

EROSION WEAR
Usure par érosion
Building Materials
The loss of matter observed on the surface of a material which results from the contact with a fluid charged or not by solid particles. The

abrasive activity of the fluid is more or less important according to the speed with which the fluid covers the surface of the considered material.

EROSIVE
Erosif
Materials and Civil Engineering
The character of what gnaws or that is sensitive to this phenomenon.

ERUPTIVE
Eruptive
Geology
An obsolete vocable that was applying on magmatic rocks. Currently is said: *volcanic rock* or *plutonic rock* according to their origin.

ESCARP
Escarpe
Construction
The important batter of a wall from the base up to the coping.

ESPION DE ROCHE
Espion de roche
Equipment for Measure and Control
Syn. with SPY OF ROCK. **See Figure 16**

ESTABLISH
Implanter; Asseoir
Topography; Masonry
1. Syn. with IMPLANT; PLANT
2. Syn. with PLACE LAY

ESTIMATE
Devis
Contract
The essential document of a contract that subdivides into specifications, estimate cost, bill of quantities and justificatory estimate.
The estimate is a pilot study and has no contractual value. It describes works to create, quantities (approximate) and qualities of materials to use, the mode of payment, means of control, etc.
We can distinguish:
- **specifications *or* billing** *(le devis descriptif) :* see DESCRIPTION;
- **estimate of costs** (*le devis estimatif),* a general statement of quantities and qualities of materials established following the drawings and descriptive. It is also the statement in place. This statement is explained in detail with the price for each kind of work;
- **bill of weight** *(le devis de poids),* establishing the tonnage or quantities of the necessary materials for a construction, and which enables numbering a part of the positions of the preliminary estimate.

ETHANOL
Ethanol
Painting
An alcohol going into the composition of wash primers.

ETHYLENE-PROPYLENE DIENE TERPOLYMER
Terpolymère éthylène-propylène diène (E.P.D.M.)
Building Materials
An amorphous elastomer which, besides ethylene and propylene, contains a slight quantity of a diene not combined. They have an excellent resistance to ozone, heat, bad weather, chemicals, and sunlight. Moreover, they are endowed of a good impact strength and a good flexibility at low temperature.

ETIOLOGY
Etiologie
Civil Engineering Structure
The science that study the causes of the disorders affecting a work.

EURITE
Eurite
Geology
An eruptive rock formed by a fel(d)spar and quartz mixing. This material is used to manufacture tarmac.

EURITINE
Euritine
Geology
An eruptive rock formed by a feldspathic paste coating mica, talc, amphibolite, garnets in slight quantity and that is used as metalling material.

***EUROGARD*™ TELLTALE**
Témoin *Eurogard*
Equipment for Measure and Control
A device that allows the follow-up of a crack and which is constituted by transparent plastic

tablets. Each plate comprises two axis recutting itself perpendicularly in their center and which are graduated vertically and horizontally in millimeters. Tablets are fixed on both sides of the crack so that their axes overlap perfectly. (This telltale allows to follow the horizontal and vertical movements of a fissured construction.)

EUROPEAN PROJECTION
Projection européenne
Drawing
The representation of the various views of a work in the following way: the view of the right-hand side is placed on the left, the view of left on the right, the view of over below, etc., in comparison with the elevation.

EVACUATION
Evacuation
Earthwork
The vertical or horizontal earth displacement with spades, vehicles or skips. Syn. with EXPORT

EVANESCENT ACTIONS
Efforts évanescents
Strength of Materials
External actions on the foundations of works. It requires a weak displacement, not detrimental to the foundation and to the structure, to cancel them.

EVENNESS DEFECT
Défaut de planéité
Defects (Metallurgy and Welding)
The permanent deformation of a sheet metal as a result of operations of construction (welding notably). This defect should not be confused with sloping or warping, although it can favor them. Syn. with FLATNESS DEFECT

***EWANS* EFFECT**
Effet *Ewans*
Metal Construction
A phenomenon of metal corrosion due to the heterogeneity of the attacking fluid medium that results in an electrolytic couple. For example, if a homogeneous metal blade submerges in water without the different surfaces being ventilated equally, the difference in the concentration of oxygen from one point to another creates an electrolytic couple that will accelerate corrosion.

EXAMINATION (*or* STUDY) OF A SCHEME
Etude
Civil Engineering Structure
Syn. with DESIGN

EXAMINE
Sonder
Test of Materials (Masonry)
To execute an investigation behind a facing, in order to examine the state of hidden parts.

EXCAVATE
Déblayer. Encaisser; Décaisser ; Caver
Earthwork; Pit
1. Syn. with CUT
2. To achieve an excavation to exploit a pit.

EXCAVATE
Excaver; Fouiller; Terrasser
Earthwork
1. To create an excavation; to dig up earth.
2. To dig, stir up, clear or fill in the soil to modify its configuration.

EXCAVATED MATERIAL
Déblai
Building Materials
1. The demolition products made out from clearing.
2. Wastes resulting from a shooting by explosive.

EXCAVATING MACHINE
Excavatrice
Equipment and Tools
Syn. with DIGGING MACHINE; DREDGING MACHINE

EXCAVATION
Décaissement; Encaissement; Excavation
Civil Engineering and Earthwork
1. Excavation made in the site of a roadway to be constructed, to put there the various layers needed to constitute it. Syn. with CUTTING
2. A digging carried out beneath the undisturbed soil. Syn. with CUTTING; DIGGING. **See Figure 17**

EXCAVATION
Fouille
Earthwork
A digging dug in the soil, in general with intent to construct, to base a work.

There are several types of excavations:

- **cutting building pit** *(la fouille en abattage),* earthwork on a vertical face that consists in carrying out vertical and horizontal channels so as to form parallelepipeds of earth that one detaches thus; **See Figure 17a**
- **sheeted trench *or* timbered digging** *(la fouille blindée),* excavation carried out in little unstable terrain and whose walls are kept by an earthwork support so as to head off their collapse; **See Figures 17b and 17c**
- **cutting** *(la fouille en déblai),* earthwork carried out to lower the altitude of a ground or part of ground at a given level;
- **underwater digging** *(la fouille sous l'eau),* carried out to open sluice to the shelter from cofferdams or caisson;
- **sloping digging** *(la fouille en excavation ou à parois talutées),* open earthwork, carried out below of the ground, not comprising earthwork supports, walls being sloped about 45° when the nature of the ground enables it;
- **foundation trench or digging for foundation** *(la fouille pour fondation),* every earthwork is designed to the digging of an excavation into which the constructions rests on the ground. This type of excavation comprises channels, trenches, wells, and shallow excavations;
- **excavation for foundation in a water table** *(la fouille pour fondations dans une nappe aquifère),* which consists in excavating through a groundwater table (this type of earthwork necessitates particular precautions); **See Figures 17d and 17e**
- **tunneling** *(la fouille en galerie):* see DRIVING;
- **vertical excavation** *(la fouille en puits):* see SHAFT; **See Figure 17f**
- **strip digging** *(la fouille en rigole),* whose width $l \leq 2$ m and depth $h \leq 1$ m,
- **well shoe digging** *(la fouille au rouet),* well carried out by shearing with the help of a well shoe with cutting shoe. The masonry is carried out as they advanced of the extraction of earth and the sinking of the well shoe;
- **underpinning excavation** *(la fouille en sous-œuvre),* carried out by small fractions underneath foundations for example;
- **stud digging** *(la fouille en tasseau),* carried out by small fractions, in underpinnings;
- **trenching *or* trenchwork** *(la fouille en tranchée)* where width *l* and depth *h* satisfy:
  – $l \leq 2$ m, $h > 1$ m;
  – $l > 2$ m, $h > 0.5$ m;

  Syn. with BUILDING PIT

EXCAVATION AND FILLING
Remplacement
Civil Engineering
A landslide stabilization that consists in substituting to the volume of earth which has slipped, a volume of earth of good quality which will be set up and compacted by successive layers.

EXCAVATION WORKS
Terrasse
Earthwork
Work relating to the performance of diggings and needs by the infrastructure of a work.

EXCAVATOR
Excavateur; Roue-pelle; Fraise à trancher
Equipment and Tools
1. A self-propelled tracked earthmover to continuous debit which is equipped with a bucket chain installed on a bucket ladder or a bucket wheel. It is reserved for earthworks to greater productivity, but its use is limited to the homogeneous grounds and fairly strong.
According to the position of the bucket ladder, the work can be led in excavation digging work or in knoll digging work. We can distinguish:

- **scraper excavator *or* dredger excavator** *(l'excavateur à godets)* essentially formed by a truck on rails or caterpillars, supporting an adjustable frame, a bucket ladder, supporting its two ends, two cranks, around which rolls an endless chain, equipped with buckets on to cutting edge sides. The frame comprises a metal frame (belfry), which supports the horizontal axle around which is articulated the bucket ladder at its top part, the boom of a crane to which the bucket ladder is suspended by reeved chains, a control cabin, a hopper and a counterbalance; **See Figure 18**
- **multibucket excavator *or* rotary-bucket excavator *or* bucket-wheel excavator** (*l'excavateur rotatif)* formed by a tracked truck, a bucket ladder at the end of which is installed a bucket wheel and a carrier to variable and adjustable tilt; it allows to execute work of

excavation in knoll digging work in wide and deep trenches. Syn. MECHANICAL NAWY
2. A working tool (tooth of harrowing, bucket) mounted on an articulated arm fixed to a shield.

EXCESS LOAD
Surcharge
Strength of Materials
Syn. with ADDITIONAL LOAD; OVERLOADING

EXCESS WATER REMOVAL FROM CONCRETE
Essorage du béton
Construction of R.C. and P.C.
The elimination of a part of water of the fresh concrete by centrifugation, pressing or vacuum. This operation has an aim to upgrade the qualities of the concrete, notably its resistance to frost. Its shrinkage decreases, its compressive strength and its hardness of the surface increase and its set is accelerated.
Principle of the vacuum method: the surplus water is extracted by a depression created inside the concrete. In order that, one has two blankets on the concrete: a filter blanket, then a tightness blanket; between these two blankets it remains a space of air that is aspired by a vacuum pump. Blankets are stuck then against the concrete and aspiration of the water occurs. The depression deeply penetrates the concrete. If the air pressure in the intermediate space of the concrete is reduced to 20% of the atmospheric pressure (namely when one obtains 80% from the possible void), the concrete will be subjected to a pressure of 8 T/m².

EXCESS WELD METAL
Surépaisseur excessive
Defects (Welding)
The extra thickness of weld metal deposited in the terminal passes of a welding.

EXCESSIVE DRYING OF CONCRETE, GROUND
Dessiccation du béton, du sol
Building Materials, Pedology, etc.
A drying, dehydration of the material that mostly appears by the appearance of fissures.

EXCESSIVE PENETRATION
Excès de pénétration
Welding
An extra of metal situated at the root of a welding carried out from the lonely face or through the metal already deposited for a welding carried out in several passes.

EXCRESCENCE
Loupe
Defects (Building Materials)
A wood defect due to the disturbed growth by the presence of a foreign body, involving entanglement of fibers and localized excrescence. Syn. with KNOB

EXCRESCENCE (OF ROCK)
Redent
Earthwork
A rock standing out between the two channels dug by the picks of a drum of a tunneling machine.

EXFOLIATE
Déliter
Masonry
Syn. with SPLIT

EXFOLIATION
Exfoliation
Geomorphology
The disintegration of rock into blocks of a thickness 1 m or more. This damage is analogous to peeling except that, in this last instance, the thickness of the disaggregated fragments is centimetric. Syn. with PELLING

EXFOLIATION
Exfoliation
Defects (Building Materials); (Masonry)
1. A wood defect characterized by a detachment of the bark, altering the phloem, one of the three envelopes which form the bark, that which is closer of the sapwood.
2. A phenomenon of stones alteration which appears by folias and plates detachment parallel to the facing without notable modification (to the visual examination) of the structure of folias.
The quarry stone often presents an intactfacing, but in depth it is divided by parallel cracking plans, what translates by a hollow sound to the sounding with the hammer. The exfoliation is mainly due to three phenomena: frost/thaw cycles, osmotic pressure of salt-laden water, or

overload of masonry. The origin of the exfoliation is especially of mechanical origin.
3. Syn. with DISINTEGRATION; SPLITTING

EXFOLIATION CAPACITY (OF THE GROUND)
Terrain délitable
Geology and Earthwork
A ground that shows after opening of an excavation, a detachment into successive layers of its faces.

EXOGENETIC ROCK
Roche exogénique
Geology
Syn. with EXOGENIC ROCK

EXOGENIC ROCK
Roche exogénique
Geology
A sedimentary rock having originate on the surface of the sphere either by evolution of the preexistent rocks throught the agency of the atmospheric agents, or by carriage of a material stemming from the dissolving or disintegration of former materials. Syn. with EXOGENETIC ROCK

EXOGENOUS
Exogène
Geology
Of a rock which has formed near the Earth's surface; it is the case of sedimentary rocks.

EXOSTOSIS
Exostose
Defects (Building Materials)
A wood defect characterized by punctual excrescences caused by an abnormal sap rush. This defect is due the most often at stings of insects or to the presence of parasitic plants.

EXOTHERMIC
Exothermique
Building Materials
Of the materials and products which, in some circumstances release the heat; cement and some resins have exothermic reactions (cement during the period of set and the resin at the time of polymerization).

EXOTHERMY
Exothermie
Building Materials
The science which explains the phenomenon of heat release.

EXPANDED AGGREGATE CONCRETE
Béton de granulats expansés
Building Materials
A material whose skeleton consists mainly of expanded aggregates (expanded polystyrene balls, expanded clay, etc.).

EXPANDEDCLAY
Argile expansée
Building Materials
A granulated product stemming from the baking of some clays by a special process, during which the constitution water brings about a swelling which allows to obtain a tough one and light material. Used as aggregate of the concretes, this material allows to carry out a light and relatively strong concrete.

EXPANDED CLAY CONCRETE
Béton d'argile expansée
Building Materials
A material whose main aggregate is cooked expanded clay which confers to the material a weak density and increases its frost resistance.

EXPANDED DENSITY
Densité foisonnée
Building Materials
The ratio of the mass of a rock to the volume that it occupies when it is fractured and produced by cutting.

EXPANDED METAL
Métal déployé
Building Materials
A material obtained by regular incisions of a sheet metal, in short splits opening in rhombus under the strain of extension. The mesh size is identified by the length of the diagonals expressed in millimeters. **See Figure 19**

EXPANDED POLYSTYRENE
Polystyrène expansé
Buildings Materials
Syn. with POLYSTYRENE FOAM

EXPANDED SHALE
Schiste expansé
Building Materials
A material to alveolar texture obtained by baking of schists at high temperature.

EXPANDED SLAG
Pierre ponce
Buildings Materials
Syn. with FOAMED SLAG

EXPANDED SLAG CONCRETE
Béton de laitier expansé
Building Materials
A material whose skeleton is mainly composed of expanded slag aggregates. It concerns generally a relatively light material used for works of blocking up of cavities or to achieve beds on frames that have not to support heavy loads.

EXPANDED STATE
Etat foisonné
Civil Engineering
The initial state of a ground layer to be compacted, before the passage of the compactor.

EXPANDING CEMENT
Ciment expansif
Hydraulic Binders
A product of which hydration is accompanied by a certain swelling. This expansion is obtained by the addition of a small quantity of aluminosulfated cement or of sulfate of calcium. The biggest favors of this material is to achieve an effect of self-constrained of the concrete that contains and to increase some its own resistance as the elasticity modulus. Syn. with EXPANSIVE CEMENT; SULFOALUMINATE CEMENT

EXPANDING CLAY
Argile gonflante
Geology
A phyllosilicate that inflates under the effect of polyalcohols. Syn. with INFLATED CLAY; SWELLING CLAY

EXPANSION
Dilatation
Strength of Materials
Phenomenon of cubical or linear increase of materials due to a rise of temperature. Syn. with DILATION

EXPANSION (OF CONCRETE)
Gonflement
Defects (Building Materials)
The increase in volume of the concrete accompanied by cracks, scaling, and breakdown. This defect is mostly due to frost or a chemical attack.

EXPANSION JOINT (ROADWAY)
Joint de chaussée
Public Work
Syn. with PAVEMENT JOINT

EXPANSION JOINT
Joint de dilatation ; Joint
Construction of R.C. and P.C.; Masonry; Construction
1. A cut for warding off the normal action of concrete thermal variations, shrinkage or its expansion during phase hardening.
2. A vertical cut in masonry (dry joint) allowing its expansion. Syn. with DRY JOINT
3. Syn. with DOWELED JOINT; HINGE; ETC.

EXPANSION METER
Dilatomètre
Equipment for Measure and Control
Syn. with DILATOMETER

EXPANSION ROLLER
Chariot de dilatation
Construction
Syn. with EXPANSION SADDLE.

EXPANSION SADDLE
Chariot de dilatation
Construction
The set roll-rods of a movable bridge-support apparatus to rolls. Syn. with EXPANSION ROLLER. **See Figure 20**

EXPANSION SLEEVE
Fourreau; Manchon de dilatation
Construction
1. A tube surrounding a piece from which one wants to allow free expansion or to protect it allowing its free movement (other that

expansion). Syn. with PIPE SLEEVE; SLEEVE. **See Figure 21**

2. Tube into which become connecting end to end, elements of railing of great length not to obstruct the dilation of various elements.

EXPANSION TEST
Essai de gonflement
Test of Materials (Concrete)
A test applied to mortar and concrete that consists in measuring with the help of a comparator the variation of length of the test specimen according to the time. These test specimens are made in special molds provided at their ends with devices for fixing of bronze dots, allowing precise measurements. After demolding (24 h after making), the origin of the variations is measured. Then the test specimens are preserved in fresh water (20 and 40°C). The variation of the length to a given age is established according to the average measurements taken on three test specimens reflecting at the same batch.

EXPANSION TEST WITH *LE CHATELIER* NEEDLE-TYPE MOLD
Essai d'expansion aux aiguilles *Le Chatelier*
Test of Materials (Hydraulic Binders)
A test allowing determining the stability to the expansive agents of hydraulic binders. **See Figure 22**

EXPANSIVE AGENT
Agent expansif; Générateur d'expansion
Hydraulic Binders; Materials
1. A product that, mixed with cement, brings about swellings with a view either to compensate the shrinkage effects or to exert controlled expansion strains.
2. An admixture of concrete, mortar, and cement grout that, mixed during mixing or at the moment previous the implementation, causes a permanent and irreversible expansion.

EXPANSIVE CEMENT
Ciment expansif
Hydraulic Binders
Syn. with EXPANDING CEMENT; SULFOALUMINATE CEMENT

EXPANSIVE STABILITY TEST
Essai de stabilité aux expansifs
Test of Materials (Hydraulic Binders)
A test carried out on cements which decomposes into two phases:
- cold, to determine the magnesia content;
- hot, to determine the lime content.

EXPERIMENT
Essai
Civil Engineering Structure
Syn. with TEST; TRIAL

EXPLODER
Exploseur
Explosives
An electrical device which cause of sufficient impulses for the firing of electric detonators of a round. Syn. with BLASTING BOX

EXPLORATION TESTS
Essais de reconnaissance
Foundation
Concerning piles, tests for supplementing soils survey; they include two types of tests:
- **preliminary tests** *(les essais préliminaires),* tests of static loading of the piles which do not form part of the work but which are carried out to the vicinity, with the same methods of performance and in the same soil;
- **inquiry tests** *(les essais d'information),* consisting in collecting, during the performance of the piles, informations like the penetration resistance by driving for example, in order to confirm the results of soil exploration.

EXPLORATORY HEADING
Galerie de reconnaissance
Earthwork
An underground excavation carried out at the site of a future tunnel in order to study and to get informed about the characteristics of the soils met: nature, dip, hydrology, stability, etc.

EXPLOSION
Explosion
Earthwork; Explosives
1. A soil compacting method using small charges of dynamite buried to determined depths at the time of the design. This type of treatment applies to sandy soil, not argillaceous, saturated by water.

2. Syn. with BLAST; BURSTING

EXPLOSION BY ANTERIOR BEGINNING
Explosion par amorçage antérieur
Explosives
A demolition or working process in which the charge is placed near the entry of the blasthole.

EXPLOSION BY POSTERIOR BEGINNING
Explosion par amorçage postérieur
Explosives
A demolition or working process in which the charge is placed at the bottom of the blasthole.

EXPLOSIVE
Explosif
Explosives
A defined compound or mixture of body capable by chemical decompositions to liberate in a shorter time their potential energy, this liberation being accompanied the most often of the release of an important volume of gas, which, brought at a high temperature, exerts on ambient elements an extremely strong pressure.
There are several types of explosives:
- *endothermic explosive substances (les substances explosives endothermiques),* of which molecules are formed from their elements with heat absorption;
- *exothermic explosive substances (les substances explosives exothermiques)* of which molecules are formed from their elements with release of heat. Explosives are divided into several categories:
  - **chemical explosives** *(les explosifs chimiques)* that are thus called when the product is obtained by chemical combination of two bodies between them and which constitute a compound (example: nitro-glycerine);
  - **chlorate (blasting) explosives** *(les explosifs chloratés)* which are formed by potassium and sodium chlorate mixture with combustible materials; one uses most often a mixture of sodium chlorate and dinitrotoluene. This are high explosive of average power,
  - **mechanical (blasting) explosives** *(les explosifs mécaniques)* which are obtained by the intimate mixing of various distinct products. We can distinguish black powder (mixing of potassium nitrate, sulfur and charcoal), dynamite (mixture basis of nitroglycerine), nitrated (see hereafter) and chlorated (basis of sodium chlorate),
  - **nitrated (blasting) explosives** *(les explosifs nitratés; Cheddites)* which are constituted mainly of ammonia nitrate and products of additions such as nitrate, chloride of sodium, powder of aluminum, etc. These explosives are conditioned in cylindrical cartridge form.
  - **nitrate-fuel (blasting) explosives** *(les explosifs nitrates-fuel)* which are constituted of ammonium nitrate and fuel oil and are used in bulk. Explosives are conditioned either in bulk or prepackaged cartridges,
  - **liquid oxygen (high) explosives or L.O.X.** *(les explosifs à l'oxygène liquide)* which are constituted of cartridges of pulverulent combustible matter: black smoke or charcoal, powder of aluminum, mothball, soaking at the time of use into liquid oxygen,
  - **plastic (blasting) explosives** *(les explosifs plastifiés ou sévranites)* which are the basis of ammonium perchlorate which are easily stuffed into a blasting hole.

EXPLOSIVE CAP
Détonateur
Explosives
Syn. with CAP; DETONATOR

EXPLOSIVE CHARGE OF BLASTING
Charge d'abattage
Explosives
An explosive charge placed into a blasthole.

EXPLOSIVE POWER
Force d'un explosif
Explosives
The beginning power of an explosive substance (namely beginning a detonation), measured by its equivalent in mass of mercury fulminate (it is therefore the quantity of mercury fulminate that would be necessary to use to obtain an identical beginning).

EXPORT
Vidange; Evacuation
Earthwork
1. The transportation of excavated materials; whole of these materials.
2. Syn. with EVACUATION

EXPOSED
Déchaussé
Foundation
Of a work whose foundations are overdrawn.

EXPOSED AGGREGATE CONCRETE
Béton à granulats apparents
Building Materials
Architectonic concrete whose aggregates appear slightly in relief either during form stripping or by means of an appropriate treatment (washing, blast cleaning, etc.) after form stripping.

EXPOSED CONCRETE
Béton apparent
Building Materials
Concrete whose facing after form stripping will remain indefinitely visible.

EXPOSED WALL
Mur déchaussé
Defects (Construction)
A wall of which foundation partly appears.

EXPOSURE
Déchaussement
Geomorphology
The disappearance of the loose envelope and soft materials which surrounded and supported a rocky mass. This phenomenon is due to an erosion and the persisting of the process can worsen until the rocky mass finds without support and fall, slips and fall down at the foot of a slope.

EXPOSURE OF AGGREGATES
Dénudage d'un béton de ciment frais
Construction of R.C. and P.C.
A surface treatment for fresh concrete that consists in exposing the mosaic of gravel from the initial set of concrete.

EXTENDER
Matière de charge
Materials
A substance mostly of a natural origin, insoluble in the suspension mediums and which, although presenting in these mediums only one low coloring capacity and a low hiding capacity, is frequently mixed into paints or comparable matters, Syn. with FILLER

EXTENDING (OF CRANE)
Chaise
Equipment and Tools
Syn. with RAISING (OF CRANE)

EXTENSION
Alaise; Allongement
Carpentry; Metallography
1. A timber piece brought back to another to lengthen it or wide it. Syn. with EKE PIECE; LIPPING
2. Syn. with ELONGATION

EXTENSION BUCKET
Bâtilong
Equipment and Tools
A device constituting an extension of a bucket drilling and allowing digging at very great depths.

EXTENSION ROD
Tige rallonge
Equipment and Tools
An intermediate bar used to lengthen drilling tools.

EXTENSOFOR™ APPARATUS
Extensofor™
Equipment for Measure and Control
A device for measuring axial displacements of one or several points inside the country rock of a tunnel or a bridge and in the face along a vertical drilling.
The process consists of a stick supporting fluctuating electrical circuits coupled with fixed metal anchorages to the wall of drilling. Every displacement translates into a modification of the frequency of the fluctuating circuit. Measurements execute with a frequency indicator with use of a table of conversion.

EXTENSOMETER
Extensomètre
Measuring and Control Equipments
Syn. with STRAIN GAUGE. **See Figure 23**

EXTENSOMETRIC BRIDGE
Pont extensométrique
Equipment for Measure and Control
An electric equipment collecting and indicating the variations of tensions of the current traversing several gauges of deformation

differently directed. (One also says *bridge of extensometry.)*

EXTENSOMETRIC COEFFICIENT
Coefficient extensométrique
Equipment for Measure and Control
A coefficient that characterizes each type of strain gauges (symbol *K*); it is used in the relation allowing the calculation of deformations from the measured frequencies.

EXTENSOMETRY
Extensométrie
Metrology
The science of the deformation measurements due to mechanical stresses.

EXTERNAL CLADDING
Habillage
Construction
Syn. with ENVELOPE; HAUNCHING; TRIM

EXTERNAL HEATING OF CONCRETE
Chauffage externe du béton
Construction of R.C. and P.C.
Heat treatment of concrete in which there is no heating within the concrete mass, but externally to the formwork. The formwork transmits calories to the concrete in place by thermal conduction (heating by hot-air furnace, etc.).

EXTERNAL STRENGTHS
Forces extérieures
Strength of Materials
All actions formed by the loads, overloads, and bearing reactions (including the weight of the different parts of the construction).

EXTERNAL STRESS
Contrainte externe
Strength of Materials
A force producing or having tendency in producing bending (out of shape) of a body, measured by the load applied by unit of surface.

EXTRA THICKNESS OF PAINT
Surépaisseur (de peinture)
Defects (Painting)
A range of initial defects characterized by the fact that the thickness of the film is, in certain zones, notably higher than the average thickness. This damage is mostly translated by runnings, ripples, cracks, a random drying, etc.

EXTRACTION
Extraction; Déblai
Earthwork and Building Materials
The removal of earth or other materials so as to create an excavation or to release a site. Syn. with QUARRYING

EXTRADOS
Extrados
Construction
1. The outside convex surface of an arch or a regularly bonded vault. Syn. with BACK; BACK OF THE VAULT OR ARCH
2. The top surface of a slab or a deck of a bridge, a beam, an arch.

EXTRADOS GROUTING
Injection d'extrados
Masonry
The treatment for the extrados of a masonry work that consists in introducing a grout into drillings opening at the extrados of the coating of the vault. The injection has a double objective:
- to regenerate the bonding of the extrados of the vault;
- to improve the sealing of the vault.

EXTRADOS IN SCREED
Extrados en chape
Construction
The top surface of a vault having slopes in several directions so as to facilitate the flow of waters which can circulate there.

EXTRADOS WATERTIGHTNESS COMPLEX
Complexe d'étanchéité d'extrados
Tightness
A complex located in a tunnel, between the structure of the work and the country rock (coal-tarred sheet metals, synthetic sheets or hydrocarbon-based sheets, etc.).

EXTRA-HARD STEEL
Acier extra-dur
Metallurgy
An iron and steel product used to manufacture sharp tools. Strength higher than 75 hectobars.

EXTRUDE
Filer
Metallurgy
To produce a bar, a tube or a metal section, forcing the flow of a billet through a drawplate.

EXTRUDED CURB OF COATED MATERIALS
Bourrelet en enrobés
Sanitary Engineering and Drainage
A small hillock made of coated gravel intended for collecting waters at the crest of an embankment (verges) and to direct it to downspouts.

EXTRUDED SECTION
Profilé
Buildings Materials
Syn. with ROLLED SECTION; SECTION

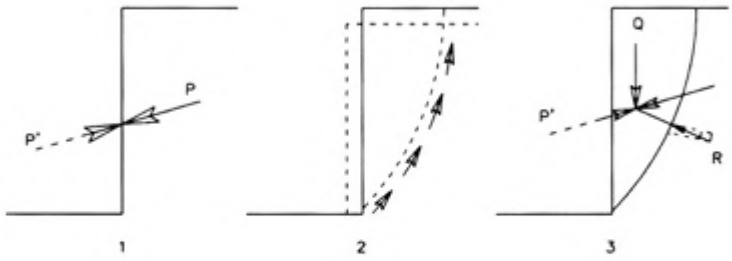
EXTRUSION
Extrusion; Filage
Metallurgy: Building Materials
1. A cold manufacture process of profiled metal parts by flow of metal under highest pressures, through a drawplate having for section the profile to be obtained.
2. In the manufacture of geomembranes, process consisting in forcing a heated or cold matter, through a drawplate of an appropriated section.
3. A manufacturing process of bricks, pipes, etc, consisting in doing passing by force the paste into drawplates in order to give to the material the shape and wanted dimensions.
4. A cold or hot shaping process for metal sections by flow of metal through a drawplate of a section of the profile to be obtained.

EYE
Chas; Oeil
Equipment and Tools; Nomenclature of Materials
1. A metal plate opening in its center into which passes the thread of the plumb line.
2. An oblong hole, slightly widened, accommodated in a tool to receive a handle.
3. A cylindrical hole accommodated in a part for receiving an axle of articulation.

Figures of the letter

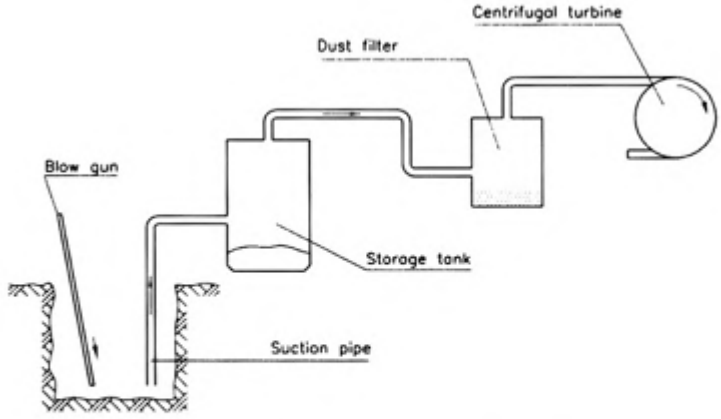


Fig. 1



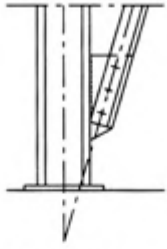
EARTH PRESSURE

Fig. 2



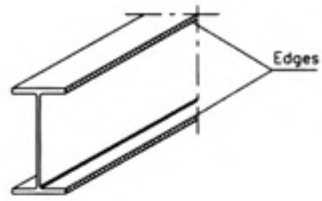
EARTHWORK BY SUCTION (Principle)

Fig. 3



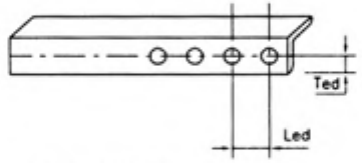
ECCENTRICITY

Fig. 4



EDGE

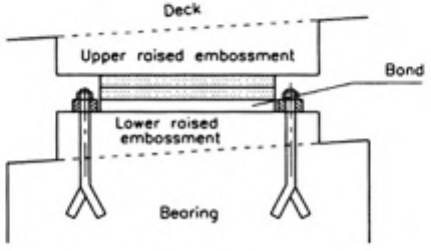
Fig. 5



Led = Longitudinal edge distance
Ted = Transverse edge distance

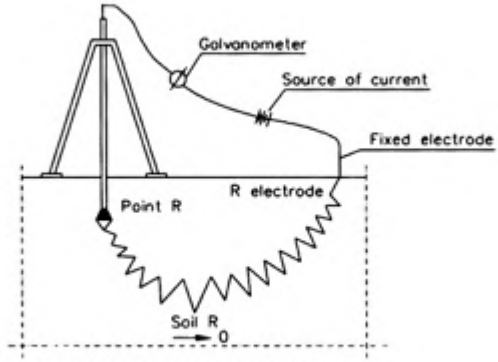
EDGE DISTANCE

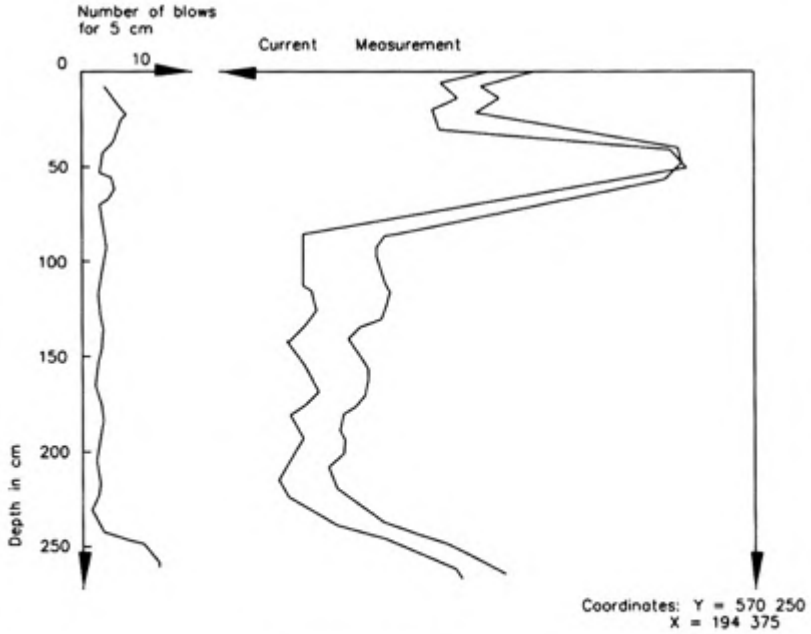
Fig. 6



ELASTOMER BEARING

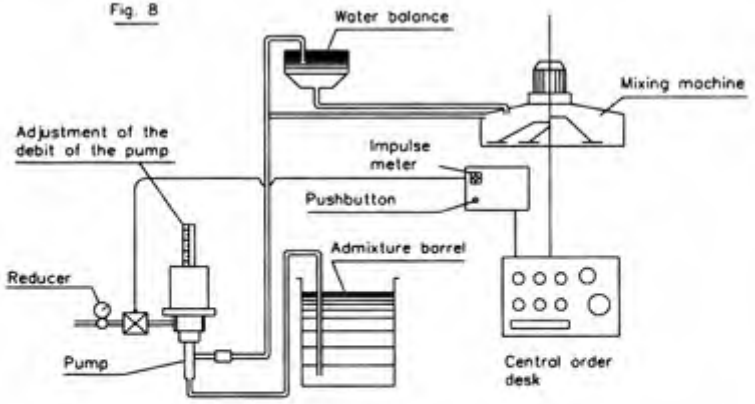
Fig. 7





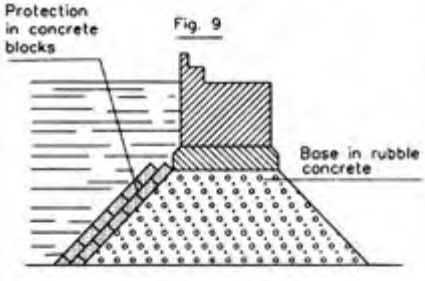
ELECTRODE PENETROMETER

Fig. 8



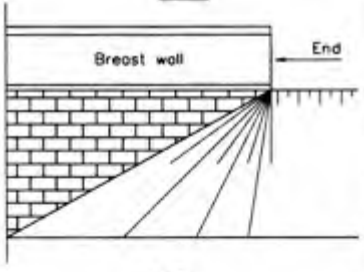
ELECTRONICAL BATCHER WITH FLOWMETER

Fig. 9



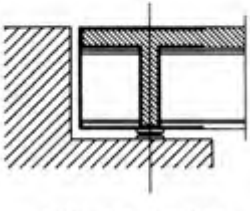
EMBANKMENT

Fig.10



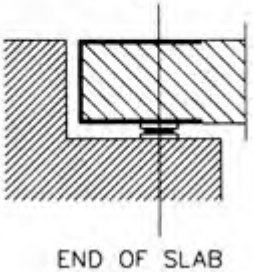
END

Fig.11



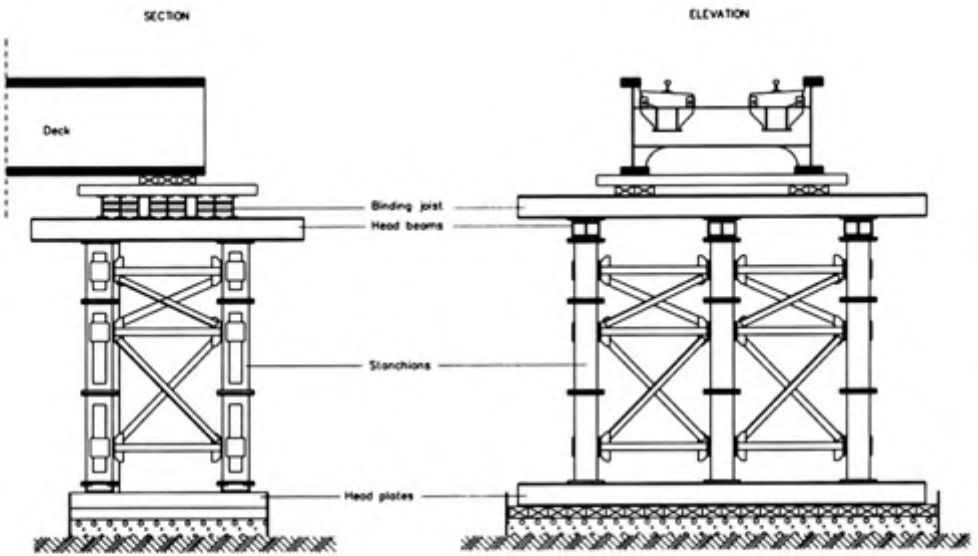
END OF GIRDER

Fig.12



END OF SLAB

Fig.13



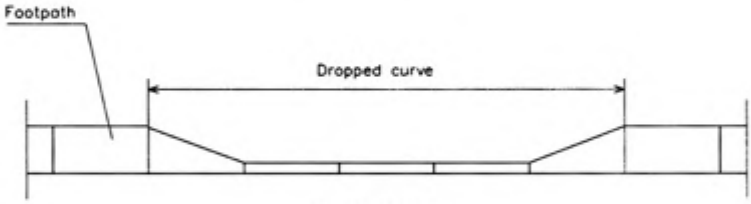
ENGLISH BENT

Fig.14



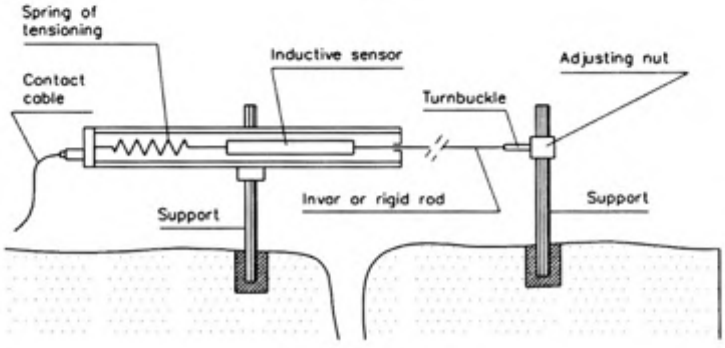
ENTABLATURE

Fig.15



ENTRANCE

Fig.16



ESPION DE ROCHE

Fig.17

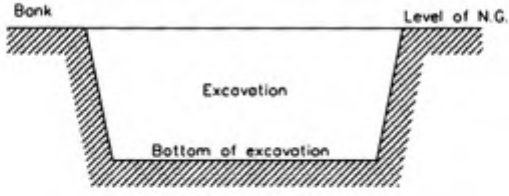
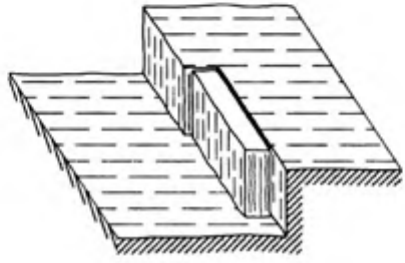
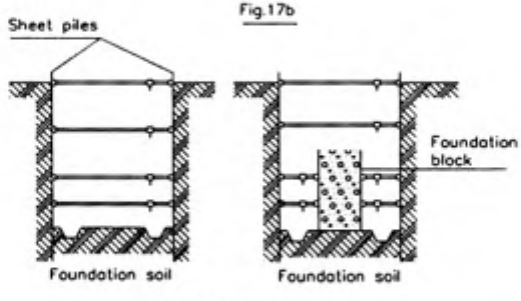


Fig.17a



Cutting building pit

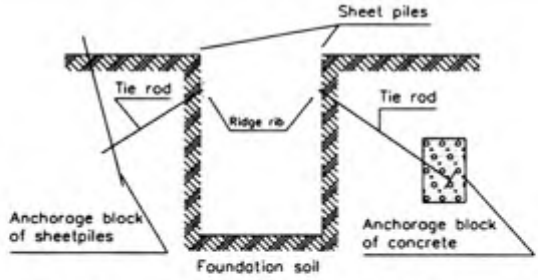
Fig.17b



Sheeted trench

EXCAVATION

Fig.17c



Sheeted excavation with sheetpiles anchored by tie rods

Fig.17d

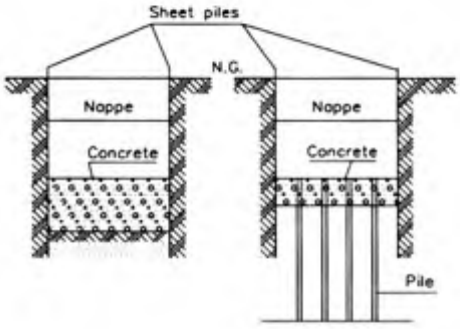
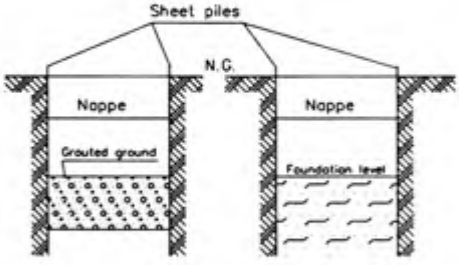
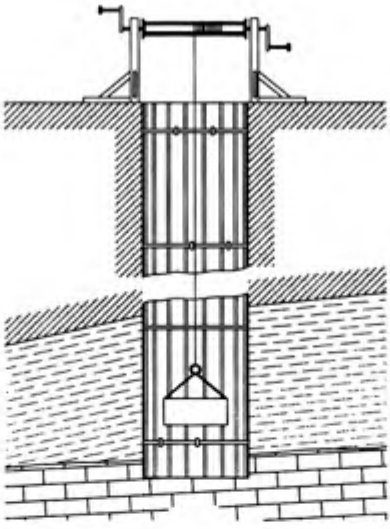


Fig.17e



Excavation for foundation in a water table

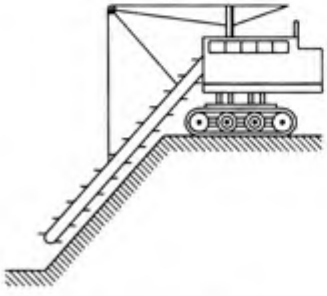
Fig.17f



Vertical excavation

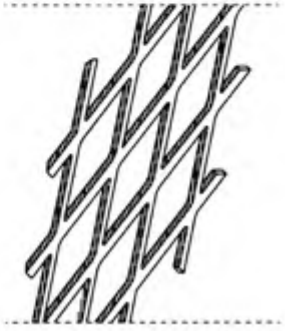
EXCAVATION

Fig.18



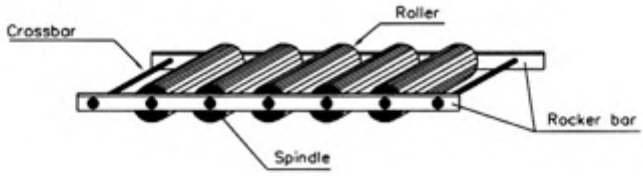
EXCAVATOR

Fig.19



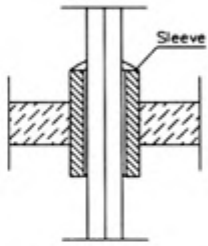
EXPANDED METAL

Fig.20



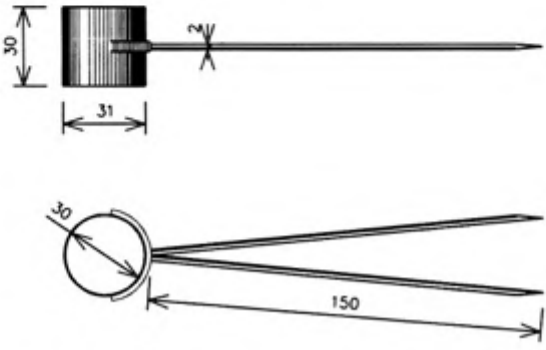
EXPANSION SADDLE

Fig.21



EXPANSION SLEEVE

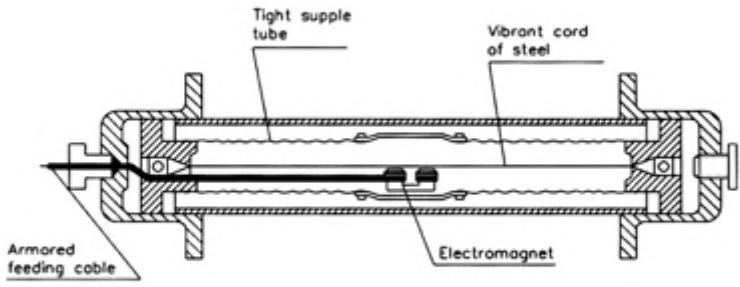
Fig.22



EXPANSION TEST WITH LE CHATELIER NEEDLE-TYPE MOLD

(Mold with needles for test)

Fig. 23



Acoustic strain gauge

EXTENSOMETER



F15 dynamite
Explosives
Gum dynamites are mainly used to work rocks in underground works.

FABRIC
Fabrique
Civil Engineering Structure
Construction whose main decoration consists in the arrangement and the bonding of materials.

FACE
Paramenter; Lit; Front d'attaque ou Front de taille; Dresser
Masonry; Earthwork; Work
1. To cover a construction with a brick or quarry stone facing. Syn. with CLAD
2. Syn. with BED
3. In tunneling, transverse and vertical part to the axis of the work to be build where the ground is in the process of cutting to carry out the excavation. It is the surface of ground bordering the site on the side where it progresses. Syn. with DIGGING FACE
4. Syn. with DRESS; STRAIGHTEN; TRIM

FACE
Tête; Parement; Lamer; Pan; Face de parement ou Parement
Construction; Metal Construction; Nomenclature of Materials
1. The face of a structural component (stone, brick) that remains apparent after its laying. (The part restrained in the construction is the tailing.)
2. Syn. with FACEWORK; FACING
3. Syn. with TO COUNTERBORE
4. One of the plane surfaces of a brick or a dressed stone. Syn. with SIDE
5. Syn. with FACING or FACING FACE

FACE BEDDED
Pierre en délit
Masonry
Syn. with BEDDED AGAINST THE GRAIN EDGE; BEDDED STONE

FACE BEDDING
Pose à contre-lit; Pose en délit
Masonry
Of a block of chalky stone bonded so as to place its natural bed upright and parallel to the facing (bed in face), or to the pointings (bed in joint). Syn. with EDGE BEDDING.

FACE BLEMISH
Défaut de surface
Defects (Civil Engineering Structure)
Syn. with FACE DEFECT; SURFACE BLEMISH; SURFACE DEFECT

FACE DEFECT
Défaut de surface
Defects (Civil Engineering Structure)
Every visible anomaly that concerns a facing and that comprises three essential components:
- the importance of lesions, in volume, in surface, or in depth;
- the existence of steels put bare and more or less deeply corroded;
- the impact (or not) of the damage on the stability and durability of the structure.

In general, a defect of surface (or facing) does not implicate, in the near future, the normal functioning and stability of a work. Syn. with FACE BLEMISH; SURFACE BLEMISH; SURFACE DEFECT

FACE FORMWORK
Coffrage-parement
Construction
A type of formwork that fills initially the same function that a temporary formwork, but which, after concreting, is of use as fixed facing to the work.

FACE (A WALL) IN IMITATION BRICKWORK
Briqueter
Civil Engineering Structure
To give the appearance of a brickwork by color and drawing.

FACE OF COAT
Garnissant
Painting
Of a coating for fulfilling perfectly the surface irregularities of a substrate to make it smooth before receiving the first paint coat.

FACE WALL ABUTMENT
Culée à mur de front
Construction
The most mainline construction that bearing, usually, on the ground by the agency of a footing of reinforced concrete or no. This type of abutment is always equipped of a front wall, return walls, or wing walls.

FACE WATERPROOFING
Imperméabilisation de parement; Etanchéité de parement
Masonry
A surface treatment allowing preventing the course of water into a crazed or hairline-cracked support, or likely to become it at a later date.

FACED
Parementé
Construction
Of a construction, a wall whose facing is perfectly dressed.

FACEPLATE
Marbre
Equipment and Tools
Syn. with SURFACE PLATE

FACES INVESTIGATION
Reconnaissance des parements
Civil Engineering Structure
Operations that consist in estimating the disorders and qualities of materials after implementation of the means of access to the surfaces to be inspected. The faces investigation of the facings consists of a visual examination, a sonic sounding with hammer or gauges.

FACEWORK
Parement
Construction
Syn. with FACE; FACING

FACIES
Faciès
Geology; Petrology
1. The whole of paleontologic and lithologic characters that enable to determine the conditions of formation of a rock or a stratum of terrain, independently of its absolute age. Strata, of different ages can present the same facies, and, conversely, in an even stratum, one can find several facies.
2. The lithologic aspect of a rock that depends on its formation and its composition.

FACING
Dressement; Bouchardage; Lamage; Plaquis
Masonry;Metal Construction; Building Materials
1. Application of a rendering on masonry facing so as to make it perfectly flat.
2. Syn. with BUSHHAMMER FINISH; BUSH HAMMERING OF STONE
3. Syn. with COUNTERBORING; LAMING.
4. Syn. with CLADDING

FACING
Dressage
Metallurgy
A metallurgic operation having for objective to correct deformations undergone by a metallic piece during heat treatment.

FACING
Parement; Revêtment
Construction; Masonry; Building Materials
1. The seen surface of a brickwork, concrete, stonework. By extension, designates the first brick or quarry stone roll or row of masonry.
2. The visible surface of a work or a material, possibly finely worked for aesthetic needs.
Syn. with FACE; FACEWORK
3. A veneering of quarry stones, bricks, etc., that cover the walls of a ditch with the aim to keep up the grounds and to protect them from erosion.
4. A garnishing brought back on the surface of a construction, a piece, and constituted by a veneering, a film, etc., put in place with the aim to protect or decorate.
5. A layer, sheet or film, laid on the surface of a material, a part in order to endow him particular properties.
6. Set of materials contained between the ground and the clear section of a tunnel which can provide several functions: the long-term stability of the vault, tightness, improvement of the flow, etc.
Syn. with CLADDING; COATING; LINING; REVETMENT; SHEATHING

FACING *or* FACING FACE
Face de parement *ou* Parement
Nomenclature of Materials
The outside face of a quarry stone, an ashlar or a brick that is intended to be seen. Syn. with FACE

FACING ALTERATIONS
Altérations de parement
Defects (Building Materials)
Diseases of the stone or brick which can take various forms according to the area, site of exposure, nature of materials, etc. They can concern several aspects: brown or black stains related to the deterioration of stones, blooms, grooves due to self-abrasion as the effect of wind, rain, etc.

FACING BRICK
Brique de parement
Building Materials
A solid brick (6 x 11 x 22 cm) whose at least one of its faces can be exposed in a brickwork.

FACING DECORATIVE BRICK
Brique en frottis
Building Materials
A facing brick with hollow or salient pointings. The brickwork is made with a dual-colored mortar.

FACING OF EMBANKMENT
Bajoue
Masonry
Any masonry, pointed or not, that covers the slopes, banks of a river or ditch in order to protect them against the erosion. Syn. with DRY FACING

FACING STONE PROFILE
Cherche
Equipment and Tools
A small board used by the stonecutters which allows them to adjust the importance of the protrusions or the cavities of the stone to be cut.

FACING WOOD
Bois apparent
Building Materials
A wood which shows its natural aspect.

FACTOR
Coefficient
Strength of Materials; Test of Materials; etc.
Syn. with COEFFICIENT; RATIO

FACTOR OF DYNAMIC ADDITIONAL CHARGE
Coefficient de majoration dynamique
Strength of Materials
A numerical magnitude that come into the calculations of civil engineering structures and is used to take account of the overloads due to the surfacing irregularities of the roadway clearing the work, irregularities that are the cause of shocks. This coefficient is also applied in the designs of railway bridges. Syn. with IMPACT FACTOR

FACTOR OF SLINGING MODE
Facteur de mode d'élingage
Handling
Factor taking into account the geometry of the slinging, notably of the number and the angle of strands and correction for bending.

FADING
Discoloration; Altération
Defects
1. Syn. with DISCOLORING
2. A more or less general modification of the primitive aspect and initial color of a paint, which is due to a physical, physicochemical, or chemical cause (heat, humidity, light).

FAGGOT
Fasciner
Foundation
To realize a faggots. To bind into faggots.

FAGGOTS
Fascinage
Foundation
A construction of fascines used in the layer of foundation for cofferdams or dike construction in terrain susceptible to washing away. Faggots are also used in consolidation of unstable slopes. Syn. with HURDLE WORK; FASCINE WORK.

FAILURE
Rupture; Fissure
Strength of Materials; Defects
1. Syn. with BREAKING; RUPTURE
2. Syn. with CRACK; FISSURE

FAILURE OF ADHESION
Décollement de revêtement; Décollement de parement
Defects
A localized or extensive defect of adhesion between the coating and its support. Syn. with DELAMINATION

FAIR-FACED CONCRETE
Béton de parement
Building Materials
A material poured on the spot and whose facing will remain visible after form striking. This facing will remain as it is after form striking or will undergo a particular surface treatment.

FALL
Eboulement; Ecroulement; Rampe
Geomorphology; Construction; Civil Engineering
1. Syn. with LANDSLIDE
2. Syn. with CRUMBLING
3. Syn. with GRADIENT; SLOPE

FALL DOWN
Ebouler
Work
To deliberately provoke the partial landslide of a rocky mass in order to purge its unstable elements.

FALL IN
Effondrement
Defects (Masonry and Construction of R.C. and P.C.)
Syn. with COLLAPSE

FALL OF A ROAD *or* A RAILWAY
Pente d'une route *ou* d'une voie ferrée
Topography
The declivity of the longitudinal profile of the considered way in comparison with the horizontal and taken in the direction of the descent (as oppose to the slope, which is a slope taken in the direction of the climb), Syn. with GRADIENT

FALL OF MATERIALS
Chute de matériaux
Defects (Masonry)
Damage in brickwork, stonework or coated masonry characterized by the detachment of one or several elements notably:

- **brickfall** *(la chute de briques),* the repetition of the phenomenon of erosion that leads to an alteration reflecting the thickness of a row of bricks. At this moment, one after the other, bricks disintegrate and disappear. Elements of connection between rolls, bonded in header, break by shear, brings about the fall of entire masonry panels;
- **stonefall** *(la chute de moellons),* it begins by a deep erosion of the pointings that ends at the fall of one or several quarry stones. Contiguous quarry stones follow gradually. In ultimate phase, a complete masonry ring can fall;
- **fall of concrete panels** *(la chute de panneaux de béton),* it is mainly due at the ultimate evolution of breaking crack or also to a thrust of country rock.

FALL TEST
Essai de chute
Test of Materials (Building Materials)
A test intended for measuring the slump of a concrete mass falling of a predetermined height. It consists in filling up, with the concrete to be tried, a truncated cone fixed on a metal framework and whose bottom base is closed by two shutters. After settlement of the concrete, the shutters are opened and the concrete falls by displaying. The ratio of the medium diameter of the biscuit thus formed and that of the base of the cone gives a workability measurement.

FALLING ROCK
Roche ébouleuse
Earthwork
Concerning the tunneling with the explosive, fragments of rock chemically intact, entirely separated from each other and imperfectly locked; in a such rock, the vertical walls can require supportings.

FalLing stone
Poul
Defects (Building Materials)
A stone, rock, which drops off or is crushed to powder when it is worked. Syn. with DROPPING STONE

FALSE BED
Délit
Nomenclature of Materials
The face of a stone perpendicular to its natural bed.

FALSE BOND
Faux-appareil
Masonry
Syn. with DUMMY JOINTS

FALSE COPING
Faux-chapeau
Temporary Construction
The transverse wooden piece supporting roof planks of a sheeting of gallery and resting on the frame by intermediary wedges. Syn. with FALSE TOP. **See Figure 1**

FALSE CRADLE
Faux-cadre
Temporary Construction
Syn. with FALSE FOUR-PIECE SET; FALSE-SETTING

FALSE FOUR-PIECE SET
Faux-cadre
Temporary Construction
Syn. with FALSE CRADLE; FALSE-SETTING

FALSE LEADERS
Jumelles
Equipment and Tools
Legs of a pile driving plant. Syn. with GUIDE PILE; LEADERS

FALSE-LEVEL
Faux-niveau
Construction
An element, construction, etc ., that is not perfectly horizontal.

FALSE MITER
Faux-onglet
Construction
A cut forming an angle different from 45°.

FALSE PIER
Faux-pieu
Foundation
Syn. with PILE EXTENSION

FALSE-REFUSAL
Faux-refus
Foundation
The insufficient depth for a pile or sheet pile because there is no means of reaching the suitable level.

FALSE SET
Fausse-prise
Hydraulic Binders
A phenomenon characterized by a premature stiffening of the cement whose process is the following.
During of the grinding of cinders used in the manufacture of Portland cements, one incorporates a certain quantity of gypsum to regularise the set. If during this operation, the temperature of the mass rises too high (150°C), the gypsum dehydrates partially and transforms into plaster. When the cement is used it causes a phenomenon known as false set. The plaster thirsting of water become rehydrated at the expense of cement and the phenomenon is characterized by the highest increase of the workability of material, a premature stiffening in the concrete mixer or after mixing, but without release of heat. The intensity of the stiffening and the time of appearance of the phenomenon are widely variable to create difficulties such as lack of strength.

FALSE SETTING
Faux-cadre
Temporary Construction
Timbers (balks) longitudinally laid between two boards threaded vertically to the right of the trench brace of a sheeting of trench. Syn. with FALSE CRADLE; FALSE FOUR-PIECE SET. **See Figure 2**

FALSE SQUARE
Faux-équerre
Construction
The state of a construction in which one face is not at a right angle to the other face. **See Figure 3**

FALSE TOP
Faux-chapeau
Temporary Construction
Syn. with FALSE COPING

FALSEWORK
Coffrage; Echafaudage; Etaiement
Temporary Construction
1. Syn. with CASING; CONCRETE FORMING; FORM; FORMWORK; MOLD; SHUTTERING;
2. Syn. with PROPPING; SHORING; STRUTTING.
3. Syn. with SCAFFOLDING

FAMMENIAN
Famménien
Geology
The upper stage of the Devonian.

FAN
Auvent
Construction
Syn. with DEBRIS-COLLECTION FAN; PROTECTION FAN

FASCINE
Fascine
Foundation
Long faggot of branches gripped tightly by wooden or steel bonds that serves to realize fascine work. Wooden or steel rods bound tightly into faggots.

FASCINE MATTRESS
Plate-forme hollandaise
Foundation
A foundation process by grillage or fascine work, used when it is a question to make rest a construction on a deeper layer of compressible or wash away ground.

FASCINE POLE
Saucisson
Materials
A fascine imprisoning a gravel core.

FASCINE WALL
Tune
Materials
A bed of fascines supported by stakes and retaining the grounds of a slope for example.

FASCINE WORK
Fascinage
Foundation
A construction of faggots used in the layer of foundation for the cofferdams or dike construction in terrain susceptible to washing away. Fascine work are also used in consolidation of unstable slopes, pegged-down brushwood, etc. Syn. with FAGGOTS; HURDLE WORK

FAST BOND
Pégueux
Adhesives
Qualifies an adhesive to instantaneous adhesion.

FASTEN
Sceller
Work
Syn. with BED; FIX IN; PLUG

FASTENER
Boulonnerie
Metal Construction
Syn. with BOLTMAKING

FASTENING
Attache de suspente; Chevillage
Construction ; Materials
1. A device fastening a suspender of a suspension bridge in top at the cable (top fastener) or at the bottom of the tie beam (bottom fastener). Syn. with CABLE CLAMP. **See Figure 4**
2. The implementation of studs. Syn. with PEGGING

FASTENING WITH CHEMICAL INSERT
Scellentent à l'aide de chevilles chimiques
Work
The fastening of a part, a rod for example, using a resin with two components conditioned inside glass or plastic bulbs, bulbs which are placed in the cavity intended for receiving the rod. This one is then introduced into there by means of a machine ensuring a rotary movement to it. The rod breaks the bulbs then and turning ensures the mixing of the components. One can thus carry out sealings several meters long.

FAT CONCRETE
Béton gras
Building Materials
A material containing a large proportion of binder conferring to the material a perfect coating of the aggregates. Syn. with RICH CONCRETE

FATIGUE
Fatigue
Strength of Materials
The behavior of materials subjected to cycles of repeated stress or deformation that cause a deterioration of the matter, resulting in a progressive fracture. Fractures will occur at levels far weaker than the material's normal tensile strength. It is behavior that one normally finds in all materials: metals, plastics, concrete, etc. The sensitivity to fatigue is measured with Wöhler's curves. Syn. with STRESS

FATIGUE FAILURE
Rupture par fatigue
Strength of Materials
Syn. with ENDURANCE FAILURE

FATIGUE FORMULA
Formule de fatigue
Strength of Materials
A calculation giving, for a given case, the fatigue of an unspecified fiber of a prismatic body, according to the external stresses, of the section of the prism and the position of the envisioned fiber.

FATIGUE LIMIT
Limite de fatigue ou d'endurance d'un matériau
Strength of Materials
Syn. with STRESS LIMIT

FATIGUE STRENGTH
Resistance à la fatigue
Building Materials
The number of deformation cycles or stresses of specified character that a given test specimen can endure before breaking.

FATIGUE TEST
Essai de fatigue
Metallography
Syn. with STRESS TEST

FATTY MORTAR
Mortier gras; Mortier riche
Building Materials
A product strongly proportioned in cement (≥ 500 kg/m³ sand), that is used to carry out renderings, screeds on the extrados of the vaults, countercopings, etc.

FAULT
Se failler; Cassure; Faille; Loup
Geology; Defects
1. Referring to a terrain, to separate in one or several faults.
2. A fracture of ground.
3. Syn. with GEOLOGICAL FAULT; RIFT
4. Syn. with BOTCH; DEFECT; MISTAKE

FAULT BLOCK
Lèvres d'une faille
Geology
Faces on the opposite of the two compartments of a fault. Syn. with FAULT SIDE; FAULT WALL

FAULT BRECCIA
Brèche de faille
Tectonics
A fault plane whose moving surface shows an irregular aspect and that is encumbered by more or less reconcreted rocks.

FAULT PLANE
Plan de faille
Tectonics
The surface of displacement of both compartments of a break.

FAULT SIDE
Lèvres d'une faille
Geology
Syn. with FAULT BLOCK; FAULT WALL

FAULT THROW
Rejet de faille
Tectonics
The value of displacements of a fault compartment in comparison with the other; the vertical and horizontal throw are distinguished.

FAULT WALL
Lèvres d'une faille
Geology
Syn. with FAULT BLOCK; FAULT SIDE

FEATHER
Claveau
Construction
Syn. with VOUSSOIR

FEATHER EDGE
Bord à angle vif
Welding
Edge obtained by splaying without leaving any flat or heel at the root.

FEED
Avancement
Earthwork
The working face of a gallery, a tunnel, etc. in the process of digging. Also, every gallery or tunnel in the process of tunneling.

FEED BEAM
Glissière de foration
Equipment and Tools
A directional arm mounted on a chassis and along of which a boring device (hammer drill or rotary rock drill) can move by sliding. Several grooves assembled on a self-propelled chassis constitute a *jumbo.*

FEEDING
Alimentation
Hydrology
The natural or artificial supplying in water of a river, a groundwater table (example: rain). Syn. with SUPPLYING

FEL(D)SPARS
Feldspaths
Mineralogy
The name given to all silicated minerals comprising potassium, sodium, calcium, and barium. These minerals play a very important role in eruptive rocks constitution. The different species of fel(d)spars form a mineralogical family. Syn. with FELDSPATHS

FELDSPATHOIDS
Feldspathoïdes
Mineralogy
Related to feldspar but not as rich in silica.

FELDSPATHS
Feldspaths
Mineralogy
Syn. with FEL(D)SPARS

***FELENIUS* METHOD**
Méthode de *Félénius*
Civil Engineering
A theory dealing with landslides, development, by Félénius which conceives that a homogeneous mass, such as that of clay, enables to schematise a landslip by assimilating it to the swinging a volume limited by a cylinder of horizontal axis. Upstream, the ground lowers and releases the edge of a slipping surface, strongly inclined (60° to 90°). Downstream, the horizontal component of the movement is noticeable, but the ground generally undergoes an upheaval.
This diagram serves as basis for the calculation of stability, especially applied to artificial embankments, by seeking by experimentation the most dangerous position in the circle: it is Félénius' method. This method applies badly to natural terrain: indeed, by neglecting cohesion, one finds that many movements could continue, if they were started, in zones that, in fact, are stable.

FELITE
Félite
Hydraulic Binders
Solid solution of calcium aluminoferrites, constituent of Portland cement.

FELLING AXE
Hachereau
Equipment and Tools
A timberman's tool used for roughing wood. Syn. with WOOD CUTTER

FELLY
Jante
Equipment and Tools
Syn. with WHEEL RIM.

FELT
Feutre
Building Materials
A product from the aggregation of animal hair or wool compressed and appearing as material in rolls.

FELT CARDBOARD
Carton-feutre
Materials
A textile materials based product of fibers, mostly impregnated, showing a certain suppleness and that is used to realize some tightness.
Among the main categories of felt-cardboards, we can distinguish:
- **bitumen roofing** *(le carton-feutre bitumé),* a tightness product soaked with bitumen whose one distinguishes:
  - *asphalt impregnated felt cartboard (le carton-feutre imprégné),* a tightness sheet industrially manufactured formed by bitumen-soaked felt cardboard,
  - *asphalt double-face soaked felt cardboard (le carton-feutre surfacé),* a bitumen-soaked product whose the two faces are also covered with bitumen,
  - *asphalt double-face impregnated felt cardboard with protection (le carton-feutre surfacé protégé)* a product whose the two faces are protected by an inert mineral matter;
- **tarred felt cardboard** *(le carton-feutre goudronné)* whose range of materials is analogous to bitumen roofings with substitution of tar by bitumen.

FENCE
Barrière ; Palissader ; Palissage
Temporary Construction; Work; Construction
1. Open-work or close board fence. Syn. with GATE
2. To close with a palisade (in piles).
3. Syn. with PALING; PALISADE

FENDER WALING
Lierne
Construction
A horizontal piece ensuring the connection between vertical elements.

FENESTRATION
Fenestrage
Masonry
The boring of windows in a wall so as to observe there the internal masonry or the enclosing terrain.

***FERAULT* HARD LIMESTONE**
Liais *Ferault*
Geology
A hard limestone of bad quality.

***FERET* APPARATUS**
Appareil *Feret*
Equipment for Measure and Control
Machine used for bending tensile test on cube molds.

***FERET-BOLOMEY* FORMULA**
Formule de *Féret-Bolomey*
Building Materials
A mathematical formulation on the proportion of concrete, based on the ratios of batching and nature of its different constituents so as to obtain the best possible concrete.
The strength of a concrete grows with the cement batching for a fixed aggregate quantity. For equal cement batching, this strength grows if one decreases the mixing water. This expresses by the Féret-Bolomey formula:

$$S = K\left(\frac{C}{W} + 0.50\right)$$

S = strength in Mpa;
K = variable coefficient following the nature of cement.
C= Cement weight
W= water weight

***FERET'S* LAW**
Loi de *Féret*
Building Materials
A code that defines the proportionality of the different concrete ingredients with the purpose to obtain the possible best resistance.
Mechanical strengths of the concrete depend on the batching in cement, in water and empty them that it will comprise. These different parameters have been regrouped by virtue laws arranged by Féret in a unique factor

$$\frac{C}{W + E}$$

(C = *cement;* W = *water*; E = *empty*)
that expresses that strengths of concrete are proportional to the cement batching and conversely proportional to the water batching and to the empties, hence the interest to prepare concrete sufficiently batched in cement, the less wet possible and in good proportions.

FERRITE
Ferrite
Metallurgy
The micrographic designation of the iron crystals (α-iron); this material contains in dissolving, in the grades of iron and merchant steels, lowest contents of others elements. Ferrite is one of the steel constituents that is chemically homogeneous.

FERRITIC NITROCARBURIZING
Nitrocarburation
Metallurgy
Syn. with NITROCARBURIZING

FERRITIC STEEL
Acier ferritique
Metallurgy
An iron and steel product which can contain from 16% to 30% chromium; some grades, with less than 16% chromium, are regarded as if ferritic so long as the contents of carbon do not exceed 0.08%, with a possible aluminum addition.

FERROALLOY
Ferro-alliage
Metallurgy
An alloy essentially constituted of iron, carbon, and a possible third metal element (silicon, manganese, chromium, etc.) in highest proportion.

FERROCEMENT
Ferrociment
Building Materials
A prefabricated material of small thickness constituted by a cement mortar coating one or

several layers of wires or the wire netting being of use as reinforcements.

FERROUS
Ferreux
Metallurgy
Of materials containing iron.

FERRULE
Frette
Construction
Circle of steel used as bond to a timber piece to head off it from to crack. Syn. with BARREL BAND; COLLAR

FESTOON
Festonner
Defects (Metal Construction)
To deform in undulation, while speaking about the sides of chords jointed by riveting of a metal construction (this defect is generally consecutive to rust expanding).

FESTOONING
Festonnage
Defects (Metal Construction)
A disorder allocating the riveted metallic works that characterizes by an undulatory side deformation of assembled chords. The festooning situates between consecutive rivets. This defect has due to the rust expanding between the assembled flats due to the fact of a consecutive tightness lack to a defect of design that translates generally into a pitch and/or an overlap of riveting too great.

FETTLING
Ebarbage
Metallurgy
Syn. with TRIMMING

FIBER
Fibre; Filament
Strength of Materials; Building Materials
1. In the theory of beams, bulk fathered by the parallel displacement to the medium fiber, of an element of the straight section.
2. Syn. with FILAMENT

FIBER BUILDING BOARD
Panneau de fibres
Buildings Materials
Syn. with FIBERBOARD; HARDBOARD

FIBER CONCRETE
Béton de fibres
Building Materials
Syn. with FIBER-REINFORCED CONCRETE

FIBERBOARD
Panneau de fibres
Building Materials
A plate, generally rectangular, constituted of disintegrated woods then compressed by felting; to strengthen their cohesion, a slight proportion of hot-setting adhesive is mixed with the paste. Syn. with HARDBOARD; FIBER BUILDING BOARD

FIBER-REINFORCED CONCRETE
Béton de fibres; Béton armé de fibres
Building Materials
Ordinary concrete in which fibers (natural, synthetic, glass, polymers, steel, (cast) iron fibers), that play the role of reinforcement frames, are added to the aggregates. Syn. with FIBER CONCRETE; STEEL-FIBER REINFORCED CONCRETE; GLASSFIBER-REINFORCED CONCRETE

FIELD
Maille d'un treillis
Nomenclature of Materials
Syn. with PANEL

FIGURED WOOD
Bois madré
Building Materials
Syn. with CURLED WOOD

FILAMENT
Filament
Building Materials
A textile fiber of greater length, said as *continuous.* Syn. with FIBER

FILE/CEMENT MORTAR RENDERING
Enduit batârd
Masonry
Any mortar coating applied on a masonry whose binder is composed of cement and lime. The proportion of lime generally ranges

between 30% and 50% of the total quantity of binder.

FILL
Rideau
Construction
A slope, embankment overcoming a channel of communication.

FILL THE DECK
Ficher
Construction
To insert mortar between the intrados of a deck and its bridge cap pier to carry out the pinning up.

FILLER
Filler; Mastic; Couvre-joint
Hydraulic Binders; Nomenclature of Materials; Materials; Construction
1. A product obtained by thin grinding or pulverization of certain natural rocks (limestone, basalt, slags, kieselguhr, bentonite, fly ashes, etc.). This product mainly acts thanks to a fitting grain size, by its physical properties on certain cement qualities (increase of the workability, reduction of the permeability, capillarity, fissurability, etc.).
We can distinguish two types of fillers:
- **inert** *(les fillers inertes),* without chemical action on the cements in the presence of water (example: limestone);
- **active** *(les fillers actifs),* which have hydraulic or pozzolanic properties in the presence of water and cement (example: slag, fly ashes).

2. An aggregate whose dimensions are lower than 0.08 mm.
3. Syn. with MASTIC; PUTTY; STOPPING COMPOUND; STOPPING UP
4. Syn. with BEAD; BATTEN; BUTT STRAP; CAPPING STRIP; COVER PLATE; COVER STRAP; JOINT COVER; TRIM

FILLER CONCRETE
Béton de remplissage
Building Materials
A material undergoing only weak stresses and whose objective consists only in filling in a space between two walls, a cavity for example.

FILLER ROD
Baguette de soudure
Welding
Syn. with WELDING ROD

FILLERIZATION
Fillérisation
Building Materials
1. The increase in viscosity of a bitumen by filler addition.
2. A filler addition in the composition of a cement.

FILLET
Bande; Bande d'agrafe
Architecture
1. A projection, decorated or not with moldings, located on the main plane of a face wall. The projection can be laid out horizontally, slightly slantwise or in archstones.
2. A sculpture ornament placed at the head of the arches and connecting the moldings of the archivolt with the key of the arc and the main plane of the wall.

FILLET
Filet de mur; Solin
Construction
1. A border standing out on the top of a wall.
2. A sloped garnishing of plaster, lime, or cement mortar, carried out at the junction of two surfaces of different plans.
3. A metal or mortar string used to block up a void (flat fillet) or to furnish the junction with two plans (projecting fillet).
Syn. with WHEATER FILLET

FILLET WELD
Soudure d'angle
Welding
Welding together, either of sheet metals whose plans are perpendicular or oblique, or the edge of a sheet metal with the face of another.

FILLET WELD (IN A LAP JOINT)
Préparation à clin; Préparation à recouvrement
Welding
A preparation in which the faces of the parts to be united are similarly direction, but are not

in the prolongation one of the other, and overlap over a certain width forming between them a dihedral angle.

FILLING
Masticage; Rebouchage
Masonry; Painting
1. The blocking-up of a crack or a cavity in a stone with a matter having identical aspect.
2. The clogging, smoothing of a damaged support (holes, cracks, etc.), executed before performing a work of painting. Syn. with PATCHING; STOPPING

FILLING ABUTMENT
Culée remblayée
Construction
Abutment solely constituted by a gravel guard wall, a breastsummer or a pier cap and poles drowned in an embankment that replace the front wall.

FILLING BRICK
Garnisse
Masonry
A brick without visible face in facing in a construction. Filling bricks constitute actually the filling masonry of a work. **See Figure 5**

FILLING CULVERT
Aqueduc de remplissage
Civil Engineering Structure
A vaulted structure or box culvert having an opening on the upstream side of a lock gate and in the lock chamber to allow the filling of the latter during locking operations.

FILLING GROUT
Coulis de remplissage
Materials
A preparation, generally containing added substances (fly ash, bentonite, etc.), used to block cavities of a certain sizes.

FILLING MATERIAL
Matériau de remplissage; Remblai; Remblayage
Building Materials; Construction
1. A category of materials such as stones, bricks, lightweight concrete, etc., used to block cavities, overbreak, etc., only undergoing low stresses and solely of compression. These materials are regarded such as non-load-bearing materials.
2. Syn. with BACKFILL; FILLING IN

FILLING OF DECK
Fichage de tablier
Construction
A stopping of mortar between the top of the bridge pier cap and the intrados of a deck of reinforced concrete or to encased girders This stopping is intended for palliating the surface irregularities of the intrados of the deck and the surface of the pier cap, and for serving as bearing. This process is used for the deck to weak span. Syn. with PINNING UP **See Figures 6 and 6a**

FILLING PASTE
Enduit
Painting
Syn. with COAT; COATING;

FILLING UP (RUBBLE)
Blocage
Masonry
Fragments of stone that fill the gaps between the primary quarry stones in a roughcast quarry stone masonry not coursed. Syn. with RUBBLE WORK

FILM
Feuil; Film; Pellicule
Painting; Building Materials; Materials
1. A film resulting from the application of one or more paint coats constituting all or part of a paint system.
2. A plastic sheet whose conventional thickness is less than 0.2 mm. Syn. with MEMBRANE; PLASTIC FILM
3. A thin coat covering a surface.

FILTER
Filtre
Sanitary Engineering and Drainage
A device which allows to retain solid particles in dispersion inside a liquid phase. Concerning purification, filters can consist of a superposition of layers of aggregates granulometrically staged having at their base a water draining system and on the top part an antipolluting cloth. Syn. with STRAINER

FILTER CAP
Chaussette
Sanitary Engineering and Drainage
A filter located behind a drainage channel or an outlet and which is constituted by an envelope of geotextile (antipolluting felt for example) filled up with large pebbles. Syn. with END DRAIN

FILTER STONE
Pierre à filtrer
Buildings Materials
Syn. with DRIPSTONE

FILTER WELL
Pierrier; Puits filtrant
Sanitary Engineering and Drainage
1. Syn. with DRY STONE WELL
2. A work achieved with the aim to sink a groundwater in aquiferous ground. This process is applicable only in permeable ground lending itself to the water circulation. Around the digging to be executed, one drills wells whose spacing range from 6 to 12 m, their number, length (up to the impermeable ground), diameter having been defined by a preliminary study. Drilling is performed with placement of a metal provisional sheath, or by means of grout (based on starch in particular) destroyed after dewatering of the well by microbial culture. One comes down inside the drilling a filter tube whose base is clogged and a certain height strained. An immersed pump is come down into the tube; a fine gravel playing the role of filter is introduced between the tube and provisional sheath which is then withdrawn. This process allows to execute foundations to dry. **See Figure 7**

FILTER(ING) BED
Couche filtrante
Sanitary Engineering and Drainage
In a drainage, bed that must leave passing the water while retaining particles of the ground that risk plugging the drainage bed, favoring in way the forming of a tridimensional filter.

FILTERING
Filtrant
Sanitary Engineering and Drainage
Of a material or a device having qualities of filtration.

FILTERING LINING
Chemisage filtrant
Sanitary Engineering and Drainage
The filling of a well by gravel that fills the space contained between a pumping tube and a perforated metal lining, resting on the ground. This system is used to sink a groundwater by filter well.

FILTERING MATERIAL
Matériau filtrant
Sanitary Engineering and Drainage
A very clean and permeable granular product used to protect cleansing devices (filling of trenches of the drainage collectors, drainage trenches, etc.).

FILTRATION
Filtration
Sanitary Engineering and Drainage
1. The dissociation of the solid particles from a liquid phase using a filter.
2. The forced or natural penetration of a liquid through a matter or a porous and permeable material.
Syn. with PERCOLATION

FIN
Balêtre; Balêvre
Defects (Metallurgy and Construction of R.C. and P.C)
1. In foundry, smudge of metal at the place of the joint of the mold. Syn. with LIP
2. A defect of localized aspect on a cased concrete facing, mostly characterized by a gravely aspect somewhat similar to the honeycombing, with a part that stands out in comparison with the other. This defect mostly meets in the facings cased with boards, or also at the connections of the formwork panels. Syn. with OVERPLUS

FINAL GRADING
Régalage
Work
Syn. with LEVELING; STRIKING-OFF

FINAL SET
Fin de prise
Hydraulic Binders
Syn. with FINAL SETTING; FINISH OF SETTING

FINAL SETTING TIME
Fin de prise
Hydraulic Binders
The moment when the cement paste, mortar or concrete is practically solidified. Concerning the cements, the final set is given with the Vicat needle. The final set is considered like reached when the surface of the paste will be able to bear the needle without it penetrating of an appreciable depth. Syn. with FINAL SET; FINISH OF SETTING

FINE AGGREGATE
Fin granulat
Building Materials
1. A natural or crushing sand whose dimensions are less than 2 mm for the majority of grains.
2. Material composed of any sand (or a mixture of two sands) possibly corrected by a fine elements supply.

FINE GRAVEL
Gravette; Gravillon
Building Materials
1. Any gravel of low grading (from 2 to 8 mm).
2. Syn. with CHIPPING; GRAVEL

FINE GRAVEL PIT
Gravillonnière
Building Materials
The location of manufacture or extraction of fine gravel.

FINE GRAVELING
Gravillonnage
Work
The spreading of chippings on any support. Syn. with CHIPPING; GRITTING

FINE GRINDING
Pulvérisation
Work
A material fragmentation process (rock, gypsum, etc.) that gives the fillers or flours.

FINE SLAG
Claine
Abrasive
Syn. with SLAG SAND

FINENESS *or* SPECIFIC SURFACE OF *BLAINE*
Finesse *ou* Surface spécifique *Blaine*
Building Materials
The sum of surfaces (in cm^2) of the grains contained in 1 gram of cement, fly ashes, etc.

FINENESS MODULUS
Module de finesse; Finesse Blaine
Hydraulic Binders
The characteristic coefficient of the grinding fineness degree of a cement, represented by the specific surface, or total surface, of the grains contained in 1 g of this cement. It is expressed in cm^2/g. Syn. with BLAINE FINENESS; BLAINE SPECIF SURFACE

FINENESS MODULUS OF AN AGGREGATE
Module de finesse d'un granulat
Building Materials
The characteristic coefficient of the fine elements quantity of an aggregate sample, which is equal to the hundredth of the sum of the refusal expressed as a percentage, on the various sieves of the following series: 0.16 – 0.315 – 0.63 – 1.25 – 2.5 - 5 - 10 - 20 - 40 and 80.
The fineness modulus allows to appreciate the quantity of fine elements contained in a sand.

FINENESS OF GRINDING
Finesse de mouture
Hydraulic Binders
The crushing smoothness of the cement; it is indicated by the Blaine specific surface. **See Figure 8**

FINENESS SENSOR
Capteur de finesse
Hydraulic Binders
An instrument for measuring the degree of the cement grinding fineness and whose principle of functioning is based on the diffraction of the light.

FINES
Eléments fins; Fines
Building Materials and Geotechnics
1. Matter in suspension in the solution during the determination of the sand equivalent; also called *flocculat.*

2. All products of size less than 80 , whatever their origin, that one can meet in a natural or crushed aggregate.
3. Fine or finest aggregates especially elaborated in order to obtain a definite and constant grading curve. Added with other aggregates, they are used as filling batch to increase the compactness of any concrete (from the mineralogical viewpoint, fines are siliceous or calcareous origin).
4. Speaking about of aggregates, the lower element in the granulometric scale.

FINISH
Fini
Civil Engineering Structure
The outside aspect of a material, a work, a machined surface, after completion of its development or its construction.

FINISH OF SETTING
Fin de prise
Hydraulic Binders
Syn. with FINAL SETTING TIME

FINISHED PRODUCT
Produit fini
Metallurgy
An artifact whose transformation in an iron and steel factory is determined and the constant section. The section is mostly defined by a standard that determines the ranges of bread-and-butter dimensions, as the shape and dimension tolerances. The drawing of the right section and surface quality are usually such as highly often the implementation by the user is limited to, for example, a simple cutting for the setting to the dimensions of use.
They are the standard sections (solid profiles, angular, flat irons and special sections), products for concrete (bars and wires), beams (I, H, etc.), machine thread, equipment for railways track, sheet piles, rolled flat products, coated rolled products.

FINISHED PRODUCT COLD-ROLLED WITHOUT COATING
Produit fini laminé à froid sans revêtement
Metallurgy
A cold-rolled finished product whose completion has comprised, by rolling and without preliminary reheating, a reduction of section at least 25%. We can distinguish sheet metal, black iron, strip, black iron in bobbin.

FINISHED PRODUCT HOT-ROLLED WITHOUT COATING
Produit fini laminé à chaud sans revêtement
Metallurgy
A material obtained by hot rolling of raw products, semifinished products or products of reusing. Its surface is technically smooth, but can, in certain circumstances, present hollows or intentional reliefs with steady spacings. The hot-rolled finished products are broken up into two primary groups according to their shape:
- **flat products** (*les produits plats);*
- **products of other shapes (Long products)** [*les produits d'autres formes (produits longs)*].

FINISHING
Taille ragréée
Masonry
The last cut carried out on a stone.

FINISHING CEMENT RENDERING
Couche de finition
Masonry
The decorative layer that, prima facie, is especially intended for clogging the fissures that occur in the body of the rendering and is formed by a cement mortar, a composition mortar or hydraulic lime mortar. Syn. with SKIM COAT

FINISHINGS
Second-œuvre; Travaux de finition *ou* Finitions
Construction; Work
1. Works which complete a construction and which do not take part theoretically in the resistance of the main work.
2. The full completion of a job that involves every trade association on a building site. That involves as well the main structure as the finishings and equipment.

FIR PLANK
Sapine
Handling
A balk which is designed to the construction of the lifting appliance called *hoist tower*.

FIR TREE
Sapin
Building Materials
A tree of the coniferous trees family with soft wood from the tempered regions. Its density range from 0.40 to 0.60. Its wood constitutes an excellent building material; from them the boards, baulks, rafters, etc. are extracted.

FIRE MARBLE
Lumachelle
Geology
A calcareous sedimentary rock resulting from the accumulation of shells. Syn. with OYSTER SHELL LIME

FIREBRICK
Brique réfractaire
Building Materials
A heat-resistant material to high temperatures and that is made of pure clay and quartz sand. Syn. with FIRECLAY REFRACTORY

FIRECLAY
Terre à four, Chamotte
Geology; Building Materials
1. A clayey fatty ground. This material is highly heat-resistant without deforming and used to make building bricks.
2. An artificial sandstone prepared from a sand containing far more silica that the other natural silico-clayey sands. Once cooked and pulverized, this sand is mixed with the natural silico-clayey, what endows it highest refractory qualities. This type of grog is used to cast steel larger pieces.
3. A fired clay being designed to the manufacture of refractory bricks.
Syn. with GROG; REFRACTORY CLAY

FIRECLAY REFRACTORY
Brique réfractaire
Building Materials
Syn. with FIREBRICK

FIRM
Ferme
Building Materials
Of the quality of a stone whose classification in this category is function of its crushing strength.

FIRST COAT
Couche de fond; Fonds
Painting
Syn. with PRIMING COAT; BACKCOAT

FIRST CUT
Entamure
Building Materials
The first stones extracted from a quarry. Syn. with QUARRY OPENING

FISH
Poisson
Equipment and Tools
The part of a broken rod or bore bit that is remained jammed inside a drilling and which should be fished out.

FISH JOINT
Eclissage
Work
Syn. with APPLYING JOINT; FISH-PLATING

FISHEYE
Oeil-de-poisson
Metallography
An often circular clear area, of a fragile aspect, observed on the dark bottom, of a ductile aspect, of some breakages of tensile test specimens broken in the molten zone of a weld on steel. The fisheye is due to embrittlement by hydrogen, the deformation during the test causing the migration and concentration of this one at the level of the defects such as nonmetal inclusions. This type of defect is systematically visible in the central part of each fisheye.

FISHING
Repêchage; Instrumentation
Foundation
The extraction out of a drilling of the drill rods which there are jammed or broken for various causes.

FISHING TAP
Taraud
Equipment and Tools
A conical-shaped threaded tool used to fish out drill rods jammed following a breaking.

FISH PLATE
Eclisse; Fourrure; Plaque d'assemblage
Construction; Metal Construction
1. A nailed, bolted, welded, riveted, etc., wooden or metal piece in order to ensure that two pieces are solidly junctioned end to end or used to strengthen a fissured piece, slender, etc. [In contrast to cover plate, that entirely connects end to end two elements of the same piece (web, flange, angle section), fishplate only ensures the alignment of two pieces without the entire transmission of all stresses.] Syn. with SPLICE PLATE. **See Figure 9**
2. A patch allowing taking up a level in thickness in order that one could about on another piece on a plane surface.
3. A patch, usually constituted by a flat iron, allowing taking up a difference of thickness in a riveted, soldered or bolted joint.
Syn. with BUSHING; LINING; PACKING. **See Figure 10**
4. A metal part with which is covered the joint formed by two other juxtaposed or joined plates, by riveting it with them. Syn. with PLATE CONNECTOR.

FISHPLATING
Eclissage
Work
1. Reinforcing a piece with the help of fishplates.
2. Action to put two pieces end to end by covering their joint with fishplates.
3. An assemblage with or without fishplate, ensuring that two pieces are aligned enabling some displacement.
Syn. with APPLYING JOINT; FISH JOINT

FISHTAIL
Queue de carpe
Building Materials
A sealing plate of flat iron, ended at an end such as a carp tail. **See Figure 11**

FISSILE ROCK
Roche fissile
Geology
A rock which crack more or less easily.

FISSILITY TEST
ESSAI DE FISSILITÉ
Test of Materials (Welding)
A trial for testing the reliability of the electrodes for hand-driven welding with the electric arc.
The test consists in achieving weld beads under very precise conditions with in particular cooling times between the performance of the groups of achievement of these weld beads. After the achievement of the last of between them, one lets completely cooling the test specimen. Weld beads thus achieved are examined with the red organol or with the magnetoscope. No split must appear.

FISSURE
Fissure; Crevasse; Fente
Geomorphology; Defects
1. Syn. with CREVICE; FRACTURE
2. Syn. with CRACK; FAILURE; RIFT
3. Syn. with CREVICE; RIFT

FISSURING
Fissuration
Defects
Syn. with CRACKING

FISSUROMETER
Fissuromètre
Equipment for Measure and Control
Syn. with CRACK MEASUREMENT APPARATUS

FISSUROMETRY
Fissurométrie
Metrology
A reading and measuring process of the relative movements of the lips of a crack under the influence of gauged external loads.

FIT
Ajointer
Construction
Syn. with JOIN UP

FIT IN
Enclaver
Masonry
Syn. with WEDGE IN

FITTER-HOISTER
Monteur-Levageur
Handling
A contractor having fitting power equipment, specialized tools as qualified personnel, allowing him to execute under one's own power the whole of assembly work, including the jointing of the various elements, lifting, the putting into place or putting down of works or parts of work.

FITTING
Ajustement
Topography
Syn. with ADJUSTMENT

FIVE-YEAR SURVEY
Visite quinquennale
Civil Engineering Structure
The examination of the structures regulated by ministerial circular specifying that a work must be subject of a detailed inspection at least once every five years (Not the same as the detailed inspection whose timing can be brought closer if the state of a work requires it). Syn. with QUINQUENNIAL SURVEY

FIX IN
Sceller
Work
Syn. with BED. PLUG; FASTEN

FIXED LEVEL
Nivelle fixe
Equipment for Measure and Control
A spirit level very sensitive used to indicate the rotational movements of a bearing, a foundation for example.

FIXED MOORING
Corps mort
Construction
A piece made jointly liable with the soil or a mass of a sufficient weight to be of use as fixed point to the assembly lifting guys. Syn. with (ANCHOR) BUOY

FIXING
Ancrage
Construction
The fastening by metal bars sealed of an element such as the deck of a work on its bridge pier cap. Syn. with ANCHORAGE. **See Figures 12 and 13**

FIXING BLOCK
Taquet
Materials
A small wooden piece sealed or embedded into a masonry; can be also fixed on another piece.

FIXING COEFFICIENT
Coefficient de scellement
Strength of Materials
Coefficient that intervenes in the design of the allowable adhesion stress, equal to the unit for plain bars, and determined by its identification form for high-adhesion reinforcements.

FIXING FILLET
Cale à joint
Masonry
A wooden stick used by the builders to adjust the thickness of the pointings of a masonry. The fixing fillet is usually used in brickwork and allows to obtain a facing showing pointings of uniform thickness. Syn. with FIXING SLIP; PAD; PALLET; SLIP

FIXING GUN
Pistolet de scellement
Equipment and Tools
Syn. with CARTRIDGE GUN; STUD GUN

FIXING ROD
Canne à scellement
Materials
A long steel rod whose one of the ends is formed by a crook and the other is threaded. Fixing rods are mostly used to fix vertical parts (example: metal stanchion on a concrete block). Syn. with BEDDING ROD; SETTING ROD

FIXING SLIP
Cale à joint
Masonry
Syn. with FIXING FILLET; PAD; PALLET; SLIP

FIXING-IN
Encastrement
Work
The joining of two oblique or perpendicular parts in which all displacement of one toward the other is forbidden. **See Figure 14**

FLAG
Carreau
Building Materials
Small slab of stone, concrete, fired clay, etc., of rectangular or squared form. Syn. with TILE

FLAGSTONE
Dalle de pierre
Construction
Element of parallelepipedal form and weak thickness by comparison with the other dimensions. Flagstones are generally of chalky nature and sometimes sandstone.
Concerning civil engineering structure, this type of slab was mainly used for serving as cover to box culverts. Syn. with PAVING SLAB

FLAKE
Ecaille
Metallurgy
A small spall of metal that detaches from the surface during an operation of forging, lamination, or hammering.

FLAKEBOARD
Panneau de particules
Buildings Materials
Syn. with CHIPBOARD; PARTICLE BOARD

FLAKING
Ecaillage
Defects (Masonry)
1. Damage characterized by a splitting off of quarry stones parallel to the facing. This damage is distinguished by the exfoliation due to the conchoidal form of the breaking surface and the impossibility to exactly replace the spall (elastic deformation). This damage is a result of stresses exceeding the mechanical characteristics of the material. Face bedding, moisture, frost, and other forms of weathering can be aggravating factors.
2. Damage allocating the renderings following an aggravation of hairline cracking and translating into superficial and localized wrenches of this rendering.

FLAKING OFF
Ecaillage
Defects (Painting)
Syn. with PEELING OFF

FLAME CLEANING
Décalaminage à la flamme
Metallurgy
Fast heating of the oxide crust covering a metallic piece. The smithsonite, bad conductor of heat, brutally expands; this phenomenon causes its breakage and detachment from the surface of the steel. Syn. with FLAME DISCALING

FLAME DISCALING
Décalaminage à la flamme
Metallurgy
Syn. with FLAME CLEANING

FLAME UNRIVETING
Dérivetage à la flamme
Metal Construction
The burning of the rivet heads with the blowtorch following of the extraction with a drift.

FLANCHING
Filet
Masonry
A small weather fillet of mortar.

FLANDERS
Flandre
Temporary Construction
A support unit in a gallery.

FLANGE
Aile; Collet
Nomenclature of Materials
1. Each of the four legs of an I-section or H-section (by extension can apply to the outside legs of other sections). **See Figures 15 and 15a**

2. The widened part of a pipe where comes to encase some other.

FLANGE
Semelle; Membrure
Metal Construction
1. The constitutive part of the top or bottom boom of a metal beam. When the beam is obtained by hot-rolling, booms are made up each of the only one flange. When the beam is formed by assembly of riveted or welded various elements, booms are mostly formed each of two or several flanges joined between them. Every boom is then joined to the web either directly by weld of the flange in contact (in welded construction) or by the intermediary of a flange constituted of two longitudinal corner irons (in riveted construction). **See Figure 15b**
2. Syn. with BOOM; CHORD

FLANGE
Oreille; Bride
Construction
1. Extra width located on the extrados of a tunnel vault nearby the springing for favoring its rest on the ground. Syn. with LUG. **See Figure 16**
2. Syn. with SLEEVE COLLAR

FLANGE ANGLE
Cornière membrure
Metal Construction
Syn. with CHORD ANGLE IRON; FLANGE PLATE

FLANGE OF GIRDER
Aile de poutre
Construction
The part of the section which is perpendicular to the web of the section. **See Figure 15a**

FLANGE PLATE
Cornière membrure
Metal Construction
In a jointed metal beam, tie element between the web and the flanges. Syn. with CHORD ANGLE IRON; FLANGE ANGLE

FLANGED (BED)
Boudinage
Defects (Geology and Civil Engineering Structure)
Syn. with CUTTING INTO HARD BED

FLANGED-V PREPARATION
Préparation en V sur bords tombés
Welding
A preparation in which the bringing together of the parts of convex surfaces obtained by folding allows to execute the weld on these.

FLANK
Rein; Flanc
Construction; Geomorphology
1. Syn. with HAUNCH OF ARCH
2. The side boundary of a landslide prolonging the main escarpment. Syn. with SIDE

FLANK JOINT
Joint de rein
Construction
In a masonry work, pointing that presents in comparison with the horizontal an angle of 30° and is appreciably equal to the angle of friction of masonries on themselves.

FLASH
Bavure
Defects (Constructions of R.C. and P.C.)
The uneven part, slightly overhanging, that remains after a concrete form striking, a cut of metal part, a surplus or untoward blow of brush in work of painting, etc. Syn. with END

FLASH POINT
Point de flamme
Building Materials
The minimal temperature in which a body must be heated so that the emitted vapor takes fire to the approach of a flame (bituminous binders are subjected to a flash point test).

FLASHED
Flammé
Defects (Building Materials)
Of the surface quality of a stone superficially fragmented under the influence of a thermal shock.

FLAT
Mater; Mat; Méplat
Painting; Defects; Nomenclature of Materials; Welding
1. To make flat a paint film.
2. Of a dull paint film. Syn. with MAT
3. Plane surface mostly carried out on a cylindrical part (there are highly often two opposite and parallel flats).
4. The portion of the face to weld located at the root of the weld, forming an angle with the remainder of this face and parallel to the corresponding portion of the other face.

FLAT BAR
Plat
Metallurgy
A long hot-rolled iron and steel product of a rectangular section, whose width lies between 5 (included) and 200 mm (excluded) and whose thickness ranges from 3 to 6 mm following the widths.

FLAT BEARER
Berceau
Construction
Support worked so as to follow the most perfectly possible the pipe which it supports. Syn. with CRADLE

FLAT BRUSH
Queue de morue
Equipment and Tools
Large and flat paint brush.

FLAT COATING
Chape
Civil Engineering Structure
A horizontal thin coating of cement or lime mortar, asphalt or bitumen, intended for improving the qualities of a soil (horizontality, form) or a construction (tightness, horizontality, shape of slope, etc.).

FLAT DEFECTS
Défauts plans
Defects (Welding)
Bidimensional defects that can appear at the level of a welded joint: the lack of melting or penetration of the weld bead; hot or cold cracks inside the weld bead or in the zone allocated by the heat, especially in the case of a lamellar wrench.

FLAT GRAB BUCKET
Grappin plat
Equipment and Tools
A two-shells narrow skip guided by a squared rod sliding inside a mast kelly and that is used to carry out the excavation of diaphragm walls in the ground.

FLAT INJECTOR
Injecteur plat *ou* cavalier
Equipment and Tools
Syn. with STAPLE.

FLAT JACK
Vérin plat
Equipment and Tools
Equipment that appears as a bag in malleable steel constituted by two pressed sheet metals joined by weld whose connection takes the shape of a cylindrical or toric flange. Two nozzles, whose one is used as a vent, allow the injection of a pressurized fluid which aside draws one of the other the two faces of the jack modifying by deformation the shape of the flange whose radius increases. Flat jacks can be inserted into the work permanently or temporarily. They are used to key-up the segments of tunnels, loading of bearings, etc. Oil, water, resin can all be used as an injection fluid. **See Figure 17**

FLAT PART
Méplat
Nomenclature of Materials
A piece broader than thick. (When a thin part is placed on the broader face it is said that it is *laid on its flat part.)*

FLAT PRODUCT
Produit plat
Metallurgy
A material having an almost rectangular right section and whose width is much higher than the thickness; its surface is mostly smooth and united but can also present hollows or reliefs forming a steady drawing; it can be corrugated or ribbed. Flat products include universal mill plate, sheet metal, strip.

FLAT PROJECTION
Géométral
Drawing
Drawing indicating the primary dimensions of a work (height, width, length, depth), the whole represented on the same scale.

FLAT SAWING
Débit sur dosse
Building Materials
The cutting of a tree trunk longways on according to its fibers.

FLAT SHEET METAL
Tôle plate
Metal Construction
In the former metal works, cover constituted of plane sheets (smooth or chequered) jointed on the elements of structure of the bridge. These sheets are sometimes stiffened by corner irons or U-irons welded in the middle part. They are covered by a concrete bed.

FLATNESS
Matité (d'un film de peinture)
Painting
Syn. with DEADNESS; MATTNESS

FLATNESS DEFECT
Défaut de planéité
Defects (Metallurgy and Welding)
Syn. with EVENNESS DEFECT

FLATTEN
Amortir
Painting
Syn. with TONE DOWN

FLATTENER
Chasse
Equipment and Tools
Blacksmith's tool of a square sledge hammer shape that one applies on the hot metal to be worked and on which one knocks with a sledgehammer. Syn. with FLATTER; SET HAMMER

FLATTER
Chasse
Equipment and Tools
Syn. with FLATTENER; SET HAMMER

FLATTING
Matage
Defects (Painting)
A phenomenon characterized by the loss of shining of a paint due to a vapor or rainwater deposit after application of the paint coat and before its drying.

FLATTING AGENT
Agent de matité
Painting
Syn. with DEADNESS AGENT

FLAW
Crique
Metallurgy and Metal Construction
1. The hairline crack affecting a metal piece.
2. A surface defect affecting a metal due to a contraction occurred during the cooling at the time of the forging or drawing operations.
Syn. with CRACK (IN THE METAL)

FLAW
Défaut; Fente
Defects
1. A visible or hidden vice, natural or of manufacture, in the building materials.
2. An internal or external imperfection produced in pieces during their development, their thermal, chemical, or mechanical transformation, or their use. Syn. with BLEMISH; DEFECT; VICE
3. A wood defect characterized by fissures of variable direction and amplitude, due to the detachment of elements under the influence of shrinkage, consequence of excessive drying (see RING SHAKE, FROST CRACK, STAR-SHAPED, CHECK).

FLAW (IN METAL)
Paille
Defects (Metallurgy)
A scale appearing on the surface of a metal product having undergone an operation of rolling or forging. This defect usually concerns only a small thickness of metal. Syn. with SCALE

FLAWING METAL
Métal pailleux
Metallurgy
Syn. with METAL WITH FLAW

FLECK
Moucheture
Defects (Painting)
An imperfection appearing on a paint film characterized by many stains of different colors from that of the initial film.

FLEXIBILITY
Flexibilité; Souplesse
Strength of Materials; Painting
1. Aptitude of a material, a structure to undergo deformations without cracking. Syn. with PLIABILITY
2. The property of a dry paint film to withstand possible deformations of its support without curling, fissuring, or stripping.

FLEXIBILITY TEST
Essai de souplesse
Test of Materials (Painting)
A trial for testing the flexibility of a paint film, which consists in folding on a cylindrical punch a metal test specimen, of defined size, covered with a paint film to be tested. This test allows to observe the appearance of cracks or detachment of this film from its substrate. The result is expressed by the minimal diameter of the punch allowing to fold the test specimen without deterioration of the film.

FLEXIBLE (WATERTIGHT) COPING
Chape en bitume armé *ou* Chape souple
Tightness
1. A waterproof blanket made up of tightness sheets prefabricated by coating of a textile or metal reinforcement in a bituminous mass possibly fillerized.
2. A supple and flexible watertight coating, formed by bitumen, oil and powder of tires.

FLEXIBLE DAMP COURSE
Chape souple
Tightness
See FLEXIBLE (WATERTIGHT) COPING

FLEXIBLE DRILLING
Flexoforage
Work
A special drilling process in which the engine is located at the bottom of the hole to drive the bore bit. It is suspended at the end of a continuous flexible tube which one unrolls or rolls up since the surface on a drum and that replaces the usual drill string. Machines using this principle are turbodrills or electrodrills.

FLEXIBLE MORTAR
Mortier souple
Building Materials
A tight product made up of cement, a binder containing resins in aqueous dispersion, fillers and admixtures. This mixture has a certain flexibility allowing it to undergo deformations without damage.

FLEXIBLE SHELL PIER
Pile à voile souple
Construction
The top part of a pier formed by two vertical or inclined reinforced concrete thin shells, being useful as connection between the deck and the body of the pier and that can be articulated or restrained at the two ends or restrained on the head and articulated at the foot. These piers are used in particular for prestressed concrete works built by successive cantilevers. **See Figure 18**

FLEXION
Flexion
Strength of Materials
A stress state having tendency to curve the longitudinal axis (or to modify the curve) of a straight or curved beam. The stress is created by one or several moments and generates especially normal stresses. **See Figure 19**
There are several types of bending:
- **combined** *(la flexion composée),* in which a section bears at once a bending moment *M* of components *My* and *Mz* following the primary axes of inertia, and a normal strain *N,*
- **oblique *or* unsymmetrical** *(la flexion gauche),* which occurs when the plan containing the soliciting load does not correspond to primary axes of inertia, the plan of bending passing however by the center of gravity of the section;
- **plane** *(la flexion plane),* a case where the forces applied at piece rates are all in a longitudinal plan passing by a main axis of inertia of the straight section which is itself axis of symmetry of the aforementioned section. The bent, which is the place of the

centers of gravity of the sections after inflection, thus remains in this plan;

- **pure *or* circular** *(la flexion pure ou circulaire),* in which the bending moment is constant along the whole length of the beam and shearing force null; the bent is thus an arc of circumference. It is a relatively rare case of particular plane bending, that it is necessary however to know because it corresponds to the action of moments equal and opposed to the supports if there are fixed end, semifixed end or balanced continuity;
- **pure *or* simple** *(la flexion simple),* which occurs when the part is prismatically shaped, namely does not present no abrupt variation of section, and as the constituent matter is homogeneous and works as well in tension as in compression. If the part is horizontal, the prompting forces are vertical and act in the plan passing by the center of gravity of the cross sections. These forces have tendency to vary the initial curve of the part.

Two next sections to a bent part have tendency to turn around an axis passing by their center of gravity.

In the bread-and-butter case of a horizontal beam and resting freely on two supports, it occurs tensile stresses in the lower part of the beam and compressive stresses in the higher part. There is a slice of fibers which does not receive any stress, it is that which passes by the center of gravity of the section and which is called *neutral fiber.*

Syn. with BENDING

FLEXURAL CENTER
Centre de flexion ou de torsion
Strength of Materials
Syn. with CENTER OF BENDING; CENTER OF TWIST

FLEXURAL STRENGTH
Résistance à la flexion
Building Materials
Syn. with BENDING STRENGTH

FLEXURAL STRENGTH TEST
Essai de flexion
Test of Materials
Syn. with BENDING TEST

FLEXURE
Flexure
Geology
A subsidence of the soil due to a stretching and a thinning of layers. Flexures are also called *monocline folds.* (In certain circumstances, a flexure can get turned into a fault, when the stretching brings about to a break.)

FLEXURE METER
Flexomètre; Déflectomètre; Fleximètre
Assaying Equipment; Equipment for Measure and Control
1. An instrument which allows to study the behavior of a paint film subjected to bending stresses.
2. Syn. with DEFLECTOMETER

FLIGHT DECK
Volée
Construction
The deck of a movable bridge which moves in console by rotation, lifting, or longitudinal translation, to release an inland waterway. **See Figure 20**

FLIGHT OF STAIRS
Volée
Construction
The uninterrupted continuation of steps of a staircase contained between two landings.

FLIGHT SLAB
Paillasse
Construction
Syn. with WAIST

FLINT
Silex
Geology
A siliceous sedimentary rock of a physicochemical origin, silica concentration in a chalky medium (chalk), formed by chalcedony, quartz, and a little opal.

FLINT NODULE
Rognon
Building Materials
Syn. with KIDNEY STONE; NODULE

FLOAT
Bouclier; Taloche
Equipment and Tools
A finisher's tool constituted by a wooden or plastic plate provided with a handle, and used to surface a rendering or a mortar screed.

FLOATING
Flottage
Building Materials
A process that consists in immersion of resinous or soft wood into fresh water generally for a month (3 months for certain species of wood) in order to replace the sap by water which makes wood dry more rapidly. Floated wood warps more or less according to species when drying. This process enables incrusting salts to be preserved which therefore contribute to a stronger resistance of wood.

FLOATING PILE
Pieu flottant
Foundation
Syn. with FRICTION PILE

FLOATING PONTOON
Barge; Ponton flottant
Handling; Equipment and Tools
1. A (floating) landing stage used for transport by waterway or setting of bridges.
2. A floating platform used to transport materials, elements of a bridge (example: deck), etc.

FLOCCULANT
Floculant
Materials
Usually acid reagent used in ceramic manufacture to increase the viscosity or the plasticity of clay.

FLOCCULAT
Floculat
Construction
Fine elements remaining in suspension in a solution during the test called *sand equivalence.*

FLOCCULATING AGENT
Floculant
Materials
Syn. with FLOCCULANT

FLOCCULATION
Floculation
Materials
Act or process of using a flocculant (colloidal product) in order to break the balance, i.e., separating the colloid from its porter and turning it into flakes.

FLOOD
Crue
Hydrology
The rise of the level of waters which very often comes out of their bed. Syn. with SWELLING

FLOOD BANK
Digue fluviale
Hydraulic Works
Syn. with BREAKWATER; EMBANKMENT

FLOODGATE
Hausse; Haussoir; Haussoire
Foundation
Syn. with WICKET

FLOODPLAIN
Lit majeur
Hydrology
Syn. with HIGH-WATER BED

FLOOR
Plancher; Sole; Aire
Construction; Topography
1. A horizontal area, at the origin carried out of jointed boards, intended for the movement of the people and/or storage of equipment or materials. Syn. with PLANKING
2. The part of ground located under the foundation raft of a gallery.
3. Syn. with SURFACE
4. Syn. with AREA; SURFACE

FLOOR COVERER
Chapiste
Construction
Syn. with FLOOR LAYER; TOPPING APPLICATOR

FLOOR GRINDER
Ponceuse à béton
Equipment and Tools
An engine device allowing the surface dressing of a screed, a slab, after hardening of the concrete (removal of the harshness, etc.). Syn. with CONCRETE GRINDER

FLOOR LAYER
Chapiste
Construction
A builder specialized in the achievement of the cement mortar screed. Syn. with FLOOR COVERER; TOPPING APPLICATOR

FLOOR PLATE
Tôle à relief; Plancher
Metallurgy: Plancher
1. A product whose one of the faces has an allowance according to certain drawings, for example of the diamond-shaped (checkered plate), oblong shapes (sheet with tears). Their most frequent thickness is 5/7 (5 mm in hollow of drawing, 7 mm directly below of the extra thickness).
2. A work platform of a drilling machine on which lie mostly gathered the main organs of the installation (a table of rotation, winch).

FLOOR SCREED
Chape
Construction
Syn. with CEMENT SCREED; COVERING; SCREED; TOPING

FLOORING
Planchéiage
Construction
Syn. with BOARDING; PLANKING

***FLORENCE* MARBLE**
Pierre de *Florence*
Building Materials
A range of marble.

***FLORENTIN* METHOD**
Méthode *Florentin*
Test of Materials
A mineralogical method of analysis applied on hardened concrete practically no longer in use.
Ancient method consisting in attacking concrete with the help of hydrochloric acid (density: 1.12) (dilution: 1:1). This process consists in making silica from cement soluble, filtering, and dosing this silica through gravimetry which makes its insolubilization twice as resistant to concentrated hydrochloric acid, in the original method at least.

FLOUR
Farine; Fleur
Building Materials: Nomenclature of Materials
1. An extremely fine aggregate whose grain is less than to 0.1 mm.
2. The part of a filler of an appreciably equal fineness to that of dust. Syn. with DUST

FLOUR METER
Flouromètre
Assaying Equipment
A device for testing the fineness of grinding of cements while separating the different particles through a rising scale of size.

FLOW
Ecoulement; Fluage; Fluxer
Hydrology: Construction of R.C. and P.C.; Rheology; Metallurgy
1. The circulation of water (contrary to stagnation but not to be confused with streaming or seepage).
We can distinguish:
- **gradually varied flow** *(l'écoulement graduellement varié);* the circulation of water which changes very slowly from one section to another;
- **rapidly varied flow** *(l'écoulement rapidement varié)',* the circulation of water which shows a discontinously rapid evolution of movement;
- **unvarying flow** *(l'écoulement uniforme);* which corresponds to the regular circulation of water. In a canal where the slope, section, ruggedness or flow are constant, this kind of flow is established;
- **varied flow** *(l'écoulement varié),* different from the unvarying flow because of the presence of a singularity (narrowing, widening, etc.) in a waterway, not only

provoking a localized energy loss, but also a modification of the free surface.
Syn. with ECOULEMENT; OUTFLOW; RUNOFF
2. Syn. with CREEP
3. The flow of a plastic or any viscous substance subject to a force.
4. To carry out to the fluxing of metal parts before galvanization.

FLOW COATING
Flow-coating
Painting
A process of painting that consists in spraying paint on wooden or metal pieces placed on a conveyor in a closed space.

FLOW NOZZLE
Ajutage
Equipment and Tools
Syn. with CONNECTION; JET; NOZZLE

FLOW TABLE
Table à secousses; Table à choc normalisée
Assaying Equipment
Syn. with STANDARD DROP TABLE

FLOW TEST
Flow-test
Test of Materials (Concrete)
A test to determine the consistency of freshly mixed concrete by generally measuring its spread on a flat area under jarring.
A test of consistency of freshly mixed concrete in pouring it in a truncated mold (different from a slump cone). Size of the mold: height: 15 cm, the diameter of the bottom area: 30 cm, top area: 20 cm.
This cone is placed on the square table (80 cm x 80 cm) generating vertical shakes with the help of a device driven by a camshaft delivering 12 shakes with an amplitude of 12.5 mm during 10 s. The full mold is then removed. The concrete is put through a test of 12 shakes during 10 s with the help of the table. The measure of the cake of concrete is then checked. The ratio D/30 = f determines the fluidity. **See Figure 21**

FLOWED-BACK (WATERTIGHTNESS) COPING
Chape refluée
Tightness
Waterproof blanket obtained by making ascend on the surface by troweling the mortar of the concrete slab, then by sprinkling this surface with a mixture comprising different products whose cement and hard aggregates.

FLOWING
Fluente
Materials
The quality of viscosity and internal friction reduced that have to possess active matter mixed in injection grout.

FLOWING CONCRETE
Béton fluide
Building Materials
Syn. with CHUTED CONCRETE

FLOW-LIMITING DEVICE
Limiteur de débit
Equipment and Tools
An equipment mostly made up of two conical pieces (one male, the other female) kept distant or closer brought one to the other according to the wanted flow from fluid passing by this piece.

FLOW-LIMITING HOLE
Duse
Equipment and Tools
A calibrated orifice that serves as flow-limiting device in a pipe under pressure.

FLOWMETER
Cône d'écoulement
Equipment for Measure and Control
An instrument for checking the apparent viscosity of cement mortars and grouts used in some grouting techniques: coating of wires and tensile cables (prestressed concrete), grounds and alluvium consolidation, internal grouting of masonry, etc.
The apparatus is formed by:
- a stainless steel funnel, whose threaded bottom part is intended for receiving a nozzle tip;
- four nozzle tips of diameter 8, 9, 10, and 11 mm;
- a graduated container (capacity 1 liter).

To measure the viscosity one fills the cone and one times the flow time of a liter of grout. The operation been made in three measures.

FLOW-TABLE TEST
Essai d'étalement
Building Materials
A test for trying the consistency of fresh concrete. It is achieved with the drop table and consists in measuring the medium diameter of a concrete heap heavy 16 kg being found on a table falling 15 time in 15 s from a height of 40 mm. Originally, the fresh concrete is cast in a truncated cone of 200 mm tall, great base of 200 mm diameter and small base of 130 mm diameter.

FLUIDIFICATION
Fluidification
Materials
The action to make more liquid, therefore less viscous, a product by various additions (water, fluidifier, etc.).

FLUIDIFIER
Fluidifiant
Materials
A mixture that, added to a bitumen, a paint, any concrete or any drilling mud, can confer it very greater liquidity without harming (or feebly) mechanical characteristics.
Fluidifiers will often facilitate with the use of some products. Concerning concrete, fluidifiers produce a deflocculation of the cement paste and bubbles of air, contained in lumps that disperse, and are liberated at the same time. Their second role, the most important, is a role of lubrication by absorption, on the wall of grains, long molecules that play an unctuous lubricant role (in the hair of a brush). Syn. with PLASTICIZER; WORKABILITY AGENT

FLUIDITY
Fluidité
Materials; Building Materials
1. The ability of a product to flow, to let oneself cast easily.
2. The possibility, for a liquid, a solution, to flow broadly easily in a piping.
3. The necessary and characteristic liquidity of any grout; it measures by means various cones of form and different nozzles (example: Marsh flowmeter).

FLUIDITY METER
Fluidimétre
Measuring and Control Equipment
Equipment intended for testing the fluidity of some matters (paint, grout, etc.).

FLUME
Canal
Railway and Canals
Syn. with CANAL; CHANNEL; CULVERT; RACE

FLUMED STRUCTURE
Ouvrage avec rétrécissement de la voie d'eau
Hydraulic Work
A hydraulic construction built on a river or a canal bringing about a contraction of the waterway. This work can be a bridge, an aqueduct, a lock.

FLUORESCEIN
Fluoréscéine
Materials
A yellow-orange coloring gifted of a very intense green fluorescence, that is used for verifying the permeability and to study the traversing of waters in inaccessible parts of a work, notably the verification of watertightness copings of the bridges in masonry.

FLUORESCENT PENETRATIVE AGENT
Pénétrant fluorescent
Test of Materials
A product whose tracers emit, through the agency of an ultraviolet excitating radiation, or in visible light, a fluorescence to which the wavelength is close to 550 nm, reflecting the maximum of sensitivity of eye.

FLUOSILICATE SEALING
Fluatation
Masonry; Construction of R. C. and P. C.
1. A process of waterproofing and superficial hardening of soft limestones and concrete by painting with solutions of magnesium and zinc fluosilicate.

2. An operation of waterproofing that consists in adding to the concrete zinc or manganese fluosilicate. With the lime liberated during the set of the cement, the presence of zinc fluosilicate in the concrete produce to the insoluble fluosilicates whose presence in crystalline concrete systems, decreases the permeability.

FLUSH CISTERN
Réservoir de chasse
Sanitary Engineering and Drainage
Syn. with FLUSH TANK

FLUSH HEAD
Tête perdue
Nomenclature of Materials
The head of a nail, a screw, or a bolt, restrained in order to not stand out.

FLUSH TANK
Réservoir de chasse
Sanitary Engineering and Drainage
A work into which come accreting elements carried in suspension by drainage water, thus facilitating the clearing out of the drainage systems. Syn. with FLUSH CISTERN

FLUSHING
Chasse
Hydrology
The cleaning of pipes by pressurized water.

FLUTE
Cannelure; Canneler
Architecture; Masonry
1. Syn. with CHANNEL; GROOVE
2. To shape semicircular grooves or cavities on an ashlar.

FLUTING
Cannelure
Architecture
Syn. with HOLLOW CHAMFER

FLUTTERING CABLE
Câble de papillonnage
Equipment and Tools
Each ropes knocked of the two edges of a dredger to allow its lateral displacement by successive swings, when it works by fluttering.

FLUVIAL ABRASION
Abrasion fluviale
Geomorphology
Syn. with RIVER ABRASION

FLUVIAL DYNAMICS
Dynamique fluviale
Hydrology
The branch of hydrology that studies and analyzes streams, flow of materials, erosive force and water level variations. Syn. with RIVER DYNAMICS

FLUVIATILE CLAY
Argile fluviatile
Geohydrology
A material that settles on the floodplain of rivers at the time of the falls. Syn. with RIVER CLAY

FLUX
Flux
Welding
A product used in welding that can appear in liquid, paste, or powder form and that is intended for eliminating oxides of the surface of the joint (in the case of oxyacetylene welding of non ferrous metals for example) or to ensure the protection of the welding bath (the case of arc welding under powder flux).

FLUX
Fluxer
Metallurgy
To proceed to the fluxing of metal parts before galvanization.

FLUX ACTIVITY
Activité d'un flux
Welding
A property arranged conventionally allowing the analytical classification of a flux from its chemical composition.

FLUX OIL
Fluxer
Civil Engineering
To add a special oil in asphalt so as to render it more fluid.

FLUXING
Fluxage
Metallurgy
In the preparation for galvanization, operation intended for protecting metal parts after their scouring before galvanization.
There exists two practices:
- **wet process** which consists in immersing immediately the scoured and rinsed parts into a hot bath constituted by salts (chlorides) of zinc and ammonium;
- **dry process** which consists in doing crossing to the scoured parts, before immersion into the bath of zinc, the froth of smelted chloride of a double flow of zinc and ammonium. This froth only covers a part of the surface of the zinc bath, in order that parts, once galvanized, could emerge in the portion of bath not covering of flow.

FLUXING AGENT
Fluxant
Materials
An epoxydic resin admixture for facilitating the implementation of epoxy binders in lowering their viscosity; one distinguishes the nonreactive fluxing agent (solvents) (to proscribe in thick coating) from the reactive fluxing agents or reactive thinners, that participate in the reticulation.

FLY-ASH CONCRETE
Béton de cendres volantes
Building Materials
Ordinary concrete to which fly ashes have been added in order to obtain a better workability and more impermeability.

FLY-ASH SLURRY INJECTION
Injection à base de cendres volantes
Work
Pressurized penetration of unstable grout (cement + fly ash + water) with which is carried out a simple hydraulic backfilling of large cavities and wells that one wishes to fill in.

FLYER
Marche droite
Construction
Syn. with STRAIGHT STEP

FLYING BUTTRESS
Buton; Arc-boutant
Construction
An external reinforcement beam or strip of the vaults placed at the level of the springings or haunches of these vaults to prevent their respective closeness (this constructive layout can be original or added afterward). Syn. with ABUTMENT PIER; ARCHED BUTTRESS

FLYING VAULT
Voûte flottante
Temporary Construction
The sheeting of a tunnel under construction carried out with pressed sheet steels. The sheeting is carried out in the first place in vault some then, from 20 m in set back, the bottom part of the tunnel is attacked by underpinning, the joints between the lower rings being shifted in comparison with those of the rings of vault.

FLYING-BUTTRESS ABUTMENT
Culée d'arc-boutant
Construction
A construction for taking the thrust of one or more flying buttresses. Syn. with PIER BUTTRESS

FLYOVER
Saut-de-mouton
Civil Engineering Structure
A structure that allows channels of communication stemming from a joint section (of lines) to cross in different plans. (The goal is to avoid the shearing of these ways.) Syn. with CROSSOVER; Y-JUNCTION

FLYSCH
Flysch
Geology
A composite sedimentary rock essentially formed by sandstone, schist, calcareous marl.

FOAM CONCRETE
Béton mousse
Building Materials
Concrete into which is mixed a foaming product that provokes a stable foam thanks to the presence of gelatine or mucilage.

FOAM GROUT
Coulis gonflant. Coulis mousse
Materials
An injected filler that has two phases:
- liquid; containing cement and admixtures, and
- gaseous; bubbles develop after the introduction of the porophorus chemical additive, that is, when the grout is already in place. Syn. with INFLATING GROUT

FOAMED ADHESIVE
Adhésif mousse
Adhesive
Syn. with FROTH ADHESIVE; SPONGE ADHESIVE

FOAMED SLAG
Pierre ponce; Laitier expansé
Buildings Materials
1. Syn. with EXPANDED SLAG
2. An alveolar aggregate of crystalline nature coming from air cooling of the blast furnace slag, in the presence of a limited quantity of water.

FOAMING PRODUCT
Produit moussant
Hydraulic Binders
An addition mixed into concrete which has the power to create inside the concrete structure bubbles of air.

FOG
Brouillard
Painting
All water droplets in suspension in the air which makes a cloud near the soil limiting visibility.

FOLD
Pli
Geology
A ground formation bent on both sides of an axis, having convexity toward the sky (anticline) or a concavity toward the sky (syncline). According to the incline of the axis of the fold, we can distinguish upright folds, warped folds, recumbent folds, and overturned folds.

FOLD (IN THE GROUND)
Repli
Geology
An undulation that shows the surface of a ground.

FOLDING
Pliage
Metallurgy
Syn. with BENDING

FOLDING WEDGES
Coins contrariés
Equipment and Tools
Wedges crossed and blocked in force used to steady wooden pieces, shores, etc.

FOLIA
Feuillet
Geology
A rock fragment from a foliated structure (example: gneiss, schist) that has contained between two plans of cleavage. This structure comes from the foliation that produced by compression under high temperature, notably in clays.

FOLIATED
Folié
Geology
Is said what presents foliation.

FOLIATED ROCK
Roche feuilletée
Geology
A stone which is divided into folias. Syn. with LAMELLAR ROCK

FOLIATION
Feuilletage
Geology
1. The aspect of a bed of nonhomogeneous ground composed of successive folias repeating in space.
2. The division in successive thin layers, of a rock following its cleavage plane.

FOLIATION OF A STONE
Feuilletage d'une pierre
Defects (Building Materials)
Damage characterized by a separation in folias of a block of stone.

Many qualities of limestones have their superficial beds foliated and constituted of porous and soft beds. These beds can alter in the time, either if there is a migration from the surface of the stone of the calcium carbonate with yellow, brown or reddish run appearance, or there is direct fast disintegration under the action of atmospheric agents (frost, rain, wind).

FONDU
Fondu; Ciment alumineux
Hydraulic Binders
Syn. with ALUMINOUS CEMENT.

FOOL'S GOLD
Pyrite
Geology
Syn. with PYRITE

FOOT
Embase; Base; Empatter; Pied
Construction; Temporary Construction; Work; Geology
1. Syn. with BASE
2. Pedestal upon which rests a pier, a column, etc. Syn. with BASIS
3. To support a crane with timbers.
4. To connect pieces or elements with tie lugs.
5. In a landslide, downstream side intersection of the initial topographic surface that reflects the base of the slip surface. The foot is often masked by the border.

FOOT BEAM
Longrine de pied; Longrine traînante
Temporary Construction
Syn. with GROUND BEAM; WALER

FOOT BLOCK
Semelle
Equipment and Tools
A timber piece laid flat under the foot of a prop. Syn. with SILL. **See Figure 22**

FOOT DITCH
Fossé de pied
Sanitary Engineering and Drainage
A channel mostly to widened edges dug at the base of embankments, slopes, intended for collecting the streaming or seepage waters of these slopes and embankments in order that these waters do not invade the railway or road platform or any other installations. See DITCH. **See Figure 20** CREST DITCH.

FOOT IRON
Echelon
Construction
Syn. with STEP IRON

FOOT ROPE
Câble de pied
Construction
In some suspension bridges comprising guys, cable located at the level of the deck and intended for resuming the horizontal stresses of guys. **See Figure 23**

FOOTING
Empattement; Rigole
Construction; Foundation
1. The width of a stanchion base.
2. A trench of small width and depth, dug in the ground to be of use as foundation for dwarf walls. Syn. with TRENCH. **See Figure 24**

FOOTING HEEL
Bêche
Construction
A part fastened under a base plate (example: post) or a plate to resist, by its setting in stop, to a horizontal force.

FOOTPATH
Accotement
Railway and Canals
1. The side strip of a railway track located between the foot of the track bench of ballast and the ditch or a wayside property. Usually, a side path (track) reserved for traffic of the maintenance personnel of the way and that is fitted on the footpath. On the footpath are put in the signs, catenary posts and they are also used to store the equipment and materials of maintenance. In the stations, the footpath is replaced by platforms.
Generally, the footpath is of the *flush* type. **See Figure 52a** under SHOULDER
2. Side strip to a canal located between the bank and a ditch or a wayside property. Generally on the footpath is fitted the towpath.

For canals or rivers the footpath is mostly of the *raised* type.

FOOTPATH JOINT
Joint de trottoir
Public Works
A transverse device ensuring the continuity of the footpath of a bridge directly below of a structure discontinuity.

FOOTSTALL
Socle; Base
Construction
Element of ashlar set under the shaft of a parapet. Syn. with PLINTH

FOOTWALK
Passerelle
Civil Engineering Structure
A constructive arrangement which, in the broadly defined term, allows to the pedestrians and/or animals to go from a point to another above or below a natural or artificial obstacle, but always built above a drop.

FORAMINIFER
Foraminière
Geology
A fossil belonging zoologically to the class of the rhizopodes, with the body provided of a chalky shell (the nummulites are foraminifers). One finds remain them these fossils in some limestones of the Cambrian.

FORCE
Force
Strength of Materials
Syn. with STRENGTH; STRESS

FORCE PUMP
Pompe foulante
Equipment and Tools
A pump set on the bottom of a pipe, into which it makes rise a liquid by means of the pressure that it exerts on it.

FORCED WATER
Eau forcée
Hydrology
Water under pressure provided by water companies. Syn. with PRESSURIZED WATER

FORCED-AIR HEATER
Aérotherme
Equipment and Tools
Syn. with WARM-AIR GENERATOR

FOREGROUND
Avant-plan
Drawing
The primitive design preceding the performance of a plan.

FORELAND
Franc-bord
Civil Engineering
The width of bank reserved to depose the clearing products from the waterways. Syn. with OUTLAND

FOREPOLE
Lance; Planche de flanc
Earthwork; Temporary Construction
1. In the digging of trenches with vertical walls or undergrounds, each metal section laid longways and resting on the centerings, which one drives in individually, by means of jacks, into the ground when the behaviour of this one requires the shoving. Syn. with FOREPOLING BOARD; SPILL
2. Syn. with CLOSE POLING BOARD

FOREPOLING BOARD
Lance
Earthwork
Syn. with FOREPOLE; SPILL

FOREMAN MASON COMPASS
Compas d'appareilleur
Equipment and Tools
A steel or wooden great compass used by stonecutters to draw full-scale working drawings.

FOREMAN STONEMASON
Piqueur
Masonry
A technician having under his responsibility builders, stonecutters and assistants, whose it overlooks and checks the carrying out of the job.

FOREMEASURMENT
Avant-métré
Contract
The quantitative estimate of a job to be executed arranged according to the drawings of the project and allows to assess loosely a figure the expenditures to be envisioned. Syn. with PRELIMINARY ESTIMATE OF QUANTITIES

FORENAIL
Avant-clou
Equipment and Tools
A tool (gimlet usually) with which a pilot hole is bored before the driving in of nails of important diameter, with the intention to avoid bursting the wood.

FORESHIELD
Masque
Equipment and Tools
A strong sheet metal equipping a front shield; it is equipped of openings mostly endowed of a hydraulic closing-down system. The foreshield is in particular used in the running grounds; the judicious opening of the gates of the foreshield allows to monitor the penetration of excavated materials into the underground, thus facilitating mucking out.

FOREWALL
Avant-mur
Civil Engineering Structure
A wall coming resting on another.

FORGE SCALE
Battiture
Metallurgy
A scale of metal brought about by the forging of iron. Hammer scales, also called *saline oxides,* once ground and sieved, give a black powder which is used in paint as pigment (black of iron). Syn. with HAMMER SCALE; IRON SCALE

FORGEABILITY
Forgeabilité
Metallurgy
A property that possesses a metal to let oneself put in form by forging.

FORGEABLE
Forgeable
Metallurgy
Of a metal that is liable to be forged. Syn. with FORGING SUSCEPTIBILITY

FORGING
Forgeage
Metallurgy
The shaping of a metal or alloy by plastic deformation at the solid state to give it a form, dimensions, and focused new characteristics. This operation is practiced mostly hot, either by shocks with a hammer or pestle, or by progressive pressure with a press or mill. Syn. with SMITHING

FORGING SUSCEPTIBILITY
Forgeable
Metallurgy
Syn. with FORGEABLE

FORK
Enfourchement; Fourche
Construction
1. The part of an archstone bonded at the top of a pier at the junction of two vaults and whose summit is cut in V markings the separation of the two stringcourses.
2. An archstone located above the springer of a pier and forming fork.
3. The connection on a pier that forms the junction of the two arches of a viaduct or a masonry bridge.

FORKED TIE
Harpon
Construction
A metal part folded at right angle, intended for connecting two walls or two structural members.

FORKLIFT TRUCK
Chariot élévateur
Handling
Syn. with LIFT TRUCK

FORM
Coffrage; Banquette; Coffrer
Temporary Construction
1. Syn. with CASING; CONCRETE FORMING; FALSEWORK; FORMWORK; MOLD; SHUTTERING

2. Syn. with BENCH
3. Syn. with PLACE A FRAME

FORM
Renformis; Gradin; Redent; Banc
Masonry; Construction; Building Materials
1. A layer of materials intended for giving at the extrados of a structure the wanted profile.
2. Syn. with STEP.
3. Syn. with BANK; BENCH; LAYER

FORM
Décaisser; Forme; Peau de coffrage
Hydrology; Earthwork; Equipment and Tools
1. To narrow a watercourse between dikes or banks.
2. The final aspect given to a terrain by earthworks.
3. A metal or plywood panel of a wall form, which forms the form lining and lies in contact with the concrete. Syn. with FORM LINING; SHEATHING

FORM (OF THE VAULT)
Couchis de voûte
Temporary Construction
The set of close or not timber pieces (mostly balks), directed following the generatrixes of the intrados of the vault under construction. The lagging forms the internal formwork of the vault under construction and it is intended for receiving the decking or supporting directly the masonries (following the importance of the vault to be built). Syn. with LAGGING

FORM LINING
Revêtement de coffrage ; Surface coffrante
Temporary Construction
1. A flexible material (plywood panel, metal sheet, rigid plastic sheet worked or not, etc.) forming the form of a formwork for giving the wanted aspect to the concrete facing (plain or architectonic concrete).
2. The main part of a formwork, designated under the name of *form,* which makes materialize the intrados of a tunnel covering for example or the visible face of a wall, ensures the quality of finish of the work at once on the aspect plan and usual comfort of the user and on the technical plan as the possible support of a sealing. Syn. with SHUTTERING; SHEATHING
3. Syn. with FORM; SHEATHING

FORM OIL
Huile de décoffrage
Construction of R.C. and P.C.
A fatty and liquid substance whose are coated the formworks so as to facilitate the demolding of the concrete elements. Syn. with MOLD OIL; RELEASE AGENT

FORM PANEL
Banche
Equipment and Tools
A formwork panel prepared in advance made up of a frame mostly of metal on which is fixed the form lining (plywood, metal sheet iron, plastic panel).
Wall forms are supported between they by various processes such as pins, bolts, etc., and are used to cast the concrete of the parts in elevation of a work. Syn. with SHUTTERING PANEL; WALL FORM

FORM STRIKING
Décoffrage
Temporary Construction
The removal of the formwork after hardening of the concrete.

FORM STRIKING PRODUCT
Produit de démoulage
Materials
A liquid or pasty product applied on the form lining of the molds or wall forms avoiding the bonding of the concrete while facilitating the removal of the formwork.

FORMATION
Etage; Formation
Stratigraphy; Geology
1. The division of the series in the stratigraphic scale. Formations are subdivided into substages or zones. Syn. with STAGE
2. The whole of geological strata.

FORMATION OF BUBBLES
Bullage
Defects (Construction of R.C. and P. C.)
At the surface of a stripped concrete, presence of small cavities of larger size than the one of

the microbubbling but less numerous. Causes of this defect can be inner to the concrete (water or laitance migration to the surface) or external (unsuitable formwork, form oil badly spread, presence of air in the formwork while pouring). Syn. with BLOW HOLES; SURFACE VOIDS

FORMED CONCRETE
Béton banché
Building Materials
Syn. with SHUTTERED CONCRETE; WALLED CONCRETE

FORMER
Gabarit; Modèle
Equipment and Tools
Syn. with GAUGE; TEMPLATE

FORMING
Ebergement; Façonnage
Civil Engineering; Building Materials
1. The regularization of bank slope during the cleaning of a canal, a river.
2. Operation that shapes reinforcement bars to meet project requirements or bar settings. It consists of cutting, welding, and bending the bars to meet the project specifications.

FORMULATION
Formulation
Building Materials
The predictive identity card of a mortar, concrete, any materials consisted of elements to combine. The formulation must specify the structure of the unit, nature and category of the binder, nature and the grain size of the binder, batching of the different components, nature of possible admixtures, etc.

FORMWORK
Coffrage
Temporary Construction
A device for giving its shape to the concrete and for supporting it during its set and that is in general terms formed by two elements: the shell and the stiffener element.
Among the different types of formworks one distinguishes notably the formworks of wood, metal, plywood, mixed wood-metal, wire netting, supple and of plastic, and more precisely:

- **stopping formwork** (*le coffrage d'arrêt ou masque),* transverse device allowing the stop of the concreting of each section of a work. The mask can be metal or constituted by wooden panels buttressed against the poles of the lateral formwork;
- **self-supporting articulated formwork** *(le coffrage articulé autoporteur),* tool used notably to concrete tunnel linings. Each section comprises its peculiar handling device, that is confused with the frame. It results some, prima facie, a simplification of form striking and carriage operations. This type of formwork is notably used in galleries of small section, there where the handling of the formwork by gantry is impossible;
- **traveling gantry formwork** (*le coffrage articulé)* which is handled by gantry. This tool is notably used in tunnel and whose handling is ensured by a distinct movable gantry from the formwork frame. Only gantry can thus successively ensure the handling and carriage of several juxtaposed sections. The gantry can be or not power-driven, in general terms, it runs on rails. The frame is articulated to retract during the form striking and carriage and it is mostly conceived manner to be able running, in the withdrawn position, inside the other elements of formworks in the work position. It then concerns the formwork called *telescopable.* Movements of folding up and unfolding of the frame are mostly driven by hydraulic jacks. When it concerns telescopable formworks, one uses several juxtaposed formwork sections, the manoeuvre consisting in resuming the backward section placing it in ahead position. The use of this type of formwork suitable particularly to concrete galleries of a section higher than 10 m^2 because of the congestion of handling gantries;
- **concrete casing** (*le coffrage en béton)* manufactured from molds used for casing large pieces;
- **timber concrete forming** (*le coffrage en bois)* whose form lining consists of pine, pitchpine or picea boards planed on the four faces, aligned, parallel with sharp edges and suitably butt-jointed; **See Figure 25**
- **rubber formwork** (*le coffrage boudin pneumatique),* formed by synthetic fibre reinforcement, that will keep its shape, sized,

coated of synthetic rubber, and that is forming by inflation. This system is used to be of use as formwork for circular pipings, circular pockets, etc.;

- **circular formwork with articulated segments** *(le coffrage circulaire à segments articulés),* which comprises no bracing and that comes true with girders used as vertical support and stiffened horizontally on the outside and inside formwork by belts with articulated segments (for tight works);
- **collapsible formwork** (*le coffrage démontable*) formed by an assembly of prefabricated elements, mostly flat panels, that, after completion of the work in a part of the work, are removed to be re-used in the next part;
- **electrified formwork** (*le coffrage électrifié*) used for the thermomaturing of precast concrete works and constituted by an heating electrical resistors system, a reflector, a fireproof;
- **standardized parts of form** [le *coffrage par éléments (coffrage manuel)],* characterized by the fact that the frame and form are separable into elements of sufficiently small dimensions not to require handling devices. At the time of each cycle of use, the formwork is dismantled and reconstructed on the site of the surface to be concreted;
- **stationary formwork** (*le coffrage fixe*) that does not offer the possibility of handling or mechanized assembly or that only allows them in a measurement very limited and that, for various reasons, cannot be reused;
- **slip formwork *or* sliding formwork *or* continuously moving form** (*le coffrage glissant),* allowing the continuous concreting, constituted by a work platform associated with the formwork and that ensures as much the stiffening that the sideboard by suppressing any scaffolding. As early as a first pouring was executed on a sufficient thickness and that the set is made to be felt on walls, without that it allocating the mass of the concrete, one lifts the totality in reason than 0.15 m/ph on average.There exists different kinds and practices of slip formworks; one can quote: Concretor, Siemens-Bauunion, Vacuum-Concrete, etc.;
- **wire-netting formwork** (*le coffrage en grillage métallique),* constituted solely by wire netting and that gives very irregular surfaces because the concrete escapes by the meshes. This process is notably used for construction joints or to allow a best bond of the renderings;
- **climbing formwork *or* double-tier formwork *or* cantilever formwork** (*le coffrage grimpant),* molding process which consists, as they advanced of the progression of the pouring of the concrete and its hardening, in alternately postponing the lower wall forms by over upper wall forms, and so on. This process is also called *the lyonnaise wall form system;* **See Figure 25a**
- **rough formwork** (*le coffrage grossier),* formed by continuous surface or carried out of wire netting and that is mostly used for facings having to remain hidden or to receive a rendering, or as stopping formwork;
- **sectional formwork** (*le coffrage industrialisé ou coffrage outil*), characterized by the presence of a mechanical handling system and used when the framing operation presents a systematic and repetitious character, namely when the number of reuse is important. Among sectional formworks, one distinguishes two categories, depending on whether organs ensuring the function of rigidity and the function of handling are dissociated or no. This are formworks articulated to handling by gantry and self-supporting articulated formworks;
- **plastic formwork** (*le coffrage en matière plastique)* whose form lining carried out with the help of plastic units allow to achieve the moldings of complicated shape and to obtain a very smooth skin of the concrete. Different types of plastics can be used: thermoplastic (PVC, etc .), thermosetting (polyester, epoxy reinforced of glass cloths);
- **moving form *or* travelling formwork** (*le coffrage mobile),* sectional formwork of great self-supporting dimensions. This type of formwork is designed to be moved horizontally on rolls or on analogous devices, and only to give place to a minimum of dismantling operations between successive operations;
- **metal formwork *or* sheathing (***le coffrage métallique),* constituted by steel sheet metals

stiffened by sections of the trade and to jointed by appropriate means. This type of formwork is especially used in the slip or single-tier formwork systems;

- **modular formwork** *(le coffrage modulaire),* intended for building shells, that is made up of a frame endowed with a stiffening of aluminum on which is fixed a wooden skin lining. Elements are very light and can be jointed in wall forms of great length. The connection of panels takes by means of two tightening flanges that can get placed in different places on the periphery of the formwork, allowing thus the achievement of offsetted panels;
- **plywood formwork** (*le coffrage en panneaux de contreplaqué*), whose form lining is constituted by plywood panels specially treated (marine ply, CTBO, etc.) fixed on a metal or wooden frame ensuring them a perfected rigidity;
- **recovery formwork** (*le coffrage de reprise),* easily that can be dismantled, used to place a frame in zones of a construction joint, case where the latter has to be achieved into several phases. The form lining can be specially fitted to allow the passage of projecting reinforcements without harming to its watertighness;
- **single-tier formwork** (*le coffrage semi-glissant),* whose framing device is displaced without dismantling. The displacement of the formwork is ensured with the help of jacks or lifting tackles; **See Figure 25b**
- **ductube *or* inflatable rubber core** (*le coffrage souple),* a special formwork whose one mainly distinguishes:
  - *formwork of tight rubberized cloth* which is inflated with the air or water, then, after concrete hardening, is deflated for the form striking. This type of formwork is used to mold pipings, cells, collectors, hollow piles, etc.,
  - *formwork of the typical rubber froths* which allows the form striking by drawing. Similar use that to the point above,
  - *coated ordinary formwork* of elastomer plates of various shapes that allow to obtain an architectonic concrete,
  - *formworks of plastic* whose use is identical to that mainline formworks;
- **tunnel formwork** (*le coffrage tunnel),* articulated or no, molding at once sidewalls and the top slab of the work and notably used to carry out frame bridges; **See Figure 25c**
- **telescopic formwork** (*le coffrage télescopique*), mounted on jacks or feet with screw that allow the framing or form striking operations relatively quick by folding up of articulated panels; **See Figure 25d**
- **glass formwork** (*le coffrage en verre),* used to obtain glazed surfaces.

Syn. with CASING; CONCRETE FORMING; FALSEWORK; FORM; FRAMING; MOLD; SHUTTERING

FORMWORK
Moule
Temporary Construction
Syn. with MOLD

FORMWORK CARPENTER
Coffreur
Temporary Construction
A worker specialized in the achievement of formworks to mold the concrete. Syn. with CARPENTER

FORMWORK DRAWING
Dessin de coffrage; Plan de coffrage
Drawing
A document that defines the shapes and dimensions of the work, construction joints, nature of the concrete, etc., namely the lines and dimensions of the reinforced concrete facings, seen or hidden, outside or inside; this drawing defines thus positions of formworks.

FORMWORK FRAMING
Ossature d'un coffrage
Temporary Construction
Load-bearing element made up of straight or arched metal sections. The frame of the formwork ensures the dimensional stability and consequently, ensure the respect of the size, the absence of important movements in the process of concreting avoiding of the annoying aftermath on the quality of the finished work.

FORMWORK HEATING BY POWER
Chauffage des coffrages par l'électricité
Construction of R.C. and P.C.
A protective or thermomaturing process of the concrete in which the formwork is of use as resistor. The process consists in passing an electric current through a special formwork; this is of use as resistor it gets overheated and it protects the concrete from the cold while accelerating its hardening.

FORMWORK HEATING WITH GAS, POWER, *or* FUEL OIL
Chauffage des coffrages au gaz, à l'électricité, ou au fuel
Construction of R.C. and P.C.
A concrete protective method used when the concreting takes place by cold weather. The process consists in closing with tiltings the volume formed by existent walls or wings of the formwork. The top part of the formwork, where the concrete is poured, is heated with the help of a hot-air furnace is fuel, gas, fuel-oil, or electricity.

FORMWORK WITH VACUUM CHAMBERS
Coffrage sous vide
Temporary Construction
A formwork using equipment that creates the vacuum on the surface of the fresh concrete placing and compacted by vibration, causing the suction of a part of the too much water and the air mixed with steam, ensuring thus a best compactness of the concrete by the reduction of interstices.

FORWARD BULGE
Forjet; Forjeture
Construction
A projecting element, stepping out of the line of a construction for example. Syn. with PROJECTION

FOSSIL
Fossile
Geology
The remain or imprint of animals or plants that appear in some rocks (ceriths, ferns, etc.).

FOSSIL WATER
Eau fossile; Eau connée
Geohydrology
A thermomineral water of sea origin that is found captive between two sedimentary strata since their deposit. Syn. with CONNATE WATER

FOSSILIFEROUS
Fossilifère
Geology
Of a rock or a ground that contains fossils.

***FOUILLOUX* POZZOLANIC BLAST-FURNACE CEMENT**
Ciment pouzzolano-métallurgique *Fouilloux* (C.P.M.F.)
Hydraulic Binders
A product resulting from a mixing containing cinder less than 65%, the rest being the granulated slag added of pozzolan or coal or lignite fly ashes.

FOUNDATION
Soubassement; Massif
Construction
1. The support of a projecting construction above the level of the ground and which plays transitory as connection between the foundation and masonry in elevation of less thickness. Syn. with BASE; WALL BASE
2. Syn. with ANCHORAGE BLOCK ; THRUST BLOCK; ETC.

FOUNDATION
Fondation
Foundation
The part of a work that is restrained in the ground and on which rests a construction, the ground being of use as bearing.
The role of the foundations is to transmit to the ground the loads developed by peculiar loads of the work and overloads that it is intended for bearing. To be stable, foundation blocks must to be got down at a depth such that one reaches a sufficiently strong ground and safe from the underwashings. The design of a foundation project depends of next elements:
- type and destination of the work to be build;
- nature and quality of the ground on which one builds and the bearing capacity of the soil;

- presence or absence of water in surface and in depth;
- situation of places (underwashings, infiltrations).

Among the main manners to carry out the foundations, we can distinguish:

- **laying foundation by pneumatic process *or* pneumatic foundation work** *(la fondation à l'air comprimé),* process used to carry out foundations underwater and whose principle is as follows: one immerses on the bed of the river, etc., a caisson (working chamber) overcame of a chimney that emerges. The compressed air allows to drive out the water and to work to the dry; **See Figures 26 to 26d**
- **Atlas foundation system** *(la fondation Atlas),* a foundation system that is similar to the continuous rafts and that consists in shaping the bottom of the excavation in vault-shaped that one covers a bar setting and reinforced concrete. Intersections of these vaults, that are horizontal generatrixes placed to the points them lowest, are strengthened with beams calculated to bear the loads, either continuous walls or isolated pillars; **See Figure 26e**
- **immersed concrete foundation** *(la fondation en béton immergé),* a process used to caary out underwater foundations whose there exists several practices:
  - *flowing bank process (le procédé à talus coulant),* which consists in concreting since the bank on the river bed. It is only applicable in calm and little deep waters (h < 0.80 m), **See figure 26f**
  - the *bucket process (le procédé à la benne),* used when the height of the water is higher than 0.80 m.

The concrete makes one's way through the layer of water to a shelter from a tight bucket got down slowly with the winch. The skip is posed onto the massif and opened by a diver, then noticed smoothly in order that the concrete flows in calm water, **See Figure 26g**

- *concrete chute process (le procédé à la goulotte),* which consists in concreting in aquatic site using a metal tube from 25 to 45 cm diameter, supported by a scaffolding with service floor. The chute is lowed, raised and displaced by way of a moving bridge with winch. It has always to be full of concrete and has constantly to be dived in the massif of concrete already in place, to avoid the washing out of concrete by water. Moreover, the pressure of concrete in the chute is to be higher to the pressure of the water at its base, **See Figure 26h**
- *bagwork (le béton en sacs),* which consists in depositing bags of jute containing the concrete, placing by divers;

- **foundation on movable caisson** *(la fondation sur caisson amovible),* process used to carry out underwater foundations. In this system, the caisson is successively used for several foundations. It is sunk into the river bed for example and its ballast is constituted by sand and gravel. After reached of the bottom grade, the masonry is erected inside the working chamber (of a higher section that the block). The caisson is gone back up, by stages, thanks to the jacks resting on already constructed beds;
- **buoyant foundation** *(la fondation sur caisson flottant),* a foundation process in aquiferous ground that uses a very light parallelepipedal structure of reinforced concrete. In this technique, the caisson floats under the influence of the hydrostatic pressure due to the presence of water. The construction is erected on the extrados of the caisson. The distribution of loads is ensured by the base and by side wall frictions; **See Figure 26i**
- **foundation on lost immersed caissons** *(la fondation sur caissons immergés perdus),* process used to carry out underwater foundations, that allows to achieve blocks of large dimensions by using of reinforced concrete caissons constructed in hold, put afloat, towed instead of use and failed. Caissons are then filled with concrete, sand or enrockments; **See Figure 26j**
- **foundation on lost metal *or* of reinforced concrete caisson** *(la fondation sur caisson méallique ou en B.A. perdu),* process used to carry out underwater foundations with the help of a caisson of sheet metal containing two distinct parts: the working chamber and the removable shuttering them overcoming it. The working chamber, whose horizontal section is identical to that the basic massif, presents a height neighbor than 2 m. Its vertical walls rest on a strengthened sheet metal placed at the outside: the cutting edge. The ceiling is stiffened by girders; walls are

connected to the ceiling by the slanted angle brace between which one builds, in the first instance, a massif of masonry. In ceiling, circular openings allow the connection of extensible chimney ending at the lock chambers intended for keeping an overpressure in the working chamber (to invert the flow of the water from the outside), and to the drainage of the excavated materials. Removable shutterings, prolonging walls above the working chamber and forming cofferdam, of sheet metal from 3 to 8 mm, posed on strings of 1 m, are to jointed in scales of fish. Successive operations to carry out such foundations can get summarized to:

- stranding of the caisson,
- driving by digging at the right of the cutting edge of a channel from 20 to 30 cm depth (berth); the caisson being no longer supported that by the side frictions goes down by its own weight. This movement is facilitated by the achievement of new masonry above of the ceiling and, if necessary, by a lowering of pressure in the working chamber. After clearing, the same operation is repeated up to:
- reached of the foundation level,
- filling of the working chamber with concrete,
- puttting down of the lock chamber and chimneys,
- concreting in the space of chimneys.

After completion and for some works only, the removable shutterings bathed by the water are deposited. If it is rare that a pier is based on several caissons, in contrast this case is frequent for abutments;

- **foundation on movable caisson** *(la fondation sur caisson mobile),* a carrying out process of the underwater foundation using caissons that derive of the diving bell. Usually, the caissons are suspended at a frame fixed on piles or on barges and are supplied with a mobile ballast allowing them going down then going back up. They can be as floating, with the balance chamber and water ballasts. These caissons are immersed and statements gradually by lightening the water ballast by draining of its water (with the compressed air);
- **floating *or* compensated foundation** *(la fondation compensée ou flottante),* used on the soft grounds, in order to avoid the stability and settlement problems posed by foundations. The practice consists in carrying out a work whose weight does not exceed the weight of the excavated foundation ground intended for receiving this work. In this respect, the medium stress at the level of the foundation is simply equal to the value of the total stress extending initially at the level of the foundation in the ground massif. This solution essentially applies in the case of thick structure of soft grounds of lower shear strength and high compressibility. It brings about the achievement of alveolar rafts of large dimensions placing by driving, or in a inherent excavation; **See Figure 26k**
- **foundation by ground freezing** *(la fondation par congélation du sol),* a process used to carry out foundations in aquiferous ground and that consists in surrounding by an ice wall the excavation to be dug. In order that, one executes tubed drillings going down up to underneath of the foundation level and sufficiently neared (0.75m to 1.50 m). In these drillings are introduced freezing pipes inside which circulates a refrigerant fluid. The freezing of the ground asks two to five month following the nature of the grounds met;
- **foundation with grouting injection** *(la fondation avec emploi d'injection),* a process used to carry out foundations in running ground, fractured, spangled of space more or less important, etc. One can modify the characteristics of the foundation/soil in place some injecting there fitting products, that it concerns to consolidate it or to tight it. One uses grout composed of:
  - cement, fine sand, and water,
  - cement and water,
  - cement, fly ashes, and water,
  - cement, clay, and water,
  - stabilized clay, and water,
  - petrifying products or gelling agents (soda and reactive silicate),
  - plastic or bituminous products,
  - acrylic resins, etc.

To choose the nature of the grout to be used, as the pressure of injection to adopt, it is necessary to know the characteristics of the ground to be injected and, especially, to have measured at the different horizons, the permeability coefficient. Drillings of injection are carried out either with the pneumatic rock

drill (short drillings), or with the drilling machine (long drillings). The drilling is tubed and the injection take place by slices delimited by way of an obturator placed in the drilling pipe. The injection can also be carried out with tubes à manchette; **See Figure 261**

- **foundation with timbered excavation** *(la fondation avec fouilles blindées),* carried out in dry ground for shallow foundations when it is not possible to carry out excavations with sloped walls in reason of the lack of place or the nature of the ground; **See Figure 26m**
- **foundation on enrockment and concrete prefabricated block** *(la fondation sur massifs d'enrochement et sur blocs préfabriqués en béton),* a process used to carry out underwater foundations and that consists in immersing, on the site of the work, an enrockment block constituted by elements of unit weight such that at each level they are stable. This condition sometimes imposes the manufacture of artificial blocks of suitable weight. One can also use the tetrapod of lesser weight, that, by overlapping some in others, form monoliths of the bigest weight. One also uses more light cellular blocks, without bottom, piled some on the others, and whose empty them are then filled with concrete to make interdependent the whole; **See Figure 26n**
- **shearing foundation** *(la fondation par havage),* which consists in putting into place in the ground and up to the foundation soil one or several hollow elements going down under the effect of their own weight and allowing the extraction of the ground to be displaced (caisson, ferrules, etc.). One uses a hollow block or caisson, of a fitting shape to the planned foundation. This caisson going down up to the foundation soil throught under the effect of its weight, as they advanced of the clearing, by the grab. The weight of the caisson has to be higher to the friction exerted by the ground on the external faces. Different practices of setting are used:

in *terrestrial site,* the caisson is built on its future site, phase by phase, as they advanced of the driving,

in *aquatic site,* one uses next processes:

- caisson on artificial island (slight depth and low water stream),
- cofferdam of metal sheet piles,
- scaffolding on piles and service floor,
- floating scaffolding,
- flotation with that can be dismantled temporary bottom.

The driving operation of the caisson comprises:

the extraction of a ground volume at least equal to that the caisson, by means:

- of a grab,
- of a suction digger or airlift pump to compressed air,

the going down of the caisson throught the agency of its peculiar weight and temporary overloads (water or sand vats, pigs, etc.). This going down is facilitated by using the following techniques:

- very smooth external surfaces of the caisson,
- pressurized water jetting,
- utilization of drilling mud to lubricate between the ground and external walls,
- tacking and vibration of the caissons.

When caissons are reached the level of the future foundation, one usually fills the well with concrete, sand, or quarry stones. The filling is ended by a platform made of concrete; **See Figure 26o**

- **foundation with sloped walls** *(la fondation à parois talutées),* which shows widened walls (mostly 2/1 or 3/2). This incline depending on the cohesion of the met ground. It is realized for shallow foundations when one has sufficiently place to execute them; **See Figure 26p**
- **strip footing foundation** *(la fondation sur semelle filante),* a shallow foundation that is a footing, mostly of reinforced concrete of a relatively important length in comparison with the width; **See Figure 26q**
- **piled foundation** *(la fondation sur pieux),* which consists in driving or casting piles into the ground. This deep foundation process is implemented when the superficial bed of ground is not likely to support foundations. One is obliged to search the good soil more deeply: one has then recourse to pits or piles. See PILE. **See Figure 26r**
- **stud foundation** *(la fondation sur plots),* constituted by a mostly cylindrical hole (rarely square or rectangular) of an equal section to at least $1m^2$, filled with masonry or concrete, manner to transmit the loads up to the level of the substratum. The base of the

stud is anchored of several tens of centimetres into the good ground. Studs can be connected between them at the level by a tie footing forming chain bond or in head by relieving vaults or sills of reinforced concrete. They are drilled with the bucket, auger, or by means of tubings;

- **pits foundation** *(la fondation sur puits)* which consists in excavating the ground by achieving pits whose spacing is function of the result of the geotechnical design and importance of the structure to be supported. This process is used in deep or semi deep foundations. Pits gets executed manually by extraction of the ground up to a depth given. The difference with the drilled pile is the difference of section (≥ 1.80) m diameter);
- **pier foundation** *(la fondation sur piles),* which is formed by large piers of masonry filling the pits dug in a little consisting ground up to a stronger ground and mostly united between them by vaults;
- **isolated footing foundation** *(la fondation sur semelle isolée),* a shallow foundation constituted by sills of geometrical dimension far more gathered that strips footings and that are often square or circular (these are individual footings). Footings are notably carried out for foundations of poles;
- **foundation on distribution slab** *(la fondation par semelle de répartition),* a sole very widened and of small thickness, constituted of a wooden grillage girders, of a metal base or grill of section irons, of reinforced concrete;
- **stepped foundation** ***or*** **benched foundation** *(la fondation à gradins),* shallow foundation that consists of a very widened footing narrowing gradually in elevation to the wall that it supports in the form of staircase or steps;
- **foundation with groundwater lowering** *(la fondation avec rabattement de nappe aquifère),* a drainage process of the grounds allowing to excavate the ground safe from the water seepage. There mainly exists two practices:
  - *filter well practice (la méthods des puits flltrants),* which is only applicable in permeable ground lending to the circulation of water (pebbles, gravel, sands not clayey). One installs a filter well system all around the excavation to be created, so as to lower the level of the underground water, to be able going down the foundations to dry, without dewatering, in the excavation. Filter wells are gone down up to the impermeable ground and are jacketed by a metal envelope (or drilled with heavy water). The filtering pipe, equipped with a submerged centrifugal pump, has then gone down inside the drilling, while the casing is gone back up, **See Figure 26s**
  - *wellpoint practice (la méthode des pointes filtrantes),* used in fine sands carried by pumps or in clayey sands, one substitutes to spaced well the spin-drying drills or well points driving in the ground, with small spacings (from 0.75 to 1 m). These points are connected to a collector ending to a vacuum pump or to a jet pump. The lowering of level obtained ranges from 6 m (vacuum pump) to 30 m (jet pump);
- **raft foundation** ***or*** **base slab** *(la fondation sur radier général),* which consists in distributing the pressures over a great surface and suits at the works based on washable away or little strong ground. The raft is any masonry or concrete platform, covered with a paving, intended for avoiding underwashings and on which rest the foundations. Some rafts are countervaulted, others present in places zones of a stronger thickness under the bearings or to upstream and downstream side (invert guards); **See Figure 26t**
- **strip foundation** *(la fondation en rigole)* whose width hardly exceeds the width of the wall to be supported. This shallow foundation is in principle reserved for light works (dwarf walls, gravel guards (walls), etc.).

FOUNDATION BOLT
Boulon d'ancrage
Materials
A device used to stabilize a traditional earthwork support or to anchor the supporting covering of shotcrete of a digging by anchorages constituted by bolts of the appropriate length, fastened in the country rock. This process is notably used in Berlin's wall, hurpinoise process, New Austrian Tunneling Method, etc.

FOUNDATION PIER
Abloc
Foundation
Syn. with BED OF AN ABUTMENT

FOUNDATION PIT
Puits de fondation
Foundation
An excavation of narrow section (but higher than 0.80 m) and great depth. Its performance is manually carried out safe from an earthwork support or mechanically. The well is afterward filled with concrete. Wells can present a widened base what allows to improve bearing capacity. These wells, sometimes known as *wells of waiting or endorsement,* allow to defer strong loads on the deep strong strata. They are of an everyday use up to 10 m deep; beyond, one has recourse to piles.

FOUNDATION PLANK DECKING
Platelage
Foundation
A close floor which, in a foundation on wooden piles, is fixed on the cross-sleepers and which is set up the masonry of the piers or abutments. **See Figure 27**

FOUNDATION RAFT
Radier
Construction
A concrete, rubble walling or reinforced concrete slab of plane or curved form that constitutes the shallow foundation of a work.
There are several types of foundation rafts:
- **main floor** *(le radier général);* a continuous bearing surface area interesting the walls and posts of a work; it reigns entirely under all the surface area of the work, allowing equalizing the pressures and forming a chain bond between the bearing points; **See Figures 28 and 28a**
- **flat slab mat** ***or*** **uniform mat** *(le radier plan épais);* a simple foundation raft used up to 3.50 m span; it consists of a simple slab from 15 to 35 cm thick. This raft juts out from (or not) the abutments;
- **beam-and-slab mat** ***or*** **beam-and-slab raft** *(le radier plan nervuré);* a simple resistant foundation raft, in reversed floor, that comprises a concrete slab, webs, and transverse beams;
- **simple foundation raft** *(le radier simple);* a construction that allows to found two walls or two files of posts;
- **draining foundation raft** *(le radier drainant);* precautions of prevention that consists equipping a foundation raft with a decompression well equipped with automatic sump pumps ensuring permanent drainage. (This type of construction is erected for works built on raft where an increase of the groundwater is to be feared);
- **inverted foundation raft** *(le radier voûté);* bearing surface of concave form (concavity stands on a lower level to that of the sidewalls).

Syn. with GROUND SLAB; MAT

FOUNDATION RAFT GUARD
Garde-radier
Construction
Syn. with INVERT GUARD.

FOUNDATION REPAIR
Rempiètement
Foundation
The strengthening or finishing of the foundations of a work; generally this operation is done by underpinning.

FOUNDATION SLAB
Semelle
Foundation
A low foundation, mostly made of reinforced concrete, broader than the wall (or the pole) which it supports and a relatively small thickness, intended for distributing the linear or concentrated loads. It can be of standard or reinforced concrete, the most general case. We can distinguish:
- **isolating footing** ***or*** **individual footing** *(la semelle isolée),* generally used for poles, which mostly presents a square, rectangular or sometimes circular form;
- **strip footing** ***or*** **continuous footing** *(la semelle filante),* of very lengthened rectangular form, used to support a wall or a file of very brought closer poles.

Syn. with FOOTING; STRIP FOOTING. **See figures 29 and 29a**

FOUNDING
Fonderie
Metallurgy
A metal-forming process that consists in casting a liquid alloy in a mould reproducing a given piece (internal and external shapes). It is a precise metal forming process, the most direct between the design and use.

FRACTIONAL SAMPLING
Echantillonnage
Building Materials
1. Sampling
2. A batch of several samples.
Syn. with SAMPLING

FRACTOGRAPHY
Fractographie
Defects
The science of the identification and causality of defects appearing in a breakage, notably on a metal part.

FRACTURE
Fissure
Geomorphology
Concerning a landslide, breaking within the material, appearing by fissures of importance and various forms according to their position. We can distinguish three elementary types:
- **tensile fracture** *(lafissure de traction);*
- **shearing fracture** *(la fissure de cisaillement);*
- **crack of compression** *(la fissure de compression).*

Syn. with CREVICE; FISSURE

FRACTURE
Fracture; Coupe; Cassure
Defects
1. The total discontinuity of a structure element that can be characterized by :
- its medium direction :
  - in *verticalfacing:* vertical, horizontal, sloped discontinuity,
  - in *vaults:* longitudinal, transverse, oblique discontinuity (in comparison with the supported way);
- the space or relative displacement of its lips (opening, reject, slipping).

Syn. with BREAKING

2. A breakage in terrain surrounding an underground gallery
3. Syn. with COMPLETE CRACK

FRAGILITY
Fragilité
Strength of Materials
Of the behavior of a solid when it breaks without a substantial permanent set. Said also of the mode of breaking of a solid, when the separation of parts of the solid is established to the continuation of a small relative displacement of the two lips of the breaking surface. Syn. with BRITTLENESS; FRAILTY; SHORTNESS

FRAGMENT
Miroir
Nomenclature of Materials
Syn. with SPALL

FRAILTY
Fragilité
Strength of Materials
Syn. with BRITTLENESS; FRAGILITY; SHORTNESS

FRAME
Etai; Cadre; Affût
Temporary Construction: Equipment and Tools
1. Syn. with PIT PROP; PROP; SHORE; STANCHION; STRUT
2. Syn. with SET
3. A telescopic foot that supports a hammer drill. (Several mountings fixed at residence on the same frame constitute a *jumbo).* Syn. with MOUNTING

FRAME
Ossature; Palée; Charpente; Charpenter
Construction; Carpentry
1. The load-bearing structure of a work which can consist of an assembling of sections (framework, bridge deck), timber pieces (framework, beam), reinforcements (reinforced concrete), beams of R.C. (deck with beams and concrete slab), etc. Syn. with METAL STRUCTURE; SKELETON CONSTRUCTION; STRUCTURE
2. A set constituted by the uprights on which leans on the horizontal beams of the traveling

gantries. Beams can be connected to the uprights in a rigid or articulated way.
3. An assembling of wooden, metal or reinforced concrete parts, constituting the frame of all temporary or permanent constructions and intended for holding up or supporting horizontal and inclined surfaces or vertical plans. Syn. with CARPENTRY; FRAMEWORK; STRUCTURE
4. To fashion and joint the different timbers of a frame, a centering, a framework. Syn. with TIMBER

FRAME (UP)
Charpenter
Carpentry
To give a rigorous structure to a construction; to construct solidly.

FRAME LEG
Montant de portique
Equipment and Tools
The vertical element of a portal frame.

FRAME STANCHION
Béquille
Construction
The vertical part or post of the frame of a portal frame.

FRAME TIMBER
Allonge
Carpentry
A part being designed to prolong a work.

FRAMED GALLERY
Galerie cadrée
Earthwork
A work whose supporting of the grounds is carried out with frames.

FRAMEWORK
Structure
Civil Engineering Structure
The way whose elements of a frame are constituted, laid out and jointed.

FRAMEWORK STRUCTURE
Structure à ossature
Construction
A work whose various elements of a same material (example: steel) are joined by welding, bolts, rivets, etc. (example: post and beam assembly)

FRAMING
Coffrage
Temporary Construction
Syn. with CASING; CONCRETE FORMING; FALSEWORK; FORM; FORMWORK; MOLD; SHUTTERING

FREE
Gaie
Construction
Of an assembly in which the joined pieces present an important loose or which easily interpenetrate (example: assembly to loose notch). Syn. with SET

FREE COUNTERVAULT REVETMENT
Contre-voûte indépendante
Construction
A strengthening structure of a vault carried out with metal sections, shell of precast reinforced concrete, or shotcrete. The independent countervault is not interdependent of the vault of the existent work and must to it alone resuming the loads, overloads, and stresses of the failing work.

FREE LIME
Chaux libre
Hydraulic Binders
Oxide of calcium, which at the end of cooking was not or is not combined any more in the hydraulic compounds of cinder.

FREE MAGNESIA
Magnésie libre
Hydraulic Binders
A body stemming from rocks used to manufacture cinder of Portland cements and which did not take part during the baking with the reactions of formation of hydraulic compounds of the cinder (symbol: MgO).

FREE MATERIAL
Matériau franc
Building Materials
A hard enough product or of good appearance.

FREE SHEET OF WATER
Nappe libre
Geohydrology
A sheet of water that finds its base on the impermeable substratum of a water bearing and which is not bordered in thickness. Its upper level can extend up to a very close level from the surface of the ground; it then takes the name of *groundwater*. This sheet of water can be then directly fed by the percolation of rainwater. Among the free sheet of water, we can distinguish:

- **perched *or* suspended water table** *(la nappe libre perchée ou suspendue)* whose water flows to the open air by a visible emergence (example: source);
- the **sustained water table** *(la nappe libre soutenue)* which is in communication with the surface waters such as a river, sea, or lake.

FREEBOARD
Revanche
Construction
In a barrage, a cofferdam or under a work, gap between the top level of the work (of the intrados for a bridge) and the maximum level which is likely to reach the watercourse at the time of a flood.

FREESTONE
Pierre franche
Building Materials
A building material which is neither much too soft nor too hard and which lends itself mostly well to the cut.

FREESTONE PIT
Grésière; Gresserie
Building Materials
Syn. with BROWNSTONE PIT; SANDSTONE PIT

FREESTONE WORK
Gresserie
Masonry
A construction of sandstone.

FREEZING
Congélation des sols
Earthwork
A ground solidification process by the cold to be able so as to achieve some earthmovings (tunneling, deep excavation, etc.).
The process consists in creating by ground freezing tight and load-bearing ice walls as vaults. The once deep-frozened terrain acquires a cohesion allowing carrying out all necessary earthmovings to carry out the project. The principle is the following: freezing tubes are driven in into the ground to be processed and whose spacing is about 1 m so as to form the wanted ice wall. If one wants to carry out a vault, freezing tubes are arranged by driving or drilling in horizontal layers from a service pit.
To freeze the ground, a cryogenic plant provides any brine whose temperature is contained between - 18 and - 25°C and that circulates in a closed circuit inside freezing tubes. Gradually the temperature of the ground drops and water contained in this one ends by freezing altogether. At the end of some weeks the ice wall is thus created. How refrigerant there exists other cryogenic fluids such that liquid ammoniac and liquid nitrogen.
The freezing can be carried out at this time of three ways:

- *closed-circuit method (la méthods fermée)* in which a primary freezing circuit, by means of compressors and condensers, liquefies the fluid. By vaporizing, this fluid ensures the cooling of the refrigerant liquid that circulates in the probes, in a closed circuit. The primary fluid can be the ammonia water or freon. The refrigerant liquid is mostly a brine having a temperature of use variable between - 25 and - 30°C;
- *open-circuit method (la méthods ouverte)* in which the refrigerant liquid is the liquid nitrogen that is transported in the site by special tankers where it is kept at a temperature of - 196°C at about 0.5 MPa. This pressure is designed to ensure the circulation of the nitrogen inside the probes. Below of the last probes a sluice liberates the nitrogen become fizzy in the atmosphere, at a temperature about than - 60° C;
- *combined method (la méthode combinée)* that consists in making complementary the earlier methods, by using the same freezing tubes. One combines thus a quick placement

in cold (nitrogen) and economical maintenance (brine).
Several other practices of freezing are also used:
- ***Poetch*** *method (la méthode de Poetsch),* by refrigerating liquid: a brine $CaCl_2$ circulates into drilled holes, after ensured cooling, in a central plant, by ammoniac gas relaxation;
- ***Dehottay*** *method (la méthode Dehottay),* by fizzy refrigerating: CO_2 slacked into a circuit of refrigeration;
- ***Dricold*** *method (la méthode Dricold),* by solid refrigerating: application of dry ice and alcohol;
- ***Grenoble*** *center inquiry method (la méthode mise au point par le centre d'études cryogéniques de Grenoble),* that replaces brine with liquid nitrogen.

Syn. with DEEP FREEZING; GROUND FREEZING. **See Figure 30**

FREEZING TUBES
Tube congélateur
Foundation
Element embedded in the ground into which circulates the coolant and which is used to freeze grounds. Syn. with PIPE FREEZING

FRENCH CHALK
Pierre de lard
Geology
A talcose rock, fatty to the touch. Syn. with TAILOR' S CHALK

FRENCH CURVE
Pistolet
Drawing
Syn. with CURVE ; MOLD

FRENCH DRAG
Chemin de fer
Equipment and Tools
Syn. with NAIL FLOAT.

FRENCH POLISHING
Polissage au tampon
Metallography
An electrolytic polishing carried out with a hand-held instrument provided with a cap soaked with electrolyte. (This local polishing is used on building site to perform nondestructive micrographic examinations.)

FRENCH SPECIFICATIONS
Norme française homologuée; Norme NF
Building Materials
All technical prescriptions relating to a product or a determined activity, condensed in a document arranged by AFNOR from preliminary pilot studies by a professional office of standardization, after tender to public inquiry and approval by the general commissioner to the standardization.

FREON
Fréon
Materials
A fluoridated organic refrigeratory fluid.

FRESH CONCRETE
Béton frais
Building Materials
A recently manufactured material whose initial set has not yet been observed. Syn. with GREEN CONCRETE; WETT CONCRETE

FRESH CONCRETE CONSISTENCY
Consistance du béton frais
Building Materials
The liquidity or firmness condition of a concrete at the exit of the mixer or concrete mixer, measuring itself with the help of the slump cone or any other apparatus conceived to that end.

FRESH CONCRETE TESTING
Contrôle du béton frais
Test of Materials (Concrete)
The verification of the workability of a fresh concrete that is usually made with the slump cone.

***FREYSSINET* JOINT**
Articulation *Freyssinet*
Construction
A reinforced concrete prism, of a narrowed section (called *core*) that ensures the connection between a reinforced concrete deck and its abutment. The fixed bearing and movable bearing are distinguished as follows:
- **fixed-bridge bearing** *(l'appui fixe)* consists of a simple reinforced concrete chip becoming integrate into the deck or interdependent of the latter; **See Figure 31**

• **movable-bridge bearing** *(l'appui mobile)* consists of two cores separated by a reinforced concrete equalizer. **See Figure 32**

***FREYSSINET* PROCESS**
Procédé *Freyssinet*
Civil Engineering Structure
A decenter process of masonry vaults that consists in loading the vault, through the channel of jacks lodged in key up to the masonry unglues from the centering. The joint of key is afterward furnished and caulked. This process is especially used for large vaults of reinforced concrete.

***FREYSSINET* SEMI-HINGE**
Semi-articulation *Freyssinet*
Construction
An articulation virtually identical to the *Considère* articulation, the difference residing in the very small thickness of the central prism; it lies hooped by neighbor parts strongly reinforced transversely.

FRIABLE ROCK
Roche meuble
Geology
A nonconsolidated material such as gravel, sand, clay. Syn. with SOFT *or* CRUMBLY ROCK

FRIABLE SANDSTONE WITH SLIGHT SILICEOUS CEMENT
Gaize
Geology
Syn. with GAIZE

FRICTION
Frottement
Strength of Materials
A phenomenon that arises in superficial zones of two body resting one on the other and whose discomfort the displacement of the other.

FRICTION PILE
Pieu flottant
Foundation
An element working overwhelmingly to the lateral friction. Syn. with FLOATING PILE

FRICTION PROP
Etançon de friction
Temporary Construction
A supporting device in which the jamming is ensured by friction (underground work).

FRICTION SHOE
Semelle de friction
Metal Construction
An extra flange fixed at the bottom flange of beams at the right of the bearing and which equips certain steel decks of small length.

FRICTION SOUNDING
Sonde frottante
Assaying Equipment
A self-drilling device of soil survey which allows to measure the side friction resistance during the driving of the probe as the compressive forces. The unit of measurement of the friction sounding is a hollow metal tube equipped with two levels of deformation gauges to measure the compressive forces. How for a loading test of piles, one obtains, by a simple difference, the side friction mobilized between the two levels.

FROG RAMMER
Grenouille
Equipment and Tools
A compacting and tamping plant of the soils, provided at its base with a small metal plate driven by trepidations. This apparatus is only used to tamp small surfaces. Syn. with CONSOLIDATING RAMMER; JUMPING JACK; STOMPER

FRONT VIEW
Vue de face; Elévation
Drawing
Syn. with ELEVATION

FRONT WALL
Mur de front. Tympan; Mur de tête
Construction
1. A construction supporting the bridge cap of an abutment; face contained between the return or wing walls.
2. Syn. with HEADWALL; TYMPANUM; SPANDREL WALL.

FRONTAL WELDING
Soudure frontale
Welding
Welding whose bead is perpendicular to the direction of the strain. Syn. with HEAD-ON WELDING

FROST
Gel
Geomorphology
A phenomenon causing a modification of the relief which one calls according to the case: congelifraction, cryoturbation, frost susceptibility. Syn. with FROST WEATHERING; GELIFLUCTION

FROST CRACK
Gélivure; Champlure
Defects (Building Materials)
1. Syn. with HEART SHAKE
2. Wood damage due to the frost of its branches.

FROST RESISTANCE TEST OF A CEMENT GROUT
Essai de résistance au gel d'un coulis de ciment
Test of Materials (Building Materials)
A test intended for trying the abilities to the frost resistance of an injection grout needed be put in work in cold period, in particular when the temperature risk to be lower than 5°C. The test are carried out on prisms of 4 x 4 x 16 cm subjected, as early as their making, to 14 freezing-thawing cycles (12 h at + 5°C, and 12 h at -10°C). After it treatment, prisms are preserved inside plastic bags at 20°C for 28 days; they are then broken in tension bending and compression.

FROST SUSCEPTIBILITY
Gélivité
Geomorphology
Syn. with LIABILITY TO FROST DAMAGE

FROST SUSCEPTIBILITY SCALE
Echelle de gélivité
Geology
Classification that expresses the degree to which rocks split up under the effects of frost.

FROST SUSCEPTIBLE
Gélif
Building Materials
Of a material or rock when their structure is sensitive to the gel and that they split up when they are going before its action. Their sensitivity to this phenomenon is all the larger since they are porous or fissured and retain therefore much water.

FROST WEATHERING
Gel; Gélifraction; Cryoclastie; Gélivation
Geomorphology
1. Syn. with FROST; GELIFLUCTION.
2. Syn. with CONGELIFRACTION

FROST-CRACKED STONE
Caillou gélivé
Defects (Geology)
A stone broken up by the frost action (breakage in spherical cap form).

FROST-PREVENTING AGENT
Antigélif
Construction of R.C. and P.C.
Admixture that enables the hardened concrete to well resist frost-thaw cycle.

FROSTPROOFING AGENT
Antigel
Hydraulic Binders
Syn. with ANTIFREEZE AGENT

FROST-SUSCEPTIBLE stone
Pierre gélisse
Defects (Building Materials)
A stone which splits throught the agency of the frost.

FROTH ADHESIVE
Adhésif mousse
Adhesive
A product which contains inside its mass dispersed gaseous cells. Syn. with FOAMED ADHESIVE; SPONGE ADHESIVE

FRUCTIFICATION
Fructification
Defects (Building Materials)
Concerning the attack of woods, organism supporting the reproductive and dissemination organs of the Ascomcetes and Basidiomcetes

fungus. The fructification, typical form for each species, allows the identification.

FULCRUM
Couteau
Construction
Prismatic piece whose an edge serve as bearing to carry out an articulation, for example an articulation of the lower fastener of a suspender. **See Figure 33**

FULL EXCAVATION CONCRETING
Bétonnage à pleine fouille
Foundation
Concreting into a digging without intervention of side formworks between the ground and the concrete (nevertheless, the bottom of the excavation can have received, before concreting, a slope concrete).

FULL OF A WALL
Plein d'un mur
Construction
The part located beyond the facing and that forms the body of the work.

FULL STONE
Pierre pleine
Building Materials
A rock that contains neither shells, pebbles, strands, earthy insertions, holes, cracks, nor hard, earthy or metal inclusions.

FULL-CELL PROCESS
Procédé à cellules pleines
Building Materials
A wood impregnation process by the combined action of the vacuum and pressure inside an autoclave (vacuum, pressure, and vacuum) in the course whose the wood is initially subjected to a partial vacuum (preliminary phase) in order to extract a part of the air that it contains.

FULL-CIRCLE SLIP SOCKET
Souricière
Equipment and Tools
A fishing tool of drilling rods that is equipped with hardened steel wedges for prehension. This system more firmly seizes the fish than the ordinary friction tube process.

FULLERING
Calfeutrement
Tightness
The clogging in depth with supple products to reestablish a tightness of cracks from the water and air, or to avoid solid matters penetrations risking blocking the movement of the crack or joint. Syn. with CAULKING

***FULLER'S* CURVE**
Courbe de *Fuller*
Geotechnics and Building Materials
Concerning the fineness of sands, the linear representation of the grading in the linear co-ordinate for the undersize material and in the proportional coordinate to the square root of the dimension for the opening of the sieves.

***FULLER'S* EARTH**
Argile smectique
Geology
An expanding clay.

FULL-FACE DIAPHRAGM SHIELD
Bouclier aveugle
Earthwork
Syn. with BLIND SHIELD

FULL-FACE SHEARING
Havage intégral
Earthwork
A boring method of galleries, tunnel, that consists in cutting down the ground of the working face by cutting with the help of a rotary excavator carrying out a succession of tangent grooves between them. Machines used are known as *punctual attack.*

FULL-FACE TUNNELING MACHINE
Haveuse intégrale
Equipment and Tools
A boomheader used to bore galleries and tunnels. This machine is mainly equipped with a directional and telescopic arm carrying at its end various rotary excavators (cylindrical or conical) provided with tungsten carbide picks. There are many ranges of this type of machine and they are usually equipped with devices of loading and backing of broken products.

FULL-SCALE WORKING
Epure
Drawing
Syn. with DRAWING; LINE DRAWING; LINEAR DIAGRAM

FUNGAL DECAY
Queue de vache; Champignon; Pourriture
Defects (Building Materials)
1. A deterioration of a cryptogamic origin of the wood of oak (and certain exotic woods) that is accompanied by discoloration.
2. Syn. with DECAY; DRY ROT; FUNGUS ROT
3. Syn. with ROT

FUNGAL GROWTH
Moisissure
Defects (Building Materials)
Syn. with MOLD

FUNGICIDAL AGENT
Agent fongicide
Painting
An organic, organomineral, or mineral admixture likely to minimize or head off the attack of the products or films by fungi or other thallophytes (seaweeds).

FUNGICIDAL PAINT
Peinture anticryptogamique
Painting
A product applied on the woods in order to protect them from the attack of cryptogamic fungi.

FUNGICIDAL PRODUCT
Produit anticryptogamique
Building Materials
A matter used to protect wood from fungi.

FUNGICIDE
Fongicide; Anticryptogamique
Materials
An impregnation and injection product for heading off mildew by eliminating the fungi or their proliferation. Syn. with ANTIFUNGUS AGENT

FUNGUS
Champignon
Defects (Building Materials)
Syn. with DECAY; DRY ROT; FUNGAL DECAY; ROT

FUNICULAR (PROCESS OR APPARATUS)
Funiculaire
Construction and Handling
Of a process (anchorage) or apparatus that wields of cables.

FUNICULAR (SKETCHING)
Funiculaire
Strength of Materials
A line in broken line representing the amplitude of a mechanical phenomenon in determined places and that plots inherently from a dynamics.

FUNICULAR ARCH
Arc funiculaire
Strength of Materials
A curvature subjected to a system of forces and such as medium fiber is a funicular curve for the system of forces. In a funicular arch with three hinges, the system of external forces related to a section is limited to the normal stress. One may find it beneficial usually to look for the presence of a medium fiber, as close as possible to a funicular curve, in order to minimize the stress brought about by shearing force and bending moment.

FUNICULAR CRANE
Blondin
Handling
Syn. with BLONDIN; CABLEWAY; ELEVATED CABLEWAY CRANE; OVERHEAD CABLEWAY

FUNICULAR CURVE
Courbe funiculaire
Strength of Materials
The balance curve of a wire subjected to the action of a system of given external forces.

FUNNEL
Cheminée; Entonnoir
Construction; Geomorphology
1. In underground structures, vertical work joining a tunnel from the surface that can have been created specially to ensure the ventilation, but that is the most often a former

well of construction kept in the same objective.
2. A vertical duct fitted out in the axis of the piers of a masonry viaduct allowing the rainwater draining from the platform. The duct opens in an aqueduct located at the base of the pier. Syn. with CHUTE ; RAIN
3. Settling of a truncated aspect that is produced in the ground following the collapse of an open, a mining development, an underground gallery, a cavern, etc. Syn. with HOLLOW

FURNITURE BEETLE
Anobie; Vrillette; Horloge de la mort
Buildings Materials
A xylophage insect that attacks almost all woods and commonly called *deathwatch (beetle).* Its cycle is annual and the adult insect leaves in May or June by small round holes of 1 to 2 mm of diameter. There is regular reject of sawdust. Galleries dug by larvae are irregular. Syn. with DEATHWATCH BEETLE

***FURNOS* PROCESS**
Procédé *Furnos*
Building Materials
A technique of preservation of wood in place by carbonization and pulverization, which consists in eliminating rotted parts and, after drying of the stripping surface, to be superficially carbonized this one with a blow lamp, then in applying creosote immediately by pulverization.

FURROW
Grippure; Rainure
Defects (Metallurgy); Construction
1. A superficial defect affecting some castings and that is characterized by adhesion to the metal of a sand deposit having been of use to the casting. Syn. with RUT; SANDSKIN
2. Syn. with CHANNEL; GROOVE; RABBET; SLOT

FURROWS STONE
Bossage *ou* Pierre de refend
Masonry
Stonework with joints marked by recesses or squared canals.

FUSE
Fusible; Mèche lente; Amorce; Amorce détonante; Détonateur
Construction; Explosives
1. A confined reinforced concrete element, added or integrated to a structure (frame placing by pulling in an embankment for example), on which come to rest on a jacking device and that is intended for bearing compressive stresses during the tensioning of cables.
When this piece is integrated to the structure, it is not taking in account in the strength design of the work. Syn. with ANCHORAGE
2. An artifice constituted by a blasting powdering cord (fine-grained black powder) contained in a tarred braided cotton sheath, and being able to be used to light the detonator of an explosive charge or directly to light a primary cartridge of explosive.
3. Syn. with DETONATOR; BLASTING CAP; DETONATOR CHARGE; PRIMER

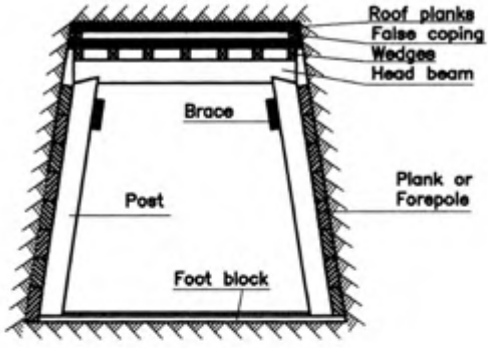
FUSE BLASTING
Tir à la mèche
Explosives
The firing of an explosive with a safety fuse.

FUSION WELDING
Soudage autogène; Soudure autogène
Welding
Syn. with AUTOGENOUS WELDING; OXY-ACETYLEN WELDING

Figures of the letter

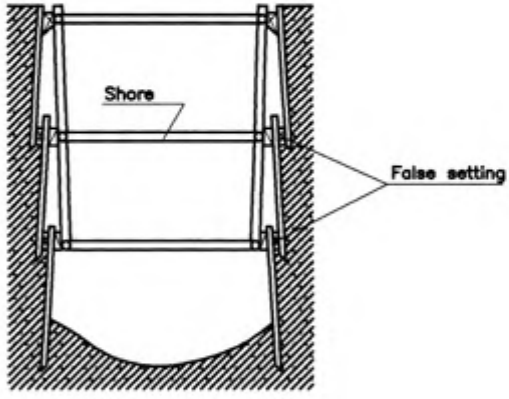


Fig. 1



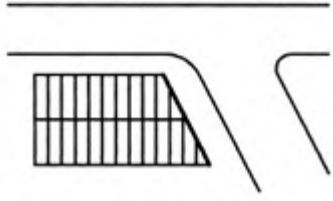
FALSE COPING

Fig. 2



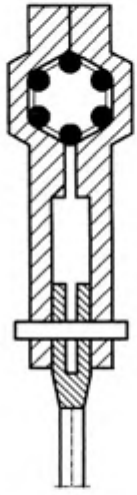
FALSE SETTING

Fig. 3



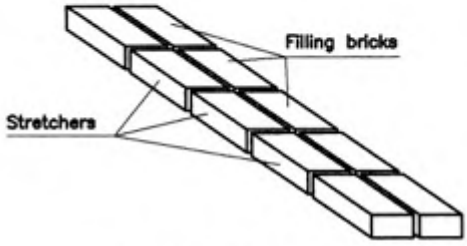
FALSE SQUARE

Fig. 4



FASTENING

Fig. 5



FILLING BRICK

Fig. 6

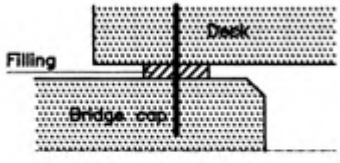
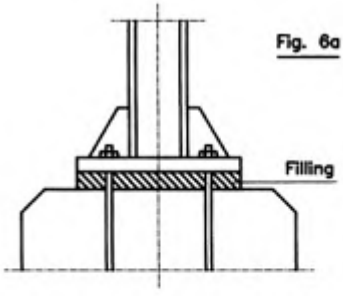
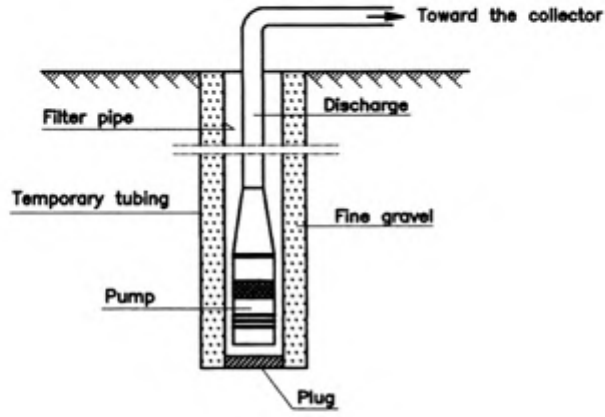


Fig. 6a



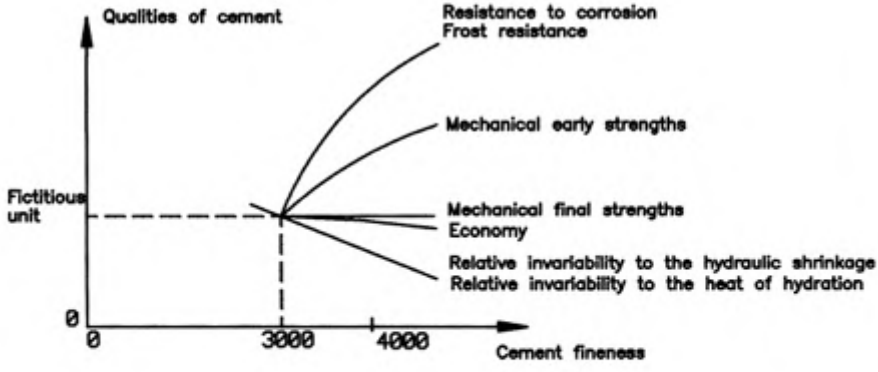
FILLING OF DECK or of FOOT OF POST

Fig. 7



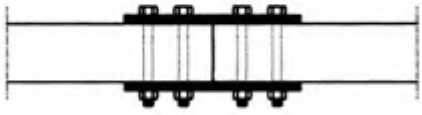
FILTER WELL

Fig. 8



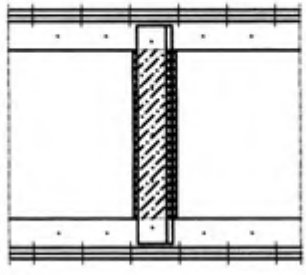
FINENESS OF GRINDING

Fig. 9



FISH PLATE

Fig.10



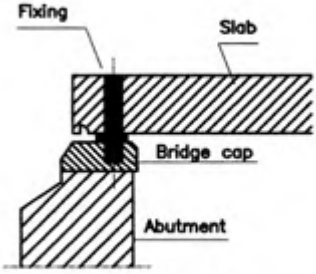
FISH PLATE

Fig. 11



FISHTAIL

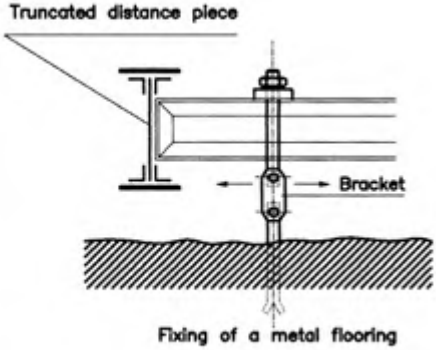
Fig. 12



Fixing of fixed bearing

FIXING

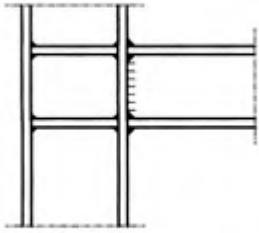
Fig. 13



Fixing of a metal flooring

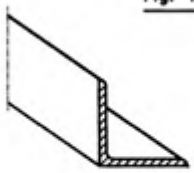
FIXING

Fig. 14



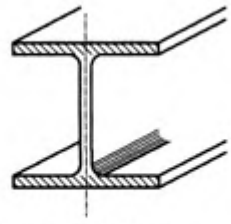
FIXING—IN

Fig. 15



Flange of angle bar

Fig.15a



Flange of H-beam

Fig.15b

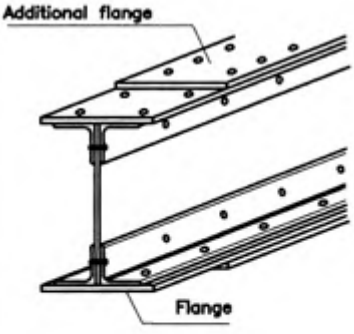
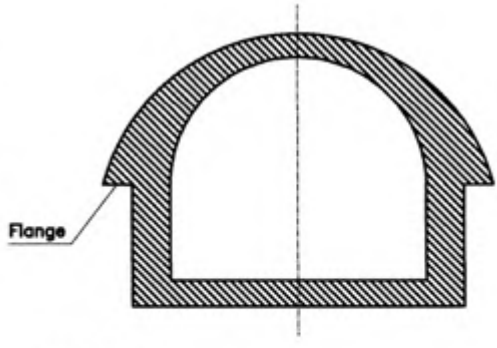
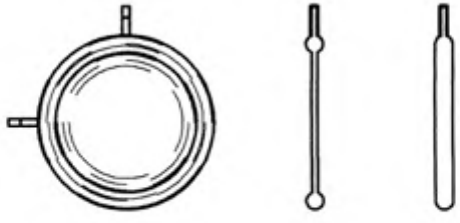


Fig. 16



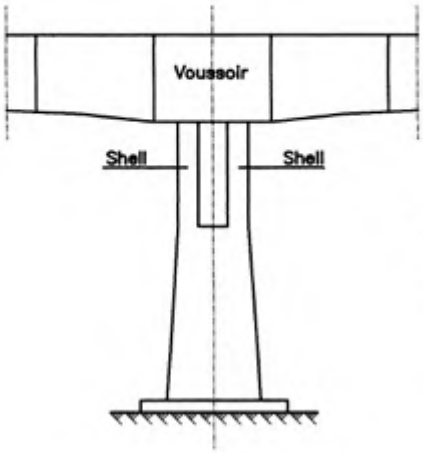
FLANGE

Fig.17



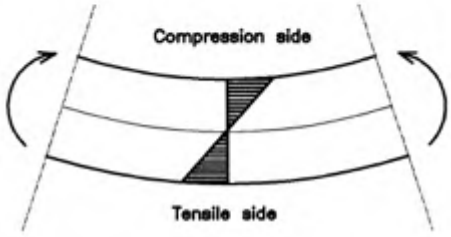
FLAT JACK

Fig.18



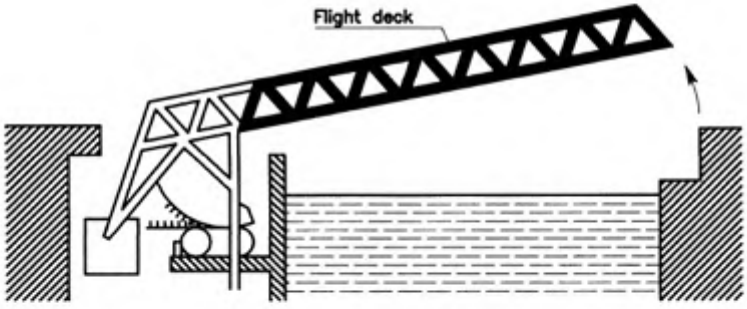
FLEXIBLE SHELL PIER

Fig.19



FLEXION

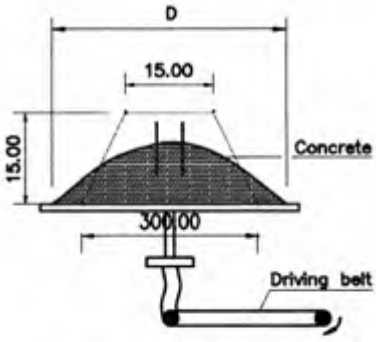
Fig.20



Flight deck of a mobile bridge

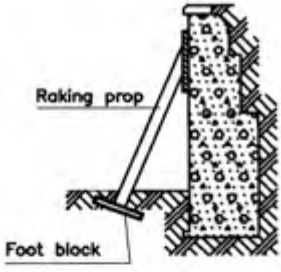
FLIGHT DECK

Fig.21



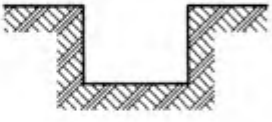
FLOW TEST

Fig.22



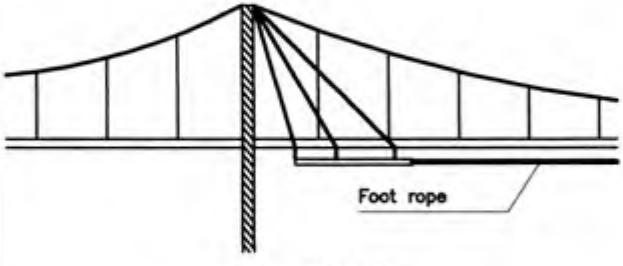
FOOT BLOCK

Fig.24



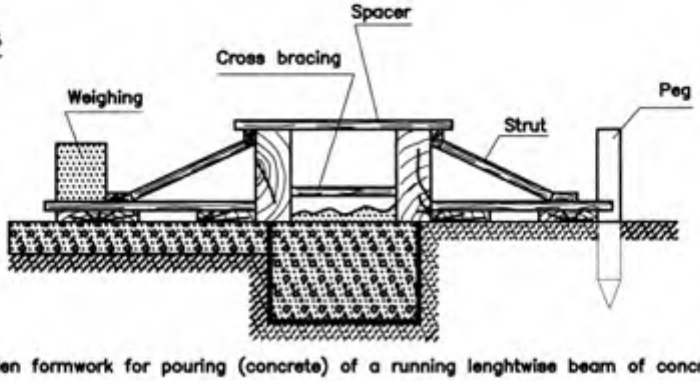
FOOTING

Fig.23



FOOT ROPE

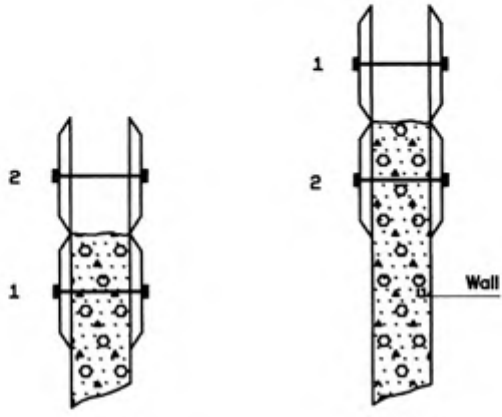
Fig.25



Wooden formwork for pouring (concrete) of a running lenghtwise beam of concrete

FORMWORK

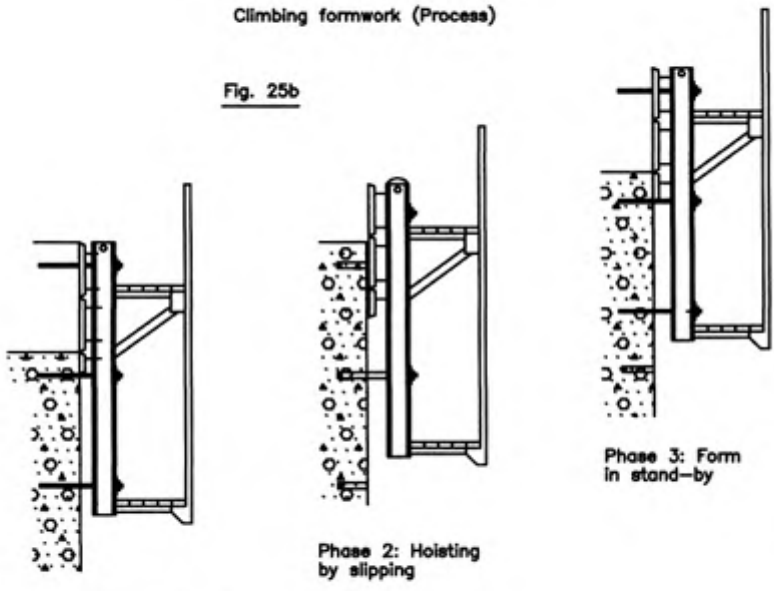
Fig. 25a



Phase 1 Phase 2

Climbing formwork (Process)

Fig. 25b



Phase 1: Concrete pouring

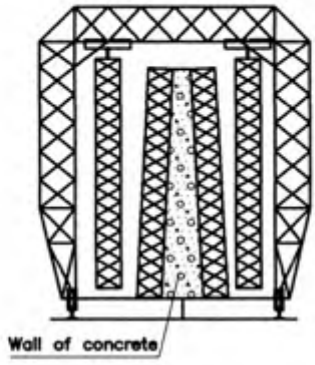
Phase 2: Hoisting by slipping

Phase 3: Form in stand-by

Single-tier formwork

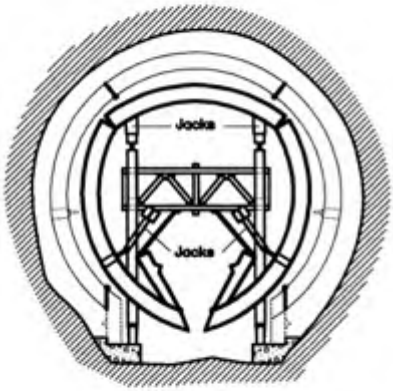
FORMWORK

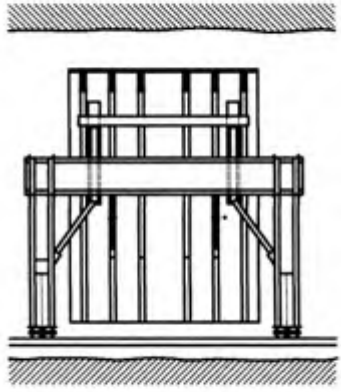
Fig.25c



Tunnel formwork

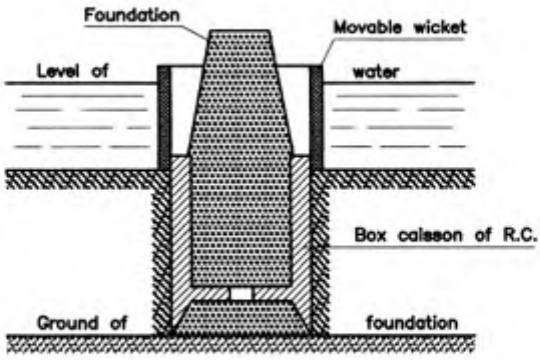
Fig.25d





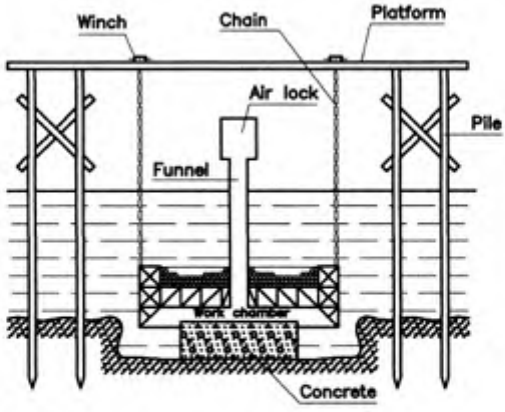
Telescopic forms for tunnels

Fig.26



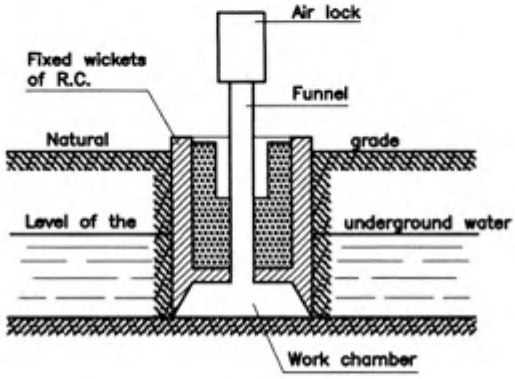
Laying foundation by pneumatic process with lost box caisson of R.C. with movable wickets

Fig.26a

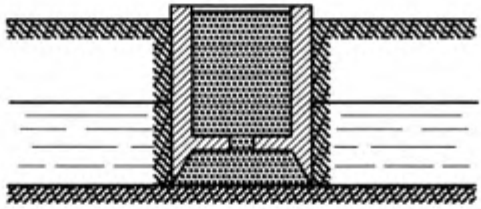


Laying foundation by pneumatic process with movable box caisson

Fig.26b



1) – Box caisson in end of earthmoving

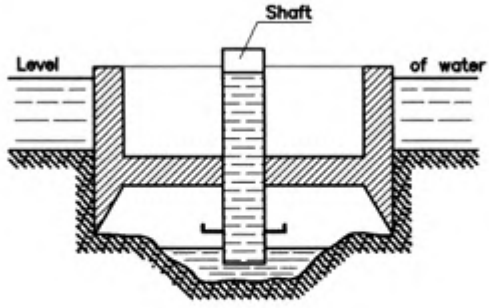


2) – Concreted ost box caisson

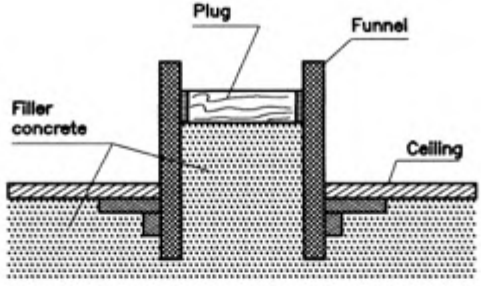
Laying foundation by pneumatic process with lost box caisson in R.C. with fixed wickets

FOUNDATION

Fig.26c



1) – Evacuation of the cuttings by shaft

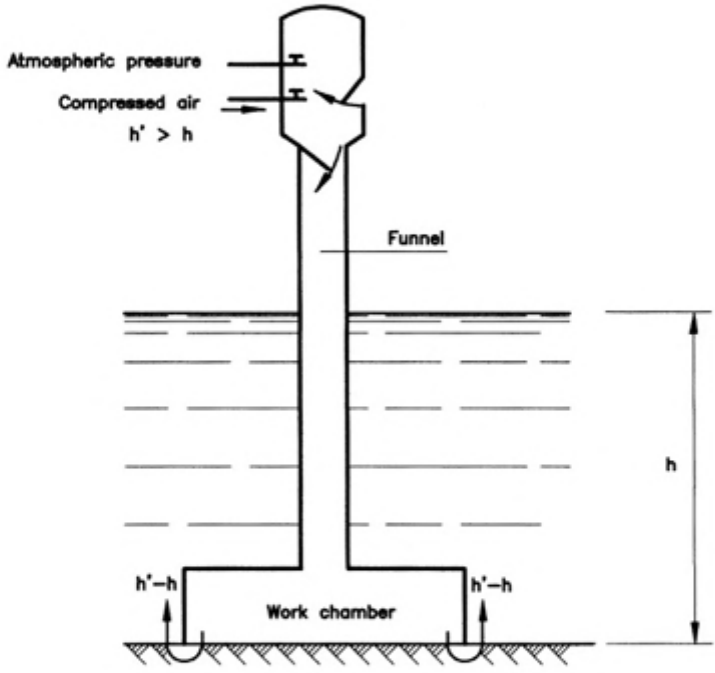


2) – Sealing of the last funnel

Laying foundation by pneumatic process

FOUNDATION

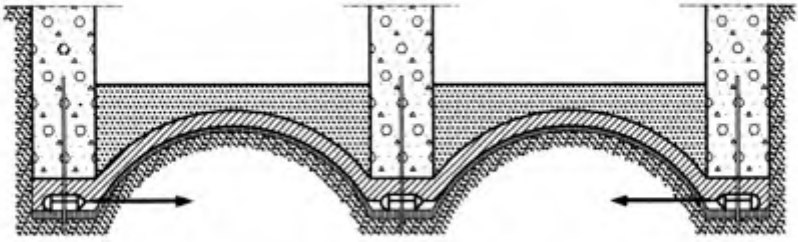
Fig.26d



Laying foundation by pneumatic process

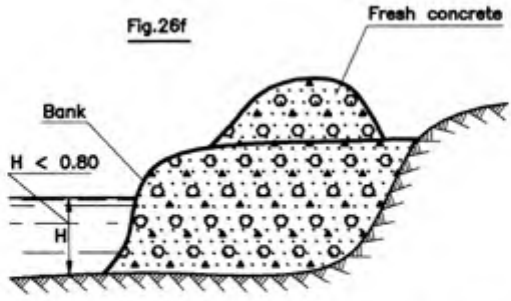
FOUNDATION

Fig.26e



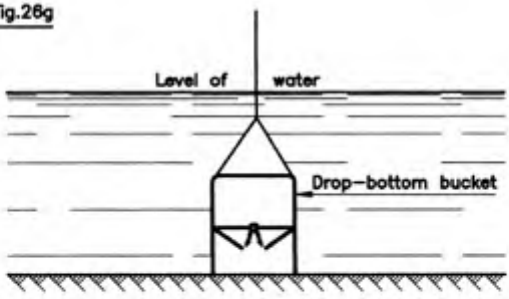
Atlas foundation system

Fig.26f



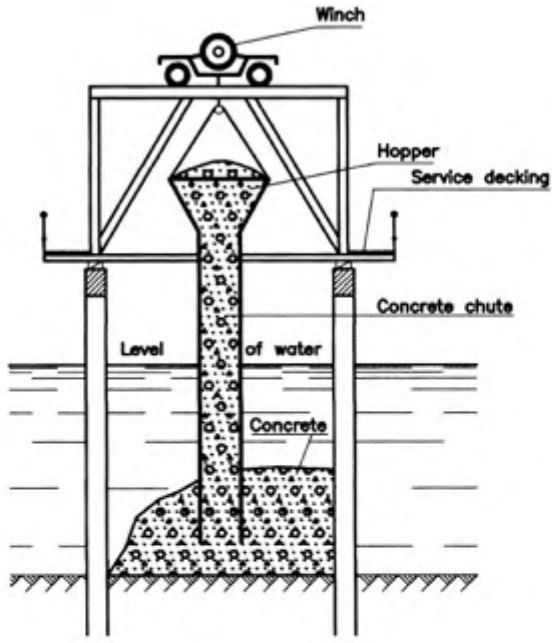
Immersed concrete foundation (flowing bank process)

Fig.26g



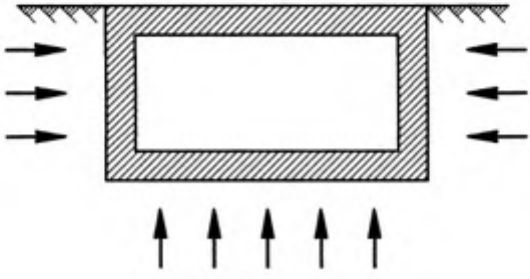
Immersed concrete foundation (Bucket process)

Fig.26h



Immersed concrete foundation (Concrete chute process)

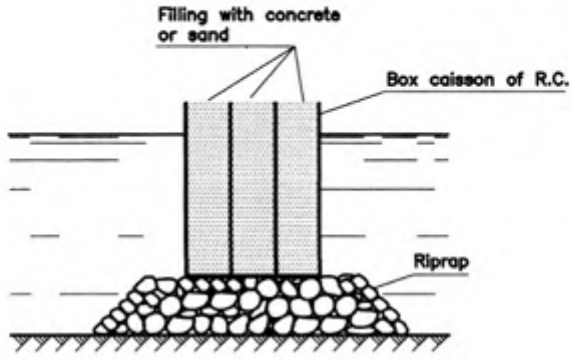
Fig.26i



Buoyant foundation

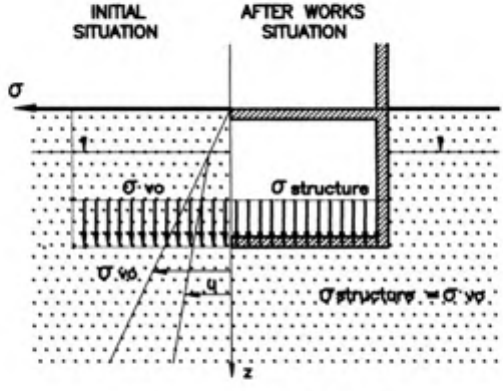
FOUNDATION

Fig.26j



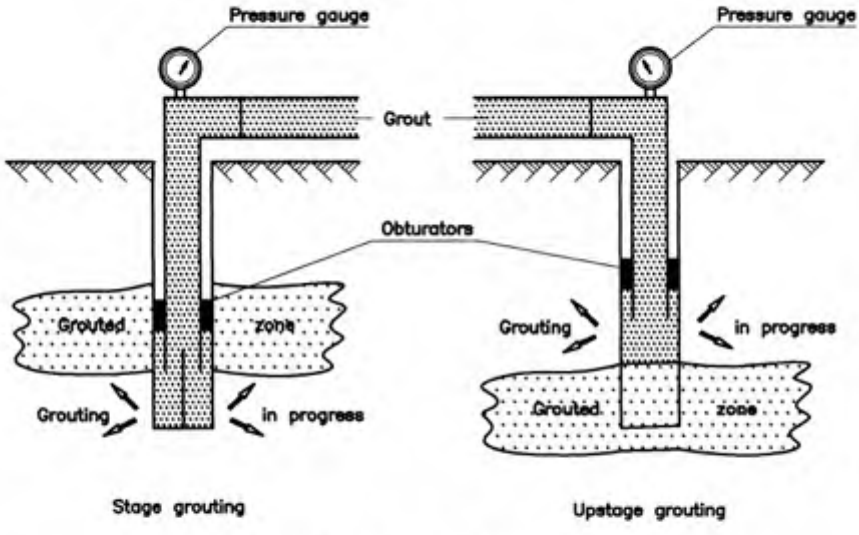
Foundation on immersed caisson

Fig.26k



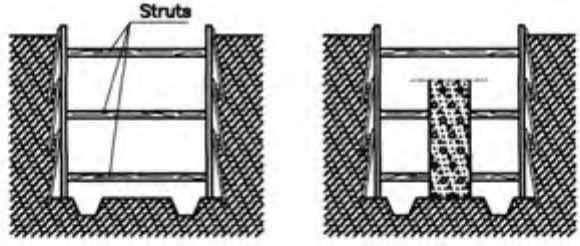
Compensated foundation

Fig.26l



Foundation with grouting injection

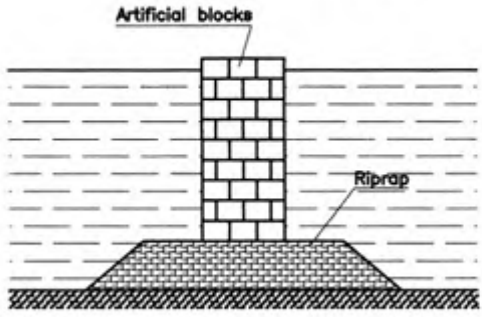
Fig.26m



Foundation with timbered excavation

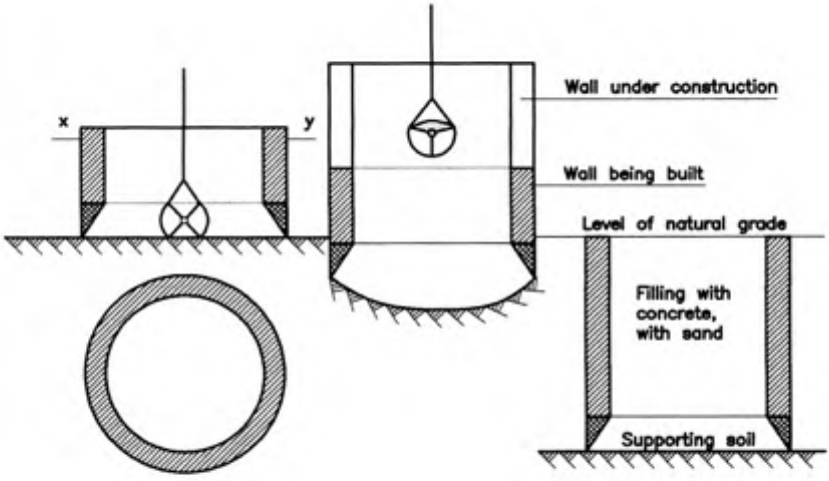
FOUNDATION

Fig.26n



Foundation on enrockment and prefabricated concrete blocks

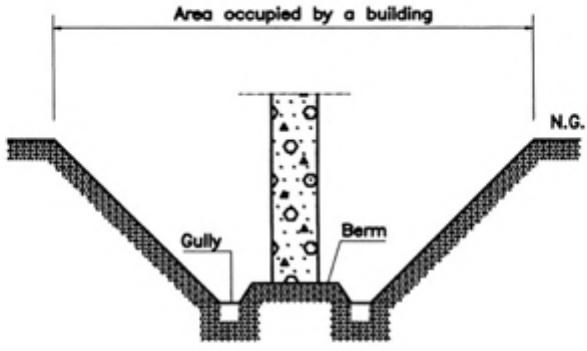
Fig.26o



Shearing foundation

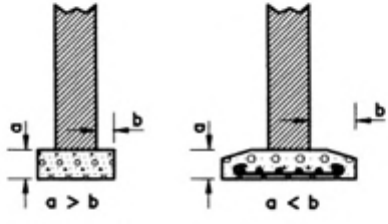
FOUNDATION

Fig.26p



Foundation with sloped wall

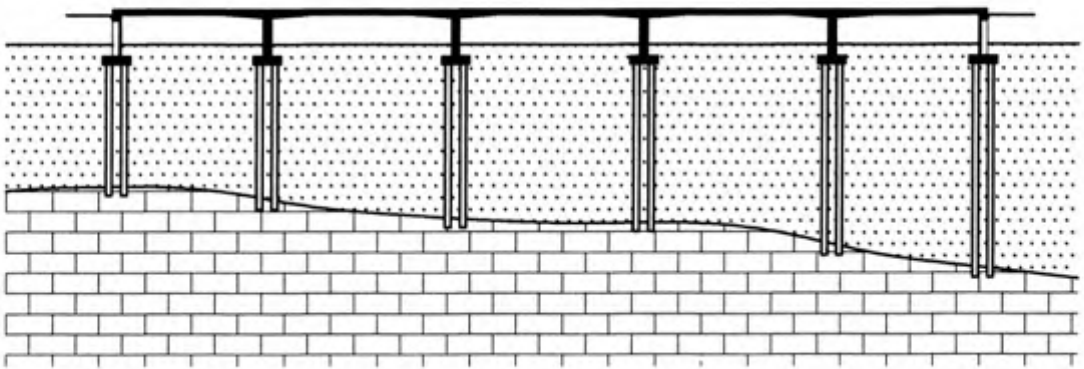
Fig.26q



Strip foundation

FOUNDATION

Fig.26r

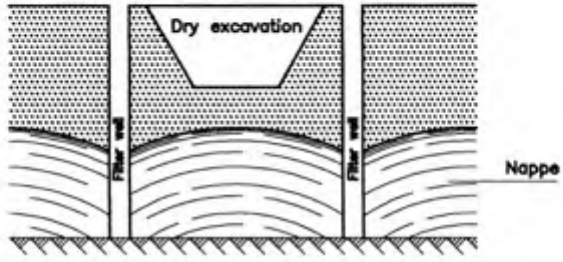


Piled foundation of a viaduct

FOUNDATION

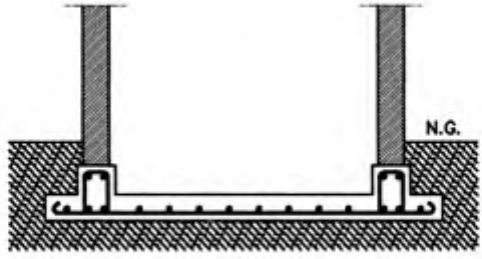
Fig.26e

Filter wells method

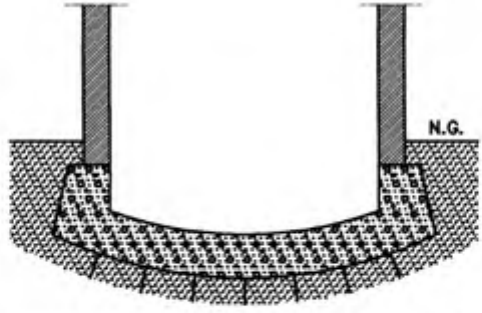


Foundation with groundwater lowering

Fig.26t



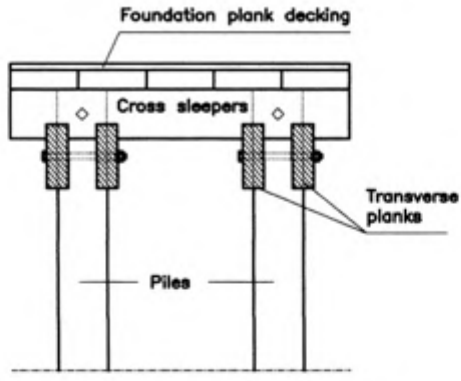
Foundation on general foundation raft of reinforced concrete



Foundation on general foundation raft of unreinforced concrete (in reversed vault)

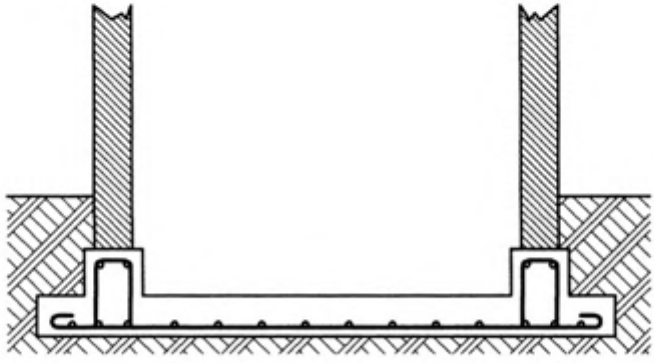
FOUNDATION

Fig.27



FOUNDATION PLANK DECKING

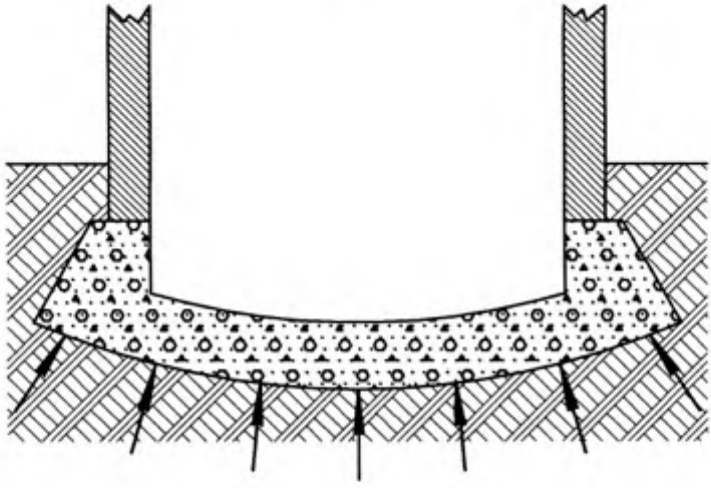
Fig.28



Main floor of reinforced concrete

FOUNDATION RAFT

Fig.28a



Main floor of reinforced concrete

FOUNDATION RAFT

Fig.29

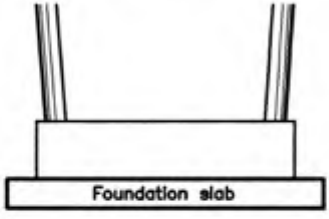
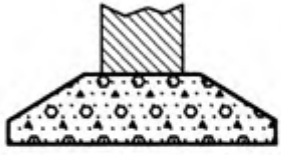
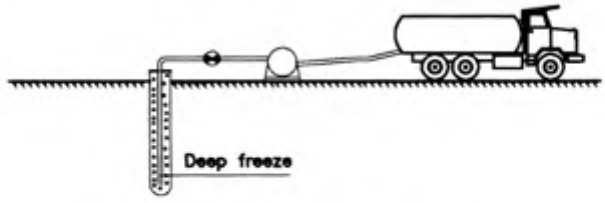


Fig.29a



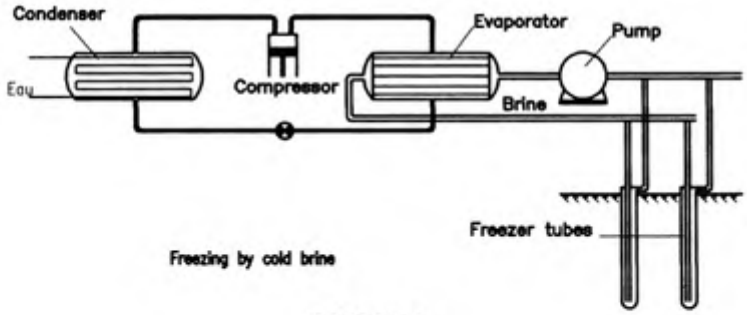
FOUNDATION SLAB

Fig.30



Freezing with liquid nitrogen

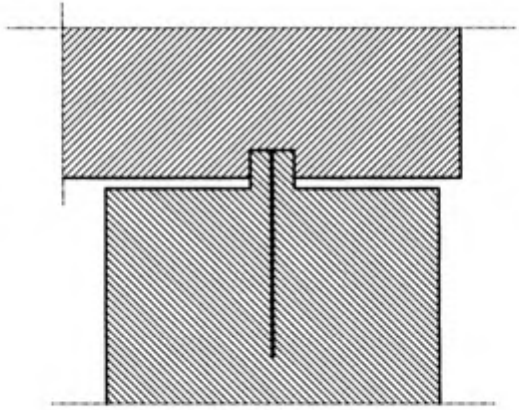
Fig.30a



Freezing by cold brine

FREEZING

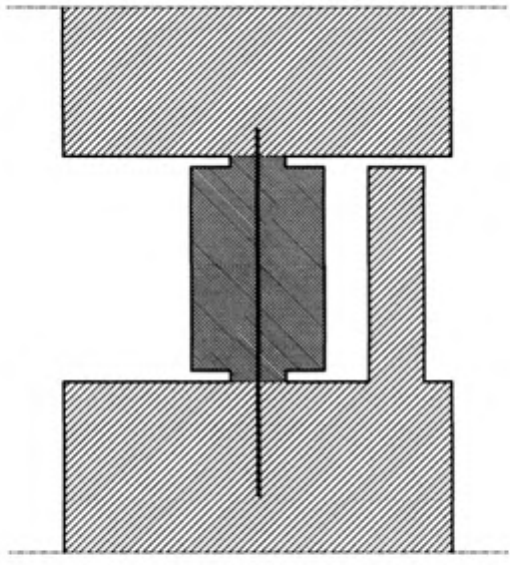
Fig. 31



Fixed bridge bearing

FREYSSINET JOINT

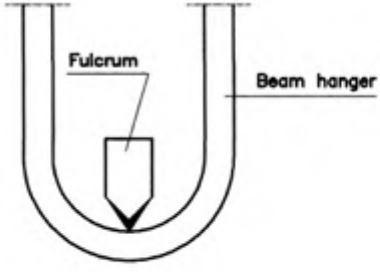
Fig. 32



Mobile bridge bearing

FREYSSINET JOINT

Fig. 33



FULCRUM
(of suspension bridge)



GABBRO
Gabbro
Geology
A plutonic rock with a composition similar to that of basalt.

GABION
Gabion
Foundation
Syn. with CRIB.

GABION WALL
Mur de gabions
Construction Term
A construction made of a stacking of cribs mounted at the foot of a side of a bank or a landslide to be used as a self-draining stop.

GABOON
Okoumé
Building Materials
Syn. with AFRICAN MAHOGANY; GABOON MAHOGANY; OKOUME

GAIN
Embrèvement
Construction Term
Syn. with BEVEL SHOULDER

GAIZE
Gaize
Geology
A siliceous sedimentary rock used after grinding as additive for Portland cement with the aim of improving the concrete and mortar strength to the chemical action of seawater. Syn. with FRIABLE SANDSTONE WITH SLIGHT SILICEOUS CEMENT

GAIZE CEMENT
Ciment à la gaize
Hydraulic Binders
A binder in which is mixed some proportion of baked gaize..

GALL
Galle
Defects (Building Materials)
A blister formed by the attack of insects on the surface of a wood. This deterioration is more or less serious according to the use at which the timber is intended for.

GALLERY
Fenêtre; Galerie; Voie de communication
Construction; Civil Engineering Structure
1. The subsidiary gallery of a deep tunnel used as point of intermediate attack during the heading

and that enables also the evacuation of excavated materials. After execution of the tunnel, it is walled, or supplied with gates.
2. A work of reduced section accommodated within some works of larger dimensions to allow the inspection of it, or to place pipes there. The gallery can be built parallel to a work in order to serve as a device of drainage, technique, etc. Syn. with TUNNEL
3. An underpass of communication which, if it is horizontal, takes the name of *gallery* and if it is vertical, takes the name of *shaft*. Syn. with SHAFT

GALLETING
Rocaillage en plein
Masonry
Syn. with GAVETING

GALLEY
Galère
Equipment and Tools
A kind of small cart that the mason uses to carry building materials that he uses on the building site.

GALVANIZATION
Galvanisation
Metallurgy
A surface processing for steels produced at hot temperature, that consists in covering them with zinc by immersion into a bath of molten zinc. The surface of steel suitably prepared (scouring, fluxing, drying) is attacked by the zinc with formation of intermetallic zinc-iron compounds. When the piece of the bath is withdrawn, the zinc retained by capillarity by the zinc-iron layer is solidified to the air and constitutes a layer of pure zinc. There is also an around-the-clock process (Sendzimir) that applies to the galvanization of the worked out sheet metal in continuous strips. Syn. with GALVANIZING

GALVANIZE
Galvaniser
Metallurgy
To cover a metal piece with a zinc film.

GALVANIZED STEEL SHEET IRON
Tôle d'acier galvanisée
Metallurgy
A product covered with a protective film by immersion into a bath of zinc in fusion.

GALVANIZER
Galvaniseur
Metallurgy
A worker who manages an operation of galvanization.

GALVANIZING
Galvanisation
Metallurgy
Syn. with GALVANIZATION

GALVANOPLASTY
Galvanoplastie
Metallurgy
Syn. with ELECTROPLATING

GALVANOSTEGY
Galvanostégie
Metallurgy
The deposit of a protecting film on a metal piece; this film is obtained by electrolysis and is intended for protecting the piece from the corrosion or any other form of comparable aggression.

γ APPARENT DENSITY
Masse spécifique apparente γ
Geotechnics
The mass of the volume unit of a complete ground sample, water included and that is expressed in g/cm^3:

$$\gamma = \frac{\text{Mass of the sample}}{\text{Volume of the sample}}$$

γ is variable depending on whether the ground is more or less made of voids that are more or less saturated and if the sample is immersed or out of water.

γ_d DRY SPECIFIC WEIGHT
Poids spécifique sec γ_d
Building Materials and Geotechnics
The weight of the volume unit of grains of a material supposed without voids, not included pore water.

GAMMADENSIMETRIC PROBE
Sonde gammadensimétrique
Assaying Equipment
An instrument mainly used to measure depths of water, whose principle is based on the diffusion of photons gave off by a small radioactive source in the medium surrounding the source and

detector unit. There is a relation between the quantity of solid matter per unit of volume of the measured medium and the value of the signal provided by the detector. If the data of density *d* are associated with those of depth *D,* you obtain in a point of coordinates in plan given *(x,y)* a vertical profile of density of the solid mass of studied sediments, *D= g (d).*

GAMMADENSIMETRY
Gammadensimétrie
Test of Materials
A nondestructive sounding approach of the density of concrete, masonry, ground, etc., by radioisotopes.

GAMMAGRAPHY
Gammagraphie
Test of Materials
A detection practice with γ-rays of defects that can concern metal pieces, reinforced or prestressed concrete pieces, sleeves for P.C., welds. The gammagraphy applied to the concrete gives negatives locating reinforcements, their corrosion, the homogeneity of concrete inside the mass.

GAMMAMETRIC PRACTICE
Méthode gammamétrique
Test of Materials
A sounding process of precast piles of reinforced concrete or steel piles, etc., with an emitting γ-rays source.

GAMMA-RAY LOGGING
Radiocarottage
Geotechnics
Syn. with RADIOACTIVE LOGGING

GANG SHORE
Batterie d'étais
Temporary Construction
Set including several props combining to the same support.

GANGWAY
Passerelle
Civil Engineering Structure
An overpass reserved only for pedestrians and/or to the passage of pipes. We can distinguish several types of gangways: metal gangways (with lateral truss girders, solid web, etc.), gangways of R.C. or P.C. with a single beam (in T) or with a slab profile, composite gangways (steel-concrete). Syn. with PEDESTRIAN FOOTBRIDGE. **See Figures 1 to 1b**

GANTRY
Chevalet de levage
Equipment and Tools
Syn. with WINCH STAND

GANTRY CARRY BRIDGE
Portique
Equipment and Tools
A lifting gear made up of a beam resting on legs or pilings. The beam supports the lifting gear which is mostly made up of winches or hoists. The apparatus can move on a runway specially conceived and be self-propelled. We can distinguish: permanent gantry carry bridges, movable gantry carry bridges, hydraulic gantry carry bridges, heavy gantry carry bridges, light gantry carry bridges. **See Figures 2 and 2a**

GANTRY CRANE
Grue-portique; Pont-grue
Equipment and Tools; Civil Engineering Structure
1. A gantry equipped in crane (can be fixed or mobile). Syn. with PORTAL CRANE
2. A work with independent spans (cantilever) resting on consoles having their bearing on piles. Syn. with BRIDGE CRANE

GAP
Ecartement du joint ; Brèche
Welding; Civil Engineering Structure
1. The minimal distance to weld, measured on a cross section between edges of a joint; sides of the joint having been parted intentionally or not.
2. Syn. with BREACH; BREAK

GAP GRADING CONCRETE
Béton de granularité discontinue
Building Materials
Syn. with DISCONTINUOUS GRAIN SIZE (or GRADING) CONCRETE

GAP GRAIN SIZE
Granularité discontinue
Building Materials
Syn. with DISCONTINUOUS GRAIN SIZE

GAP OF THICKNESS
Manque d'épaisseur
Defects (Welding)
A local or continuous shortcoming of deposited weld metal leading to a profile of a weld bead in withdrawal compared with the correct profile.

GARGOYLE
Gargouille
Construction
A horizontal pipe of concrete, cast iron, stone, etc., overhanging largely of the masonry facing and that is intended for draining the waters coming from the inside of the work and to reject them farthest possible of the facing so that those do not stream on its surface.

GARLAND DRAIN
Cunette de ceinturage
Sanitary Engineering and Drainage
A crown of drainage surrounding an excavation, the bottom of a well, etc., intended for channeling zenithal or seepage waters. The aim of garland drain is to protect the excavation from the erosive action of waters or the flood of the building site. Syn. with BYE-CHANNEL; DIVERSION CUT

***GARY* APPARATUS**
Appareil *Gary*
Equipment for Measure and Control
A thermometrical instrument that records temperature variations of a cement block during its set duration and that informs on the duration of its hardening.

GAS CAVITY
Soufflure
Defects
Syn. with AIR CAVITY; BLISTER; BLOWHOLE; HONEYCOMB

GAS CLASSIFIER
Elutriateur
Equipment for Measure and Control
A cylindric-conical device to vertical axis into which a sample of material is subjected to rising air or water stream to consistent speed that entails and makes overflow grains whose speed of sedimentation is lower than the upward speed.

GAS CONCRETE
Béton gaz
Building Materials
Any alveolar concrete (or cellular) that is an ordinary concrete into which aluminum powder is added. This mixture produces, in contact with the lime released by the hydration of Portland cement, a release of many hydrogen bubbles. Syn. with AERATED CONCRETE; AEROCRETE; POROUS CONCRETE

GAS PORE
Soufflure sphéroïdale
Defects (Welding)
A blowhole that concerns a weld and presents an appreciably spherical shape.

GAS TAR
Coaltar
Materials
Syn. with COAL TAR

***GASCON* RIVET**
Rivet *gascon*
Metal Construction
A piece whose head is offset compared with the shank.

GASEOUS OCCLUSION
Occlusion gazeuse
Metallurgy
A cell filled with gas which was formed during the molding operation of a casting.

GASKET
Joint d'étanchéité
Tightness
A product of hydrocarbon foam, elastomer, etc., used to process the discontinuities of concrete structures or others, at the right whose the pavement or water tightness complex cannot with him only assume the sealing of the work. Syn. with SEAL; WATER BAR; WATER STOP

GATE
Barrière; Portrion
Temporary Construction; Construction
1. Syn. with FENCE
2. The sluice of a lock.

GAUGE
Gabarit; Modèle; Calibre; Jauge
Equipment and Tools; Masonry; Equipment for Measure and Control
1. Syn. with FORMER; TEMPLATE
2. A wooden piece lined of sheet metal, used to carry out mouldings in hollow and relief on all coatings. Syn. with TEMPLATE
3. Instrument for measuring a quantity of liquid or pulverulent matters.

GAUGE BOARD
Gâcheur
Equipment and Tools
Syn. with MORTAR BOX

GAUGE LEVEL
Niveau d'eau; Niveau à caoutchouc
Equipment for measure and Control
Syn. with WATER LEVEL

GAUGE SCARP
Escarpe
Equipment and Tools
A wooden gauge used by the mason to adjust the batter of a wall.

GAUGE STONE
Calibre; Panneau
Masonry
A carved profile used to cut stones.

GAUGE WATER
Eau de gâchage
Building Materials
Syn. with GAUGING WATER; MIXING WATER

GAUGED LENGTH
Longueur entre repères; Longueur calibrée
Metallography
1. The dimension of the cylindrical or prismatic part of a test bar on which must be measured lengthening to the given moment of a tensile test of steels. Not least, we can distinguish:
- **initial length between marks** *[la longueur initiale entre repères (Lo)],* the distance between marks before application of the load;
- **ultimate length between marks** *[la longueur ultime entre repères (Lu)],* the distance between marks after breaking of the test bar and reconstitution of the former, two fragments being brought closer carefully so that their axes are in the prolongation one of the other.

2. The dimension of a part of uniform and determined diameter of a tensile test bar, of twist, etc., of steels.

GAUGING
Dosage
Test of Materials (Mineralogy)
The determination of the content in a specified oxide (for chemical analysis) or in a given mineral (for the quantitative mineralogical analysis). Syn. with PROPORTIONING

GAUGING WATER
Eau de gâchage
Building Materials
Syn. with GAUGE WATER; MIXING WATER

GAVETING
Rocaillage en plein
Masonry
The insertion of small falls of stones over all the surface of the facing of a concrete or coated wall. Syn. with GALLETING

GEHLENITE
Gehlénite
Hydraulic Binders
A silicoaluminate of lime which one mainly meets in aluminous cements as in the slags of a blast furnace whose chemical formula is $Si(O)_2Al_1(O)_12(O)_8(O)$. Gehlenite does not make set by itself, but, water-hardened (granulation), this body acquires pozzolanic properties, namely that, mixed with fat lime, its hydraulic properties grow.

GEL
Gel; Colloïde
Polymers; Materials
1. A term that relates to solidification phenomena of the gelatinous type (soft and flaccid) that can be very various origins.
- during the polycondensation of a blend of monomers whose functionality is higher than 2, the reactional medium takes, at the end of a certain time, the aspect of a mass deprived of any flow property. It is said that there is *gelation* or that the reaction reached its *gel point* or *gelation.* From this point, the polymer includes two parts: one, insoluble in all solvents, is the *gel,* the other,

soluble, is the *sol.* As polycondensation increases, the proportion of gel increases and that of sol decreases;
:: during radical polymerization, it can arrive that, the viscosity of the medium being too rising, reactions of termination are stopped. It is the *gel reaction,* or *Tommedorff reaction;*
◌ sometimes designates the compact mass that is formed to the cooling of some macromolecular solutions (gelation).
2. Syn. with COLLOID

GEL FORMATION
Gélifraction
Polymers
Syn. with GELATION

GELATINE
Gélatine
Adhesives
An adhesive of animal origin often used as admixture in some glues whose primary binder is of another origin.

GELATION
Gélification
Materials; Polymers
1. The transformation of a body from the liquid state into a solid or gel state.
2. The generally progressive formation of a gel, under the effect of heat, time, or chemical agent.
Syn. with GEL FORMATION

GELATION (OF THE SOIL)
Gélification
Civil Engineering
The consolidation of grounds by injection into drillings, of a silica gel or resin to jointly liable pulverulent or dissociated elements. The aim of this process is to restore to the basement a cohesion inherent in supporting foundations for example, and to bring about a drop-off of its permeability.

GELIFLUCTION
Gel
Geomorphology
Syn. with FROST; FROST WEATHERING

GELIGNITE
Gélignite
Explosives
A gelatined explosive of the dynamites family used to demolish or to head (a tunnel) in rocky ground.

GEMELLED
Géminé
Construction
Of columns, piers or arches, twinned two by two (example: gemelled arch).

GENDARME
Gendarme
Temporary Constructions
In a timbered gallery, wedge that supports in rocker a roof plank while giving him its slope.

GENERAL LEVELING OF FRANCE
Repères N.G.F. (Nivellement Général de la France)
Topography
Altimetric reference marks forming a network covering the whole of the territory. Respective altitudes of each one of them are referred at the same plan of comparison whose the zero normal one, chosen arbitrarily and fixed by the Convention of 1852, are the average level from the Mediterranean in Marseilles. This zero normal is located and withdrawn from the oscillations by apparatuses known as marigraphs. Each reference mark is registered; its nature, position, altitude are the subject of repertories placed to the arrangement of concerned departments of State (DDE, the French railway, etc.).

GENERATOR STEEL BAR
Générateur
Building Materials
A longitudinal bar of setting bar laid out inside a cylindrical reinforced concrete work (tank, pipe).

GENERATRIX
Génératrice
Construction
Each normal line that draw a vault in the longitudinal direction and form the cradle.

GEOCHEMISTRY
Géochimie
Geology
A field of Geology which studies the chemical constitution of the globe.

GEODETIC DISTANCE METER
Géodimètre
Topography
Syn. with GEODIMETER

GEODIMETER
Géodimètre
Topography
Instrument of topography that is designed to directly measure the distances owing to a luminous wave train. Syn. with GEODETIC DISTANCE METER

GEODYNAMICS
Géodynamique; Géologie dynamique
Geology
A field of Geology that studies the forces which act on the Earth's crust. The external geodynamics is distinguished, that is interested at the external agents (water, wind, glaciers, etc.) and to the study of the deterioration of rocks and grounds under the effect of varied physical agents, of the internal geodynamics, that studies internal agents (orogenetic forces, volcanism, etc.). One of the most important branches of geodynamics studies deformations of grounds in the aftermath of internal forces; it is called *tectonics.*

GEOHYDROLOGIC MAP
Carte hydrogéologique
Geohydrology
An important document that mostly comprises, on a topographic ground of an ad hoc scale the next indications: the natural and artificial hydrographical system, isopieze curves of the water table at a determined date, them limit of the underground catchment area, folds, faults, different lithologic formations and their thickness, etc.

GEOHYDROLOGICAL INVESTIGATION
Etude hydrogéologique
Geohydrology
A study of which aim is to count points of water (sources, emergences, well, trial holes) and to train some an inventory. Collective data are the location, the depth of the water and the piezometric level, rate of flow, the total depth of the work, and the quality of water.

GEOHYDROLOGICAL STUDY
Etude hydrogéologique
Sanitary Engineering and Drainage
Concerning drainage, study which has for goal to put in problem obviousness that the presence of the water will pose and provide all necessary elements for their solution, that is :
- nature and heterogeneity of terrains,
- aquiferous terrain geometry,
- anisotropy of terrains,
- piezometric surface of the water table at different periods,
- feeding and outlet.

It is from these elements that in laboratory the hydraulic ground study is achieved, allowing choosing a system of drainage and to judge its efficiency.

GEOHYDROLOGY
Hydrogéologie
Geohydrology
A science that studies the role of materials constituting the soil and basement in the origin, the distribution and mode of deposit, modes of flow and physicochemical properties of underground waters.

GEOLOGICAL ACCIDENT
Accident géologique
Geology
A sudden discontinuity of ground such as fault of great thickness, bed or lentil of unstable ground, etc.

GEOLOGICAL DIGITAL MODEL
Modèle numérique géologique
Geology
A system of representation of the informations relating to geological strata.

GEOLOGICAL FAULT
Faille
Geology
Syn. with FAULT; RIFT

GEOLOGIST
Géologiste
Geology
A technician in geology.

GEOLOGY
Géologie
Geology
The primary field of the study of Earth's constituents.

GEOMECHANICS
Géomécanique
Geology
A field of the geology that treats of soils and rock mechanics.

GEOMEMBRANE
Géomembrane
Tightness
A superficial tightness product which has generally speaking a thickness higher than 0.5 mm.
It is a product adapted to Civil Engineering, thin, flexible, continuous, watertight to the even liquid under operational deformations, mainly in tension. There are several types of geomembranes:
- **reinforced** *(la géomembrane armée),* a product whose reinforcement, called *reinforcement,* consists of a structure or continuous elements;
- **compound** *(la géomembrane composée),* a manufactured product formed by superposition and assembly of several components whose at least a geomembrane. Different components than the geomembrane are the *associated materials;* they are not separable from the geomembrane without deterioration of the former;
- **in-situ** *(la géomembrane fabriquée sur place),* that is carried out on the even service site and which can be carried out in one layer (single layer) or several layers (multilayer);
- **manufactured** *(la géomembrane manufacturée),* a material manufactured in factory under the form of strips conditioned in rolls;
- **single-ply** *(la géomembrane monopli),* that can be made up, but not reinforced;
- **multiply** *(la géomembrane multipli),* formed by adherent folds between them, identical or different nature;
- **strengthened** *(la géomembrane renforcée),* whose mechanical and/or physical characteristics are upgraded by a reinforcement placed in its bosom. Reinforcements can be fibrous or granular, of organic or mineral matter and are highly strongly related with the matrix constituting the geomembrane. Reinforcements can be distributed uniformly in all the mass or be located in the thickness, and when they appear as structure or continuous elements, they are called *reinforcement.*

GEOMETER
Géomètre
Topography
Syn. with GEOMETRICIAN; LAND SURVEYOR; SURVEYOR

GEOMETRICAL ANOMALY
Anomalies géométriques
Defects (Building)
Disorders that concerns the works and which are: defects of alignment, verticality, subsidences, creeps, bulges.

GEOMETRICAL DEFECT OF THE FACING ON A LARGE SCALE
Défaut géométrique du parement à grande échelle
Defects (Civil Engineering Structure)
The variation in elevation of the profile of an element of the work whose causes may be a bad achievement or a bad design of the formwork, a settlement of the centering, a premature form striking, an impaired alignment of the work to the construction, etc.

GEOMETRICAL DEFECT OF THE FACING ON A SMALL SCALE
Défaut géométrique du parement à petite échelle
Defects (Civil Engineering Structure)
An irregular aspect of the surface from the viewpoint shapes to the exclusion of the important segregations. We can distinguish surface voids, bleeding channels, localized segregation, splashes, traces of the texture of the formwork, inclusions, wrenches, etc.

GEOMETRICAL SPECIFICATIONS OF AGGREGATES
Caractéristiques géométriques des granulats
Building Materials
Primary characteristics of aggregates defined by their state of surface, angularity, shape and grain size. Each element (or elementary particle or grain) of an aggregate is a solid limited by faces having a some state of surface and forming

angles between them. The three main dimensions of the element define its shape, one of they determining its membership to a particle-size range.

GEOMETRICIAN
Géomètre
Topography
Syn. with GEOMETER; LAND SURVEYOR; SURVEYOR

GEOMORPHOLOGICAL RESTITUTION BY ULTRASOUND WITH A LATERAL SONAR
Restitution géomorphologique par échographie avec un sonar latéral
Topography
An establishment approach of the cartography of subaquatic bottoms whose principle is as follows: a lateral sonar carries out a sweeping of the aquatic bottoms by emission of an ultrasonic beam of 500 kHz. Pictures are restored point by point on paper. One thus obtains a true structural photography of the bottom. Interpretation is of two types:
- *qualitative* as for the nature of elements (sludge, sand, gravel, blocks),
- *quantitative* as for of the form of blocks, wrecks, constructions and geomorphological figures.

GEOMORPHOLOGY
Géomorphologie
Geomorphology
A field of the geology whose objective is to explain the terrestrial relief, its last and common evolution.

GEOPHONE
Géophone
Equipment for Measure and Control
An instrument that allows to collect vibrations coming from the soil, a construction, or a material and that transmits them such as electrical signals to a decoder, mostly a seismograph. Syn. with SEISMOMETER

GEOPHYSICAL PROSPECTING
Prospection géophysique
Geophysics
An application to the study of the basement of techniques derived from the physics and whose primary goal is the search of mineral deposits. This approach is founded on the measure, on the surface of the ground or sea, sometimes from a plane or helicopter, of a physical magnitude whose value is influenced by the structure of the basement and nature of rocks which make it up. Approaches most used are gravimetric, magnetic, electric and seismic approaches and are characterized by their capacity of penetration, power of resolution, specificity and their mode of interpretation.

GEOPHYSICIST
Géophysicien
Geophysics
A specialist in geophysics.

GEOPHYSICS
Géophysique
Geophysics
A field of geology that studies the Earth by means borrowed from physics.

GEOSTATIC STRESS
Contrainte géostatique
Strength of Materials
Concerning underground work, compression force due to the lonely weight of sublying grounds.

GEOSYNTHETICS
Géosynthétiques
Materials
All synthetic materials constituted by films (membranes) used for earthworks, drainage works and the protection of grounds, etc. and that includes geotextiles, geomembranes, polyane films, etc.

GEOTECHNICAL ENGINEER
Géotechnicien
Geotechnics
A specialist in soil mechanics.

GEOTECHNICS
Géotechnique
Geotechnics
All approaches and scientific processes devoted to the study of properties of grounds and rocky grounds in terms of the construction projects of civil engineering structures, buildings, etc. and that is subdivided into two primary parts:

- **rock mechanics** (or of rocky grounds) *(mécanique des roches)*;
- **soil mechanics** (or of loose and plastic grounds) *(mécanique des sols).*

GEOTEXTILE
Géotextile
Materials
A cloth of synthetic fibers used to improve or preserve properties of soils and that also plays a role of separation between the bearing ground and brought material, thus allowing the latter to preserve its characteristics.
The geotextile one can play the role of antipolluting, filter or again reinforcement. Two types are available:
- **woven,** whose threads are distributed geometrically according to two perpendicular directions that endow on the structure on the mechanical plan, a very marked anisotropic character;
- **not woven,** formed by fibers or filaments distributed in a random way and whose cohesion is ensured by a bonding treatment (chemical, thermal or mechanical).

GEOTEXTILE POROMETRY
Porométrie d'un géotextile
Materials
The distribution of pores of a geotextile, given while making pass through the textile a soil with a continuous and proper grading in suspension in the water. The process of passage must be such as it does not have there accumulation of particles without movement on the surface of geotextile during the test.

GERM
Germe
Hydraulic Binders
A powder that results from the fine grinding of a hardened cement paste and that is mixed with cement at the time of the implementation of the latter. Germs bring about to start crystalline precipitation in a supersaturated medium that accelerates hardening considerably.

***GEWI*™ STEEL**
Acier *GEWI*™
Building Materials
A high-strength steel whose rough ribbings form a thread on two faces. Bars tie up with couplers.

GEYSERITE
Geysérite
Geology
A rock siliceous in major part.

GIANT
Monitor
Equipment and Tools
A lance throwing water under high pressure, used to quarry soft grounds. Syn. with MONITOR

GIANT CANTILEVER CRANE
Grue-marteau
Equipment and Tools
Syn. with HAMMERHEAD CRANE; SADDLE-JIB CRANE

GIANT TEMPER
Mégapilonneuse
Equipment and Tools
A soil compacting plant that uses a mass fixed at the end of a cable, released in free fall.

GIMLET
Laceret
Equipment and Tools
A carpenter's drill bit used to create stud holes. Syn. with SMALL AUGER

GIN
Bigue
Handling
Syn. with SHEER-LEG

GIN POLE (DERRICK)
Sapine
Equipment and Tools
Syn. with CRANE POLE; HOIST TOWER

GIRDER
Poutre
Construction
Syn. with BEAM

GIRDER (*or* BEAM) REINFORCEMENT
Sous-poutre
Construction
An added beam that to double another in the interest of strengthening.

GIRDERAGE
Poutraison
Construction
Syn. with BEAMS; GIRDERS

GIRDERING
Poutraison
Handling
Syn. with BEAMING

GIRDERS
Portraison; Poutraison
Construction
Syn. with BEAMS; GIRDERAGE

GIRDLE
Ceinture
Construction
A metal string forming ring used to hide a joint.

GIVE QUARTER
Donner quartier; Faire quartier
Handling and Drawing
See GRAPH (DRAWING) and TURN (HANDLING)

GIVETIAN
Givétien
Geology
Formation of the Devonian system of the Paleozoic Era.

GLASS
Verre
Mineralogy
Of minerals not crystallized.

GLASS BLOCK
Pavé de verre
Building Materials
A parallelepipedal block of glass used to carry out glass concrete panels. Syn. with PAVEMENT LIGHT

GLASS CONCRETE
Béton translucide
Building Materials
Syn. with GLAZED REINFORCEMENT CONCRETE

GLASS-BEAD BLASTING
Billage
Civil Engineering Structure
A surface treatment that consists in spraying under pressure small balls, mostly of glass.

GLASS-FIBER-REINFORCED CONCRETE
Béton armé de fibres
Building Materials
Syn. with FIBER-REINFORCED CONCRETE; STEEL-FIBER REINFORCED CONCRETE

GLAUCONITE
Glauconie
Geology
A ferriferous sedimentary rock of deepened green color coming from sea deposits, composed of grains whose diameter is from 0.5 to 1 mm.

GLAZE
Glacis
Painting
An oil-base paint whose pigment content is very low and that gives during an application a practically transparent film.

GLAZED BRICK
Brique vernissée ; Brique vitrifiée
Building Materials
1. A material covered with a thin layer of enamel.
2. Syn. with CINDER BRICK

GLAZED REINFORCEMENT CONCRETE
Béton translucide
Building Materials
A material constituted by solid glass blocks (Nevada, etc.) and whose bonding and the frame are carried out by reinforced concrete. Syn. with GLASS CONCRETE

GLAZED STONE
Verrier
Defects (*Building Materials*)
A defect affecting an ashlar presenting the aspect of a chunk of glass.

GLOBAL AGGREGATE
Echantillon global
Building Materials
Syn. with GLOBAL SAMPLE

GLOBAL SAMPLE
Echantillon global
Building Materials
The quantity of aggregates constituted by the whole of sampling and intended for providing samples for testing. Syn. with GLOBAL AGGREGATE

***GLÖTZL* STRESS AND PRESSURE CELL**
Cellule *Glötzl*
Equipment for Measure and Control
Instrument for measuring stresses or pressures.

GLUE
Colle; Souder
Adhesives; Welding
1. A product for joining two pieces by contact that presents in two aspects, in dispersion or in solution:
- **dispersion glue** (*la colle en dispersion)* appears in the form of paste or gel of a milky white;
- **solution glue** (*la colle en solution*) appears in the form of liquid in solution in a solvent and is, when it is not charged, transparent. It always has an odor which is that of the solvent. Syn. with ADHESIVE

2. To join materials by gluing with an inherent adhesive offering an exceptional bond and preventing any separation to more or less long term.

GLUED ALVEOLATE ELASTOMER JOINT
Joint en élastomère alvéolé collé
Tightness
A supple elastomer containing bubbles of air, used to seal construction joints.

GLUED-LAMINATED TIMBER
Lamellé-collé
Building Materials
Syn. with GLULAM

GLUING
Collage
Adhesives
A mode of assembly of two surfaces by means of a liquid or pasty material (to cold or to hot), in the form of film.

GLUING ASPHALT
Bitume d'encollage
Tightness
A bituminous material for hot-gluing multilayer products in flexible damp-course, cardboards mat asphaltic, and pasty products.

GLUING BY SELF-ADHERENCE FILM
Collage par film (par bande d'apport)
Adhesives
An assembly that consists in inserting between the faces to be render jointly liable, a self-adhesive film mostly reactived.

GLULAM
Lamellé-collé
Building Materials
A prefabricated wooden panel formed by slates stuck between them and perpendicular laid out to the plan of the panel. Syn. with GLUED-LAMINATED TIMBER

GNEISS
Gneiss
Geology
An acid metamorphic rock, into which alternate, in strata, clear zones (feldspar and quartz) and black zones (mica). Different varieties of gneiss are defined according to the additional minerals which they contain (garnet, magnetite, pyroxenes, etc.). Most widespread gneisses are acid gneisses, with garnet, cordierite, and sillimanite. Eye-shaped gneisses are varieties with large feldspar crystals.

GOING
Giron
Construction
The distance separating two risers of a staircase or two concurrent noses of step.

GONIOMETER
Goniomètre
Topography
A topographic instrument for measuring angles.

GOOSE NECK
Crosse d'échelon
Construction
A retractable round iron rod with a hook-shaped top extremity and when it is in the operational position, exceeds about of 1 me the last course of

an inspection chamber, a manhole. The goose neck allows to facilitate the going down (or the go back up) of inspection or maintenance personnel. Syn. with SWANS NECK

GORGE
Gorge
Welding
The height, taken from the root, of the greatest triangle than it is possible to inscribe in the straight section of a weld bead.

GOUGE
Echopper; Gouge; Gouger; Goujure
Metallurgy; Equipment and Tools; Work; Welding
1. To remove the projections of smelted metal from the surface of a metal piece using a burin.
2. A straight or S-cranked chisel used to cut wood or stone; the board is concave and the cutting edge is semicircular.
3. To perform a recess or a groove with a gouge.
4. To subject a weld bead to an attack that allows to eliminate irregularities, defects, possible deposits of slag to let remain the only healthy metal before resumption. One can also gouge the back of a weld before performance of a bead, it is in particular the case for welds on preparation in X where one gouges the root of the first part before carrying out the symmetrical chunk of the bead. The gouging is carried out with a pneumatic gun equipped with a special graver, by grinding, etc.
5. The result of gouging.

GRAB
Benne preneuse
Equipment and Tools
A type of grab laid out at the end of an arm of crane and used to load rocky materials. Syn. with CLAMSHELL GRAB; GRAB BUCKET; GRAPPLE

GRAB BUCKET
Benne preneuse
Equipment and Tools
Syn. with CLAMSHELL GRAB; GRAB; GRAPPLE

GRABEN
Fossé
Sanitary Engineering and Drainage
Syn. with DIKE; DITCH; DRAIN; TRENCH

GRADE
Nuance; Abreuver
Metallurgy; Masonry
1. The indication of the strength of a steel in the form of the value of the guarantee elastic limit *Re,* or under that of the guarantee breaking strength, expressed in kg/mm^2, preceded by the letter *E* (example: E26, E36, etc.).
2. To carry out a rendering on a porous or uneven background to make it smooth and even.

GRADE OF A STEEL
Qualité d'un acier
Metallurgy
The criterion of value that depends on the manufacture more or less developed of the steel, of the processes used to transform the cast iron into steel from coming out of the blast furnace and of the proportioning of elements introduced during the operation that allows to play on the grain, impurity and carbon content, cohesion, weldability, and appearance factor in the time with regard to the fatigue.

GRADE OF BRIDGE EXPANSION JOINT
Classe d'un joint de chaussée
Civil Engineering
The organization into a hierarchy giving a classification that is determined in terms of the total traffic of a roadway.

GRADER
Niveleuse
Equipment and Tools
A pneumatic-mounted earthmoving plant carrying in the middle of the chassis an adjustable curved blade. This machine is used to level soils, to scour on a low depth or to display materials. Syn. with LAND GRADER

GRADIENT
Déclivité; Rampe; Glacis; Inclinaison
Civil Engineering; Construction; Defects
1. The inclination that the longitudinal profile of a communication routes shows in a direction or in another. When the gradient allows to reach a point more high than the one that marks the origin of the start, it is called *slope.* If, on the contrary, it goes in the backward direction, one calls it *fall of a (railway or roadway).* One

indicates the value of this inclination by the tangent (expressed in thousandths) of the angle formed by the longitudinal profile with the horizontal profile or by a fraction having for the numerator the unit and for the denominator the number of meters that it is necessary to cover for increasing 1 meter.
2. The declivity of a road or a railway track considered in the direction of the climbing. Syn. with FALL; SLOPE
3. Syn. with BANK; SLOPE
4. Defect of verticality of a drilling or a well. Tolerances mostly are in the range of 3°.

GRADIENT BRIDGE
Pont en pente ou en rampe
Civil Engineering Structure
A structure of which supported way shows a declivity. The deck supporting the way follows the slope and it is known as *in slope* or *gradient* according to the traffic stream (it can be both at once).

GRADINE
Gradine
Equipment and Tools
A jagged chisel comprising four (flat gradine) or six teeth (diamond point gradine) and that is used to remove the harshness left on the stone by the punch or to cut very hard stones. **See Figure 3**

GRADING
Granulométrie
Geotechnics; Test of Materials
1. A soil classification in terms of dimensions of its grains that is carried out by sifting with round-hole sieve or sieve up to 100 µm; for particles of lower size one proceeds by sedimentation. Syn. with GRANULOMETRY; GRAIN SIZE DISTRIBUTION
2. The science of the determination of particle sizes whose goal is to express, as a percentage of mass, grains of various dimensions constituting a given aggregate mass.
The operation requires the use of weighing instruments, on the one hand and measurement of dimensions on the other hand. A grading is binary, compound, quaternary, etc., depending on whether aggregates are classified, by dimensions, in two or more categories. A grading is continuous, or discontinuous, according to whether, in categories of aggregates implemented, the higher limit of dimensions of a category corresponds, or not, at the lower limit of the next category. Example:
- **continuous grading** (*granulométrie continue*): 0-5, 5-15, 15-30, 30-70, 70-120;
- **gap grading** (*granulométrie discontinue*): 0-5, 15-30, 70-120.

Syn. with GRANULOMETRY; PARTICLE SIZE DISTRIBUTION

GRADING CURVE
Courbe granulométrique
Building Materials; Geotechnics
1. The representation on a graph of the proportion (in percentage of the mass) of aggregates of dimension lower than a diameter *d* (in mm) and following to a grain size analysis. The curve thus realized is afterward compared with landmark curves established for typical granular mixtures (Fuller curves, Bolomey curves). The aim of these curves is to define, a priori, in terms of the dimension maximum of aggregates and the cement batching, percentages in weight of aggregates within the defined categories that must, theoretically, give most effective concrete.
2. The graphic translation of the grain size analysis that is established after sifting and sedimentation analysis of a soil sample.
This curve represents for each dy *dimension of particle, the weight (or the mass y) of particles of this size or lower size: this weight is expressed in percentage compared with the total weight of the dry material of the studied sample; having regard to the extent of dimensions of the soil particles, the grading curve is plotted in the semilogarithmic coordinate, what allows a more precise representation of the fine particles whose importance is major on the behavior of the soils. This curve is established while putting down:*
- *in abscissa (logarithmic scale), sizes of soils elements, namely the dimension of the diameter of meshes of the sieve or equivalent diameter of the sedimentation analysis;*
- *in ordinate, percentages of undersize materials drawn.*

The elementary granular fractions are written out in abscissa on the plot, allowing thus a rapid identification of the studied soil.

GRADING PARTICLE-SIZE DISTRIBUTION
Analyse granulométrique
Test of Materials (Buildings Materials) and Geotechnics
Syn. with GRAIN SIZE ANALYSIS; PARTICLE -SIZE ANALYSIS; SIEVE ANALYSIS

GRADING RANGE
Fuseau granulométrique
Building Materials
Surface contained between two limit grading curves into which the real grading curve of an aggregate is located.

GRADING RANGE OF MANUFACTURE
Fuseau de fabrication
Building Materials
In a grading curve, the characteristic grading range of the manufacture; it is that than contains 95% of grading curves of the material.

GRADING RANGE OF REGULARITY
Fuseau de régularité
Building Materials
In a grading curve, range that defines the extent of the zone in which 95% of curves obtained during the control must lie; it is set inside the grading range of specification.

GRADING RANGE OF SPECIFICATION
Fuseau de spécification
Building Materials
In a grading curve, range that defines the zone into which the grading range of regularity must to lie.

GRADUATED ARCHSTONE
Crossette
Construction
The upper chunk of an archstone horizontally extended in the tympan beyond of the joint of the vault string molding, forming thus step. Syn. with SHOULDER. **See Figure 4**

GRADUATED BANK
Redent
Construction
Syn. with BENCH

GRADUATED KEYSTONE
Clef à crossettes
Construction
A key of which joints are interrupted by symmetrical steps that give to blocks thus tooled the appearance of a T. Syn. with SHOULDERED KEYSTONE

GRAFT
Abouter
Construction
To join end to end two parts, two elements of a structure. Syn. with BUTT END; JOIN END TO END

GRAFT
Greffer; Enter; Anter ou Enter
Temporary Construction; Work
1. To extend a scaffolding pole, a ladder, etc. Syn. with ADD
2. To lengthen by notch assembly two structural elements (example: two pieces of wooden frame, a pile, etc.).

GRAFTED POLYMER
Polymère greffé
Polymers
A polymer formed by molecules into which one or several species of sequences are fixed to the primary chain by forming lateral chains, these last being constitutional or configurational different from those of constitutional motives forming the primary chain, other than junction points.

GRAFTING
Aboutement
Construction
The assembly joint of two elements placed end to end (example: two beams). Syn. with BUTTING; JOINING

GRAIN
Fil; Grain; Veine
Nomenclature of Materials; Petrography
1. The fiber and vessel of wood.
2. A small element of detrital origin present in sedimentary rocks.
3. Texture of wood.

GRAIN DIAMETER
Diamètre de grain
Construction and Geotechnics
The size of grain determined in the grain-size analysis by sifting or sedimentation analysis. Syn. with GRAIN SIZE

GRAIN SHAPE
Forme d'un grain
Building Materials
In grading, thickness, size, and length of each grain. Syn. with PARTICLE SHAPE

GRAIN SHAPE RATIO
Coefficient de forme d'un grain
Building Materials
The ratio between the real volume and the fictitious volume of a grain corresponding to its circumscribed sphere.

GRAIN SIZE
Calibre; Granularité; Diamètre de grain
Building Materials; Geotechnics
1. An essential datum characterizing sizes of grains constituting the large aggregate. The grain size is designated by two dimensions *d* and *D* expressed in millimeters and that are openings of the meshes of standardized sieves. Syn. with PARTICLE SIZE
2. The grain-size distribution of an aggregate.
3. Syn. with GRAIN DIAMETER

GRAIN VOLUMETRIC MASS
Masse volumique du grain
Building Materials
In grading, the mass of the unit volume of the even matter constituting the aggregate.

GRAINED
Grenu
Building Materials
Of a material presenting superficial grain-shaped small harshness largely spaced.

GRAINED SURFACE
Surface grenue
Construction of R. C. and P. C.
The facing of a concrete work presenting a granular aspect and whose grains can reach the scale of the sand grains.

GRAINING
Madrure; Veinage
Defects (Construction of R.C. and P.C.)
The figuration of wood grains on a concrete facing having been cased with boards, balks, and some plywoods.

GRAIN-SIZE ANALYSIS
Analyse granulométrique
Test of Materials (Building Materials and Geotechnics)
An operation which allows to measure the dimensional distribution in weight of elements of a material (ground or aggregate), then allowing the establishment of a grading curve. This separation of grains is carried out by sifting by means of series of standardized sieves until dimensions of 0.1 mm and continued beyond by application of Stokes law to a suspension of material during sedimentation.
For a ground, the aim is to determine the dimension of particles that constitute a sample and to calculate the percentage compared with the total weight of the sample of the weight of particles whose dimensions are included in the focused ranges.
Results, expressed as a percentage of the dry weight, are postponed on graphs, with, on the abscissa, on the logarithmic scale, the diameter of grains expressed in round opening of round-hole screen and, in ordinate, on a linear scale, the percentage of grains whose dimensions are lower or equal than the corresponding abscissa. Syn. with GRADING PARTICLE-SIZE DISTRIBUTION; PARTICLE SIZE ANALYSIS; SIEVE ANALYSIS

GRAIN-SIZE CLASSIFICATION OF SOILS
Classification granulométrique des sols
Geotechnics
Syn. with SOIL CLASSIFICATION OF GRANULOMETRIC GRADATION.

GRAIN-SIZE DISTRIBUTION
Granulométrie
Geotechnics
Syn. with GRADING; GRANULOMETRY

GRANITE
Granit; Granite
Geology
1. A hard and strong rock likely to be polished, called *granite* by quarry workers, but which is not necessarily a granite. In this family of stones one can quote: granite, syenite, diorite, gabbro.
2. A family of eruptive rocks characterized by the prevalence of alkalis on the lime and a strong content of quartz (which can reach 80%). There exist very many varieties of granites, which one distinguishes according to the size of grains, according to the mineralogical composition, or according to the texture. Granite is an excellent building stone used to construct many works, in particular in Brittany.

GRANODIORITE
Granodiorite
Geology
A plutonic rock containing more than 20% quartz.

GRANOLITH
Granito
Building Materials
Syn. with GRANOLITHIC CONCRETE; GRANOLITHIC FINISH; TERRAZZO CONCRETE

GRANOLITHIC CONCRETE
Granito
Building Materials
Concrete whose skeleton is constituted by marble or comblanchian aggregates or any other hard stone likely to be polished. Syn. with GRANOLITH; GRANOLITHIC FINISH; TERRAZZO CONCRETE

GRANOLITHIC FINISH
Granito
Building Materials
Syn. with GRANOLITH; GRANOLITHIC CONCRETE; TERRAZZO CONCRETE

GRANOPHYRE
Granophyre
Geology
A porphyritic microcrystalline granite.

GRANULAR
Granuleux
Building Materials
1. Of a product divided into grains.
2. Of a surface that shows many small harshness formed by grains of a material whose matrix does not level their summits.
Syn. with GRANULOUS

GRANULAR COEFFICIENT
Coefficient granulaire
Test of Materials (Building Materials)
A numerical magnitude that represents the hardness and adhesion characteristics of the aggregates going into the proportion of concretes.

GRANULAR DESIGN MIX
Etude de la composition granulaire d'un béton
Building Materials
An analysis that consists in defining optimal percentages of different aggregates whose one has (sands, fine gravels, gravels, stones) so as to manufacture concrete whose qualities are those researched to build a work or a part of work.

GRANULAR FILL
Matériau granulaire
Building Materials
A three-phase system formed by solid grains, pore water, air, and water vapor.

GRANULAR FRACTURE
Cassure à grains
Metallurgy
A breaking facies of a frail metal (sudden breaking without deformation).

GRANULAR METAL
Grenaille
Metallurgy
A grain of metal (mostly of cast iron) that constitutes a reject material used for grains shot-blasting operations.

GRANULAR RESIDUE
Grappiers
Hydraulic Binders
Syn. with GRAPPIER CEMENT

GRANULAR SOIL
Sol pulvérulent
Geology
Syn. with COHESIONLESS SOIL

GRANULAR SURFACE
Cendrure
Metallurgy
A superficial defect of a steel characterized by a granular surface.

GRANULATE
Boucharder; Grenailler
Equipment and Tools; Work
1. Syn. with BUSH HAMMER
2. To carry out shot blasting.

GRANULATED READY PRIMED PRODUCT
Produit grenaillé prépeint
Metallurgy
Iron and steel product having undergone a surface cleaning comprising a blast cleaning and the application of a prime coat of paint.

GRANULATING HAMMER
Bouchardeuse; Boucharde
Equipment and Tools
1. A tool fitted with a bush hammer. It is used in quarries, and it is capable to work throughout the surface of the block of stone to be cut.
2. Syn. with. BUSH HAMMER

GRANULATION
Granulation; Grenaillement
Building Materials; Work
1. Operation of fragmentation of rocks that provides chippings.
2. The result of an operation of shot blasting or action to granulate.

GRANULE
Granule
Materials
A particle dispersed in a suspension.

GRANULITE
Leptynite; Granulite
Geology
A rock resembling granite, with very fine elements containing mica.

GRANULOMETRIC
Granulométrique
Building Materials
Which concerns grading.

GRANULOMETRIC PLOT
Graphique granulométrique
Building Materials
A plot that appears a chart of the content of various elements composing the sample of the studied soil and that is represented by an equilateral triangle in which three systems of coordinate are parallel with each side, in the granulometric study of soil by sedimentation. Each of the three cells thus obtained allows to appear sets made up of the three fractions of soil. The triangular plot is especially known in pedology, three systems of coordinate indicating clays then silts and sands. Syn. with GRAPH OF GRAIN-SIZE DISTRIBUTION

GRANULOMETRIC PROPORTIONS
Composition granulométrique
Geotechnics and Building Materials
The proportion of the grains of various size that compose an aggregate or a given soil.

GRANULOMETRY
Granulométrie
Test of Materials and Geotechnics
Syn. with GRADING; PARTICLE -SIZE DISTRIBUTION

GRANULOUS
Granuleux
Building Materials
Syn. with GRANULAR

GRAPH
Abaque; Faire quartier; Donner quartier
Drawing
1. Syn. with CHART; NOMOGRAPHY
2. To execute graphic constructions in which a piece will be represented in its new position.

GRAPH OF PRESSURE
Faire le trait à la poussée
Strength of Materials
To determine by the graphic method the thickness of a wall and the need for a buttress to resist a thrust.

GRAPHIC STATICS
Statique graphique
Strength of Materials
All processes that allows by purely geometrical means, to solve problems in regard to statics. It

have for aim the research of conditions that contribute establishing the balance of a nonlinear system of forces connected by rigid bars. It uses, to represent a force in magnitude and direction, a right line, its length, and its position.

GRAPHITE
Graphite
Metallurgy
A variety of carbon entering in the composition of steels and whose one of main properties is to be chemically homogeneous. Syn. with PLUMBAGO

GRAPPIER CEMENT
Grappiers; Ciment de grappiers
Hydraulic Binders
1. Grains of limestone collected after the sifting of extinguished limes, which are composed of underburnt lumps, of badly extinguished remains and mainly, in the case of hydraulic limes, of more clayey or more baked parts where lime lies in a more advanced state of combination with silica or alumina, and whose composition approaches more or less that of the cements. Syn. with GRANULAR RESIDUE
2. A product that ensues from the grinding of grappiers coming from the manufacture of limes well baked, after complete extinction and husking of grappiers.

GRAPPLE
Benne preneuse
Equipment and Tools
Syn. with CLAMSHELL GRAB; GRAB; GRAB BUCKET

GRATING
Caillebotis; Grille; Grillage
Construction; Foundation; Building Materials
1. A frame formed by a set of galvanized steel slats, jointed in lattice, used as a grille and that is posed on the ground above gutters.
2. A light decking element more or less formed by metallic flats on edge in tight grid layout, of sections or twisted bars, used to cover some bridges (walkways, pedestrian bridges, movable bridges, etc.).
Syn. with DECK
3. Generally metallic element formed by a barred frame placed in front of the entry of an aqueduct, a duct, etc., with intent to retain various rubbish washed along by waters.
4. A decking formed by squared wooden pieces being used as support to the footings of old bridges.
5. Set of pile caps and cross sleepers of wood connecting between them heads of wooden piles of a foundation. The grating supports the decking on which rest masonries.
Syn. with GRILLAGE
6. Syn. with OPEN METALWORK

GRATING PIT
Rouet
Foundation
Syn. with TIMBER MAT PIT

GRAVEL
Gravier
Building Materials
A material coming from the dredging of the river. Its grading displays from 2 to 20 mm and that is used to manufacture concretes. Syn. with GRIT; GRITSTONE

GRAVEL CONCRETE
Béton de gravier
Building Materials
A material whose skeleton is composed of gravel and sand.

GRAVEL FORM
Gravelage
Work
A regulated bed made of gravel.

GRAVEL GRAB
Chape à gravier
Equipment and Tools
In drilling, tool used to bore grounds constituted by gravels and sands. The gravel grab must be used inside a sheath or a tubing to avoid the locking of tools by the landslide of the drilling walls.

GRAVEL GUARD
Murette garde-ballast; Garde-grève; Crapaudine
Construction
1. A small concrete or masonry wall for supporting grounds of the platform and ballast (in the case of railway bridges), and for releasing

ends of the deck. For some works, the abutment being leveled on the level of the installation plan of the bridge-support apparatus, therefore on a lower level than that of ways or the roadway, it is necessary to establish, in set back of butts of beams or deck, these dwarf walls. Syn. with BALLAST RETAINER. **See Figure 5**
2. Syn. with WATER STRAINER

GRAVEL GUARD LOW WALL
Garde-grève
Construction
A supporting low wall interdependent of the abutment and intended in the roadway bridges for separating the road platform from the deck while ensuring the maintenance of grounds, and for serving if necessary as support at the transition slab or again for keeping the expansion joint.

GRAVEL GUARD PLATE
Garde-grève
Construction
A trailing plate of sheet metal of a steel deck making the junction between the deck and the gravel guard dwarf wall.

GRAVEL METALLING
Cailloutis
Civil Engineering
A metalling carried out with pebbles.

GRAVEL PIT
Gravière; Ballastière
Building materials
1. The location of extraction of gravel.
2. Syn. with BALLAST PIT

GRAVELLY
Graveleux
Building Materials
Of a matter, soil, etc.. which contains gravel.

GRAVELLY CONCRETE
Béton gravillonneux
Building Materials
Damage of the concrete due to its lack of compactness. This defect is due to a too firm plasticity leading a hard pouring of the concrete that settles badly and keeps a spongy consistency, or to an excess of vibration. It presents a texture in which appear only very few binders and sand. Between fine gravel, one observes small cavities in which soot, smokes and humidity penetrate causing spallings, cracks, etc.

GRAVELLY MARL
Caillasse
Building Materials and Geology
Syn. with BROKEN STONE; HARD SILICEOUS BED; HARDCORE

GRAVELLY SOIL
Cailloutis
Geology
Gravels, all of loose materials where predominate pebbles.

GRAVELLY SURFACE
Gravelure
Defects (Metal Construction)
A defect that impairs some sections, sheet metals, hot-rolling products characterized by small superficial cavities due to the removal of small scales of smithsonite.

GRAVEL-SAND
Grave
Building Materials
Syn. with SAND-GRAVEL MIXTURE

GRAVEL-SLAG MIXTURE
Grave-laitier
Building Materials
A material formed by a blend of an aggregate 0/20 mm and some percentage (15% to 20%) of granulated slag provided by blast furnaces and that is used in road construction to carry out the base courses of a roadway. This material has the property, in the presence of water and of a catalyst of the hot type, to make set as a hydraulic binder and thus to bond aggregates.

GRAVELWORK
Gravelage
Work
A work carried out of gravel (example: drainage).

GRAVIFIC WATER
Eau gravifique
Geohydrology
The free liquid content in porous rocks and circulating by gravity. Syn. with FREE WATER

GRAVIMETRIC INVESTIGATION
Gravimétrie
Geophysics
Syn. with GRAVIMETRY

GRAVIMETRIC LOGGING
Sondage gravimétrique
Geophysics
A geophysical approach of the soil survey. See GRAVIMETRY.

GRAVIMETRY
Gravimétrie
Geophysics
A geophysical prospecting method that consists in doing measurements relating of the weight intensity on the surface of the earth or sea. Goal is to look anomalies to draw information from it on the rocks distribution of the basement and the possible spaces. Syn. with GRAVIMETRIC INVESTIGATION

GRAVITY ACTION
Gravitaire
Work
Of what is exerted, occurs, in the alone action of gravity, namely of its own weight.

GRAVITY APPARATUS
Appareil de gravité
Equipment and Tools
A distributor device of where a liquid flows under the effect of its own weight.

GRAVITY DAM
Barrage-poids
Civil Engineering Structure
A structure of trapezoidal section and large thickness which can resist against the thrust of water solely due to its weight. Some of these structures are strengthened with tie rods. They can be constructed either in masonry or in concrete. Syn. with GRAVITY DAM OF TRIANGULAR SECTION

GRAVITY DAM OF TRIANGULAR SECTION
Barrage-gravité
Civil Engineering Structure
Syn. with GRAVITY DAM

GRAVITATIONAL WATER
Eau libre; Eau de gravité
Geohydrology
Syn. with FREE WATER

GRAVITY-TYPE MACHINE
Bétonnière
Equipment and Tools
A device used to manufacture concrete mainly equipped with a mixing vat turning on an axle. There are concrete-mixers with inclined axis, horizontal axis or again vertical axis. Syn. with CONCRETE MIXER; CONCRETE MIXER DRUM; CONCRETE MIXING MACHINE. **See Figure 6**

GREEN BRICK
Brique crue
Building Materials
Syn. with AIR BRICK; HAND-FORMED BRICK

GREEN CONCRETE
Béton jeune ; Béton frais
Building Materials
The designation given to concrete during the period extending from the end of its implementation to the moment where it is able to support the first stresses generally due to the form striking. Syn. with FRESH CONCRETE; IMMATURE CONCRETE; WET CONCRETE

GREEN (or FRESH) CONCRETE ANALYSIS
Analyse du béton frais
Test of Materials (Construction of R.C. and P.C)
All operations for determining the proportions of various constituents of a fresh concrete (cement, aggregates, water).

GREEN EARTH
Terre verte
Geology
A material resulting from the decomposition of the pyroxenes and clays and which is made of silicates of magnesium, calcium, aluminum, potassium, and sodium enclosing iron.

GREEN OIL
Carbonyle
Materials
Syn. with CARBONYL

GREENSTONE
Pierre verte
Building Materials
A stone freshly extracted from a quarry.

GREYWACKE
Grauwacke
Geology
A variety of dark-colored siliceous sandstone.

GRID
Résille
Building Materials
A wire netting forming reinforcement in a screed.

GRID LAYOUT
Maillage
Work
The regular arrangement, such the meshes of a wire netting, of drillings carried out in a masonry or a ground to carry out injections, needling, etc.
See Figure 7

GRIGNARD
Grignard
Geology
Any conchiferous limestone marked by strong round imprints due to the presence of shells.

GRIL
Longrine; Racinal
Foundation
Syn. with PILE CAP.

GRILLAGE
Grillage
Defects (Masonry)
A defect that affects some renderings containing a hydraulic binder due to an insufficient hydration of this binder and that appears by a microcracked surface reminding the lattice.

GRILLAGE
Plate-forme; Racinal; Grillage; Gril en bois
Foundation
1. A horizontal frame that connects and rests on a pilotis and which is set up the masonry of a pier or abutment. Syn. with ELEVATED GRILLAGE ON PILES
2. Set formed by the assembly of wooden piles (or pillars) and pile cap that connect them on head.
3. Syn. with GRATING
4. Syn. with TIMBER MAT

GRIND
Gréser
Construction of R.C. and P.C.
To treat a surface to obtain a more fine grain or a concrete facing with apparent fine gravels.

GRIND (THE STONE)
Egréser
Masonry
To work the surface of a hard ashlar with an abrasive so as to obtain an almost smooth facing, however creating some fine deep lines like little stripes. Syn. with ABRADE

GRINDER
Gréseur; Gressier; Egréseur
Construction of R.C. and P.C.; Masonry
1. A quarry worker who works in a sandstone pit.
2. A laborer whose specialty is grinding.

GRINDING
Grésage; Egrisage; Egrésage; Doucissage
Construction of R.C. and P.C.; Masonry
1. The water grinding of a concrete facing so as to obtain apparent fine gravels. Syn. with PARTIAL VITRIFICATION
2. Syn. with HONING

GRINDING
Broyage; Mouture
Building Materials; Hydraulic Binders
1. A rock fragmentation process that produces sand.
2. A product obtained by the fine grinding of the cinder.

GRINDING
Ebavurage; Meulage
Metal Construction; Work
1. The removal on a metal part of smudges provoked by boring, punching, shearing, or flame-cutting of a bar or a sheet of metal. This process is usually carried out with an angle grinder.
2. Machining or sharpening with a grindstone.

GRINDING AGENT
Agent de mouture
Hydraulic Binders
An additive mixed during making of cements for facilitating their grinding.

GRINDING MACHINE
Broyeur
Equipment and Tools
Syn. with CRUSHER

GRINDING TEST OF CRUSHED MATERIALS
Essai de résistance à l'attrition ou à la trituration de matériaux concassés ou de blocs d'enrochements
Test of Materials (Building Materials)
The strength determined by the Deval test.

GRINDSTONE
Meule; Pierre à faux
Equipment and Tools; Geology
1. A disc or crown formed by agglomerated abrasives, fixed on the axle of a turning machine at high speed and driven by various means (electricity, compressed air, thermal engine), which is used to machine by abrasion. Syn. with ABRASIVE WHEEL; GRINDWHEEL
2. Syn. with WHETSTONE

GRINDWHEEL
Meule
Equipment and Tools
Syn. with ABRASIVE WHEEL; GRINDSTONE

GRIP
Main pinçante
Equipment and Tools
A towing device of a tunneling machine along the face, formed by an arm that tacks on the cut conveyor.

GRIP LENGTH
Longueur d'adhérence
Construction of R.C. and P.C.
Syn. with BOND LENGTH; BONDING LENGTH

GRIPPERS
Grippeurs
Equipment and Tools
Side bearing blocks equipping tunnellers and on which take rest onto jacks pushing the turning tray.

GRISARD
Grisard
Building Materials
A French name to designate a sandstone variety of a great hardness.

GRISETTE
Grisette
Defects (Building Materials)
A French name to designate a decay that occurs in the armpit of the branches of some trees.
One distinguishes:
- **gooseflesh grisette** (*la grisette à chair de poule*), which is a mildew strewed with whitish color points;
- **flame grisette** (*la grisette à flammes*), which propagates regularly in yellow or brown veins; the yellow flames extend, generally, over a big length. This form of decay is dangerous.

GRIT
Gravier; Abrasif; Grain d'une roche
Building Materials; Petrography
1. Syn. with GRAVEL; GRITSTONE
2. Syn. with ABRADANT; ABRASIVE
3. The medium dimension of rock constituents.

GRIT CHAMBER
Dessableur
Sanitary Engineering and Drainage
Syn. with SAND TRAP

GRIT CRUSHER
Gravillonneur
Equipment and Tools
Syn. with GRITTER

GRIT REMOVAL UNIT
Dessableur
Foundation
A device that extracts the sand from the drilling mud during its ascent on surface.

GRIT TRAP
Puisard
Construction
Syn. with SUMP

GRITSTONE
Grès; Gravier
Geology; Building Materials
1. Syn. with SANDSTONE
2. Syn. with GRAVEL; GRIT

GRITTER
Gravillonneur
Equipment and Tools
A crusher used in quarry to split up the rock and to turn it into fine gravels. Syn. with GRIT CRUSHER

GRITTING
Gravillonnage
Works
Syn. with CHIPPING; FINE GRAVELING

GROG
Chamotte
Building Materials
Syn. with FIRECLAY; REFRACTORY CLAY

GROIN
Arête
Construction; Materials
The salient angle formed by the conjunction of two plans; the edge can be sharp or round. Syn. with ARRIS; EDGE; QUOIN

GROIN OF A VAULT
Arête d'une voûte
Construction
The angle formed by a vault at the conjunction with a wall or another vault. Syn. with NERVURE

GROOVE
Refouillement; Rainer; Cannelure
Carpentry; Work, Architecture
1. Syn. with RABBET
2. To carry out grooves in a material. Syn. with FLUTE
3. Syn. with CHANNEL; FLUTE

GROOVE
Rainure; Gorge; Feuillure
Construction
1. A long and narrow notch with three preserved faces, dug in a material. Syn. with CHANNEL; FURROW; RABBET; SLOT
2. Syn. with THROAT
3. Syn. with BACKBAND; RABBET; REBATE

GROOVED BOARD
Planche rainée
Building Materials
A piece comprising a groove normally located in the axis and of a thickness at least equal to the third total thickness of the board.

GROOVED MOLDING
Gorge
Architecture
A concave circular molding (mostly a half- or quarter-circle). Syn. with THROAT

GROOVING
Recoupement
Masonry
Syn. with CHANNELING.

GROUND
Sol; Terrain
Geology; Earthwork
1. The terrestrial superficial bed formed by water, gas and solid mineral grains, which owes its origin to the physical, mechanical, or chemical alteration of rocks. There is a great variety of grounds which one usually distinguishes by their chemical, mineralogical, grading compositions, and their water content.
Two great classes of grounds are distinguished according to the size of grains:
- **coarse-grained soils** (*les sols grenus*), whose particle sizes range from 20 µm to 20 mm (pebbles, gravel, coarse and fine sand);
- **fine soils** (*les sols fins*), whose size of grains ranges from 2 to 20 µm (silt and clay). Gravels, sands and silts come from the physical disintegration of the parent rock, whereas clays come from the chemical alteration of the aforementioned parent rock.

In soil mechanics, the term of ground is only addressed to the loose materials that can be separated into grains with the hand or by a mechanical strain of very low intensity. Syn. with SOIL
2. All rocks of similar composition, genesis, or age.
There are several types of grounds:
- **grounds of igneous origin** (*les terrains d'origine ignée*), whose materials come from the

terrestrial core such as crystal, microcrystalline, vitreous rocks;

- **grounds of sedimentary origin** (*les terrains d'origine sédimentaire*), which spin off from the carrying of sediments by agents of erosion (rain, freezing, wind, glacier). We can distinguish:
  - loose deposits in a permanent state (fall, gravels, sands);
  - loose deposits in an apparent state of moisture (clays, marls, silts);
  - deposits agglomerated by:
    - desiccation (clays and marls dry),
    - pressure (chalk, very fine sands),
    - autocementation (limestones, siliceous rocks),
    - cementing of grains (sandstone);
- **grounds of metamorphic origin** (les terrains d'origine métamorphique), which result from sedimentation at high temperatures (schist, marble, etc).

Syn. with LAND

3. In the classification of earthwork difficulties, grounds are classified into:

- **ordinary** (*terrain ordinaire*) (excavatable with the spade or pickaxe), they are topsoils, loose sands, fill of recent formation, demolition rubbles;
- **semi-compact** (terrain semi-compact) (hardly excavatable with the spade but without difficulty with the pickaxe);
- **clayey, stony or plastic** *(terrain argileux, pierreux ou plastique)* (hardly excavatable with the pickaxe), they are tuffs, fragmented marls, sands agglomerated by a clayey binder;
- **compact** *(terrain compact)* (excavatable with tools or equipment such as peaks, rock breaker, explosives), they are compact clays, granites, etc.

GROUND ANCHORAGE
Ancrage de terrain
Civil Engineering
A practice of soils consolidation that consists in regularly distributing into the ground to be treated steel bars mostly sealed by grouting. As for the prestressed concrete, there are two types of anchorages, the active and passive:

- an *active anchorage* is sealed in the ground at its end which forms excrescence called *anchorage bulb*. It comprises a free length, tensioning, that rests onto the work;
- a *passive anchorage* is not tensioning after its setting.

GROUND BASHING
Consolidation dynamique
Works
Syn. with DYNAMIC CONSOLIDATION; VIBROCOMPACTION

GROUND BEAM
Longrine de pied; Longrine traînante
Temporary Constructions
In a timbered gallery, the timber piece posed longitudinally in a channel and on which rest the posts of frames or carriers. Syn. with FOOT BEAM; WALER

GROUND CARRYING CAPACITY
Portance
Geotechnics
All loads which can bear a ground. Syn. with BEARING CAPACITY

GROUND CONVERGENCE
Convergence des terrains
Civil Engineering Structure and Earthwork
The tendency that have the walls of an underground excavation to nearer in the aftermath of the pressure of country rock.

GROUND FREEZING
Congélation des sols
Earthwork
Syn. with DEEP FREEZING; FREEZING

GROUND INVESTIGATION
Reconnaissance des sols
Geotechnics
Before establishment of a construction, all investigations likeky to inform the designer about:

- the nature of the different strata met in-depth,
- the quality of each stratum and its thickness.

The soil exploration is made before the establishment of the design project of the work. To recognize soils one has many means of investigations among which one can quote: the research for archives, examination on the spot, trial borings (destructive or not), etc. Syn. with SOIL SURVEY

GROUND NAILING
Clouage de sol
Civil Engineering
A ground strengthening technique by linear elements working to tension and shear, setting by

sinking or driving, or inside drillings sealed by grouting. The nailing comes true high downward (contrarily to the reinforced earth wall). The protection of the facing is often carried out with shotcrete. Syn. with SOIL NAILING

GROUND PIGMENT
Pigment broyé
Painting
A paste which allows by moistening to give paints or coatings (or fillers). Among ground pigments, we can distinguish:
- **ground whites** (*les blancs broyés*) (white or oxides of zinc, lithopone, white of titanium);
- **usual colored pigments** (*les pigments usuels colorés*) (carbon black, black of charcoal and charcoal, black animals, yellow ochre, yellow of zinc, yellow or brown iron oxide, red of natural and artificial iron, red ochre, blue of cobalt, of Prussian or of overseas, green emerald, green of zinc, green oxide of chromium).

GROUND PLASTICIZED WITH CEMENT
Sol plastifié au ciment
Civil Engineering
A ground into which cement and a important quantity of water is mixed what brings about to soften it, thus allowing a setting without compacting.

GROUND PROP
Potelet
Temporary Construction
A vertical element placed between two wallings of a trench earthwork support. Syn. with PUNCHEON

GROUND REINFORCEMENT BY BALLASTED COLUMN, ETC.
Renforcement des sols par colonnes ballastées
Foundation
See BALLAST PILE

GROUND SLAB
Platée; Radier
Foundation; Construction
1. Syn. with PLATE FOUNDATION
2. Syn. with FOUNDATION RAFT; MAT

GROUND STUDDING
Cloutage de terrain; Clouage
Public Works
Syn. with GROUND NAILING

GROUND THRUST
Poussée des terres
Geotechnics
Syn. with EARTH PRESSURE

GROUNDS CLASSIFICATION
Classification des sols
Geotechnics
The distribution by category of soils, that may be made according to two approaches:
- the one, called *group index,* uses the grain size analysis, the liquid limit and plasticity index;
- the other, called *practice C.B.R.* (Californian Bearing Ratio), rests on the value of an index called *Californian bearing index.* This index expresses the ratio between pressures producing a sinking given in the studied material and treated by immersion and by optimum Proctor on the one hand, and in a typical material, on the other hand.

These two processes allows to estimate thicknesses that must have grounds beign used as foundation to resist to the required loads. They allow moreover to know in which limit it is possible to improve a ground of mediocre resistance by incorporating into it materials of better quality or by substituting him, on a determined thickness, a more carrying ground.

GROUNDS REINFORCEMENT BY RIGID VERTICAL INCLUSIONS
Renforcement des sols par inclusions verticales rigides
Foundation
The strengthening of a soil by a network of inclusions of grid layout given, interesting all or fraction of the thickness of poor soils. The reinforcement is carried out with piles or root piles.

GROUNDWATER LOWERING
Rabattement de nappe; Rabaissement de nappe aquifère
Foundation
Syn. with DEWATERING; SINKING OF GROUNDWATER

GROUNDWATER RESERVOIR
Aquifère; Couche aquifère
Geohydrology
Syn. with AQUIFER; WATER BEARING

GROUNDWATER SURFACE
Surface d'une nappe; Surface *ou* Niveau phréatique
Geohydrology
1. The surface area busy by water on the top part of the groundwater table.
2. The level of the underground water table fluctuating with the importance of precipitations and measurable in a well.

GROUP INDEX
Indice de groupe
Geotechnics
A numerical indication developed by American geotechnicians and that consists in classifying soils according to grain-size analysis, liquid limit and index of plasticity. The index of group is a variable number from 0 to 20. Lowest indexes correspond with best soils.

GROUPING OF ACTIONS
Combinaison d'actions
Strength of materials
Set constituted by actions to be considered concurrently.

GROUT
Liaisonner; Couler des joints
Work; Masonry
1. To join masonry (bricks, quarry stones, etc.) so as to make them interdependent between them. Syn. with BOND; JOINT; LINK; POINT
2. To seal a joint of masonry with grout.

GROUT(ING)
Coulis
Materials
An injectable liquid preparation in the form of solutions, emulsions and suspensions. Syn. with SLURRY

GROUT CEMENT PUMP
Pompe à injection
Equipment and Tools
Syn. with INJECTION PUMP

GROUT CURTAIN
Rideau d'injection; Voile d'étanchéité
Civil Engineering
Tight barrier carried out following a preestablished grid layout and which girdles by injected drillings a some volume of ground. This type of treatment applies to the alluvial grounds or fillings.

GROUT LOSS
Fuite de laitance
Defects (Construction of R.C. and P.C.)
A tightness defect of formworks whose joints or interstices leave to escape the laitance and that is characterized by runs on the external facing of the formwork.

GROUT MIXER
Malaxeur pour coulis
Equipment and Tools
An apparatus for manufacturing cement-based grouts. Syn. with SLURRY MIXER

GROUT STONE
Couler la pierre
Masonry
To bed a stone with grout.

GROUT UNDER PRESSURE
Injecter
Work
To fill spaces of variable importance with grout sent under monitored pressure into drillings reaching the levels to be injected.

GROUT VENT
Event
Construction
Syn. with VENT; VENT HOLE

GROUTED AGGREGATE CONCRETE
Colcrete
Building Materials
Syn. with COLCRETE

GROUTING
Injection de coulis de ciment; Barbotine
Work; Materials
1. A treatment process that consists in making penetrating under pressure a cement-based grout to regenerate masonries, fill cable ducts, fill in small cavities, seal cracks, or to reinforce soils.

2. Syn. with CEMENT GROUT; CEMENT SLURRY; SLIP

GROUTING ADMIXTURE
Adjuvant pour injection
Hydraulic Binders
An additive, which mixed to the grout or mortar of injection, allows to increase by it fluidity and to reduce the risks of settling and exudation.

GROUTING CONSOLIDATION
Consolidation par injection
Work
A strengthening ground method that consists in clogging existing spaces by carrying out the grouting with a cement-based grout.

GROUTING CONTROL TEST
Epreuve de contrôle des coulis de ciment (pour injection de gaines)
Test of Materials
A control executed on the building site with timings that are mostly defined in the contract. Main measurements achieved (in more test specimens for the strength test) are fluidity and exudation tests.

GROUTING FLUIDITY TEST
Essai de fluidité d'un coulis d'injection
Test of Materials (Building Materials)
A test which consists in measuring with a Marsh flowmeter of 1875 cm^3 the fluidity of a hydraulic binder-based grout. One times the time put by a liter of grout to pass through of a calibrated nozzle.

GROUTING LANCE
Lance d'injection
Equipment and Tools
A pipe by which the grout is brought into the medium to be injected and which is sealed or kept in the drilling with a tight mortar or of any other product likely to ensure the sealing, or with inflatable obturator. Generally speaking, the lance is provided of a closure device (sluice, faucet, etc.) and is sometimes provided of a pressure limiter. The lance is connected to the injector with supple tubes. Syn. with INJECTION LANCE

GROUTING MACHINE
Machine à jointoyer ; Guniteuse
Equipment and Tools
1. A compressed-air device which allows the mechanical carrying out of the mortar pointings of a masonry bond. Its principle of operation on grounds of the same principle as the mortar gun.
2. A mortar-throwing device functioning with compressed air. Syn. with SHOTCRETING MACHINE

GROUTING PLANT
Centrale d'injection
Equipment and Tools
On the important building sites, grouping of products to be injected, preparation of grout and all the necessary equipment to carry out groutings. The plant can be fixed or movable. One finds there gathered: silos, batching equipment and feeding, mixers and vats of resumption, press or pumps of injection, gauges, monitor and recording devices.

GROUTING SUITABILITY CONTROL TEST
Epreuve de convenance de coulis de ciment (pour injection de gaines)
Test of Materials
A trial for verifying, in the conditions of the building site, that the means and condition of implementation allows to carry out the grout with a minimum of risks and that the accepted formulation during the design grouting test suitable well.

GROWN IN SITU
Autochtone
Geology
Syn. with AUTOCHTONOUS

GROWTH
Tumeur
Defects (Building Materials)
A wooden sickness due to the deterioration of the phloem and affluence of sap in precise points. Syn. with TUMOUR

GRUAU
Gruau
Equipment and Tools
A term in use in some regions to identify a stony ground. Syn. with STONY SOIL

GRUB
Larve; Edosser
Defects (Building Materials); Earthwork
1. The second stage of the vital cycle between the egg and nymph; it is the longest stage during that is observed an important development of the individual. In many cases, they are the larvae which drill the wood and are directly responsible of damage. Syn. with LARVA
2. To clear land of roots, stumps, etc.

GRUBBING
Essartage; Edossage
Public Works; Earthworl
1. Syn. with CLEARING; LAND CLEARING BY BURNING
2. Digging up by the roots.

GUARANTEED STRENGTH BRICK
Brique à résistance garantie
Building Materials
A material whose strength is guaranteed to the crushing; its strength is, respectively, 2, 3 and 4 MPa. Syn. with ENGINEERING BRICK

GUARD
Nu intérieur d'un garde-corps; Corset
Construction; Work
1. A vertical plan to the plumb of the most projecting part of the railing toward inside, located at 45 cm or more above the normal parking zone, and limiting the projection of the body. Syn. with INTERIOR LINE OF A RAILING
2. See ENCLOSING

GUARD BOARD
Garde-gravois; Plinthe
Temporary Construction; Construction
1. A board setting on edge on the edgings of a scaffolding floor for preventing the fall of demolition rubbles or tools.
2. Syn. with TOEBOARD

GUARD PILES
Avant-duc
Construction
A piloting established at the entry or on the edge of a river, intended for being opposed to the water underminings under banks.

GUARDRAIL
Garde-corps; Balustrade; Lisse; Main-courante
Construction
1. Syn. with HANDRAIL; RAILING; SAFETY RAIL
2. Syn. with BALUSTRADE
3. In a railing, half-round section directly assembled with vertical rods or kept with screw on the top cross bar and that is intended for being taken by hand. By extension, upper chunk of a balustrade, a guard bar or rail of staircase.

GUARDRAIL PANEL; BARRIER PANEL
Panneau de garde-corps, de barrière
Construction
A portion contained between two successive vertical rods.

GUDGEON
Crapaudine
Construction
Syn. with SOCKET

GUDGEON (STONE)
Goujonner
Works
Syn. with DOWEL; JOGGLE; PIN

GUDGEONED STONE
Gousset
Masonry
A chunk of stone that is added, doweled, stapled.

GUIDE BUND
Guideau
Hydraulic Works
A small unsinkable longitudinal dike established along the bank of a river, which directs water at the entry and exit of a bridge. It regularizes the water flow and parts aside transverse streams from the foot of the embankment, in particular directly below of abutments. Guide bunds are built of rubble work or concrete. Syn. with GUIDE WALL

GUIDE DWARF WALLS
Muret-guide
Foundation
A low wall of concrete (or building blocks) built laterally on both sides of a future excavation carried out in a diaphragm wall in the ground.

These guide dwarf walls are intended for guiding the earthwork bucket. Syn. with GUIDE TRENCH

GUIDE PILE
Jumelles
Equipment and Tools
Syn. with FALSE LEADERS; LEADERS

GUIDE PIPE
Virole; Tube guide
Foundation
Concerning drillings of piles, metal or concrete tube element, sometimes supplied with a sill, set on the head of drilling hole, avoiding the surface landslides and allows the guidance of tool over the first meters.

GUIDE ROPE
Verboquet; Vingtaine
Equipment and Tools
Syn. with VERBOQUET

GUIDE TRENCH
Muret-guide
Foundation
Syn. with GUIDE DWARF WALLS

GUIDE WALL
Guideau
Hydraulic Works
Syn. with GUIDE BUND

GUIDED DRILLING
Forage dirigé
Work
Syn. with DIRECTIONAL DRILLING

GUIDING SPROCKET
Dent de guidage
Construction
A device that prevents the relative slipping of two pieces moving one on the other in a bridge support apparatus. This device is formed by a male tooth and female tooth situated on the lateral faces of the elements constituting the supporting device.

(RAINWATER) GULL(E)Y
Avaloir
Construction
Syn. with OUTLET

GULLIED SOIL
Sol ravineux
Geology
A ground covered with channels dug by the streaming of rainwater.

GULLY
Caniveau; Rigole
Sanitary Engineering and Drainage
Small canal or ditch dug in the ground to lead or to drain waters. Syn. with DRAINAGE DITCH; DITCH; GUTTER

GULLY EROSION
Ravinement
Hydrology
The formation of channels in the ground by removal of materials, due to the streaming of the rainwaters which violently flows.

GULLY INLET
Avaloir
Construction
Syn. with OUTLET

GUMMING
Gommage
Civil Engineering Structure
A cleaning which consists in treating selectively a facing without modifying its surface aspect.

GUN
Pistolet
Equipment and Tools
A device reminding the shape of the firearm, controlled by a trigger for throwing as fine droplets: paint, molten metal, sand, molten plastic matters. Syn. with SPRAY GUN

GUN (SHOTCRETE OR SPRAYED CONCRETE)
Lance de projection (béton ou mortier projeté)
Equipment and Tools
Compressed-air tool for spraying mortar or concrete. This device is fixed at the end of a carriage conduct and that forms the mortar or concrete jet. In dry shotcreting, it is in the lance that are mixed water, compressed air, and ingredients. Syn. with CEMENT GUN; CONCRETE GUN; MORTAR GUN. **See Figure 8**

GUN APPLICATION
Pistolage
Painting
Application of paint on a surface with a squirt gun. The spraying is carried out with hand-driven or automatic paint squirt guns of various types, whose:
- **(compressed) air gun** (*le pistolet à air comprimé*) which sprays the paint, before introduced by simple gravity or pressure, in the form of fog;
- **high-pressure gun** (*le pistolet à pression élevée*) whose relaxation at the exit of the nozzle ensures the pulverization of the paint;
- **electrostatic gun** (*le pistolet électrostatique*) into which the paint, divided into droplets, is charged electrically by an electrode suitably laid out and moves toward the object to be painted carrying a load of an opposite sign.

Syn. with SPRAY PAINTING

GUN INJECTION
Procédé par injection
Building Materials
A wood impregnation by diffusion consisting in inserting into a very wet wood with a hollow needle a concentrated preservative in the form of paste.

GUN-APPLIED MORTAR
Mortier projeté; Gunite
Building Materials
Syn. with PNEUMATIC MORTAR; SHOTCRETE

GUNITE
Guniter; Projeter
Work
1. To spray.
2. To implement sprayed concrete or mortar. Syn. with SHOTCRETE

GUNITE APPLICATOR
Projeteur
Work
The driver of a concreting robot.

GUNITING
Projection; Gunitage
Works
1. Syn. with MECHANICAL APPLICATION; SHOTCRETING
2. Syn. with SHOTCRETING; SPRAYING

GUNITING CAPACITY
Projectabilité
Buildings Materials
Syn. with SHOTCRETING CAPACITY

GUNITING POT
Pot pour projection de mortier
Equipment and Tools
A vat into which the mixing of the mortar to be thrown is performed and which is also used to its spraying. Its principle of operation is the same one as that of the pot for injection. This apparatus is used for wet shotcreting, in particular to repoint a masonry.

GURLET
Grelet; Gurlet
Equipment and Tools
A mason's hammer with a broad and lengthened peen.

GUSSET
Gousset; Barrette
Construction; Metal Construction
1. A progressive and localized thickening (inside or outside) of the intrados of segmentsat the right of a bearing (pier in particular) of a prestressed concrete work built by successive corbelings.
2. A metal plate joining the diagonal sections of a distance piece or a truss beam.

GUSSET PLATE
Gousset
Metal Construction
Syn. with ANGLE TIE; BRACKET; CORNER PLATE

GUTTER
Chéneau; Caniveau
Sanitary Engineering and Drainage
1. A box-shaped device of waters channeling placed under metal bridges or along some abutments to direct won waters toward an outlet. In the bridges with metal deck gutters receive waters by the intermediary of pipes or directly by holes drilled in the decking. **See Figure 9**
2. Syn. with DITCH; DRAINAGE DITCH; GULLY

GUY ROPE
Câble de retenue ; Hauban
Construction
1. In the suspension bridges or in some cable-stayed bridges, cable or chunk of cable located between the anchorage and pylon when this cable does not carries the deck. Syn. with STANDING ROPE. **See Figure 10**
2. Syn. with CABLE STAY

GUYING
Haubanage
Work
1. The carrying out of the maintenance of the stability of a mast, a pylon, etc., with cables or ropes; the result of this operation.
2. The set of cables or oblique rectilinear bars of a suspension or guy bridge.
Syn. with BRACING; STAYING

GUYS LAYER
Nappe de haubans
Construction
Set of guys from the same pylon on the same side, and anchored in the axis (axial layer) or on the same side (lateral layer) of a deck. In a layer, guys can be laid out according to a radiating configuration, in fan, harp, star.

GYPSEOUS
Gypseux
Geology
Concerning what contains gypsum or is analogous with rock.

GYPSIFEROUS
Gypsifère
Geology
Of a matter that contains gypsum.

GYPSIFICATION
Gypsage
Hydraulic Binders
An addition of gypsum during the grinding of cinder with intent to regularize the set of the cement at the time of its placing.

GYPSUM
Gypse
Geology
A hydrated calcium sulfate of saccharoidal or compact texture with inclusions of crystal varieties (lamellar, etc), of white color or sometimes colored.
It is a soft mineral, scratchable with the nail, that appears mostly inserted in the beds of clay or marl. Heated at 120° C it gives the plaster and is dissolved by water at a rate from 2 to 3 g/l. Gypsum-laden waters are known as *calcareous* (or *selenitic*). Gypsum is a sedimentary rock. There are several types of gypsym:
- **albastroid** (*le gypse albastroïde*), formed by large squat or tabular crystals which commonly reach several decimeters. Generally speaking, it contains many micritic grains disseminated or associated in heap, millimeter-length beds or system;
- **floury** (*le gypse farineux*), which owes its name to a microsaccharoidal structure and low cohesion of grains. The floury gypsum, formed by lenticular microcrystals very homometric (great dimension ranging between 30 and 50 µm), form heap or millimeter-length or centimetric interbeds within the agglomerated facies where they penetrate intergranular spaces. They can also constitute decimetric levels whose purity is only concerned by some blackish films, very deformed, of organic origin;
- **fibrous** (*le gypse fibreux ou fibro-lamellaire*), whose fibers are perpendicular to vein walls;
- **powdery** (*le gypse poudreux*) with microcrystalline structure that appears in vaguely stratified millimeter-length beds or in discontinuous films between megacrystals. Its granulometric and textural characteristic allows to identify it compared with a variety of alabaster which would are acquired none cohesion;
- **saccharoidal** (*le gypse saccharoïde*), whose crystals evoke those of grains of a lump of sugar.

Syn. with PLASTERSTONE

GYPSUM CONCRETE
Béton de gypse
Building Materials
A material with plaster binder. Syn. with PLASTER CONCRETE

GYPSUM QUARRY
Plâtrière
Buildings Materials
Syn. with PLASTER QUARRY

GYRATION
Rayonnement
Topography
See LEVELING

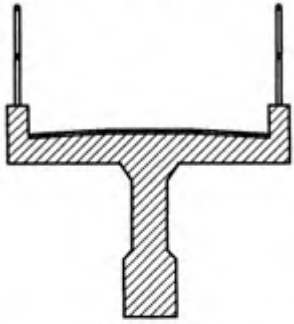
GYRATORY BREAKER
Broyeur à cône
Equipment and Tools
Syn. with CONE (-TYPE) CRUSHER; GYRATORY CRUSHER

GYRATORY CRUSHER
Broyeur à cône
Equipment and Tools
Syn. with CONE (-TYPE) CRUSHER; GYRATORY BREAKER

Figures of the letter

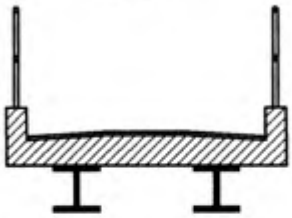


Fig. 1



Gangway with single girder of R.C.

Fig. 1a



Gangway with universal section slab of R.C.

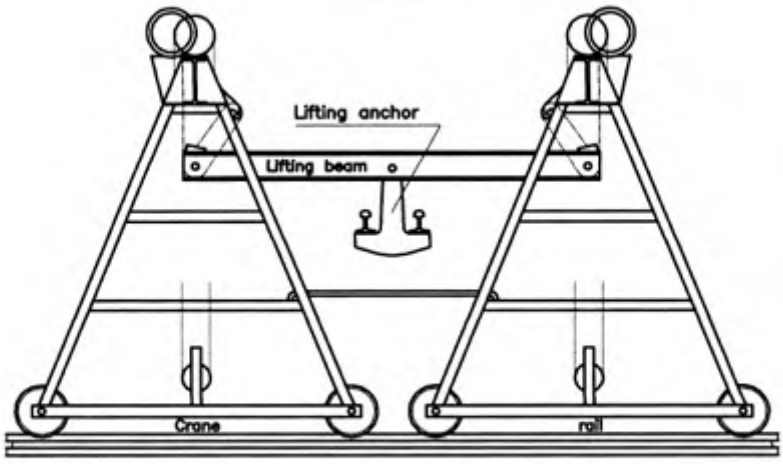
Fig. 1b



Slab–shaped gangway

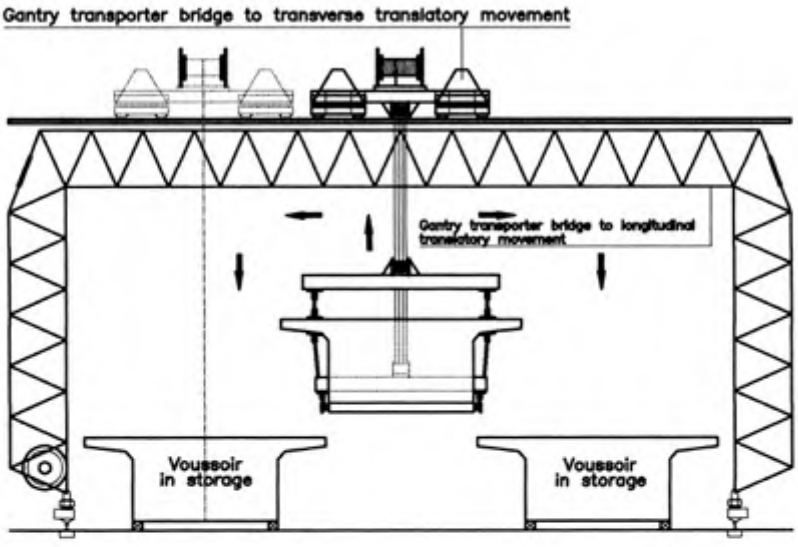
GANGWAY (different types)

Fig. 2



GANTRY CARRY BRIDGE (Handling)

Fig. 2a



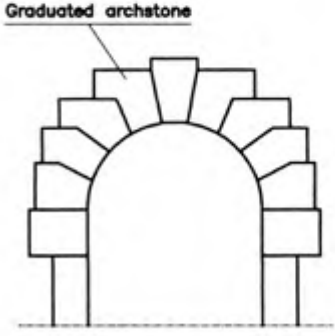
GANTRY CARRY BRIDGE (Handling)

Fig. 3



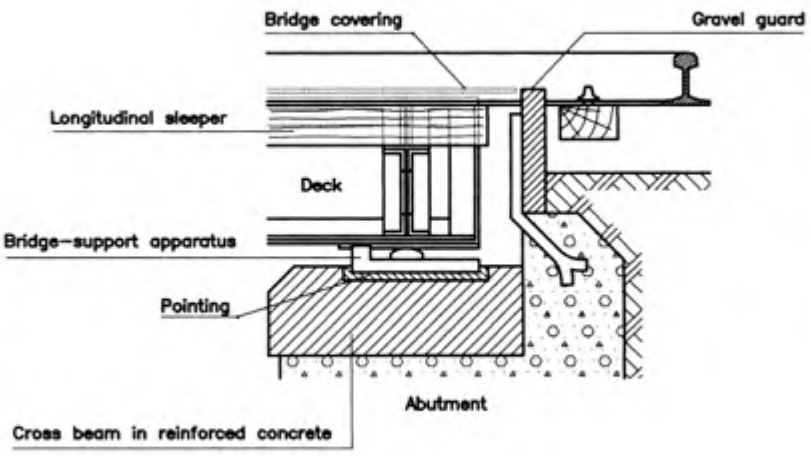
GRADINE

Fig. 4



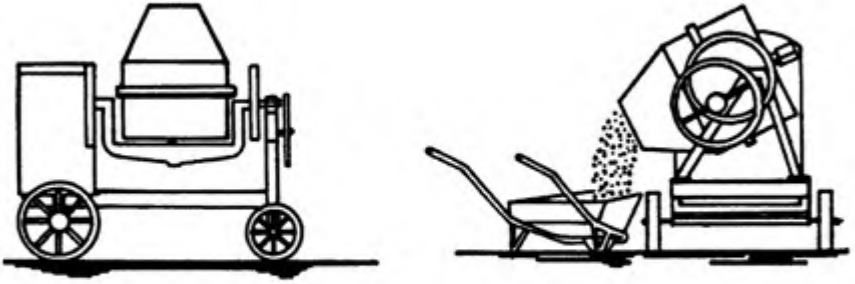
GRADUATED ARCHSTONE

Fig. 5



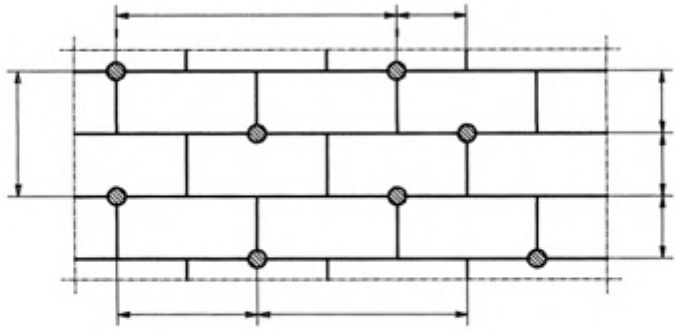
GRAVEL GUARD

Fig. 6



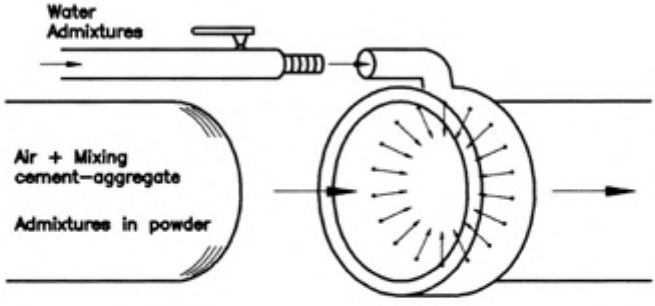
GRAVITY–TYPE MACHINE

Fig. 7



GRID LAYOUT

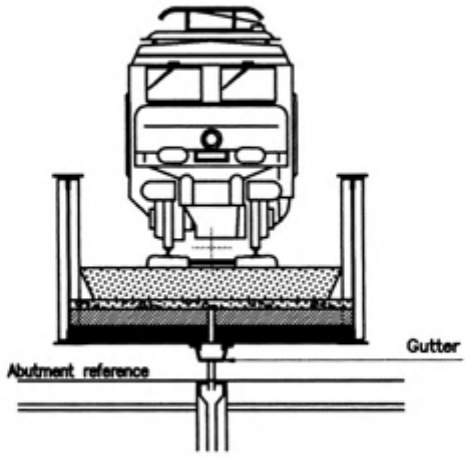
Fig. 8



(Principle of the concrete gun)

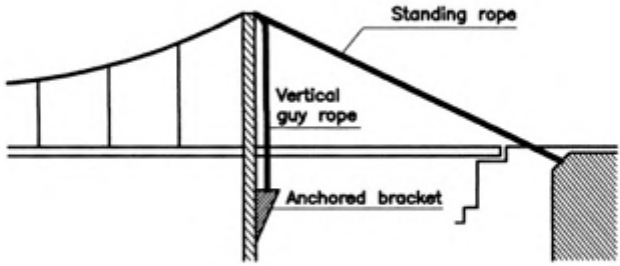
GUN

Fig. 9



GUTTER

Fig.10



GUY ROPE and VERTICAL GUY ROPE



HACK
Layer; Piocher
Construction of R.C. and P.C.; Masonry; Work
1. To perform hacking on a concrete surface. Syn. with COMB-HAMMER; TOOL
2. To shape and dress the facing of ashlar or a quarry stone with a comb-hammer.
3. To perform hacking. Syn. with KEY

HACK UP
Hacher
Masonry
1. To prepare a facing before its surface dressing by picking with a pick or a hatchet to obtain a better adhesion of the rendering.
2. To link the facing of a stone before carrying out the rustic work.

HACK-AND-COAT
Recharger
Masonry
To hack and build-up a rendering in extra thickness.

HACKED STONE
Pierre layée
Masonry
A stone dressed with a comb-hammer.

HACKING
Piquage du béton ; Piochement
Construction of R.C. and P.C.; Work
1. The stabbing of a construction facing to make it uneven so as to bring back a rendering to it or make some surface defects disappear
2. The performing of a work with pickaxe (demolition of rendering, earthwork, cut of stone, etc.). Syn. with KEYING

HACKING
Plumée; Plomée; Hachement; Layage
Masonry
1. The scabbing of a coating over a weak width. This task is carried out when one builds a wall in a perpendicular join with an already existing wall. The hacking is intended for ensuring a better connection between the two walls.
2. The preliminary task to the cut of sides of an ashlar, consisting in digging, on the circumference of a side, a notch which will be used as a guide to dress the facing.
3. A light recutting of a facing to prepare it for rendering. Syn. with KEYING
4. Shaping stone with comb-hammer.

HACKSAW
Scie à métaux
Equipment and Tools
A handsaw for cutting metal consisting of an arch (adjustable or not) with which a branch is provided with a handle and the other of a butterfly nut tensioner. This nut enables the tensioning of the steel blade with fine teeth which are used for cutting up.

HAIRLINE CRACK
Microfissure
Defects (Metallurgy; Welding; Construction of R.C. and P.C.)
1. A thinnest crack that affects a metallic part, whose cause can come from various origins such as: incident during the development, operational abnormal stress, ageing of metal.
2. A crack of microscopic size that affects a weld bead or which is located at the connection between the bead and parent metal.
3. A non-adhesion area of a limited extent at the particle sizes of aggregates and that is characterized by the appearance of the thinnest crack, to the more or less consistent and mostly discontinuous layout; it can evolve until to form a network. Primary causes of the appearance of hairline cracks are the important density of bar setting, action of the wind and/or sun, an excess of cement and/or water batching. Syn. with MICROFAILURE

HAIRLINE CRACKING
Faïençage; Microfissuration
Defects (Painting; Building Materials)
1. A system of superficial threadlike cracks similar to some earthwares. This defect affects the films of paint whose solvent has evaporated too rapidly. Syn. with CRACKING; CRAZING; MAP CRAZING
2. Syn. with MICROCRACKING

HAIRY
Chevelu
Construction of R.C. and P.C.
Set of round irons of a small diameter arranged in rim of formworks that enable all light bonds on a concrete wall. Syn. with PENCIL BARS; STARTER BARS

HALF COUPLER
Coquille
Construction
An element of adjustment and wedging of some anchorage devices of prestressing cables. Syn. with CHILL COUPLER

HALF ROUND (STEEL)
Demi-rond
Metallurgy
A standard section whose cross section is a part of circle limited by an arch and its chord; the height equal at least to the half-chord. The chord equals at least to 15 mm. Half rounds are often used as a top rail of some metallic guardrail.

HALF-COLUMN
Demi-ceint
Construction
A half-column rested against a wall.

HALF-DEEP FOUNDATION
Fondation semi-profonde
Foundation
A work that differentiates from the shallow foundations by a greatest ratio depth/width of the body of foundation without there being a net limit to this subject. This type of foundation is therefore characterized by a deeper foundation, foundation determined by conditions of the ground capacity. One considers as a half-deep foundation, foundations whose depth range from 2.50 to 6 m. Among the types of half-deep foundation one can distinguish:
- continuous blocks,
- studs, pits, and supporting-wall units of the low slenderness ratio.

HALF-DRYING WOOD
Bois d'entrée
Building Materials
A material which has not finished drying.

HALF-FIRM STONE
Pierre demi-ferme
Building Materials
A rock whose crushing strength ranges from 12.1 to 27.5 MPa.

HALF-HARD STEEL
Acier demi dur *ou* mi-dur
Metallurgy
An iron and steel product for manufacturing rails, splints, etc. Strength ranging between 55 and 65 hectobars.

HALF-LAP JOINT
Assemblage à mi-bois
Carpentry
Assembly realized while cutting the two parts respectively on half of their thickness. Syn. with HALVED JOINT; HALVING. **See Figure 1**

HALF-LINING
Demi-revêtement
Masonry
Any supporting masonry of weak height holding walls of an excavation.

HALF-PIER
Demi-pile
Construction
In vaulted masonry bridges, construction projecting on the abutment and on which leans on the vault. The half-pier has a height and width lower than the abutment. This constructive arrangement is especially used in the vaults in arc of circle or for cow horn elliptic vaults. **See Figures 2**

HALF-ROUND GROOVE
Gueule-de-loup
Temporary Construction
A horizontal V-shaped notch (or concavity) carried out at the end of a timber of sheeting (e.g., shore strut), with the aim to obtain a better contact for the maintenance of this one against the timber on which it comes to lean. **See Figure 3**

HALFTONE
Demi-teinte
Painting
Medium tone between light and dark.

HALF-TRAILER WITH TRACTOR
Demi-remorque à tracteur
Handling
A transportation vehicle of excavated materials comprising a driving axle to obtain the total adhesion in difficult ground.

HALF-WALL
Rôtie
Construction
Syn. with RAISING; ROTIE

HALITE
Sel gemme *ou* Halite
Geology
A soft rock, very soluble in water, which was formed during the evaporation of saline water. Syn. with ROCK SALT

HALVED JOINT
Assemblage à mi-bois
Carpentry
Syn. with HALF-LAP JOINT; HALVING.

HALVING
Assemblage à mi-bois
Carpentry
Syn. with HALF-LAP JOINT; HALVED JOINT

HAMMER
Corroyer
Metallurgy
In locksmith's trade, to hot-hammer the iron.

HAMMER
Marteau
Equipment and Tools
1. Any steel striking tool, made of a head on a side and peen of the other, of different form according to the use. The tool can be equipped of a wooden handle going through an eye or be cast solid. We can distinguish:

- **claw hammer** *(le marteau arrache-clou),* a tool of formwork's carpenter made up of a striking table at an end and the other of a curved peen nicked in V;
- **rough hammer** *(le marteau bretté),* a tool with two serrated cutting edges, used for the cut of soft stones, a cutting edge alone being usually toothed (a stone dressed with a rough hammer is said *hacked*); **See Figure 4**
- **brick axe *or* bricklayer's hammer *or* axe** *(le marteau à briques),* made up of a head and cutting edge and used by masons for cutting and laying bricks;
- **chipping hammer** *(le marteau burineur),* a pneumatic tool, graver or point tool, used in particular for the hacking of rendering, the raking out of joints, etc.;

- **scutch *or* scabbling pick (le marteau à dégrader),** that comprises two oblique points, used in particular for the raking out of pointings;
- **face hammer** *(le marteau à dresser),* used for the planing of thin sheet metals; it is made up of a convex table at an end and a plane table to the other;
- **bush hammer** *(le marteau à pointes ou boucharde);*
- **polka hammer** *(le marteau polka),* which comprises two cutting edges;
- **axhammer** *(le marteau têtu ou têtu);*
- **hand scabbler** *(le marteau à smiller),* a mason's tool with a normal cutting edge and toothed cutting edge;
- **geologist's hammer** *(le marteau de géologue),* a cast solid steel tool comprising a squared head and slightly bent pointed peen.

2. A device or machine used to drive into the ground piles or sheet piles. We can distinguish:

- **monkey** *(le marteau ou mouton à chute libre),* simply constituted by a guided heavy mass freely falling on the element to be driven. The mass went up by a cable to which it is suspended. Nowadays this apparatus is not practically used);
- **single-acting pile hammer** *(le marteau ou mouton à simple effet),* primarily made up of a cylinder and piston. According to the type of machine, it is the cylinder or piston that constitutes the striking mass and carries out an up-and-down movement. The fall of the striking mass is tree, the bringing up is carried out by the action of the vapor or compressed air; **See Figure 5**
- **rapid-stroke hammer *or* double-acting pile hammer** *(le marteau trépideur ou mouton à double effet),* made up of a cylinder and piston; the striking mass is always the piston and it is driven by a fluid as well as during the bringing up or during the going down. The frequency of strike ranges from 120 to 400 blows per minute. The machine can get exempted of pile driving if it is kept in place by small guide piles suspended to a crane or, in the case of sheet piles, if guidance is ensured by the sliding motion of joints. This hammer is essentially set in motion by means of the steam or the compressed air, but some machines are drove hydraulically; **See Figure 5a**
- **diesel pile hammer *or* diesel pile driving** *(le marteau ou mouton diesel),* that comprises a striking mass raised by the gas relaxation coming from the combustion of the air and diesel fuel blend. It is a self-propelled unit, whose functioning is based on the same principle as diesel engines, the piston constituting the striking mass; **See Figure 5b**
- **petrol pile hammer** *(le marteau à essence),* whose active organ, raised by the gas relaxation coming from the explosion of the air/fuel blend, can be the piston related with the striking mass or the cylinder.

Syn. with PILE DRIVING HAMMER; SHEET-PILE-DRIVING HAMMER

HAMMER BEAM
Blochet
Carpentry; Building Materials
1. Syn. with BAWCK
2. A timber piece whose dimensions of section are important in comparison with its length.

HAMMER DRILL
Marteau perforateur; Perforatrice
Equipment and Tools
1. Syn. with JACK HAMMER DRILL; ROCK DRILL HAMMER
2. A boring equipment working in rotary percussion equipped with a drill steel. It is used to bore holes in rock or masonry. The necessary energy for the operation can be compressed air or more rarely electricity. Syn. with PERCUSSION DRILL; ROCK DRILL

HAMMER HATCHET
Hachette
Equipment and Tools
A hammer fined with a square head and vertical sharp peen. It is used by stonecutters to hit, cut, or carve. It is also used to clean off, square, and scabble quarry stones.

HAMMER SCALE
Battiture
Metallurgy
Syn. with FORGE SCALE; IRON SCALE

HAMMERGRAB
Hammergrab; Benne Hammergrab
Equipment and Tools
A machine used to drill piles, trial borings or also the removal of cuttings inside a drilling. It appears as a heavy cylinder of large diameter, ended at its base by shells of various shapes,

tight and very robust, able to dig and take ground in bottom of hole.
The machine is equipped with a device allowing the automatic closing of shells as their opening. This process is especially used in the cased drillings.
The principle is the following: one drops the bucket in free fall into the tube, open shells which are inserted into the soil to be cleared. A winch goes up the bucket and the cable which tacks it does, by its traction, to be closed shells on the imprisoned spoil, which there is not any more but to go up and empty. Syn. with HAMMERGRAB BUCKET. **See Figure 6**

HAMMERGRAB BUCKET
Hammergrab; Benne Hammergrab
Equipment and Tools
Syn. with HAMMERGRAB

HAMMERHEAD
Tête marteau
Nomenclature of Materials
A device formed by a parallelepipedal mass welded or forged at the bottom of a sealing rod. It is dimensioned to slip between two channels posed on edge horizontally and in parallel, embedded inside the foundation, and to jam themselves under these bars, therefore to get opposed to the uprising, after rotation of 90° of the rod
This system allows a precise adjustment of posts, as well in height as horizontally, before concreting. **See Figure 7**

HAMMERHEAD CRANE
Grue-marteau
Equipment and Tools
An apparatus made up of a metal lattice mast topped by a pivoting lattice jib on which evolves a holder-loads trolley. A ballasted counter-jib ensures the stability of the unit. This crane can be controlled since a cabin installed inside the structure or since the ground with a case of electrical control. The hammerhead crane is mostly setting on a roll path formed of rails. One also says *armament crane, crane of graving dock, Titan.* This handling machine is used to work to great height. Syn. with GIANT CANTILEVER CRANE; SADDLE-JIB CRANE. **See Figure 8**

HAMMERMAN
Frappeur
Metal Construction
Syn. with STRIKER

HAND
Main
Metal Construction
Concerning a lattice, former term expressing the orientation in comparison with the plan of the beam of the section of a profile, mostly an equal corner iron.

HAND CARRIAGE
Bardage
Handling
The carriage of ashlars with a hand-barrow.

HAND RAMMER
Dame
Equipment and Tools
Syn. with PUNNER; RAM; RAMMER

HAND WALL OF LOCK
Bajoyer d'écluse
Construction
Syn. with CHAMBER WALL; LOCK WALL; SIDE WALL OF LOCK

HANDBARROW
Bard; Bayart
Handling
A two-wheel shaft used by builders to transport materials, particularly ashlars.

HAND-DRIVEN BUSH HAMMER
Bouchardeuse pneumatique manuelle
Equipment and Tools
Syn. with PNEUMATIC BUSH HAMMER

HAND-DRIVEN OPERATION
Marche manuelle
Welding
The operating mode of a welding machine in which each operation is controlled manually.

HAND-FORMED BRICK
Brique crue
Building Materials
A hand-made material from clay which is not fired in a brick kiln but only sun-dried. This material is not used to build permanent

structures. Syn. with AIR BRICK; GREEN BRICK

HANDLING
Manutention
Handling
The action to handle, to move materials over short distances.

HANDLING ARM
Bras de manutention
Handling
Equipment similar to the bracket for raising and moving a load in whatever direction effortlessly thanks to an automatic balancing system.

HANDLING MACHINE
Appareil de manutention
Handling
A machine, device, equipment which allows to lift, displace, etc., materials on a building site without human intervention.

HAND-PUSHED CRANE
Poutre roulante
Equipment and Tools
Alternative of the travelling crane constituted by a metal section suspended or traveling on two parallel rails. On the section is suspended a monorail hoist.

HANDRAIL
Garde-corps; Main courante; Lisse; Rampe; Ecuyer
Construction
1. A safety device of a walkway intended for avoiding the fall of people in the space. It is put alongside a work floor, along a bridge deck, a footbridge, etc. It is necessary to distinguish a railing for pedestrians from a service railing (the goal is the same one but the condition of uses is different); moreover, the setting and fastenings systems are more rudimentary in a service railing in comparison with that intended for pedestrians. Syn. with GUARDRAIL; RAILING; SAFETY RAIL. **See Figure 9**
2. Syn. with RAIL
3. A handrail fastened on the string wall of a staircase.
4. A wooden bar fastened along the side of a staircase.

HANDSAW
Egoïne; Scie
Equipment and Tools
1. A saw with single handle equipped with a blade of triangular or trapezoidal form used by the carpenters. Electrical handsaws are also common.
2. A hand tool made up of a mounting to one or two wooden or steel handles, carrying a toothed blade; it is used, by a to and fro motion, for the cutting of wood, steel, stone, etc.

HANGER
Lien
Construction
Syn. with STIRRUP; STRAP

HANGING KEYSTONE
Clef pendante; Queue en cul-de-lampe
Construction
1. A key standing out on the intrados and extrados of a vault (it is about a voussoir higher than to the surrounding archstones). **See Figure 10**
2. Keystone whose bottom face stands out on the intrados of the string course and/or vault.

HANGING NEEDLE
Aiguille pendante
Carpentry
A timber or metal piece that relieves a tie beam. When it is in central position, it hangs from king post.

HANGING STAGE SUPPORT
Chèvre d'échafaudage
Temporary Construction
A wooden structure forming a cross posed to flat on the top of a structure for supporting a flying scaffold.

HARD
Sévère
Civil Engineering Structure
Of conditions under which a work or structural element works at the limit of its possibilities.

HARD (STEEL)
Dur (acier)
Metallurgy
Of an ordinary steel to high carbon content.

HARD BED, SOFT BED
Lit dur; Lit tendre
Building Materials
The top and bottom surface of a rock bench.

HARD CONCRETE
Béton dur
Building Materials
A material mainly composed of very hard aggregates, such as the carborundum for example.

HARD HEAD
Tête dure
Geology
A thin formation that separates two rock benches. This formation is harder than the under and overlying rock. Syn. with HARD BED

HARD IRON
Fer aigre
Metallurgy
Syn. with BRITTLE IRON

HARD LIMESTONE
Liais
Geology
A fine-grained hard and compact limestone, free from shells and frost-riven, having little height of bench.

HARD NODULE
Clou; Ferrage
Defects (Building Materials)
1. A defect affecting stones characterized by the presence of hard nodules making body with the stone and harming the cutting and the sawing.
2. Syn. with HARDCORE

HARD SILICEOUS BED
Caillasse
Building Materials; Geology
1. A low-grade stone.
2. In the industry of the sandstone, rock the most solid, but often the less hard. Syn. with BROKEN STONE; GRAVELLY MARL
3. Large stone used to carry out foundations or walls of strong thickness. Syn. with BROKEN STONE; GRAVELLY MARL
4. A pebble used to metal roads and roadways.
5. A brown or reddish stone of bad quality, hard, siliceous, brittle, sometimes pulverulent. This stone is found in Parisian Basin in the form of discontinuous beds, inserted into the marls of the upper Lutetian, by opposition with the excellent underlying building stone. In High-Savoy, they are schistose debris; in the other regions they are marly pebbles, compact grit stones, etc. Syn. with BROKEN STONE; GRAVELLY MARL; HARDCORE

HARD STEEL
Acier dur
Metallurgy
An iron and steel product for manufacturing springs, hammers, etc. Strength ranging between 60 and 75 hectobars. Syn. with HIGH-TENSILE STEEL

HARD STONE
Pierre dure
Building Materials
The quality of a stone which is defined by its crushing strength but that varies according to the quarries and even according to the benches of the same quarry. They are limestones to strong density (2.35 to 2.58) and very strong (50 to 110 MPa), likely to be polished. This quality is inherent this very hard stone and beyond the solid stone.

HARD WATER
Eau dure
Hydrology
A water containing a substantial quantity of calcium salts in solution.

HARDBOARD
Panneau de fibres
Buildings Materials
Syn. with FIBER BUILDING BOARD; FIBERBOARD

HARDCORE
Blocage; Blocage hourdé; Blocaille
Foundation and Masonry
1. A subgrade built with quarry stones or concrete blocks of small dimensions strongly compressed.
2. A masonry built with different size materials, thrown pell-mell into a mortar bed. Syn. with BLOCKING; RANDOM; UNCOURSED RUBBLE

3. The waste of the cutting of stones or bricks used to carry out a rubble work of little importance.
4. A stone having too small dimensions to be used in facing.
Syn. with RUBBLE STONE

HARDCORE
Ferrage
Defects (Building Materials)
Parts harder than others in a building stone. This defect prejudice at its homogeneity and increases the difficulty of cutting. Syn. with HARDNODULE

HARDEN
Indurer
Hydraulic Binders
To start making set, speaking about of a hydraulic binder. Syn. with SET

HARDENABLE STEEL
Acier trempant
Metallurgy
An iron and steel product able receiving quenching, characterized by its hardenability.

HARDENED CONCRETE
Béton durci
Building Materials
Former concrete whose structure contains, strictly speaking, no cement but a mixing of crystals and gels due to hydration. When analyzing a former concrete, one generally focuses on the batching in cement of the hardened concrete. It actually concerns the anhydrous cement content of the mixture used in making the concrete, or what it is left after aggressions that this last one has been able to undergo.
The hardened concrete is an heterogeneous medium composed of many solid phases [aggregates, hydrated cement crystals (CHS, portlandite, tetracalcium aluminate)], one liquid phase (interstitial solution) and one gaseous phase (air contained in pores).

HARDENED CONCRETE TESTING
Contrôle du béton durci
Test of Materials (Concrete)
Check of the quality of the hardened concrete from which one distinguishes two approaches: destructive examinations and nondestructive examinations. Among destructive examinations one can quote: trials with test specimens (compression and tension), core drillings, etc .; nondestructive examinations include notably: sclerometric sounding, electromagnetic sounding, etc.

HARDENED STEEL
Acier trempé
Metallurgy
A material subjected at a high temperature then to a sudden cooling while diving it into water, oil or urine of horse or also simply to the air. The aim of this operation is to increase the original hardness of the steel by endowing him a better strength as well mechanical as to wear, but presents the disadvantage to decrease its impact strength. In the same way one quenchs tools so various such as axes, point tools, gravers, etc. Syn. with TEMPERED STEEL

HARDENER
Durcisseur; Accélérateur de prise
Painting; Polymers
1. An admixture added at the time of the application and that provokes hardening and the formation of the film. Syn. with HARDENING AGENT
2. Syn. with CURING AGENT

HARDENING
Trempe; Durcissement
Metallurgy; Painting
1. A thermal treatment for steels that upgrades their mechanical characteristics. Hardening consists in heating metal higher than 50 to 100°C to that of its point of transformation, then in cooling the treated part at a speed function of the chemical steel composition. The cooling agent can be air, water, oil, urine of horse, water of soap, etc. Hardening makes the steel tough one, harsh and brittle. One applies this treatment in particular to the shock or cutting tools such as burin, axe, point tool, etc. Syn. with QUENCH(ING)
2. Development of the paint films to a terminal hardness state.

HARDENING ABILITY
Capacité *ou* Intensité de durcissement
Metallurgy
The maximal hardening value of a steel obtained by quenching and that depends on the carbon content of the steel.

HARDENING ACCELERATION OF CONCRETE
Accélération de durcissement du béton
Hydraulic Binders
The activation of concrete hardening by heating or mixing of admixtures.

HARDENING AGENT
Accélérateur de durcissement; Durcisseur
Hydraulic Binders; Painting
1. A chemical admixture mixed with concrete or fresh mortar with intent to accelerate their speed of hardening.
2. Syn. with HARDENER

HARDENING AUSTENITIC or MARTENSITIC STAINLESS STEEL BY PRECIPITATION
Acier inoxydable austénitique ou martensitique à durcissement par précipitation
Metallurgy
Steel that contains elements such as molybdenum, copper, aluminum or niobium. Particular thermal treatments, comprising an austenitization, a fast cooling and one or several temperings, allow to obtain, by carbide precipitation of the above elements (formation of martensite by austenite destabilization), especially of intertnetallic compounds (secondary hardness), and of high mechanical characteristics.

HARDNESS
Dureté
Strength of Materials
The ability of a material to resist to the penetration and scarring by another material.

HARDNESS OF A PAINT FILM
Dureté d'un feuil de peinture
Painting
Competence for a dry film applied on a rigid substrate, to resist without alteration to concentrated strains. It is measured with Persoz's pendulum (pendular hardness) or by scratch or notch resistance.

HARDNESS OF STEELS
Dureté des aciers
Metallography
The firmness of a steel expressed by resistance to the sinking of a ball, a cone, or a pyramidal point. One measures the depth of penetration in the metal tested. The ball is of hard steel or carbide of tungsten (Brinell test). The cone (Rockwell test) or the pyramid (Vickers test) are of diamond. Syn. with STEEL HARDNESS

HARDNESS SCALE
Echelle de dureté; Echelle de Mohs
Mineralogy
Syn. with *MOHS* SCALE

HARDNESS TEST
Essai de dureté
Test of the Materials (Building Materials)
A test to determine the indentation of some materials.
We can distinguish:
- **elastic hardness** *(la dureté élastique)* corresponding to a punching strength without plastic deformation of the matter;
- **plastic hardness** *(la dureté plastique),* determined while creating a permanent deformation of measurable dimensions as a result of punching, (example: Rockwell hardness).

HARDNESS TEST OF WOOD
Essai de dureté d'un bois
Test of Materials (Building Materials)
A test carried out to determine the firmness of wood. The most routinely used test is the following.
On the silver grained face (radial) of a test specimen of dry wood of 2 cm thick, one applies a steel cylinder of 3 cm diameter under a load of 200 bars during 5 s. The hardness is the opposite of the depth of the imprint, expressed in millimeters.

HARDPAN
Carapace
Geology
A hard formation close to the surface of altered or soft rocks, due to the vertical migrations of

water tables, rich in iron or alumina oxide taken in the basement.

HARDSTONE PICK
Pioche à pierre dure
Equipment and Tools
Stonecutter's tool which appears as a steel hammer ended by hardened points with four sides.

HARDWOOD
Bois dur
Building Materials
A material which stems from deciduous or exotic trees. A wood is *hard* when its hardness is rated between 6 and 9 on Chalais-Meudon's scale, *medium hard* between 3 and 6, *very hard* beyond 9.

HARROWING
Rippage
Earthwork
An earthwork carried out with rooter.

HATCHINGS
Hachures
Drawing; Masonry
1. Oblique and parallel lines that indicate a section in the representation on plan of a part.
2. Rough and more or less deep notches on a facing that result from the hacking.

HAUGHTY
Fière
Building Materials
Of a stone which bursts easily under the action of the chisel.

HAUGHTY STONE
Pierre fière
Building Materials
A hard rock but brittle and difficult to work.

HAUL DOWN
Affaler
Handling
To go down with rope. Syn. with PAY DOWN

HAULER
Camion à benne basculante
Equipment and Tools
Syn. with DUMP TRUCK

HAULING
Lissage
Handling
Syn. with SLEDGING

HAUNCH
Hanche
Handling
Each of the two primary uprights of shear legs.

HAUNCH OF ARCH
Rein
Construction
1. Zone of a vault next of the leaning section to 60° on the vertical for little surbased vaults; for others, nearby zone of the middle of the height, namely halfway between springings and key.
2. Zone close of the points of null moment in an arch.
Syn. with FLANK

HAUNCHING
Habillage
Construction
Syn. with ENVELOPE; EXTERNAL CLADDING; TRIM

HAWK
Bouclier
Equipment and Tools
A mason's tool used to finish and straighten rendering. It is a son of a quadrilateral or pentagonal small board, made of wood, plastic or metal, with a handle. Syn. with FLOAT

HAYDITE
Haydite; Argile expansée
Building Materials
Syn. with EXPANDED CLAY.

HAYDITE CONCRETE
Béton de haydite
Building Materials
Syn. with EXPANDED CLAY CONCRETE.

HAZE
Voile
Defects (Painting)
A range of alteration of the dye of a paint characterized by the appearance of a diffusing surface on a film initially shining.

HAZEN'S DIAMETER
Diamètre efficace
Geotechnics
Concerning grain-size classification, diameter *d10* which was defined by Hazen (*d10* being the dimension of the sieve through which passes 10% of the weight of the soil) corresponding to *P* = 10% of the grain-size diagram (*P* = weight percentage lower than the dimension noticed by the corresponding abscissa on the grading graph). The notion of efficient diameter (with that of uniform coefficient) characterizes the permeability of a little compact sand. Syn. with EFFICACIOUS DIAMETER

HAZEN'S RATIO
Coefficient d'uniformité *ou* de *Hazen*
Geotechnics
Coefficient that expresses the grading uniformity of a soil, namely its degree of display that is represented by the shape of its grading curve. This coefficient is equal to the ratio *d60/d10; d60* = the dimension of the particles such that 60% of the weight of the soil has dimensions equal or lower than *d60, d10* = identical definition corresponding at 10% of the weight of soil. Syn. with COEFFICIENT OF UNIFORMITY; MODULUS OF UNIFORMITY; UNIFORMITY COEFFICIENT

HEAD
Bouteroller; Sablière; Tête; Casque de battage
Metal Construction; Geomorphology; Equipment and Tools
1. To form heads of rivets with the rivet set. Syn. with SNAP
2. In a steel construction, horizontal beam staying the posts of a long tail at the level of drops of the truss.
3. Concerning a landslide, uphill boundary of the slipping and more precisely, part where the slipped material is in contact with the main escarpment.
4. Syn. with CRASH HELMET; DOLLY; DRIVING CAP; DRIVING HELMET; PILE HELMET

HEAD (OF BRIDGE)
Tête (de pont)
Construction
One of faces which borders a bridge parallel to its axis. A head is straight or skew, according to whether it occupies normally or not the direction of piers and abutments.

HEAD (OF PILE)
Tête (de pieu)
Foundation
The top part of a pile.

HEAD BAY
Arrière-bief
Construction
A level located upstream.

HEAD BEAM
Chapeau
Temporary Construction
Cross member or distance piece which sandwichs between double members the head of poles of a temporary pile frame or a propping-up.

HEAD CUP DOLLY
Turc
Equipment and Tools
A small cast iron anvil used to support the first head of a rivet during the snapping of the second head.

HEAD FACE
Parement de tête
Masonry
The cutting and aligning of the quarry stones that form the head of an isolated wall.

HEAD JOINT
Joint de face; Joint de tête ; Joint montant
Masonry
1. Each joint (vertical, horizontal or in a string course) of archstones of a stringcourse that one sees on the head of the work.
2. Syn. with PERPEND JOINT

HEAD LOCK
Musoir
Construction
The head of a lock.

HEAD OF HEADFRAME
Tête de chevalement
Temporary Construction
A horizontal timber piece leaning on two shores.

HEAD OF WATER
Charge
Hydraulic
The pressure that the water exerts on the walls that contain it.

HEAD PLATE
Semelle
Equipment and Tools
In a supporting of gallery, removable metal part ensuring the connection of a metal head beam with a wooden (or metal) upright on which it rests.

HEAD TREE
Buton
Temporary Construction
Syn. with STAY; STRUT

HEADER
Boutisse
Masonry
A stone that has more length of tailing than length in facing. Syn. with BONDER

HEADFRAME
Chevalement
Temporary Construction
A propping up formed by a horizontal timber or metal piece resting on frames for supporting a part of construction (example: during an underpinning). **See Figure 11**

HEADFRAME POST
Poteau de chevalement
Temporary Construction
In the timbered galleries, post supporting the ridge beam of a headframe. (It is an extra post which doubles a normal endorsement post.)

HEADING
Bouterollage; Galerie d'avancement
Metal Construction; Earthwork
1. A job that consists in forming the second head of a rivet with a special tool called *rivet set.*
2. Syn. with DRIFT

HEADING (tunnel)
Percement
Earthwork
Syn. with DRIVING (TUNNE)

HEADING JOINT
Enture; Raboutage
Foundation
Syn. with SCARF (JOINT); SPLICE; SPLICING;

HEADROOM
Tirant d'air
Construction
The clearance under a bridge. Syn. with CLEARANCE

HEADSTONE
Clef de voûte; Mensole
Construction
Syn. with KEY; KEYSTONE

HEADWALL
Mur tympan
Construction
A vertical wall perpendicular to the axis of a tunnel allowing the transition between two works of different sections.

HEADWATER
Amont
Hydrology
The upstream part of a watercourse which, with regard to another, is the nearest from the source. Syn. with UPSTREAM

HEAP
Eboulée; Tas
Geomorphology; Building Materials
1. A heap of earth that crumbles and accretes in a manner to form the foot of a hill, a slope, an embankment.
2. A pile of various materials (sand, stones, demolition rubble, etc.).

HEART CENTER
Moelle
Nomenclature of Materials
The soft substance located in the centre of a wooden log. Syn. with PITH

HEART SHAKE
Gélivure
Defects (Building Materials)
A wood defect characterized by radial splits going from the periphery to the center. This defect is due to the frost of interstitial water of

the wood which makes burst this one. Syn. with FROST CRACK

HEARTCRACK
Maille
Defects (Nomenclature of Materials)
A crack that affects a timber piece, come from the heart and continuing up to its periphery.

HEARTWOOD
Duramen; Bois parfait; Coeur du bois
Nomenclature of Materials; Building Materials
1. Syn. with DURAMEN
2. Syn. with PERFECT WOOD
3. Syn. with CORE (OF WOOD)

HEARTWOOD BELCH
Lintinus squamosus
Defects (Building Materials)
A discoloration fungus variety called *of substrate,* more known as the name of *heart rotting* (of wood).

HEAT INSULATION
Calorifugeage
Materials
The putting into place of an insulation. Syn. with THERMAL INSULATION

HEAT INSULATOR
Calorifuge
Materials
A material of thermal insulation (example: glass wool, expanded polystyrene, etc.). Syn. with INSULATION

HEAT OF HYDRATION
Chaleur d'hydratation
Hydraulic Binders
The heat released by a hydraulic binder during its set then of its hardening. **See Figure 12**

HEAT TREATMENT
Traitement thermique
Metallurgy
All operations carried out on metal pieces, which includes a heating followed by isothermal maintenance at a permanent temperature, then of a more or less fast cooling up to ambient temperature. We can distinguish:

- **basic thermal treatments** *(les traitements thermiques de base),* necessary to the upgrading of the homogenization of the structure and search of the state of balance; it is a matter of treatment carried out on pieces or ingots in a rough state of casting. One then seeks to favor the diffusion of the alloy elements to obtain a homogeneous structure;
- **directed thermal treatments** *(les traitements thermiques orientés)* toward the applications intended for creating structures mostly out of balance and that allow to upgrade the deformation, shock, wear, and abrasion resistance.

HEAT TREATMENT WITH THE FLAME
Traitement thermique à la flamme
Construction of R.C. and P.C.
A technique surface treatment of concretes which is carried out with the blowtorch on a green concrete (about four days). It is question of causing a thermal shock which makes burst the skin of concrete; this shock is obtained by spraying the facing to be processed with cold water then strolling on the surface area a blowtorch releasing a heat about than 3000°C.

HEAT-AFFECTED ZONE
Zone thermiquement affectée
Welding
The part of parent metal affected, on the metallugical plan, by the heat of the welding or thermal cutting but which was not melted.

HEATED CONCRETE
Béton chauffé
Building Materials
A material heated in situ by different processes such as heating formwork, heating reinforcements, etc.

HEATING
Echauffement; Echauffure
Defects (Building Materials)
Syn. with INCIPIENT DECAY.

HEATING BY *JOULE* EFFECT
Chauffage par effet *Joule*
Construction of R.C. and P.C.
A demolition method of reinforced concrete which consists in accessing to the reinforcements by whichever means in two points of a same bed and if possible in two points of a same bar. One makes pass a very intense current between these

two points. The reinforcement is overheated very fast to the red, expands consequently, and causes the cracking of the concrete.

HEATING BY REINFORCEMENTS
Chauffage par les armatures
Construction of R.C. and P.C.
A heat treatment process for concrete which consists in making passing an electric current in the reinforcements that make resistor office. The objective is to accelerate the concrete hardening. This method is notably used in precasting.

HEATING PIPE
Tuyau chauffant
Equipment and Tools
Concerning concrete heat treatment, pipe 1-m long that includes three electrodes directed at 120° positioned inside an electrically insulated tube. The concrete to be heated circulates between these electrodes, connected each one to a phase of the sector. A part of proper shape is fixed at the end of electrodes to pass from the circular section to the spangled section while keeping the same section of passage. A flexible socket of security acts as a valve at the entry of the tube.

HEAVE
Souffler
Defects
Concerning the foundation raft of a work, to raise oneself up under the influence of the pressure of the underlying grounds.

HEAVING
Soufflage
Defects (Civil Engineering Structure)
The uprising of the foundation raft of a work following an expansion of the underlying grounds or to a hydrostatic thrust.

HEAVY
Lourd
Earthwork; Building Materials
1. Of a very compact clayey soil difficult to excavate or to dig up.
2. Of a wood of the leafy trees family of a density ranging between 0.80 and 0.95. It is known as *very heavy* if density exceeds 0.95.

HEAVY BASEMENT
Orthostate
Construction
Syn. with CYCLOPEAN BASEMENT; ORTHOSTATE

HEAVY CONCRETE
Béton lourd
Building Materials
A material whose skeleton is made of heavy aggregates. It is concrete of barite, magnetite, etc.
These concretes have, in a dry state, a settled apparent density larger than 3000 kg/m^3. Syn. with DENSE CONCRETE; HEAVYWEIGHT CONCRETE

HEAVY EARTH
Terre massive
Geology
A solid matter without important spaces.

HEAVY FOOTPATH
Accotement lourd
Construction
A construction placed side by side on a railway bridge deck, independent from this last and of high weight. This primary aim is to protect the deck from possible shocks, in particular of road vehicles. In most cases, the intrados of the heavy footpath stands on a lower level than that of the deck. See **Figure 13**

HEAVY (STEEL) SHEET
Tôle forte
Metallurgy
A product whose thickness is at least 4.76 mm. Syn. with HEAVY-GAUGE SHEET METAL; PLATE

HEAVY SPAR
Barytes
Building Materials
Syn. with BARITE; BARYTES

HEAVYWEIGHT CONCRETE
Béton lourd
Building Materials
Syn. with DENSE CONCRETE; HEAVY CONCRETE

HEEL
Talon
Construction
1. The widened base of a R.C. or P.C. beam in the form of upside-down T.
2. The back shoe of the footing of a reinforced concrete retaining wall in the form of upside-down T . **See Figure 14**

HEIGHT
Appareil
Masonry
1. The form, dimensions, assembly and apparent arrangement of materials (bricks, quarry stones, etc.) in a masonry construction.
The are several types of heights:
- **bond with regular course** (*l'appareil à assises réglées),* see MASONRY - Bonded masonry; **See Figure 15**
- **boss bond *or* rustic work** *(l'appareil de bossage)* of which quarry stones or ashlars have rustications;
- **header work** *(l'appareil en boutisse)* that is included of stones or bricks offering their small side in facing and occupying all the thickness of the wall; **See Figure 16**
- **tile *or* block and heading bond** (*l'appareil en carreaux et boutisses)* in which tiles are linked by headers; **See Figure 17**
- **herringbone work *or* opus spicatum** *(l'appareil en épi),* showing an arrangement according to which bricks or stones are bonded obliquely and form in each rank an angle with elements of the following rank, drawing a figure that reminds an ear of wheat;
- **isodome bond** *(l'appareil isodome)* in which all stones present the same dimensions in length and in height and whose joints intersect in the middle;
- **opus incertum bond** *(l'appareil en opus incertum),* which consists of a masonry of grit stones or apparent chalky quarry stones and that is realized with irregular joints, without any organization or last course;
- **pseudo-isodome bond** *(l'appareil pseudo-isodome),* which is formed alternately by low and high courses and whose joints correspond exactly with the axis of each stone;
- **regular bond** *(l'appareil régié),* in which the arrangement of ashlars is to rectilinear beds (such as the isodome height), but to variable height courses.

2. All indications, forms and marks allowing cutting stones of a work.
3. The arrangement of quarry stones or ashlars in a vault of masonry.
Syn. with BOND

HEIGHT OF A VAULT
Montée d'une voûte; Flèche
Construction
The vertical distance separating the key from the horizontal plan of springings. Syn. with RISE

HEIGHT OF AN ARCH
Voussure
Construction
The height of a vault.

HELICAL REINFORCEMENT
Frettage
Construction of R. C and P. C.
Syn. with BINDING; HOOP REINFORCEMENT; HOOPING

HELICAL WIRE
Fil hélicoïdal
Equipment and Tools
A cable from 4 to 6 mm diameter, formed by three hard helical-rolled up steel strands, that is used to saw the stone. Syn. with STRANDING WIRE

HELICOPTER
Hélicoptère; Truelle rotative
Equipment and Tools
A rotary trowel propelled electrically or by a thermal engine and that is used to dress a mortar screed or a concrete slab. Syn. with MACHINE TROWEL; POWER FLOAT; ROTARY FLOAT; ROTARY TROWEL

HEM
Ourlet
Metal Construction
The edge of a thin sheet metal worked according to a cylindrical shape.

HEMPY
Chanvreux
Defects (Building Materials)
Of a wood when it gives fibrous surface to the cut.

HERRINGBONE DRAINAGE
Epi *ou* Drainage en épi
Sanitary Engineering and Drainage
A layout of drains in a ground or chases carried out in the facing of a work rejoining a main drain. **See Figure 18**

HERRINGBONE PATTERN BREAK
Cassure en chevrons
Defects (Building Materials)
All superposed V-shaped drawings appearing on the break surfaces of some materials.

HETEROGENEITY
Hétérogénéité
Defects (Building Materials)
A foreign element (different nature) to the composition or normal structure of a material or a set of materials.

HETEROGENEOUS SKIN
Peau
Metallurgy
A superficial film covering a metal piece having a chemical composition and/or a structure different from those of the mass or the heart.

HETEROGENEOUS STONE
Pierre moyée
Building Materials
A rock showing parts of inequal hardness.

HETEROGENEOUS WELD
Soudure hétérogène
Welding
The result of the welding operation when, either materials to be assembled have an identical or neighboring chemical composition and mechanical characteristics but the deposited product used has different chemical composition and/or mechanical characteristics. Its melting point being loosely the same one as that of basic materials; either materials to be assembled have a different chemical composition and/or mechanical characteristics and their melting point can be identical, neighboring or different.

HEW
Equarrir; Dresser une pierre; Dégrossir
Masonry; Building Materials
1. Syn. with SQUARE
2. Syn. with DRESS
3. Syn. with ROUGH-GRIND; ROUGH-OUT

HEWING CHISEL
Langue de carpe
Equipment and Tools
Syn. with BOTT CHISEL

HEXAGONAL MOSAIC
Mosaïque hexagonale
Masonry
A bonding of rubble walling without horizontal courses. Quarry stones are cut regularly according to a hexagonal gauge and the masonry so carried out looks like a nest of bees. **See Figure 19**

***HHW* SHUTTERING UNIVERSAL BEAM**
Poutrelle de coffrage *HHW*
Temporary Construction
An I-section of laminated timber which is usable exclusively for working loads linked to the direct endorsement of the formwork to concrete slabs or walls. The height of this section is 200 mm.

HIDDEN DEFECT
Vice caché
Defects (Civil Engineering Structure)
A defect in a work, invisible at the time of acceptance.

HIDDEN FACING
Parement caché
Construction
The surface of a masonry work that lies hidden after the completion of jobs (example: facing covered by a cladding).

HIDING POWER
Pouvoir couvrant par opacité; Pouvoir opacifiant
Painting
The ability for a pigment to dissimulate, when it is dispersed in a binder, the background on which the paint obtained in this way is applied.
Syn. with OPACIFYING POWER

HIDING POWER METER
Opacimètre
Equipment for Measure and Control
Syn. with OPACITY METER

HIDING POWER OF A PAINT FILM
Opacité d'un feuil de peinture
Painting
The ability of one or several paint coats to mask, after drying, any other subjacent color.

HIGH CONCRETE PERFORMANCE
Béton à haute performance
Building Materials
A material partly composed of active artificial aggregates. From a given formulation of concrete, using aggregates and local cements, the replacement of some grain size fractions of sand or gravel by artificial aggregates that react with the cement, lead to materials that present high strengths, particularly at early ages. The better adhesion paste-aggregate, created by chemical reactions between these artificial aggregates (cinder) and the cement, leads to an improvement of performances of the concrete in other fields than strengths. Thus the aptitude for clear cracking of the concrete is decreased, the wear strength is better, the permeability under hydraulic gradient is null or weak for some formulae.

HIGH POLYMER
Matériau macromoléculaire
Polymers
Syn. with MACROMOLECULAR MATERIAL; POLYMER

HIGH ROOF
Haut-toit
Building Materials
The whole of rock benches which overcome an underground excavation, with the exclusion of excluding nearest benches that constitute the roof.

HIGH SLAB
Cadre
Construction
A decorated overhang stone forming salient or reentrant face to form decoration.

HIGH TIGHTNESS
Etanchéité haute
Tightness
A system implemented on masonry viaducts or on works in order that the tightness of extrados cannot be carried out for economic reasons (times of intervention affecting interruptions of traffic, etc.) or techniques (harmful cutting, etc.). The tightness is carried out above the original tightness; it is for this reason that it is called *high tightness.*

HIGH-ADHESION STEEL
Acier à haute adhérence (H.A.)
Building Materials
A reinforcement provided with twists conferring him a better adhesion to the concrete than that of the plain bar. Its minimal breaking elongation is higher than the plain bar. This type of steel is prohibited in the construction joints because the successive operations of foldings and unfoldings are strictly forbidden. Syn. with HIGH-BOND BAR **See Figure 20**

HIGH-ALUMINA CEMENT
Ciment alumineux
Hydraulic Binders
Syn. with ALUMINOUS CEMENT

HIGH-BOND BAR
Acier à haute adhérence (H.A.)
Building Materials
Syn. with HIGH-ADHESION STEEL

HIGH-BOND STONE
Pierre de haut appareil
Building Materials
A material coming from a thick bench (thickness > 0.40 m).

HIGH-CALCIUM LIME
Chaux aérienne
Building Materials
Syn. with AIR-HARDENING LIME; NONHYDRAULIC LIME

HIGH-PLASTIC CONCRETE
Béton très plastique
Building Materials
A concrete of which subsidence measured with the slump cone is included between 10 and 15 cm with a tolerance of ± 3 cm.

HIGH-PRESSURE CUTTING WATER JET
Jet d'eau coupant à haute pression
Work
A water jet of small section, at very high pressure, used to cut various material (concrete,

stone, etc). Among the cutting jets we can distinguish:

- **continuous jet** *(le jet continu),* a permanent water flow through an opening of small diameter (few millimeters);
- **modulated jet** *(le jet modulé),* of the continuous kind but with modulation of the pressure during the flow. Values of the pressure reached are in the same range of magnitude than those of the continuous jets;
- **pulsated jet** *(le jet intermittant ou pulsé),* a number of repeated jets. Each jet lasts a split second and the jets follow one another with a high frequency. Pressures are highest, 1800 Mpa approximately;
- **caviting high pressure jet** *(le jet cavitant),* based on the phenomenon of cavitation of liquids.

HIGH-PRESSURE SOIL
Méthode sol-ciment
Civil Engineering
Syn. with GROUTING; JET GROUTING. SOIL-CEMENT METHOD

HIGH-PRESSURE STEAM-CURING
Autoclavage du béton
Construction of R.C. and P.C.
Syn. with AUTOCLAVE CURING; CONCRETE STEAM CURING

HIGH-SILICA-CONTENT CEMENT
Ciment sursilicé; Ciment à haute teneur en silice
Hydraulic Binders
A binder rich in silica and oxides of iron, very poor in alumina, giving a low heat of hydration and used in aggressive environment. Syn. with H S C (PORTLAND) ARTIFICIAL CEMENT

HIGH SPEED STEEL
Acier rapide
Metallurgy
An iron and steel product which has low carbon content but high of tungsten thus preserving him its hardness up to a temperature about 600°C. This steel is notably used to manufacture cutting tools (drills, graver, etc.).

HIGH-STRENGTH FRICTION GRIP BOLT (HSFG BOLT)
Boulon à serrage contrôlé
Materials
Syn. with CONTROLLED SCREEWING TIGHT BOLT

HIGH-TENSILE BOLT (H.T. BOLT)
Boulon H.R.
Materials
A calibrated high tensile bolt which works to the tension, contrary to the common bolt. Its tightening is made with a torque wrench. It is used notably to assemble elements of metal decks. Syn. with HIGH-STRENGTH FRICTION GRIP BOLT

HIGH-TURBULENCE MIXER
Malaxeur à haute tubulence
Equipment and Tools
A device having a rotation speed higher than 1500 rpm. It is used to mix cement grouts intended for injections, notably to manufacture foam grouts. Syn. with RAPID-ACTION MIXER

HIGH-TENSILE STEEL
Acier à haute résistance (H.R.); Acier dur
Building Materials; Metallurgy
1. A product used overwhelmingly as prestressing steel by virtue of its high breaking rate.
2. Syn. with HARD STEEL

HIGH-WATER BED
Lit majeur
Hydrology
In the transverse profile of a watercourse, maximum width occupied by the watercourse at the time of the rise in the water level. This distance mostly represents the totality of the breach to be crossed by a work. Syn. with FLOODPLAIN. **See Figure 21**

HIGHWAY
Route
Public Works
Syn. with ROAD

HIGHWAY BRIDGE
Pont-route; Passage supérieur
Civil Engineering Structure
Syn. with ROAD BRIDGE

HIGHWAY CONSTRUCTION MATERIAL
Matériau de viabilité
Public Works
Syn. with ROADMAKING MATERIAL

HIGHWAY DEPARTMENT
Service de la voierie
Civil Engineering
The administrative service that manages and maintains the public channels of communication.

HILL
Côte
Civil Engineering
A road that follows a hillside of low altitude.

HINGE
Rotule
Construction
1. Concerning fixed metal bearings with bascule, cylindrical part ensuring the connection between the upper bearing balance and the bottom bearing balance.
2. A connection between two pieces, that transmits forces and authorizes rotations in all directions but allows neither displacement nor transmission of moment.
3. A connection organ of a bridge-support apparatus allowing a free movement (rotation) of the supported part. We can distinguish:
- **cylindrical hinge** *(la rotule cylindrique),* which allows a rotation in only one plan, mostly vertical;
- **spherical hinge** *(la rotule sphérique),* which allows the rotation in all vertical plans.

Syn. with KNUCKLE; SWIVEL
4. Syn. with DOWELED JOINT; EXPANSION JOINT; ETC.
5. Syn. with ARTICULATION; JOINT; KNUCKLE

HINGE PIN
Broche
Equipment and Tools
A steel cylindrical piece insuring the translatory connection between two mobile pieces the one with regard to the other.

HINGED PIER
Pile pendulaire
Construction
A structure articulated in foot and in head (at the level of the deck and of the foundation).

HITCH
Noeud
Equipment and Tools - Various
An intertwining that unites narrowly two strands, two threads, two ropes, etc., or simple tight interlacing of a strand, thread, rope, etc., on itself. Syn. with BEND

HOD
Oiseau
Equipment and Tools
An apparatus used by men to carry mortar or concrete.

HOE
Houe
Equipment and Tools
A former tool that used manually the builders to mix the various constituents of the mortar or concrete.

HOIST
Palan;Guinder
Equipment and Tools; Handling
1. A handling appliance used to lift loads with a chain or a cable. This machine is equipped with a reducing system or speed-reduction gear. There are several types of hoists:
- **hand-chain hoists** *(les palans à bras)* (regulars, with chains, at ratchet wheel);
- **differential pulley blocks** *(les palans différentiels);*
- **electric pulley blocks** *(les palans électriques);*
- **pneumatic pulley blocks** *(les palans pneumatiques)* (with piston or engine);
- **hydraulic pulley blocks** *(les palans hydrauliques).*

Syn. with HOIST TACKLE; PULLEY BLOCK
2. To lift a load by any means (crane, hoist, etc.).

HOIST (WITH PULLEY BLOCK)
Palanquer
Handling
Syn. with WHIP

HOIST TACKLE
Palan
Equipment and Tools
Syn. with HOIST; PULLEY BLOCK

HOIST TOWER
Sapine
Equipment and Tools
A fixed or movable lifting gear, used to handle materials.
There are two types of hoist tower:
- **stationary crane tower** *(la sapine fixe),* which comprises a vertical shaft carefully braced, built by means of corner irons or timber pieces (poles, balks). The total height can reach 30 m and more. The shaft carries the crane whose rotation is total or limited. A winch is placed at the base; it is operated manually or mechanically;
- **mobile crane tower** *(la sapine mobile),* apparatus similar with the stationary crane tower, but whose base rests on a platform rolling on a railway track through the channel of four rollers; the translation is controlled by crank or other mechanical means.

Syn. with CRANE TOWER; GIN POLE (DERRICK)

HOISTER
Levageur
Handling
Contractor having lifting gear and specialized equipments, of all powers, allowing him carrying out under one's own power operations of handling and all other interventions, but not carrying out the assembly of elements set up.

HOISTING
Grutage; Levage
Handling
1. A handling operation carried out with a crane.
2. Syn. with LIFTING UP; RAISING

HOISTING HOOK
Crochet
Equipment and Tools.
Syn. with HOOK

HOISTING MACHINE
Appareil de levage
Handling
Syn. with LIFTING GEAR; LIFTING TACKLE

HOISTING MAST
Mât de levage
Equipment and Tools
A quadrangular lattice girder formed by several juxtaposed sections and ended by two sections in the form of a truncated pyramid. The mast is equipped by a system of guys ensuring its stability and with a lifting system, constituted by a suspension point at the upper part where is hung the reeving raising the burden and, at the base of the mast, by the return pulley of the pull cable ending to the hoisting winch. **See Figure 22**

HOISTING POWER
Force portante
Handling
The maximal power of use for that is designed the lifting device of a gantry crane.

HOLDING-DOWN BOLT
Boulon de scellement
Materials
Syn. with RAG BOLT

HOLDING-DOWN CLIP
Ferrement
Building Materials
A steel part intended for strengthening a masonry work (anchor, tie rod, tie, etc .).

HOLDING-UP LEVER
Levier d'abattage
Equipment and Tools
A device formed by a long rod provided in the one ends by a notch into which the dolly is placed intended for supporting the second head of a rivet during a riveting operation. This apparatus allows to exert the supporting of the rivet with more force than with a hand dolly. Syn. with LEVER DOLLY. **See Figure 23**

HOLE
Pénétration; Enlacer; Lacune; Lumière
Construction; Carpentry; Defects; Welding
1. A reserved or created opening (cased or not) through the thickness of a construction (pile, sidewall, wall, etc.) that delivers passage to a water pipeline, power conduit, etc.
The presence of a hole in a work erected in an aquiferous environment always constitutes a sensitive point and becomes a preferential place for water seepages.
2. To bore a hole (dowel hole) through an assembly of timber pieces.
3. Syn. with VACANCY
4. Syn. with PORT

HOLE DEVIATION LOGGING
Mesure de déviation
Work
An operation that allows to reconstitute the exact trajectory of a trial boring on the basis of the plotting of measurements of its orientation in several points or constantly. Syn. with DEVIATION MEASUREMENT

HOLE DEVIATOR
Déviateur de forage
Equipment and Tools
A device that guides the drilling tool in its second phase when the profile of the drilling has, from a certain depth, to show a curve profile. The most routinely used are the whistle deviator; the bevel of steel placed on the bottom of the hole and on which the bore bit comes to lean to attack the wall of the hole; the elbow from one to two degrees placed above a turbine of drilling and that obliges this one to get offset compared with the vertical.

HOLE OPENER
Elargisseur
Equipment and Tools
Syn. with ENLARGING BIT; UNDERREAMER

HOLE PATTERN
Maille; Mailler
Work
1. The predetermined spacing between the drillings before injection of a soil or a work.
2. To lay out according to a layout grid, drillings for an injection, ties for fixing a lathing, etc.

HOLE POST
Potelle
Temporary Construction
In tunneling work, channel carried out in the invert or the sidewall and into which the end of a supporting timber comes to lodge. Syn. with HOLE PROP

HOLE PROP
Potelle
Temporary Construction
Syn. with HOLE POST

HOLIDAYS
Manques
Defects (Painting)
Syn. with SKIPS

HOLING BLOCK
Bois de calage
Masonry
A block of hard wood, carved in bevel, used during the operations of raking out /repointing to keep quarry stones or bricks.
These skids are placed before the operation of raking out. Then they are humidified during the implementation of the mortar of repointing. At the end of the works and after complete drying of the mortar and woods, the skids are picked out.

HOLLOW
Entonnoir
Geomorphology
Syn. with FUNNEL

HOLLOW ABUTMENT
Culée creuse
Construction
A work formed by a front wall and return walls supporting a cover slab or a vault. The sloping embankment coming to break and fall back at the end of the abutment and exerting thereby only a very weak pressure on the walls. Some hollow abutments are endowed with a wall forming supporting side embankment what suitable that none earth is found inside the work. The interior of these abutments is lighted in *cathedral* or in *hollow tower*. They are constructed when one is found in the presence of works of great height, viaducts notably. **See Figure 24**

HOLLOW AREA
Décollement d'enduit *ou* de béton projeté
Defects (Masonry)
The adhesion breaking between the covering or shotcrete and the support on which it was applied. Several causes are possible for this damage; one can quote the defect of adhesion of the support, a bad preparation of the latter or its failure.

HOLLOW BLOCK
Corps creux
Building Materials
Syn. with HOLLOW BODY

HOLLOW BODY
Corps creux
Building Materials
A hollowed molded building material, of fired clay, concrete, etc., used to build a wall (concrete block, hollow masonry unit, etc.). Syn. with HOLLOW BLOCK

HOLLOW BRICK
Brique creuse
Building Materials
A material with perforations that are generally parallel to the laying plane so that the surface of spaces is higher than that solid pans. Syn. with HOLLOW MASONRY UNIT

HOLLOW CHAMFER
Cannelure
Architecture
A hollow molding carried out longways on of a masonry work. Syn. with FLUTING

HOLLOW HAUNCH
Rein vide
Construction
A space not filled above the extrados of noncarrying vaults.

HOLLOW MASONRY UNIT
Brique creuse
Building Materials
Syn. with HOLLOW BRICK

HOLLOW NEEDLE
Aiguille creuse
Equipment and Tools
A tool used by the quarry worker to pull down the stone. The practice consists in drilling holes along a line whereby must crack the stone. Long and narrow wedges was inserted inside these holes between two iron bars with round external faces that follow the shape of the walls of holes. Wedges are forced with the hammer and the stone splits. **See Figure 25**

HOLLOW TOWER
Tour creuse
Construction
The cylindrical inside facing delimiting an empty space in a wall (for example, opening well in an abutment). **See Figure 41** under ROUND WALL FACE

HOLLOW-OUT THE FACE
Défoncer
Masonry
To hollow out a facing to obtain a set back surface.

HOLLOWED TYMPANUM
Tympan évidé
Construction
A spandrel wall comprising one or several openings.

HOLLOW-WEB GIRDER
Poutre à caisson
Construction
Syn. with BOX BEAM; BOX GIRDER; DOUBLE-WEBBED BEAM

HOMOGENEITY
Homogénéité
Building Materials
The quality of a good mortar, concrete, stone, of a building material in general, that makes its structure or its composition is coherent and that foreign bodies being able to be there do not affect of anything its mechanical, physical, or chemical characteristics.

HOMOGENEOUS STONE
Pierre entière
Building Materials
A homogeneous rock, i.e., free from crack, strand, vein.

HOMOGENEOUS WELDING
Soudure homogène
Welding
The result of the operation of assembly when materials to be welded have an identical or neighboring chemical composition and mechanical characteristics, as the deposited product, if it is used by it.

HOMOGENIZATION OF PAINT
Mise à corps
Painting
The homogenization by mechanical agitation of a paint preparation into which a deposit was formed.

HOMOGENIZATION PROCESSING
Traitement d'homogénéisation
Metallurgy
An operation which consists in bringing up the alloy at a temperature as high as possible in a solid state to favor the phenomena of diffusion, so that the concentration in the alloy element is regularly distributed in the structure. The aim is eliminating the shrink holes and segregations.

HOMOGENIZE A SECTION
Homogénéiser une section
Construction of R.C. and P.C.
To turn fictitiously the steel into concrete for facilitating stress designs of reinforced concrete works. One transforms thus, to facilitate calculations, a heterogeneous structure into a homogeneous structure.

HOMOPOLYMER
Homopolymère
Polymers
A polymer resulting from the polymerization of a single monomer.

HONE
Doucir
Masonry
To execute the grinding of a stone.

HONEYCOMBING
Nid de cailloux
Defects (Constructions ofR.C. and P.C.)
A defect that can be observed in some concrete works, which are characterized by apparent gravels with spaces and absence of fines between aggregates. This defect can be hidden by a thin coat of laitance. It often is the consequence of a segregation brought about by an overvibration of the concrete. Syn. with ROCK POCKET

HONING
Doucissage
Masonry
Working the surface of a stone until it is smooth. Syn. with GRINDING

HOOD
Visière; Avant-bec; Chaperon
Equipment and Tools; Carpentry
1. The foreshield of a drilling shield which constitutes a projection of the top section of the cutting shoe and which generally develops over an arc of circle of 150°.
2. A timber piece added and assembled with another piece having a mortise at its end.

HOOK
Crochet
Equipment and Tools.
A metal part resembling the shape of a reversed question mark, mostly fixed at the end of cables or chains of lifting appliances and whose dimensions are extremely variable. Syn. with HOISTING HOOK

HOOK BOLT
Boulon à crochet
Materials
A special piece used to fix the longitudinal sleeper supporting rails on metal decks (railway bridges); the head is replaced by a hook that clutches in a port of angle cleat for example. **See Figure 26**

HOOKUP
Accrochage
Defects (Concrete)
A surface defect of the cast concretes characterized by the adhesion of the laitance on the skin of a formwork.

HOOP
Cerce; Anneau; Cercle; Fretter
Construction of R.C. and P.C.; Construction; Work
1. A helical-shaped reinforcement to close single turns placed in the circular works (poles, piles, etc.) and being used for hooping the concrete in zones where this one undergone important strains (example: under a bearing). Syn. with HOOPING
2. The part of a vault included between two concreting transverse joints (or two transverse parts of reworked masonry). **See Figure 27**
3. The small length of a part of masonry carried out or reworking in only once on all the development of the transverse section of a tunnel.
4. A device placed around a piece, a pole, etc., so as to grip tightly it or to keep up it.
5. Syn. with BAND; BIND WITH A RING; REINFORCE WITH STEEL HOOPS

HOOP BAR
Frette
Building Materials
Syn. with BINDER; HOOP RING

HOOP IRON
Feuillard
Metallurgy
Syn. with STEEL STRIP; STRIP

HOOP REINFORCEMENT
Frettage
Construction of R. C and P. C.
Syn. with BINDING; HELICAL REINFORCEMENT; HOOPING

HOOP RING
Frette
Building Materials
A transverse reinforcement strengthening the heads of poles, piles, etc., of reinforced concrete, and intended for heading off the bursting of the concrete under the influence of compressive stresses. Syn. with BINDER; HOOP BAR

HOOPING
Frettage; Cerce
Construction of R.C and P.C.
1. An operation that consists in putting in place transverse reinforcements very close together (binders) intended for increasing the compressive strength of the concrete, notably in the poles, and so as to oppose to the transverse swelling of the concrete (example: hooping of a pile).
2. Set of hoops.
Syn. with BINDING; HELICAL REINFORCEMENT; HOOP REINFORCEMENT
3. Syn. with HOOP

HOOPING
Frettage; Croisure; Cerce
Masonry; Temporary Construction; Construction
1. The consolidation of certain fissured parts using anchored enclosing of flat iron that prevent the space of dissociated parts.
2. Syn. with LAPPING; TIE RING
3. Syn. with CIRCLE

HOOPING BUTTRESS
Cerce
Temporary Construction
Syn. with BUTTRESSING OF A DAM

HOPPER
Trémie
Equipment and Tools
1. Distributor of aggregates in form of truncated cone or reversed pyramid of large dimension. **See Figure 28**
2. In a concrete plant, kind of large funnel into which concrete manufactured in the mixer located above comes pouring out. Truck mixers spinning tops become supplied there being placed under the trap located in the bottom part of the hopper.

HOPPER BARGE
Marie-salope
Equipment and Tools
A barge with movable bottom used to dredge watercourse. This equipment allows self-unloading. Syn. with (DREDGER'S) MUD BARGE; MUD DREDGER

HORIZON
Horizon
Stratigraphy
A bed of very small thickness notable in a lithological sequence.

HORIZONTAL EXCITATION METHOD OF PILES
Méthode d'excitation horizontale des pieux
Test of Materials (Foundation)
A process which allows to verify the global behavior of a pile and to determine with a good approximation the modulus reaction of the ground, in the field of weak deformations. The principle is the following: the head of a pile subjected to a known sinusoidal horizontal excitation displaces in a determined direction and it is possible to measure the displacement, the speed, and the acceleration. Measurements take place in head, but also along of the shaft if an interdependent tube of the pile has been anticipated. **See Figure 29**

HORIZONTAL EXTRADOS
Extrados de niveau; Extrados horizontal
Construction
The top surface of a vault perfectly horizontal in all directions.

HORIZONTAL *or* VERTICAL PROJECTION IN MAIN PLANE OF A WALL
Ressaut
Construction
The breaking of the alignment or the plumb of a wall forming two edges, one projecting, the other internal.

HORIZONTAL TUBES FOR MEASUREMENTS OF DEFORMATION
Tubes horizontaux pour mesures de déformation
Equipment for Measure and Control
An instrument used to measure all deformations (vertical settlements and horizontal displacements) of riprap or ground structures (barrages, embankments, etc.).
The device (also called *hydraulic ferret*) uses a detecting probe of an electromagnetic position and movable telelevel.
Equipment includes basically:
- a PVC tube, cast inside the embankment;
- a torpedo-shaped double sensor, circulating inside the PVC tube and including:
- a telelevel that measures settlements according to the principle of the communicating vessels,
- a detecting probe of position,
- a winch put in at the end of tube allows, with a to and fro cable to move the sensor to take the measurements.

See figure 30 and 30a

HORN SOCKET
Cloche de repêchage
Equipment and Tools
Syn. with DRILL EXTRACTOR; OVERSHOT

HORNBEAM
Charme
Building Materials
A leafy tree giving a grayish white wood, deriving slightly on the yellow. This hard and compact wood is especially used to manufacture handles.

HORSE
Chevalet; Chèvre; Sabot
Temporary Construction; Equipment and Tools
1. A kind of inclined shore used to sheet diggings of great width and that is arranged in gang (shore).
2. A small headframe used on a trial pit (pit not intended for the extraction).
3. A superstructure or infrastructure supporting a temporary bridge deck, generally composed of timbers.
4. Tilted wooden pieces connected in head by crossing and forming the most active part of a headframe.
Syn. with HORSEHEAD; SUPPORT; TRESTLE
5. Syn. with BOOMLESS DERRICK; LIFTING JACK; SHEAR LEGS; TRACK LIFTING JACK
6. A wooden mounting of builder's gauges.

HORSEHEAD
Chevalet
Temporary Construction
Syn. with HORSE; SUPPORT; TRESTLE

HOT CONCRETE
Béton chaud
Building Materials
A standard concrete manufactured with hot water and possibly reheated aggregates. This kind of concrete is used when cold-weather concreting.

HOT *or* COLD DRAWING
Etirage
Metallurgy
Syn. with DRAWING (OUT) OF METAL

HOT-LAID MIXTURE
Enduit d'application à chaud (EAC)
Tightness
A product for glueing a watertightness coping on its support and for sticking countercopings between them or on the screed, and that can be:
- *tar-based* (à base de goudron) and which is composed of coal-tar pitch, anthracenic oils, sulfur and resin in small proportion;
- *bitumen-based* (à base de bitume), binder containing blown bitumen whose characteristics are chosen in function of the place of use, the slope and of the nature of the support; it must contain at least 70% in pure bitumen mass.

HOT-ROLLED STRIP
Bande
Metallurgy
A hot-rolled flat product which, at once after the final rolling pass, is rolled up with turns regularly superimposed to form a bobbin with more or less plane side faces.
The as-rolled strip has thinly bulged edges, but it can also be delivered with shorn edges or to come from splitting of a broader strip. According to its width, the strip is classified into:
- hot-rolled wide strip *of which the width is higher or equal to 600 mm;*
- hot strip iron *of which the width is lower than 600 mm.*

HOT-ROLLED WIDE STRIP
Large bande à chaud
Metallurgy
A flat iron and steel product obtained by hot-rolling. Its width is higher or equal to 600 mm.

HOT-WATER MIXING
Gâchage à l'eau chaude
Building Materials
The mixing of the various constituents of the mortar or concrete with heated water. This process is in particular implemented in winter.

HOT-WIRE ADDITION
Fil chaud
Welding
A weld metal appearing as a wire heated at a temperature close to its melting point.

HOT-WORKED METAL
Métal corroyé
Metallurgy
A material initially cast in the form of plates or billets, subjected afterward to a mechanical transformation by lamination, extrusion, forging or stamping, giving a fiber drawing at the product thus processed: sheet metals, sections, forged pieces, etc.

HSC (PORTLAND) ARTIFICIAL CEMENT
Ciment sursilicé; Ciment à haute teneur en silice
Hydraulic Binders
Syn. with HIGH-SILICA-CONTENT CEMENT

H-SECTION
H
Metallurgy
A metal girder to flanges whose profile resembles the letter H. We can distinguish among them H.E., themselves broken up into H.E.A., H.E.B.,and H.E.M.

HUCKBOLT
Rivelon
Metal Construction
A special rivet posed to cold with an appropriate gun functioning with compressed air, or also hydraulic. The head is round; the shank fluteed circularly over a great length comprises a groove of breaking carefully dimensioned. Tightening is ensured by a ring, of light alloy or steel, set by axial repression. The total axial strain necessary to the tightening and repression is taken again by tension on the tail, so that the breaking of the groove ensures the correct condition, necessary and sufficient, of tension in the shank after installation. Syn. with AVDELOK. **See Figure 31**

HUE
Teinte
Painting
A radiation which, in the colorimetric sense of the term, is defined by the dominant wavelength of a stimulus of paint or a colored creation given. Syn. with TINT

***HUEY*'S TEST**
Essai de *Huey*
Test of Materials (Metallurgy)
A trial for determining the intergranular corrosion resistance of the austenitic steels. It is a corrosion trial in nitric environment.

HULL
Coque
Construction
A thin continuous structure, with curved surface, usually made rigidly by its shape and by the nature of its constituents.
A shell structure is a curved plate of reinforced concrete, metal or also of wood and that can work in tension, as oppose to the masonry vaults. The curve can be simple (thin shell), double in a lonely feel (sphere and derivatives) or in invert

curves (paraboloid). Syn. with BARREL SHELL; COQUE SKIN

HUMIDITY AND HEATING PERFORMANCE TEST
Essai de tenue à l'humidité et à la chaleur
Test of Materials (Painting)
An assay for testing the resistance of paints in wet and/or hot atmosphere and which consists in subjecting test specimens prepared under conditions determined to the action of a wet atmosphere (100% relative humidity) and heat (40°C).
During the test, that lasts one month, one note variations of aspect of the paint film, the formation and evolution of possible blisters. From the end of the test, one performs the quotation of blisters with a scale of standardized quotation. After 48 h of rest of test specimens in the laboratory atmosphere, one conduct, on the reference test specimen and those having undergone the test, with the checking of adherence by tear strength.

HUMMOCKY AREA
Moutonnement
Geomorphology
All borders appearing on the surface of a ground, of a more or less short amplitude and developed regularly enough, characteristic of the presence of a landslide.

HUMPING
Coltinage
Handling
Carriage of materials on one's shoulder. Syn. with CARRIAGE

HUMUS
Humus
Geology
A blackish substance resulting from a microbial action taking part in the decomposition of leaves and vegetable remains.

HURDLE
Chaise d'implantation
Topography
Syn. with REFERENCE FRAME

HURDLE WORK
Fascinage
Foundation
Syn. with FAGGOTS; FASCINE WORK

HURPINOISE PROCESS
Hurpinoise
Earthwork
A technique of earth supporting that consists in nailing walls of the excavated ground with subhorizontal reinforcements driven to the progress of the earthwork.
The process consists in excavating the ground on a depth from 1 to 2 m, then as the excavation progresses, to make penetrate into the ground the reinforcements from 6 to 8m of length. These reinforcements are tilted at 20° in comparison with the horizontal one. Walls (vertical) of the excavation are afterward covered with a protective layer from 5 to 10 cm of shotcrete reinforced with a reinforcement mat; the end of bars being sealed in the concrete. This operation is repeated up to the final bottom level of the excavation.

HUT
Baraque
Temporary Construction
Syn. with SHED; SITE HUT

HYBRID
Hybride
Metal Construction
Of a reconstituted welded beam of steel whose one or several flanges are of a higher grade than that of the web.

HYBRID BEAM
Poutre hybride
Construction
An element whose web and chords are made up of steels of different grades.

HYDRATE
Hydrate
Materials
A chemical body resulting from the combination of a body with water molecules.

HYDRATED SILICATE CALCIUM
C-S-H (Silicate de Calcium Hydraté)
Hydraulic Binders
The primary hydrate formed at the time of the hydration of cements. It is the mainly hydrated

calcium silicate that determines the structure of the hardened cement paste.

HYDRATION
Hydratation
Materials
Phenomenon of water absorption by a chemically receptive body.

HYDRATION OF CLAYS, ANHYDRITE, etc.
Hydratation des argiles, de l'anhydrite
Geology
The substantial water absorption by certain rocks, clays, etc. causing a tremendous increase in their volume. The most quintessential case is that of the anhydrite apt to get turned into gypsum, transformation that is accompanied by an increase in volume about 60%.

HYDRATION WATER
Eau d'hydratation *ou* de prise
Building Materials
Syn. with SETTING WATER; WATER OF HYDRATION

HYDRAULIC BINDERS TEST
Essai des liants hydrauliques
Hydraulic Binders
A test for assessing the quality of cements (set test, breaking test, etc.) and carried out on a standard paste or a standard mortar. The mixture is prepared according to the standard in use on the binder to be tried with a standard sand.

HYDRAULIC CONCRETE
Béton hydraulique
Building Materials
An artificial stone reconstituted by the three main components that are aggregates (sands, gravel, etc.), a hydraulic binder (cement or hydraulic lime), a reagent (the water).
The main quality of an hydraulic concrete is harden when immersed water or when the binder is in contact with water as well. A chemical reaction starts leading to the phenomenon of set and hardening, even if it is immersed or in open air.
The most used hydraulic concrete is the one with artificial cement as a binder. Nowadays concrete composed of hydraulic lime is practically no longer employed.

HYDRAULIC CONDUCTIVITY
Coefficient de perméabilité *K ou* Continuité hydraulique
Hydrology
Syn. with COEFFICIENT OF PERMEABILITY *K*; *K* PERMEABILITY FACTOR

HYDRAULIC CUSHION
Amortisseur
Equipment and Tools
Device of jack allowing a progressive deceleration of the piston when it arrives in the stroke end. Syn. with HYDRAULIC SHOCK ABSORBER; OIL CUSHION

HYDRAULIC CYLINDER
Vérin
Equipment and Tools
In hydraulics-pneumatics, an apparatus consisting of a cylinder which is inserted with a piston activated by hydraulic or pneumatic pressure accompanied by a rod working in conjunction with the piston; it is capable of pushing or pulling a heavy load. There is a single-acting (hydraulic) ram and double-acting (hydraulic) ram. In the former the pressure of the fluid can only be exerted on one side; in the latter on two sides of the piston. Syn. with OIL CYLINDER; PNEUMATIC JACK

HYDRAULIC DRILLING
Foration hydraulique
Work
1. A drilling that uses a hammer drill whose energy of touch is provided by a hydraulic pump.
2. A drilling that is made with a high pressurized water jet. This process is used to drill at a shallow depth.

HYDRAULIC EXCAVATION
Abattage hydraulique
Building Materials and Earthwork
A process of rock dislocation by a pressurized water jet. According to the intensity of this pressure, we can distinguish:
- *monitor* (a few tens of bars) *(le monitor),* primarily used in the alluvial or detrital grounds;
- *cutting jets* (a few hundred to a few thousands of bars) *(les jets coupants),* allowing the attack of hard rocks.

HYDRAULIC GRAB
Pelle hydraulique
Equipment and Tools
An earthwork equipment whose driving force is based on hydraulic oil acting on pistons and/or jacks. Syn. with SHOVEL.

HYDRAULIC GRADIENT
Gradient hydraulique
Hydrology
The ratio of the pressure drop to the distance covered along a given journey by water.

HYDRAULIC HAMMER
Marteau hydraulique; Brise-béton
Equipment and Tools
1. An identical tool to the pneumatic hammer, except the fact that the movement of the piston is sued by a hydraulic fluid instead of compressed air.
2. Syn. with CONCRETE BREAKER; PNEUMATICALLY HAMMER

HYDRAULIC LIME
Chaux hydraulique
Hydraulic Binders
A natural product whose essential property is to make set in water or air.
Hydraulic limes come from chalky stones containing clays in variable proportions, which by combining with the lime give salts having hydraulic properties (lime/alumina, lime/iron or lime/silica combinations). Limes are slow-setting binders. Hydraulic limes can be classified according to their setting time into:
- **poorly hydraulic lime** *(chaux faiblement hydraulique),* whose hydraulicity index ranges from 0.10 to 0.16. The quantity of clay contained in the limestone ranges from 8.2% to 14,8%; the final set is contained in a bracket varying between one and two weeks;
- **fairly hydraulic lime** *(chaux moyennement hydraulique),* whose hydraulicity index ranges from 0.31 to 0.42. The quantity of clay contained in the limestone ranges from 14.8% to 19.1%; the final set is contained between two days and a week;
- **eminently hydraulic lime** *(chaux éminemment hydraulique),* whose hydraulicity index ranges from 0.42 to 0.50. The quantity of clay contained in the limestone ranges from 19.1% to 21.8%; the final set takes less than two days.

HYDRAULIC MORTAR and HYDRAULIC CONCRETE
Mortier hydraulique et béton hydraulique
Building Materials
Mortar or concrete manufactured with hydraulic binders (making setting at the touch of water).

HYDRAULIC PILLAR
Pile hydraulique
Temporary Construction
A supporting device endowed with hydraulic jacks resting on the roof and wall of an underground excavation by the means of a sole and a pile cap of a large surface. It is the subunit of the walking support. According to the relative position of hydraulic jacks and the shape of the pile cap, we can distinguish the:
- **file-to-file pillar** *(la pile file à file),* simplest, formed by two or three hydraulic props aligned perpendicular to the face, on the same sole, and supporting the same pile cap. Files are assembled two by two through the channel of articulated jacks;
- **caisson pillar** *(la pile monobloc ou pile caisson),* constituted by two rigidly linked files and supporting the same pile cap;
- **boom pier** *(la pile à flèche),* of which pile cap is kept in place by an articulated arm on the base and drawn up by a jack; space at the base of the pile cap lies thus released;
- **lemniscate pier** *(la pile à lemniscate),* of which pile cap can remain from consistent distance of the face during the tightening, allowing to adapt it to variable openings;
- **shield pier, with caisson, boom, or lemniscate** *(la pile bouclier, à caisson, à flèche ou à lemniscate),* of which elements located at the rear cut prevent the invasion of the building site by caving by addition of a metal plate or by widening of arms to make them jointed;
- **drawing-off pier *or* shield pier** *(la pile à soutirage),* shield pier modified and strengthened (with boom or lemniscate), its shield is provided with an opening allowing the recovery of excavated materials.

HYDRAULIC PROPERTY
Propriété hydraulique
Building Materials
The ability of a product to be made setting and hardening in the presence of water forming stable compounds.

HYDRAULIC RADIUS
Rayon hydraulique
Hydrology
The quotient of the area formed by the transverse profile of a watercourse bed, by its medium depth. The hydraulic radius orders the loss of energy by friction on the bed.

HYDRAULIC SHOCK ABSORBER
Amortisseur
Equipment and Tools
Syn. with HYDRAULIC CUSHION; OIL CUSHION

HYDRAULIC STRUCTURE
Ouvrage hydraulique
Hydraulic Work
Work is going through the railway or road platforms and that allows:
- the reestablishment of permanent or not watercourses;
- the water runoff coming from longitudinal devices of platforms, as arriving of possible networks of agricultural drainage.

Syn. of HYDRAULIC WORK

HYDRAULIC SUPPORTING
Soutènement hydraulique
Temporary Construction
Sheeting material whose driving force actuating the supporting panels is hydraulic oil-based operating on pistons and/or jacks.

HYDRAULIC WORK
Ouvrage hydraulique
Hydraulic Works
Syn. with HYDRAULIC STRUCTURE

HYDRAULICITY
Hydraulicité
Hydrology; Hydraulic Binder
1. The ratio of the annual average flow of a watercourse at a some year to the medium flow established over one or several years and that is intended for particularizing the importance of the volumetric flow of this watercourse during this given year.
2. A phenomenon of chemical conversion that characterizes hydraulic limes and cements. At the touch of water, components of the binder change: tricalcic silicate gives hydrated monocalcic silicate, and the monocalcic aluminate gives hydrated bicalcic aluminate. This hydraulicity is the property characteristic of binders. It is measured by an index of hydraulicity:

$$i = \frac{\text{mass of } (SiO_2 + Al_2O_3 + Fe_2O_3)}{\text{mass of } (CaO + MgO)}$$

HYDRAULICITY INDEX *or VICAT* INDEX
Indice d'hydraulicité *ou* Indice *Vicat*
Hydraulic Binders
The result of the proportion ratio of the bodies of a binder having hydraulic properties: combined silica + alumina + iron sesquioxide, in comparison with lime and the magnesia and that is expressed by the formula:

$$i = \frac{\%SiO_2 + \%Al_2O_3}{\%MgO + \%CaO}$$

The chemical resistance of binders is of as much better than their index of hydraulicity is higher, namely they are poorer in lime. For example, cement that contains 50% lime, 25% silica and 12% alumina gives a hydraulicity index equal to

$$\frac{25 + 12}{50} = 0.74$$

HYDRAULICS
Hydraulique
Hydrology
Particular field of the fluid mechanics that corresponds to the liquids, namely to the incompressible fluids.

HYDROCAMPE
Hydrocampe
Equipment and Tools
A railway machine used to put in place or take out temporary or definitive bridge decks and that is formed by:
- two load-bearing trucks equipped with four bogie trucks;
- a beam with leg connecting the load bearings;
- two couples of lifting gear evolving on the beam.

See Figure 32

HYDROCARBON MASTIC
Coljoint
Materials
A bituminous mastic elastomer to a very great ability of lengthening, poured hot and used for the bridging of fissures and filling of pointings.

HYDROCLASTATION
Hydroclastie
Geomorphology
The disintegration of the rock brought about by fluctuations in moisture content in the pores and cracks of this one; the presence of clay in its chinks increase the phenomenon.

HYDRODENSIMETRY
Hydrodensimétrie
Geotechnics
A geotechnical method of the soil test that uses the variation of absorption by beds of ground of the radiations emitted by a radioactive source (gamma rays and neutrons). A Geiger counter allows to take useful measurements. One deduces from it the density and moisture content of each bed, which allows to know compactness and the bearing capacity of it.

HYDRODYNAMICS
Hydrodynamique
Hydrology
A science which studies moving liquid (velocity, flow, etc.).

HYDROEOLIAN
Hydroéolienne
Geomorphology
Of a form of building materials erosion of a work or rocks and that is due to the combined abrasive action of winds and water.

***HYDROFOND*™ CUTTING MACHINE**
Hydrofond
Equipment and Tools
A drilling machine to reverse circulation which has the singularity to go down into the drilling progressively of the boring. This machine is equipped directly above the tool of:
- six hydraulic engines laid out in star around a hollow shaft by that is carried out the aspiration of cuttings;
- an immersed hydraulic reducer;
- a power submerged pump;
- a superimposed unit of drill collar;
- in the *sea version,* the apparatus is suspended to cables and is fed by a flexible device. The couple is taken again by skates that are blocked on the walls of the metal casing;
- in the *earth version,* the couple is brought back at the drilling head by a square bar string, fixed on the frame laid out on the surface. **See Figure 33**

HYDROFRAISE
Hydrofraise
Equipment and Tools
Syn. with HYDROFRAISE CUTTING MACHINE; ROCKMILL

***HYDROFRAISE*™ CUTTING MACHINE**
Hydrofraise
Equipment and Tools
A drilling machine with reverse circulation of the drilling mud, equipped by three *bottom hole* engines.
The machine is made up of a frame used as guide, equipped at its base by revolving drums in opposite direction. These drums furnished with picks attack the ground while a pump hardly located above, ensures mucking through the channel of the drilling mud. The hydrofraise is mainly used to carry out diaphragm walls or supporting walls units up to depths being able to reach the hundred meters. The framework is carried and handled by a crane assembled on caterpillar tread. Syn. with HYDROFRAISE; ROCKMILL. **See Figure 34**

HYDROGEOCHEMICAL PROSPECTING
Prospection hydrogéochimique
Geotechnics
A soil prospecting method based on the placement in halos and trails obviousness of dispersion in the shallow or underground waters. The formation of geohydrochemical halos of dispersion results from various physicochemical processes to which a deposit is subjected.

HYDROGRAM
Hydrogramme
Hydrology
The chart of the rate of flow evolution of a watercourse or an underground table according over time.

HYDROGRAPH
Hydrographe; Limnigraphe
Equipment for Measure and Control
An instrument that records the level variation of watercourses.

HYDROGRAPHIC SYSTEM
Réseau hydrographique
Hydrology
All of watercourses draining a region.

HYDROGRAPHY
Hydrographie
Topography
The topography of watercourses and seabeds.

HYDROLOGIST
Hydrologiste *ou* Hydrologue
Hydrology
A specialist in hydrology.

HYDROLOGY
Hydrologie
Hydrology
A discipline that studies the cycle of water in the nature, the distribution and evolution of water in its three states (gaseous, liquid, and solid), successively in the atmosphere, on the surface and in the little deep stratums of the Earth's crust.

HYDROLYSIS
Hydrolyse
Materials
The chemical decomposition of a substance by water, this one also breaking up (for example, hydrolysis of silicates).

HYDROMECHANICAL CLASSIFIER
Classificateur hydro-mécanique
Equipment and Tools
A device used for hydraulic classification of natural aggregates and in which one attached to the action of water that a mobile mechanical part. It exists some two main types: the spiral Archimede classifier and ribbon spiral classifier. The principle of functioning is the following: natural aggregates to be classifyed are arranged in an inclined vat whose bottom part is obturated and the top part opened. A mechanical device ensures the brewing of aggregates to be sorted and the ascent of decanted products in the water that circulates in the vat.

HYDROMETALLOPLASTY
Hydrométalloplastie; Hydroplastie
Metallurgy
Syn. with HYDROPLASTY.

HYDROMETER
Densimètre; Hydromètre
Equipment for Measure and Control
1. An instrument that gives by simple reading the density of a liquid.
2. An instrument designed for measuring the height of a liquid inside a drilling. Syn. with WATERMETER

HYDROMETRIC REEL
Moulinet hydrométrique
Equipment for Measure and Control
An instument for measuring the current speed in the streamlets, rivers, canals or boreholes.

HYDROMETRY
Hydrométrie
Hydrology
A discipline that analyzes properties of water and most notably the flow phenomena of surface waters and underground waters.

HYDROMORPHOLOGY
Hydromorphologie
Hydrology
The field of hydrography that aims to define the shape of the catchment areas, the density and organization of the drainage.

HYDROPHONE
Hydrophone
Equipment for Measure and Control
A similar instrument to the geophone but that collects the sound waves in an aqueous environment.

HYDROPLASTY
Hydroplastie
Metallurgy
An application process of metal coating on another metal without recourse to electricity. The operation comes true by the chemical displacement of a solution (coppering, zinc plating, etc.). Syn. with HYDROMETALLOPLASTY

HYDROPONT™
Hydropont
Civil Engineering Structure
A head of bridge or aqueduct prefabricated of R.C.; it is formed by the spandrel wall, wing walls, and a foundation raft.

HYDROSANDING
Hydrosablage
Work
A technique of scouring or cleaning that uses concurently the sand and water in pressurized splashing.

HYDROSHIELD
Hydroschild; Bouclier à pression de boue
Equipment and Tools
Syn. with MUD-PRESSURE SHIELD

HYDROSTATIC PRESSURE
Pression hydrostatique
Strength of Materials
The pressure exerted by a liquid body on what contains or surrounds it (example: fresh concrete on walls of formwork, grounds saturated with water on a retaining wall, etc.). Syn. with PORE-WATER PRESSURE

HYDROSTATIC UPRISING
Soulèvement hydrostatique
Geotechnics
The apparent dropoff of the specific weight of a ground due to the pressure exerted by subjacent water.

HYDROSTATICS
Hydrostatique
Hydrology
The study of liquids at rest that includes equilibrium conditions of liquids, the transmission of pressures by liquids and pressures exerted by liquids on the walls of what contains them.

HYDROTACHOMETER
Hydrotachymètre
Equipment for Measure and Control
An instrument that measures the current velocity of a watercourse.

HYDROTECHNICS
Hydrotechnique
Hydrology
Of the speciality that study the flow and distribution of waters.

HYGROMETER
Hygromètre; Psychromètre
Equipment for Measure and Control
1. An instrument that measures the humidity content of air.
2. Syn. with PSYCHROMETER

HYGROMETRY
Psychrométrie
Works - Painting
Syn. with PSYCHROMETRY

HYGROSCOPIC(AL)
Hygroscopic(al)
Building Materials
Having the property to absorb moisture from air.

HYGROSCOPICITY
Hygroscopicité
Building Materials
The property which have certain materials to absorb by capillarity the water which meets their face.

HYPABYSSAL ROCK
Roche hypabyssale
Geology
A subvolcanic endogenic or veining rock.

HYPERSTATIC ARCH GIRDER
Poutre courbe hyperstatique
Strength of Materials
Girders whose reactions of bearing cannot be calculated by means of equilibrium equations of the elementary statics.

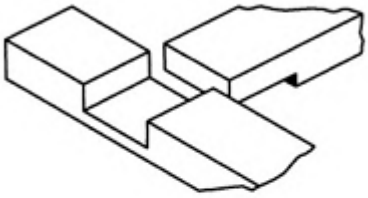
HYPERSTATIC BEAM
Poutre hyperstatique
Strength of Materials
1. A beam resting on more than two supports (beam for which number n of the components of bearing reactions is higher than the number k of equations provided by statics. Its hyperstatic degree is n-k). **See Figure 35**
2. A beam restrained at its two extremities.

HYPERSTATIC FRAME
Structure hyperstatique
Strength of Materials
A form for which it is not possible to determine stresses which result from a system of loads given by calling solely to the equations of statics. Syn. with STATICALLY INDETERMINATE FRAME

Figures of the letter

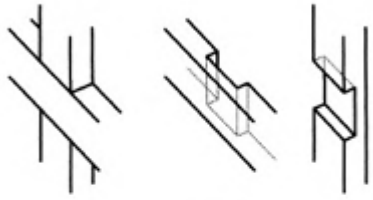


Fig. 1



Square corner halving

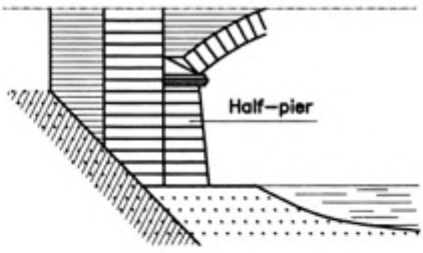
Fig. 1a



Crosslap joint

HALF–LAP JOINT

Fig. 2



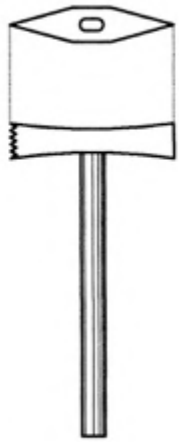
HALF–PIER

Fig. 3



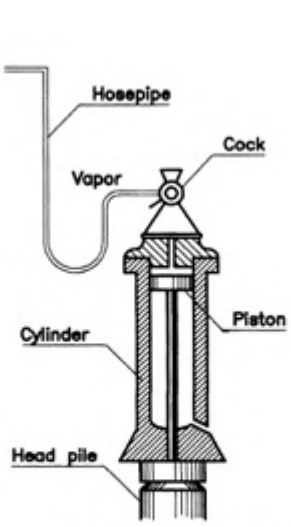
HALF–ROUND GROOVE

Fig. 4

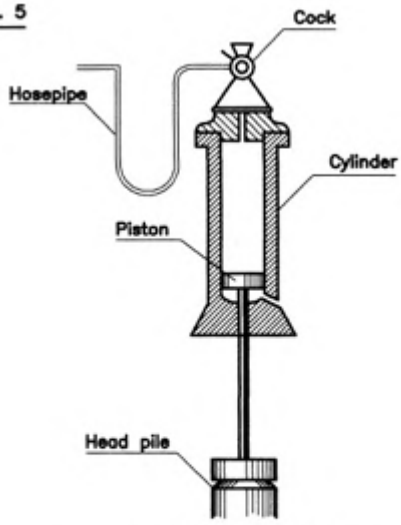


Rough hammer or Comb hammer

Fig. 5



Rammer in lower position

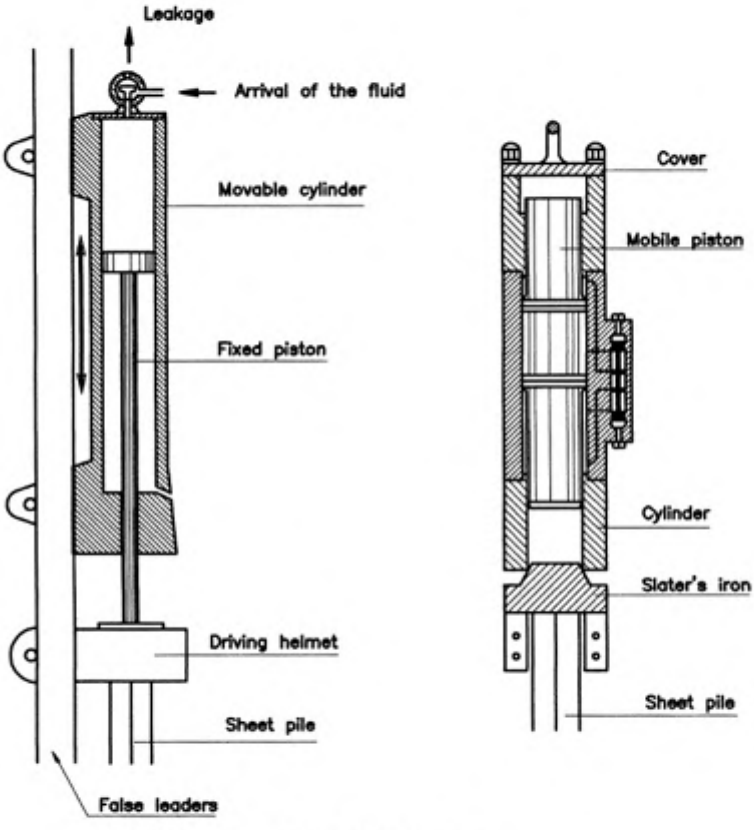


Rammer in high position

Single–effect steam rammer

HAMMER

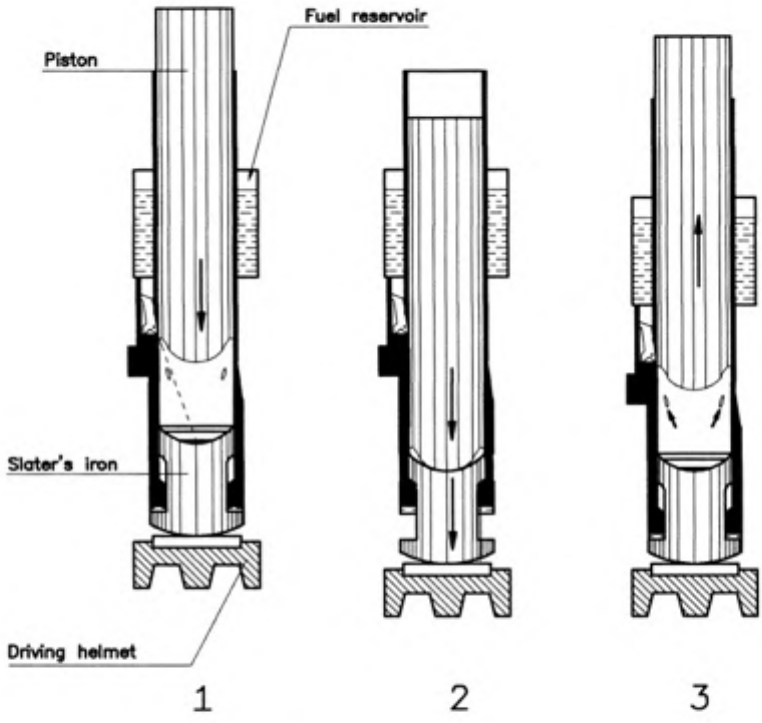
Fig. 5a



Rapid-stroke hammer

HAMMER

Fig. 5b



1 – Descent of the piston and injection of the fuel
2 – Shock on the anvil and explosion
3 – Ascent of the piston

Diesel pile hammer

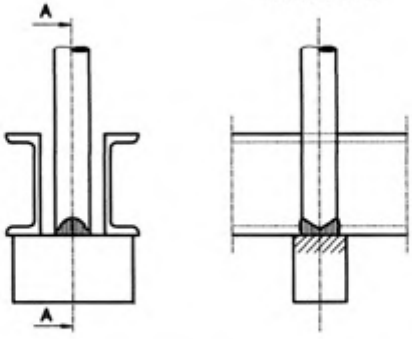
HAMMER

Fig. 6



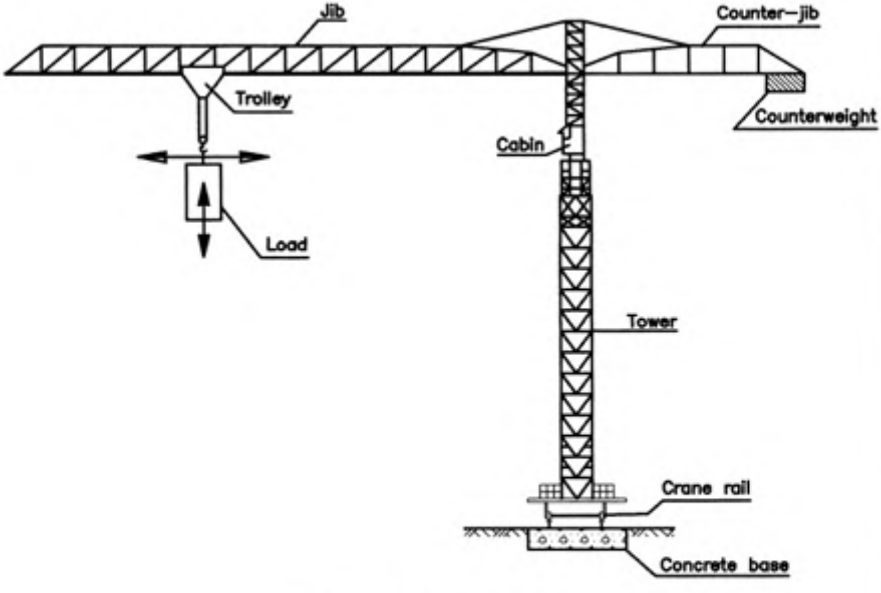
HAMMERGRAB

Fig. 7



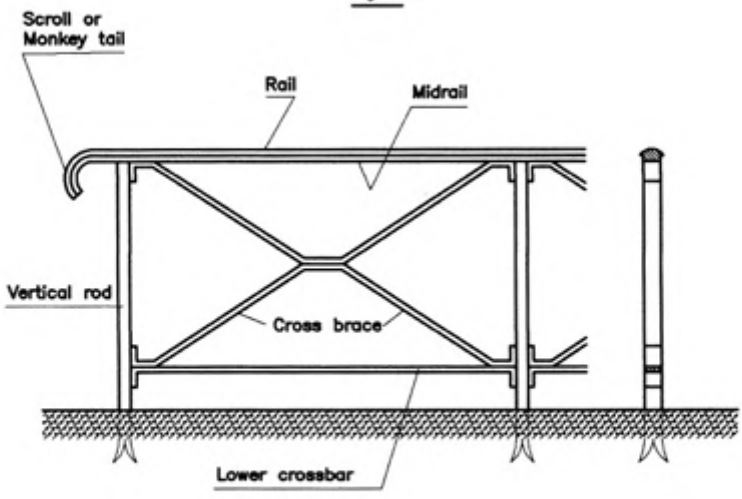
HAMMERHEAD

Fig. 8



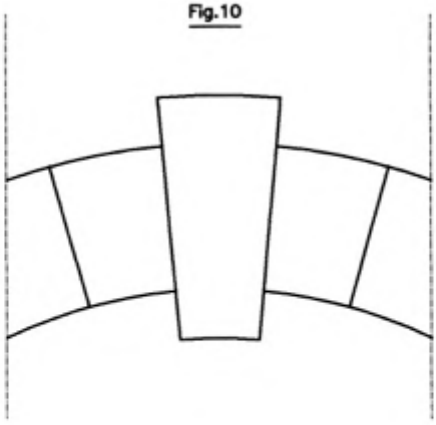
HAMMERHEAD CRANE

Fig. 9



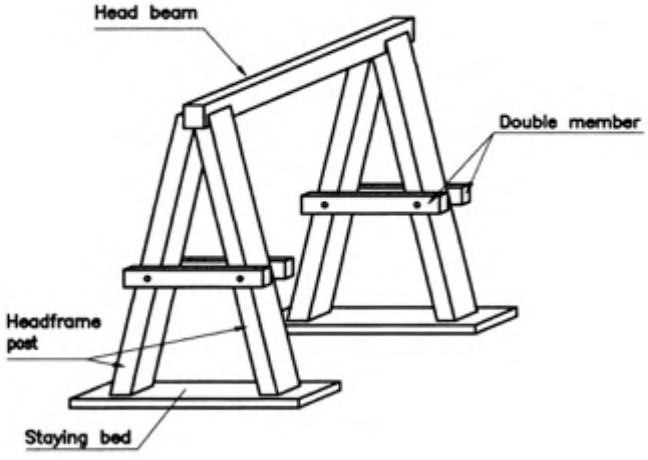
HANDRAIL

Fig.10



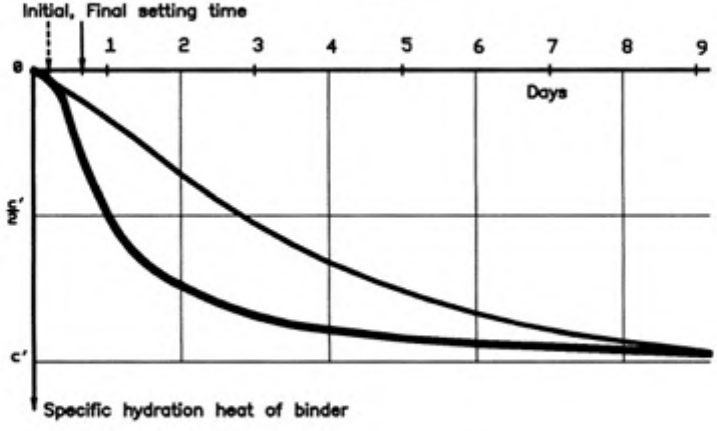
HANGING KEYSTONE

Fig.11



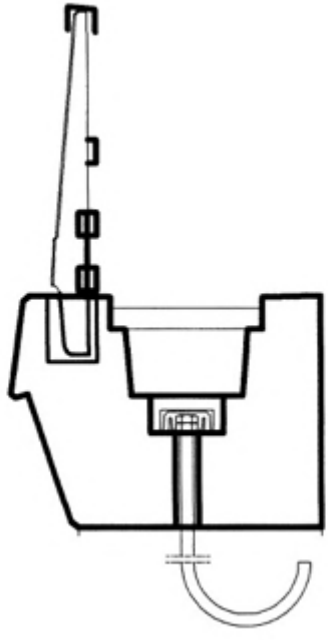
HEADFRAME

Fig.12



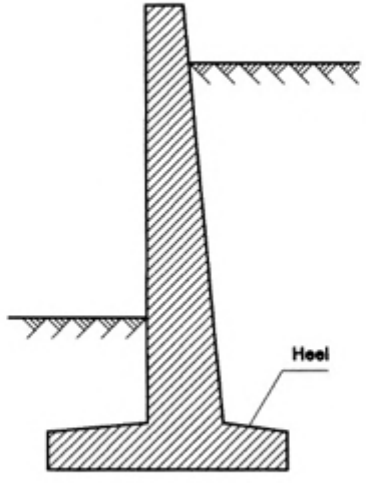
HEAT OF HYDRATION

Fig.13



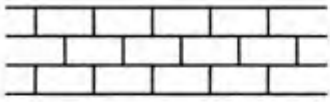
HEAVY FOOTPATH

Fig.14



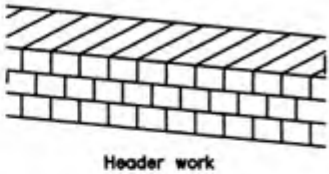
HEEL

Fig.15



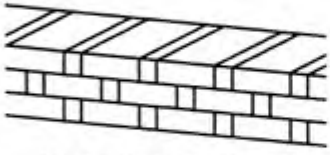
Bond with regular course

Fig.16



Header work

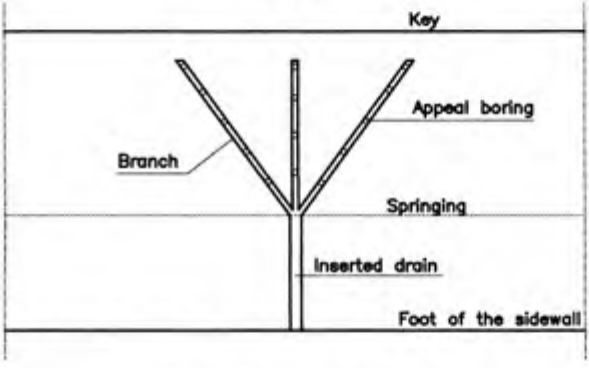
Fig.17



Tile or block and heading bond

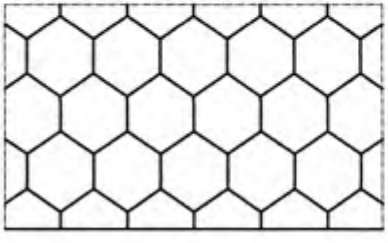
HEIGHT

Fig.17



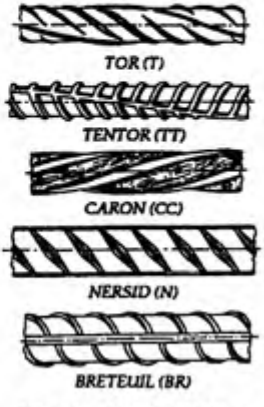
HERRINGBONE DRAINAGE

Fig.19



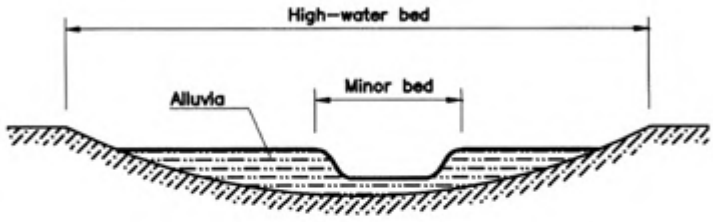
HEXAGONAL MOSAIC

Fig.20



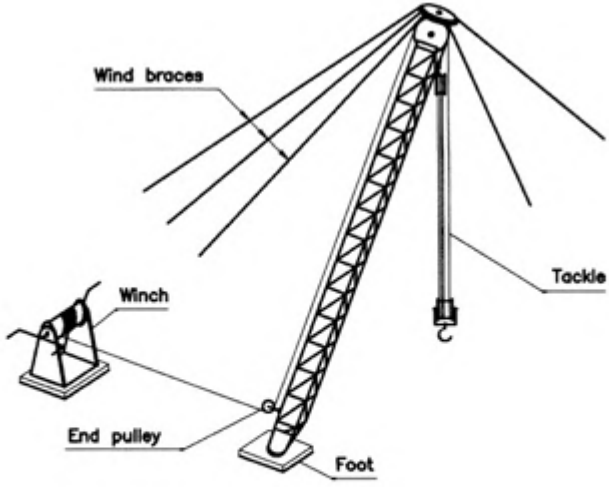
HIGH–ADHESION STEEL

Fig.21



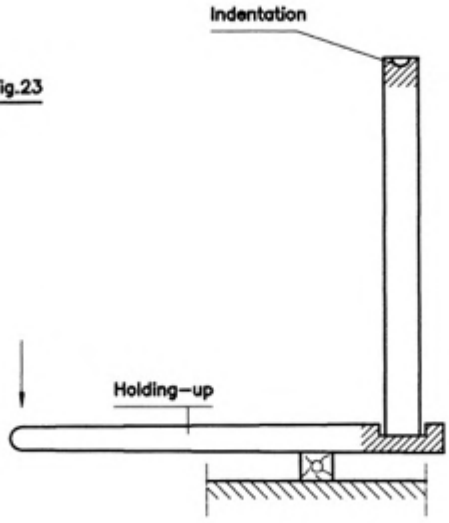
HIGH–WATER BED

Fig.22



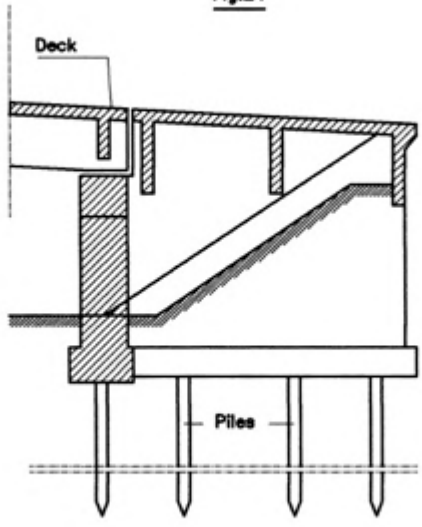
HOISTING MAST

Fig.23



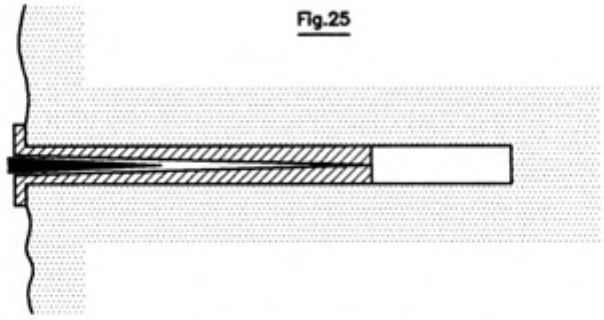
HOLDING–UP LEVER

Fig.24



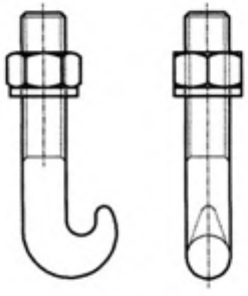
HOLLOW ABUTMENT

Fig.25



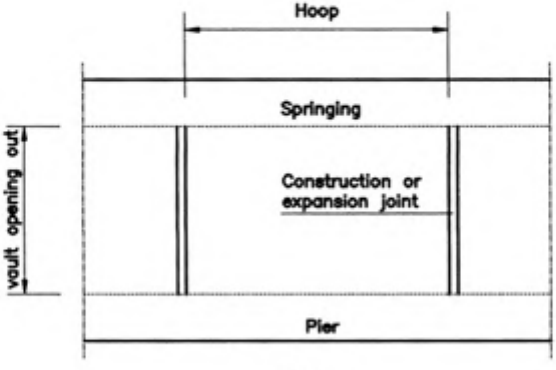
HOLLOW NEEDLE

Fig.26



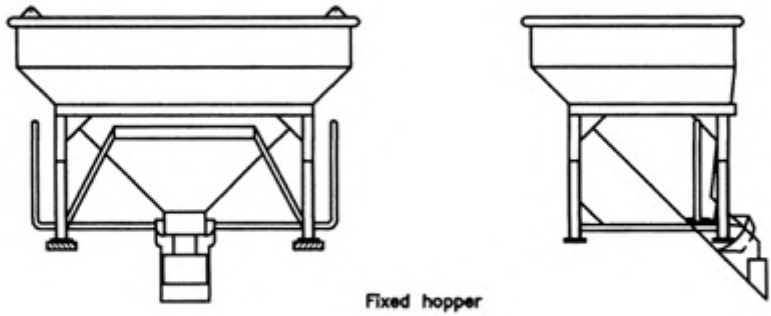
HOOK BOLT

Fig.27



HOOP

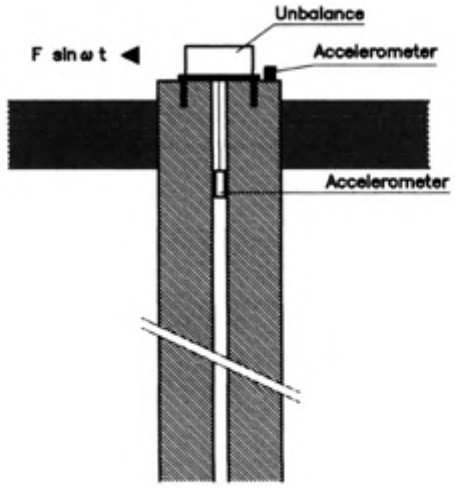
Fig.28



Fixed hopper

HOPPER

Fig.29



HORIZONTAL EXCITATION METHOD OF PILES

Fig.30

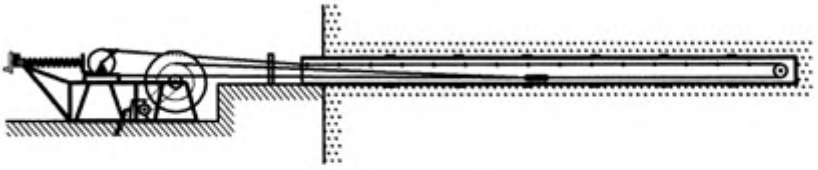
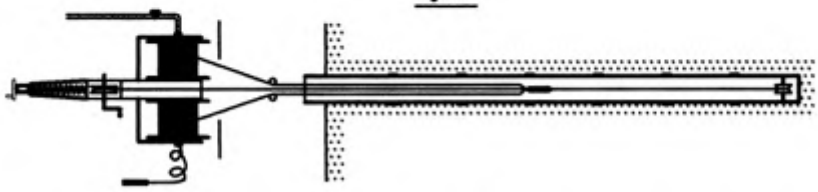
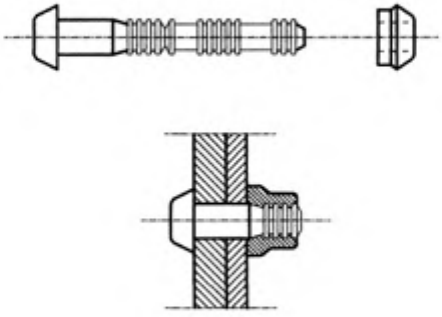


Fig.30a



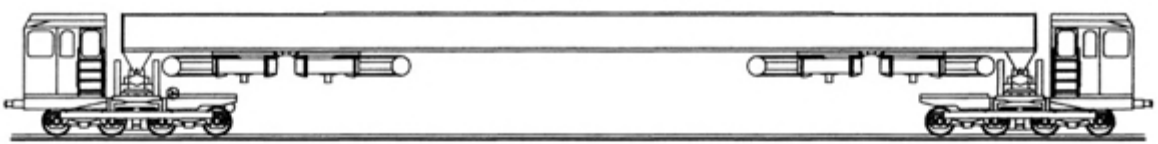
HORIZONTAL TUBES FOR MEASUREMENTS OF DEFORMATION

Fig.31



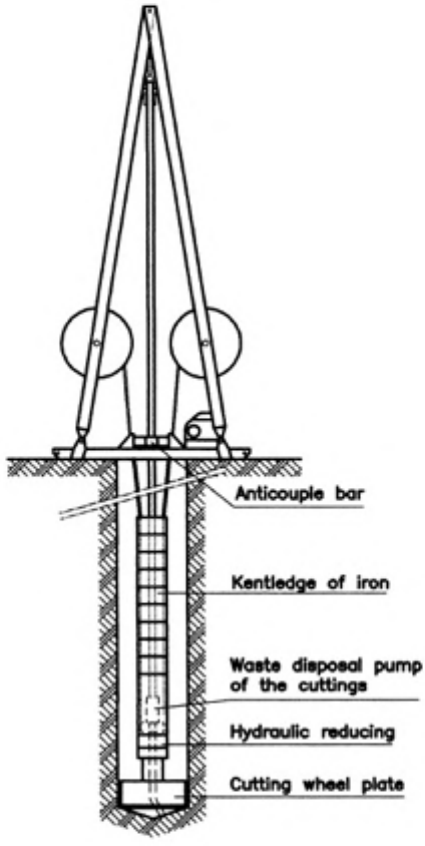
HUCKBOLT

Fig.32



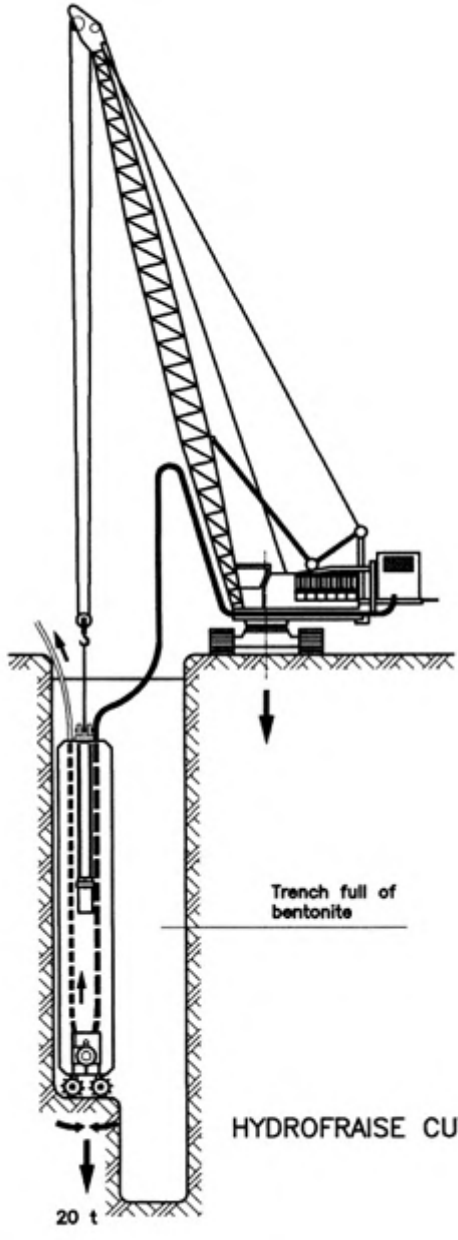
HYDROCAMPE

Fig.33



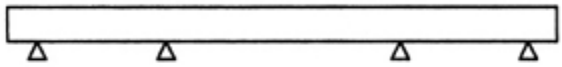
HYDROFOND CUTTING MACHINE

Fig.34



HYDROFRAISE CUTTING MACHINE

Fig.35



HYPERSTATIC BEAM or STATICALLY INDETERMINATE BEAM



I
Strength of Materials
In physical mechanics, designates a moment of inertia.

ICE BLOCK
Embâcle
Hydrology
An accumulation of ice in a waterway.

ICE BREAKUP
Débâcle
Hydrology
The breaking and the drifting of the ice layer of a river according to the current.

ICE CANDLE
Chandelle de glace
Defects (Building Materials)
A stalactite of ice formed by the frost of streaming or infiltration waters that can be frequently found in tunnels and at the outlets of bridges.

ICE CLAY
Argile glaciaire
Geology
A material of glacial origin that can be found in the Scandinavian fjords, for example.

ICE CONCRETE
Béton à la glace
Building Materials
A cellular concrete whose porosity results from the incorporation of ice.

ICEBREAKER
Brise-glace
Construction
A construction erected upstream from a bridge pier with intent to protect it from shocks produced by drifting ice blocks.

ICE-SMOOTHED ROCK
Roche moutonnée
Geology
Syn. with ROCHE MOUTONNEE

IDENTIFICATION SHEET
Fiche d'identification
Building Materials
A document accompanying approved products such as paints, resins, etc., that sums up every piece of information concerning a product (natural product, manufacturer, various trials, characteristic of use, etc.) in tabular form.

IDENTIFICATION TEST
Essaid'identification
Geotechnics
A test intended for classifying ground samples and determining their physical and chemical characteristics, namely: moisture content, specific gravity, grain-size distribution, consistency limit, contents of carbonates, and organic matter.

I-GIRDER
Poutre en I
Construction
An element made up of a solid web and two flanges whose transverse section resembles the letter I (formerly known as *double-T beam*).

IGNEOUS ROCK
Roche ignée; Roche plutonique; Roche endogène
Geology
Syn. with PLUTONIC ROCK

IMBIBITION
Imbibition
Building Materials
A capillary phenomenon characterized by a liquid's power of penetration into a solid, pulverulent or porous matter.

IMITATED BRICK
Brique imitée
Building Materials
A rendering achieved on a building on which false joints are drawn. Plaster is tinted by mixing it with ochre. Squared joints are made by sealing with white or tinted plaster.

IMITATION BRICKWORK
Briquetage
Masonry
A rendering made in a way to get the appearance of brick.

IMMATURE CONCRETE
Béton jeune
Building Materials
Syn. with GREEN CONCRETE.

IMMERSION INTO MOLTEN METAL
Immersion dans un métal en fusion
Metallurgy
A method of protection for steel pieces which, after having undergone a careful surface cleaning, usually by pickling (acid etching), are temporarily immersed into a bath of smelting metal.
This operation can be carried out made to order, that is for a part or set of parts, or ongoing for iron and steel products such as sheet metals, tubes, extruded metals, etc, straight after their development. This technique is usually used for zinc coatings (galvanization), aluminum ones (aluminizing), tin and lead ones. After cooling, coated parts can undergo a complementary passivation process in some circumstances.

IMMERSION VIBRATOR
Pervibrateur; Vibrateur interne
Equipment and Tools
Syn. with INTERNAL VIBRATOR; PERVIBRATOR; POKER VIBRATOR

IMMERSION-EMERSION TEST
Essai d'émersion-immersion
Test of Materials (Metallurgy)
A test intended for checking the corrosion resistance of pieces made of aluminum alloy or aluminum processed by anodization. This trial can also apply to other metals. Corrosion resistance is checked by the trial of alternating immersions-emersions in a saline solution.

IMPACT
Choc
Strength of Materials
A trial intended for testing the impact resistance of a material.

IMPACT APPARATUS
Appareil à percussion
Equipment and Tools
An apparatus used for the development of sands and gravel from pits. The fragmentation of these aggregates is obtained out of shocks. This machine is made up of one or two heavy rotors on which hammers or rigid hammers that turn between 200 and 1000 rpm are fixed. Materials are introduced over the rotors through windows and come across the hammers that break them and project them, either against bars of touch, or against massive platings.

IMPACT FACTOR
Coefficient de majoration dynamique
Strength of Materials
Syn. with FACTOR OF DYNAMIC ADDITIONAL CHARGE

IMPACT RESISTANCE
Résistance au choc
Building Materials
A product's resistance to a given shock in set conditions.

IMPACT RESISTANCE TEST OF PAINT FILM
Essai de résistance au choc d'un feuil de peinture
Test of the Material (Painting)
A test that consists in subjecting a coating applied on a metal substrate to the shock of a mass falling in a guided fall and to determine the minimal fall height causing the crackling or the separation of the paint film. One uses two shock masses in steel of polished spherical end, one of 400 g and the other of 1100 g. The result is expressed in the drop height of a given mass that has shown the first disorder.

IMPACT SPANNER
Clef à choc
Equipment and Tools
Syn. with IMPACT WRENCH; POWER WRENCH

IMPACT STRENGTH
Résilience
Building Materials
Syn. with IMPACT VALUE; RESILIENCE

IMPACT TEMPER
Appareil à chocs
Equipment and Tools
A standardized device used for placing standard mortar into metal molds with a view to prepare cube molds intended for strength tests of hydraulic binders.

IMPACT VALUE
Résilience
Building Materials
Syn. with IMPACT STRENGTH; RESILIENCE

IMPACT WORKING
Abattage à la percussion
Earthwork
A technique of quarrying, demolition, etc., with shock tools (pick, point tools, jackhammers, concrete breaker, etc.).

IMPACT WRENCH
Clef à choc
Equipment and Tools
A device that can be pneumatically driven and whose tool is a female polygonal wrench allowing nut screwing. This tool is used for special tightenings, such as those used for nuts of supporting bolts, bolts of frames, etc. Syn. with IMPACT SPANNER; POWER WRENCH

IMPERMEABILITY
Imperméabilité
Building Materials
The quality of a compact material, namely which pores or capillary vessels or capillaries do not allow a liquide to infiltrate through there. Syn. with IMPERVIOUSNESS

IMPERMEABILITY TEST
Essai d'imperméabilité
Test of Materials (Building Materials)
A test intended to determine the resistance to sheet products to water penetration, in particular sealing materials, when they are in contact with pressurised water. The product sample is placed in an apparatus enabling the application of pressurized water on the surface of the material. The material is called *waterproof* if in the conditions of the test no water marks make their way through it.

IMPERVIOUS
Imperméable; Etanche
Building Materials; Tightness
1. Property of a material, rock, soil, not to let itself seep (or slightly) by water.
2. Qualifies a work in which the flows of leaks running through it, their location, their reappearence and traversing are limited and suit to the owner. Syn. with (WATER) TIGHT

IMPERVIOUS CORE (WALL)
Noyau
Hydraulic Works
Syn. with CORE OF DAM

IMPERVIOUSNESS
Imperméabilité
Building Materials
Syn. with IMPERMEABILITY

IMPLANT
Implant; Implanter
Metallography; Topography
1. A cylindrical test bar in steel, machined out of a steel sample, whose sensitivity to cold cracking is to be characterized. The implant comprises a notch (circular or helical) close to one of its ends and is inserted inside a calibrated hole bored in a support plate.
2. Syn. with ESTABLISH; PLANT

IMPLANT TEST (or Test of susceptibility to cold cracking)
Essai d'implant (ou Essai de susceptibilité à la fissuration à froid)
Metallography
The method of cracking test by implant tensile under a consistent load makes it possible to determine, for any given steel, cracking stresses associated with the conditions of welding, considering the welding process and especially the hydrogen content of the deposited metal.
The method is chronologically as follows:
- *The implant is introduced into a calibrated hole bored in a support plate, so that the end comprising the notch is level with the surface of the plate;*
- *Afterward, a weld bead is laid out in one pass on the support plate under carefully controlled conditions according to a direction passing through the axis of the implant. During the welding operation, the thermal cycle characterizing the energy contribution is recorded by means of a thermocouple rhodium platinum-platinum immersed in a fusion bath. The weld bead must be such that the notch is located in the large-grain area of the thermically affected zone (case of the circular notch);*
- *After welding and before complete cooling, the implant is subjected to a tensile static load during a given time. Ifa breaking occurs during the bearing of the load, the time of bearing must be noted up to the breaking of the implant;*
- *If there is no rupture at the end of this time, the test specimen (implant-support plate) is unloaded. Then the possible cracks appeared on the level of the notch are looked out, by metallographic tests, in the large-grain area. The test can be carried out for various values of the following variables:*
  - *cooling criterion,*
  - *stress applied, accounting for the effect of the clamping stresses,*
  - *hydrogen content.*

IMPLANTATION DRAWING
Dessin d'implantation
Drawing
A plan on which are transferred every piece of information allowing to precisely locate the points of bearing of a frame on its foundations or itsinfrastructure.

IMPLEMENTATION
Mise en oeuvre
Construction
To use whichever materials, giving them a shape and place determined in advance.

IMPLEMENTATION OF A BATCH
Mise en oeuvre d'une gâchée (mortier ou béton)
Construction
The process as a whole since the weighing of constituents of a batch until the end of its putting on shelves.

IMPOVERISH
Amaigrir
Hydraulic Binders
To mix an inert matter with cement in order to minimize its binding capacity.

IMPREGNABILITY
Imprégnabilité
Building Materials
The ability of wood to be penetrated by preservatives. Impregnability is usually measured in definite conventional conditions to achieve maximum absorption.

IMPREGNATION
Imprégnation
Construction of R.C. and P.C.; Tightness
1. A regeneration method for concrete that consists in getting its homogeneity and its cohesion back by means of a resin in solvent

phase. The resin conveyed as deep as in the smallest cracks or the smallest pores will polymerize there to seal them and will thus get some cohesion back to the concrete by resticking the dissociated aggregates.
2. A process consisting in making a material in liquid form penetrate a geomembrane, at the heart, into a usually textile support.

IMPREGNATION OF HEARTWOOD
Imprégnation de coeur d'un bois
Building Materials
The maximum penetration of a product inside a timber piece even when sapwood, and *a fortiori* heartwood, are not or little impregnable.

IMPRESSOR
Pénétrateur
Assaying Equipment
The part of a trial machine of material hardness, in particular metal, which imprints its stamp in the part subjected to the testing (diamond, ball, etc.).

IMPROVED SUBGRADE
Couche de forme
Construction
The layer of the support structure resting on the subgrade.

IMPROVED WOOD
Bois amélioré
Building Materials
A material initially made of wood, but whose natural qualities have been improved by a special processing without nevertheless destroying the original structure.

IMPROVEMENT OF WOOD
Amélioration des bois
Building Materials
The whole of wood processing techniques providing materials, known as *improved,* with new physical and mechanical characteristics (high mechanical strength, resistance to chemical agents).

IMPULSES RADAR
Radar à impulsions
Equipment for Measure and Control
An istrument used for the sounding of tunnels and whose principle consists in looking the presence of possible empties (cavities, settlings, etc.) being able to be located behind the coating or under the platform. The principle of functioning of the radar to impulses is as follows. *An electromagnetic wave of variable frequency (100 up to 1000 MHz) is emitted from an impulses generator. Reflections on the interfaces between benches, on the walls of cavities of the ground and other discontinuities are collected and recorded on a paper tape. Recordings, comparable with a section of seismic time, represent in X-coordinate the distances and ordinate the propagation time of the considered wave. The propagation time depends on the speed of electromagnetic waves that depends on the dielectric constants of the medium came through. A calibration, definite thanks to the reflection on a mirror of known depth, makes it possible to know this speed, with which one can connect the propagation time to the depth, and to then use this scale for other reflections. The penetration depth is very variable according to the materials, the attenuation of amplitude being directly related with the conductivity and dielectric constant of the ground as well as with the frequency of the wave sent. This emission-reception is done by means of an antenna which has, either trailed on a carriage for the platform, or applied to the facing for statements in the vault and sidewalls. Readings are made with the stream to a speed lower than 3 km/h. This practice is also operational for the search for buried pipeworks, outlining of the bottom of lakes or rivers, sounding of airfield tracks.*

IMPURITY
Impureté
Defects (Building Materials)
A foreign element which was introduced inside the structure of a product during its development and that is present in small quantity.

IN BED
En lit
Masonry
A stone laid parallel to its natural face.

IN PLATFORM
En plate-forme
Construction
Among subunits of a permanent structure, identifies what is located under the track or the roadway.

IN SITU CONCRETE
Béton in situ
Building Materials
A polydisperse mixture obtained from a large aggregate skeleton processed in a dry state and whose voids are filled afterward by means of a generally activated mortar. Its use is generally limited to blocks poured underwater, foundation blocks, or also in underground.

IN SITU RETICULATION TIME
T.R.P. (Temps de Réticulation en Place)
Polymers
In injection, expresses the time after which one can consider that the organic binder put into work has acquired its final mechanical properties.

IN SITU TEST
Essai in situ
Work
A test carried on the building site.

INACCESSIBILITY TO PARTS OF A WORK
Inaccessibilité à certaines parties d'ouvrages
Defects (Civil Engineering Structure)
A bad constructive disposal - ascribable to the project or to later modifications - preventing the access to certain parts of a work in order to carry out the inspection and/or maintenance. This defect can be found especially at the ends of decks and in some assembly points.

IN-AND-BOND
Besace
Construction
Syn. with CORNER BONDING; QUOIN BONDING; SADDLE

INCERTUM
Incertum
Masonry
Syn. with RUBBLE WORK

INCIPIENT DECAY
Echauffure
Defects (Building Materials)
An alteration of wood characterized by a modification of the consistency and the coloring of wood (for example, the conifer sapwood turns blue and yellowish marks appear on the beech) that is the sign of the beginning of dry rot attacks. The affected wood has a particular smell; they are called *seedy; red wood and white wood.* Syn. with HEATING

INCLINAISON
Pendage
Stratigraphy
Syn. with DIP; PITCH.

INCLINATION
Dévers
Civil Engineering Structure
An object that is out of plumb is said to be inclined. Syn. with OUT OF PLUMB; SLOPE

INCLINE
Déverser
Work
To tilt a piece of timber.

INCLINE WATERSPOUT
Descente d'eau
Sanitary Engineering and Drainage
Syn. with SLOPE WATERSPOUT

INCLINED BAR
Armature inclinée
Construction of R.C. and P.C.
Concerning a beam, reinforcement of web tilted on the medium fiber and which allows, prima facie, to admit values of the tangent stress higher than straight reinforcements.

INCLINED MEMBER
Diagonale
Construction
Syn. with DIAGONAL STRUT; DIAGONAL TIE

INCLINED SHORE
Contre-fiche; Etai oblique
Temporary Constructions
1. Syn. with RACK SHORE; RAKER; RAKING SHORE; SHORING
2. Syn. with RAKING PROP; RAKING SHORE

INCLINED STAY
Jambe de pantalon
Temporary Constructions
Syn. with TROUSER LEG

INCLINED VAULT
Descente
Construction
A vault tilted to the horizon.

INCLINEMETER
Eclimètre
Topography
A topographic instrument to measure slopes.

INCLINOGRAPHIC CURVE
Courbe clinographique
Topography
A curve representing the average slope value of a region in terms of altitude.

INCLINOMETER
Clinomètre; Inclinomètre
Equipment for Measure and Control
1. An instrument that measures angular displacements (rotation of abutment, rock faces, etc.). Syn. with DRIFT METER
2. An instrument that enables to follow ground movements (to measure landslides, stability control, measurement of pile and diaphragm walls deflection) and whose principle is as follows.
A metal tube of a squared section is slipped into a drilling; a measuring sensor gone deep into the drilling at the end of a cable enables a statement of the tube slope. The deformation of the tube and therefore the horizontal displacement in comparison with the initial position are easily deduced. If the base of the tube's cramping is taken care of over approximately 5 m within a set horizon and if you take a double measurement in opposition, you can reach the precision of ± 1 mm for a height of 10 m above the restraint. Syn. with CLINOMETER; DRIFT INDICATOR CLINOMETER

INCLINOMETER WITH MOBILE PROBE
Inclinomètre à sonde mobile
Equipment for Measure and Control
An instrument that measures angular displacements of a tube put into a drilling and that is used in particular to follow landslides. The mobile probe enables angular measurements of variations at various depths thanks to an accelerometer.

INCLUSION
Cendrure
Defects (Building Materials)
A foreign matter (earth, etc.) filling up the split(s) in a stone. It is a defect for a building stone.

INCLUSION (INTO A METAL)
Inclusion
Defects (Metallurgy)
A foreign body inserted inside a metal throughout the various operations that it underwent during its development or during an operation of welding.
Inclusions may be of various natures, slag being the most often encountered matter.
Inclusions have a harmful role concerning the starting as well as the propagation of fatigue cracks. They can be at the origin of cracks when they are of sufficient size. One can say that:
- *for the same type of particle and the same size, the harmful effect will be more susceptible in hard steel than in soft steel;*
- *the localization of inclusion has an influence on the starting of crack and the interinclusion distance has an influence on the propagation of the crack;*
- *the form of inclusion affects the origin of starting (an angular inclusion is more dangerous than a spherical inclusion);*
- *during a welding operation, differences in the expansion coefficient between the matrix and the inclusion lead to contractions unrelated to the cooling by creating local stresses.*

INCLUSION (INTO A STONE)
Inclusion
Building Materials
A defect affecting stones of the sedimentary origin that is characterized by the presence of foreign matters inserted naturally and accidentally into their structure; we can identify:
- **inclusions** *(les cendrures),* filling of cavities or cracks inside the rock by pulverulent matters (clay);
- **dense inclusions** *(les inclusions denses),* such as flints or pyrites; these last can bring about black or brown stains while oxidizing.

INCLUSION PIT
Grumelure
Defects (Metallurgy)
A small hole inside a casting due to an inclusion (air, etc).

INCOMPLETE FUSION
Collage
Defects (Welding)
The penetration defect of a weld bead that is characterized by a lack of connection between the metal deposited by welding and the parent metal, or between two contiguous deposited metal layers.

INCOMPRESSIBLE SOIL
Terrain incompressible
Geology
A little or not compressible soil; soil known as *heavy* such as limestone, granite, tuff, sand, pebbles.

INCREASE
Allaise
Hydrology
Syn. with DEPOSITS ; SAND-BANK

INCREASE IN VOLUME
Foisonnement
Earthwork
Syn. with BULKING; SWELLING

INCREASING
Accrue
Geohydrology
The enlargement of a land surface area following the retirement of water or by accretions. Syn. with ACCRETION THROUGH ALLUVIUM

INCRUSTATION
Incrustation
Defects (Metallurgy)
An element like carbon deposits or oxide that adheres on the surface of a rolled metal piece. After the removal of these incrustations, the surface lets small holes appear, the so-called *gravelly surface.* Syn. with INSERT

INCUBATION
Incubation
Defects (Metallurgy)
The first stage of the metal corrosion process during which is built a polycrystalline primary film made up of randomly directed microcrystals. Germination starts at the end of that period.

INDENTATION
Crénelure
Construction
A serrated surface facing.

INDENTATION TEST
Essai de poinçonnement
Test of Materials (Tightness)
A test that consists in testing the resistance to punching under the ballast of a watertightness complex. The test unfolds with application of alternate loads. The studied complexes are set up on a porous concrete slab of 0.80 x 0.80 x 0.10 m. They are stuck for adhesive systems and they rest on a limed sand form for independent systems. A metal cylinder of 0.60 m diameter filled with 5 cm of rolled gravel and with 20 cm of ballast is laid out on the unit. The load is applied with a dynamic pulsator after its interposition between the piston of the pulsator and the ballast of a distribution plate of 0.30 x 0.30 x 0.05 m. The implementation of the complex thus put through alternate loads (1.5 t/12.5 t) accounting for the passage of a convoy-type wheel (an axle of 25 t) for 2106 cycles at the frequency of 3 Hz. After unloading, the complex is examined as much from the viewpoint of integrity (perforations or apparent tears) as from the viewpoint of impermeability.

INDENTING
Harpement
Construction
Syn. with TOOTHING

INDEPENDANT GIRDER FASTENING
Attelage de travées
Construction
Syn. with SPAN TYING

INDEX MARK
Repère
Topography
Syn. with LEVEL MARK; REFERENCE MARK; REFERENCE POINT

INDEX OF PLASTICITY
Indice de plasticité
Geotechnics
Syn. with PLASTICITY NUMBER

INDEX OF REFRACTION
Indice de réfraction
Painting
Syn. with REFRACTIVE INDEX

INDIA RUBBER
Caoutchouc
Polymers
Syn. with RUBBER

INDUCED-CRACKING RESISTANCE TEST
Essai de résistance à la fissuration provoquée
Test of Materials (Polymers)
A test intended to appraise the provoked cracking resistance of polymer-based materials applied in films or sheets sticking on hydraulic concrete. The product being implemented on a hydraulic concrete cylinder test, the deformation for which the product sticking on the support breaks when causing the concrete to crack is measured by means of a sensor.

INDURATE
Indurer
Geology
To consolidate itself concerning loose sediment.

INELASTIC BEHAVIOR
Comportement plastique
Building Materials
Syn. with PLASTIC BEHAVIOUR/REACTION

INERT FINES
Fines inertes
Building Materials
Products not having practically any influence on normal processes and reactions of cements.
Actually, there are no truly inert products taking part in the concrete proportion; they are all more or less prone to react with binders. They only differ by their nature, the speed and intensity of the reactions they take part in.
These fines are products provided by fragmentation processes of healthy rocks. In concretes they tend to be integrated into the hydrated cement paste. This integration is due to two primary phenomena:

- *the creation of epitaxic connections, namely connections due to an almost continuous joining of the hydrated constituents network of the binder on the network of the grain. Only chalky fine (calcite and dolomite) are able to present that type of connection;*
- *some pozzolanic activity that is by the ability of some fine elements to combine with the lime released during the hydration of the binder*

INFANTILE STAGE
Stade infantile
Defects
The beginning of the deterioration cycle of a material or of a construction, or the erosion cycle of a rock or soil.

INFILL WALL
Remplissage
Construction
In masonry bridges, blocking up with stones of the space located between the spandrel walls and the vault and whose role is to distribute the loads on the vault. The infill takes part in the bearing capacity of the work by its distribution effects (in the transverse and longitudinal direction), as shock absorbers of the dynamic and possibly mechanical effects.

INFLATED CLAY
Argile gonflante
Geology
Syn. with EXPANDING CLAY; SWELLING CLAY

INFLATING GROUT
Coulis mousse; Coulis gonflant
Materials
Syn. with FOAM GROUT

INFLECTED ARCH
Arc renversé
Construction
Syn. with COUNTER ARCH; INVERTED ARCH

INFLECTED CURVE
Contre-courbe
Construction
A curve inverted in comparison with the general or important curvature of a channel of communication, of an arch or a piece, etc.

INFLUENCE ANGLE
Angle d'influence
Geotechnics
The significant angle of the ground surface that is influenced by the presence of an underground excavation.

INFLUENCE LINE
Ligne d'influence
Strength of Materials
A curve that indicates, by variation of its ordinate, how the effects of an unit force (bending moment, shearing force, sag, etc.) vary on a well-defined element when this force moves (displacement is diagrammatic on the abscissa).

INFRARED CAMERA
Caméra infrarouge
Equipment for Measure and Control
A device used in thermography for the detection and measurement of the radiation emitted by a material. The monitored energy is converted in electrical information and reproduced on a television screen.
We can distinguish between two types of cameras: the commonest type, which optomechanically scans the surface, and the type which scans with an electronic-pyricon beam. **See Figure 1**

INFRARED SPECTROGRAPHY
Spectrographie infrarouge
Assaying Equipment
An identification method for complex substances.

INFRARED THERMOGRAPHY
Thermovision
Test of Materials
An infrared thermal imaging based investigation and sounding technique.

INGOT
Lingot
Metallurgy
An iron and steel product obtained by casting liquid steel in a mold suitable to techniques for later transformation into semifinished products or finished products, usually by hot-rolling or forging.

INGOT CAST STEEL
Acier fondu
Metallurgy
An iron and steel made by pouring molten steel into crucible.

INGROWN BARK
Entre-écorce
Defects (Building Materials)
Syn. with BARK POCKET; lNTERBARK

INHAUL CABLE
Câble de tête
Construction
In some suspension bridges with multiple spans, a taut cable connecting the trolleys at the head of the pylons to themselves and to anchor blocks so as to stiff the hanger. Syn. with DIGGING CABLE

INHIBITIVE PIGMENT OF METALLIC CORROSION
Pigment inhibiteur de la corrosion métallique
Painting
A pigment whose inherent property is to oppose to the electrochemical corrosion of the metal by the ambient environment thanks to the emission in this medium of ions likely to polarize microcells which are at the origin of this variety of corrosion. The primary inhibitive pigments of the corrosion are minium, basic chromate of zinc, lead silicochromate, zinc phosphate, barium metaborate, and calcium plumbate.

INHIBITOR
Inhibiteur
Materials
A substance that prevents or slows down a chemical reaction (example: minium is a corrosion inhibitor).

INHOMOGENEOUS
Inhomogène
Construction and Materials
A material or a construction that lacks unity and homogeneity.

INITIAL SET
Début de prise du ciment
Hydraulic Binders
The beginning of the phenomenon of set characterized by an increase relatively abrupt of

the viscosity of cement grout, which explains by the forming of crystals in needles which confuse. The initial set is defined with the help of a Vicat needle and it is determined by the moment where the needle stops to 2.5 mm to the bottom of the truncated mold containing the paste, the mould being immersed in the water at 20°C. Syn. with INITIAL SETTING TIME. **See Figure 2**

INITIAL SETTING TIME
Début de prise du ciment
Hydraulic Binders
Syn. with INITIAL SET

INITIAL STRESS
Contrainte initiale de précontrainte
Strength of Materials
The stress that exists inside the concrete or the steel of a prestressed element and which is subjected to a total, initial compression until the intervention of the creep or plastic flow phenomena.

INITIAL WIDTH OF A JOINT
Largeur initiale d'un joint
Construction
The joint width measured at the time of the implementation of the pointing material.

INITIATION
Amorçage
Explosives; Polymers
1. The putting into place of a detonator in contact with an explosive charge.
2. The first stage of the polymerization of a resin.

INITIATOR
Amorceur; Initiateur
Polymers
1. A reactive compound that creates active centers necessary to the initiation or the starting of a reaction of polymerization.
2. A substance that produces (as a catalyst) the acceleration of some chemical processes, but, by doing this, is inherently destroyed leaving no trace of its presence at the end of its action.

INJECT
Injecter
Work
To make a product in liquid state penetrate under pressure into a material (or matter)

INJECTABILITY
Injectabilité
Materials
The property of a material that allows an injection product to penetrate into its structure.

INJECTABLE
Injectable
Materials
Able to be injected.

INJECTABLE POLYMER
Polymère injectable
Polymers
A synthetic product having the property (in particular fluidity) to be able to be introduced under pressure into various materials. Injectable polymers are subdivided into two classes:
- *aqueous monomers* for waterproofing and consolidation;
- *nonaqueous resinous precondensed binders* for the injection of hairline cracks and sticking of concrete.

The first class of products gives mixtures as fluid as water that, after polymerization, turn into a homogeneous mass whose simple compressive strength can range from 0.1 to 10 MPa, according to the concentration and nature of the constituents. The second class of products has a viscosity thinly higher than that of water, 3 up to 15 cP, and gives, after polymerization, an extremely hard mass whose strength can exceed 100 MPa in simple compression and 30 MPa in tension.

INJECTABLE RESIN
Résine injectable
Polymers
See INJECTABLE POLYMER

INJECTION
Injection
Materials; Construction of P.C.
1. A technique enabling, in the way of proactive processing, to force the penetration of preservatives into the wood by action of pressure (injection in autoclave up to refusal, injection by *Boucherie* process, etc.).
2. An operation that consists in making penetrate under pressure a product intended either for sealing, consolidating (or both at once), filling cavities, restoring some cohesion to an impaired

structure or processing some materials (e.g. wood). Grounds and former masonries are concerned by this technique. We can distinguish:

- **contact grouting** (masonry and concrete) *(l'injection de collage),* intended to restore its homogeneity to a work structure. When they are stabilized cracks or honeycombings, the continuity of the structure is carried out by injections of mixtures containing epoxy or polyester resins whose formulation is adapted with the particular conditions of the task to carry out. These resins are generally injected with pumps that make it possible to reach high pressures. In this type of injection, one can quote:
  - *injection in tunnel,* a processing that aims at filling centimetric voids, either between injections of extrados and country rock, or between the extrados itself and country rock when the latter is in contact. This type of injection can be used with intend to ensure a perfect solidarity between a work and its rocky foundation,
  - *in the ground,* a processing intended for perfecting the filled connection surroundings/fulfilled zone, after an injection of filling;
- **blocking-up injection** *(l'injection de comblement),* whose aim is to fill the important spaces (example: at the extrados of a tunnel) and which is carried out with light materials (aerated mortar, foam grout, etc.);
- **injection of cracks** *(l'injection de fissures),* that consists in making penetrate a product into a crack, either with the aim of waterproofing, or in the interest of consolidation. In most cases, before the injection of the crack, a needling by sewing the crack is carried out in the first instance;
- **regeneration grouting** *(l'injection de regeneration),* that consists in processing the structure of a concrete or masonry work to fill relatively important spaces which can concern them. The process consists in introducing a cement grout whose proportions is in harmony with noted degradations;
- **injection of filling** (*l'injection de remplissage),* that consists in introducing a grout (mostly lightened) to fill spaces of a certain importance (in the range of several cubic meters) at the extrados of a work or into the ground;
- **structural injection of strengthening** *(l'injection structurale de confortement),* processing of a reinforced concrete work that aims at restoring the bearing ability of the faded structure. The goal is to restore at this structure the monolithism of missing or faded material;
- **structural injection of waterproofing** *(l'injection structurale de confortement),* processing of a concrete structure to compensate certain local failures of sealing with respect to the water or gas infiltrations;
- **structural injection of preservation** (*l'injection structurale de protection*), processing of reinforced concrete work aiming at filling up the cavities of the structure by injection of a product also intended for protecting steels by passivation or hydrophobia.

2. A pressurise filling of cement grout or other product into a cable duct for prestressed concrete, whose primary aim is the protection of the cable from corrosion. The injection can be performed under vacuum to improve the filling of the cable duct.

INJECTION BLUEPRINT OF PRESTRESSING CABLE DUCTS
Programme d'injection des gaines de précontrainte
Construction of P.C.

A detailed contractor's account that indicates all phases of implementation of the injection and that specifies in particular:

- the nominal designation of the responsible person for the injection,
- the description of the material used: mixer, vat of maintenance, pump (type, capacity, rate, outflow, pressure, etc.), sluices and connections,
- the formula of the grout (proportions, origin of material, viscosity, envisaged control),
- the order of injection of the cable ducts,
- the rate of performance,
- orders and particular disposals in the event of incidents or when some extreme climatic conditions are to be feared,
- the description of the devices provided for detecting the communicating cable ducts and the opportunities of simultaneous injection.

INJECTION BY CONNECTION ON DRILLING HEAD
Injection par branchement en tête de forage
Work
Process in which the lance (of injection) is inserted or sealed into a drilling over a short length. This method is intended for not very deep grounds processing or for well-localized cavities filling. This is the most widely used method for the injections in masonry.

INJECTION CONCRETING
Bétonnage par injection
Construction ofR.C. and P.C.
Technique consisting in introducing into empty spaces left by large aggregates set beforehand between tight formworks, a cement mortar whose rheologic characteristics have been specially studied (mortar to high turbulence, for example). Injectable dense mortars are often made with barite sand to a ratio S/C ranging from 3 to 3.5 in weight and a report W/C of approximately 0.8. The injection is made with a tube under hydrostatic pressure. This process is used when the geometry of the structure to be realized is complicated (piping and sheath passages, notches, etc., underwater concreting).

INJECTION NEEDLE
Aiguille d'injection
Equipment and Tools
Device made up of a wood screw of 6 mm in diameter, bored, along its longitudinal axis, of a hole of 3 mm in diameter. On the head of this screw is brazed a base, bored itself and inwardly threaded (the needle measures approximately 6 cm long). The needle is screwed on a wooden wall plug bored in its center and which is embedded inside the masonry to be injected.

INJECTION OF GROUND PROCESSING
Injection de traitement de terrain
Work
Ground processing performed in various ways and intending to modify the mechanical characteristics or the permeability of the ground. Only grounds in which there are spaces are injectable, for example: fissured rocky solid masses and permeable soils.
We can distinguish:
- **impregnation grouting** *(l'injection par imprégnation)* of existing gaps by a fluid grout. The grout penetrates thus the cracks or interparticle voids;
- **strain injection** (*l'injection par claquage)* of the solid mass and filling by a fluid grout which is a pressurised introduction causing itself the opening of the cracks in which the grout will set;
- **injection by locking of thick grout** *(l'injection par serrage de coulis épais),* that does not circulate, but sets into cavities resulting from the material repression provoked by this injection.

INJECTION PRESS
Presse à injection
Equipment and Tools
Machine used to achieve groutings of cement grout; it is generally made up of two different pistons coupled in opposition and driven by a pneumatic engine or by an electric or thermal motor with hydraulic transmission pushing the grout inside carriage pipes.

INJECTION PUMP
Pompe à injection
Equipment and Tools
Appliance specially designed for injecting various more or less fluid products into the structures. There are two categories: low-pressure ones, the pressure during pumping being usually limited to 1 Mpa; and high-pressure ones which work beyond this value. Pumps are provided with checking accessories that allow the reading of the pressure of injection, as well as the assessment of the quantities injected. Pumping is either by hand or mechanized. The powerdriving is then electric, hydraulic or pneumatic. We can distinguish:
- **low-pressure pump** *(la pompe basse pression),* basically made up of pressure air tanks or diaphragm pumps. This type of pump is particularly adapted for the pumping of resins and viscous products such as grout and the mortars injected into the largely open cracks as well as in important cavities;
- **high-pressure pump** *(la pompe haute pression),* driven by pistons. It is well suited for injecting narrow cracks (< 3 mm for example) as well as porous concrete or construction joints;
- **proportioning pump for the simultaneous injection of several components** *(la pompe doseuse pour injection simultanée de plusieurs composants),* which is specially equipped and

that comprises a pump by component. The pump supplies a mixer set close to the point of injection and makes a homogeneous and consistent mixing according to a fixed and planned batching. This pump is used when products are injected without being premixed, products which must be implemented when the chemical reaction is hardly started.

INJECTION TUBE
Cavalier
Building Materials
Pipe of injection embedded in a mortar covering the apparent mark of a crack.

INJECTION WITH CIRCULATION OF GROUT
Injection avec circulation du coulis
Work
Artificial cementing practice that consists in having a tube or a pipe go down into the core of a drilling and to the bottom, then in injecting under pressure up to the grout overflows the hole.

INJECTOR
Injecteur
Equipment and Tools
Appliance or device used for resin or grout injection. We can distinguish:
- **glued injector** (*l'injecteur collé*), used for the injection of cracks in masonries and whose various models are used exclusively:
  - when the injection pressures are low (< 5 bars),
  - when the injection debits are low.

The most widely used injectors are flat injectors;
- **drilled injector** *(l'injecteur foré),* placed inside a hole having a diameter ranging between 15 and 30 mm and which can consist in a tube whose end placed inside the drilling is provided with a rubber coupler, associated with a crushing device making sealing possible. Other sealing systems can be ensured by flexible tubular membranes inflated with air or water or by rubber or leather disks. Injectors may be provided with closing-down devices (faucets, nonreturn valves, valves), and devices controlling the flow of products (pressure gauge, flowmeter). Drilled injectors are mostly used for injections requiring debits or pressures higher than 5 bars.

INJECTOR HEAD
Tête d'injection
Equipment and Tools
A device which keeps the connection between the stand of drill pipe and the flexible pipe conveying of the drilling fluid. Syn. with SWIVEL

INJECTOR WITH OBTURATOR
Injecteur à obturateur
Equipment and Tools
See CLOSING DEVICE

INJURY
Blessure
Defects (Building Materials)
Solution of continuity brought about in the wood by the accidental wrench of the bark and the healing of the wound resulting (the wood is often more or less altered around the injury).

INLAY
Incruster
Masonry
Syn. with ENCRUST

INLAYING
Incrustement
Masonry
Syn. with ENCRUSTMENT

INLET FILTER
Crépine
Equipment and Tools.
Filter placed at the end of a water-aspiring pipe inside a drilling, intending to prevent solid elements from the ground from being aspired.
The inlet filter has a double purpose:
- avoid the obstruction of the pump;
- avoid that an important removal of solid particles may destabilize too much the ground surrounding the pumping zone.

INNER BATTER
Contre-fruit; Surplomb
Construction
Syn. with COUNTERBATTER

INNER FACE
Intrados
Construction
1. The intrados of a vault, an arc, also called *bottom face.* **See Figure 3**
2. The bottom surface of a slab, a beam, also called *soffit* (beam) or *underside.*
Syn. with BOTTOM FACE; INTRADOS; SOFFIT

INNER WALL
Contre-mur
Construction
Syn. with COUNTER-WALL

INORGANIC THINNER.
Diluant minéral
Painting
Syn. with MINERAL THINNER

INQUIRY TEST
Essai d'information
Foundation
Test that consists in subjecting piles to various tests in order to collect data concerning their implementation, may it be by driving, drilling, or pushing.
Piles subjected to these tests are a part of the work and their procedure is not different from the other piles. The progress of this test is subjected to the establishing of a driving, pushing, or drilling form, depending on the way the piles have been made. On this form are reported all the indications concerning its implementation (identification number, date and hour of beginning and end of execution, the acute identification of the means and ways of implementation, incidents which occurred, the refusal, etc.).

INSERT
Pièce rapportée; Incrustation
Construction; Defects (Metallurgy)
1. Element added to an already built or worked unit (example: tip on a tool, stiffener stanchion on the web of a metal beam). Syn. with PATCH
2. Syn. with INCRUSTATION

INSERT WATERTIGHTNESS COMPLEX
Complexe d'étanchéité intercalaire
Tightness
In a tunnel, continuous damp-proof course contained between a prepared surface, in order to support it, and the internal structure. It actually consists in a complex on the inlet side, located between its supports (synthetic sheets or hydrocarbon-based sheets).

INSIDE CUTTER
Coupe-tube
Equipment and Tools
Syn. with PIPE-CUTTER; TUBE FUSE; CASING KNIFE

INSIDE MEASUREMENT
Mesure dans oeuvre
Metrology
The dimension taken between two works, two walls, their thickness excluded (facing opposite facing).

INSIDE THE FABRIC
Dans œuvre
Construction
The part of work contained in the whole.

INSIDE THE FABRIC PIPE
Tuyau dans oeuvre
Construction
A nonapparent pipe, restrained or embedded inside a masonry, or also set inside the shaft of a column.

INSPECTION HOLE
Regard de visite
Construction
Chamber laid out to enable the connection between various drainage devices, the supervision of their correct functioning and to facilitate their clearing-out; the inspection hole is covered with an inspection cover. Syn. with APERTURE; MANHOLE

INSTABILITY
Instabilité
Strength of Materials
1. The state of physical balance corresponding to the overturning of a complete building by swinging of the foundation raft, through the action of an exceptional horizontal force (seism, exceptional wind) eventually accompanied by an exceptional rising force (seism, cyclone).

2. A phenomenon of excessive deformation, followed or not by a breaking, leading to the partial or total ruining of a construction. The instability can apply only to one of the structural elements and can result either from a first-order effect, a second-order effect, or both.

INSTALL
Appareiller
Carpentry
To choose the timbers for the construction of a work.

INSTANTANEOUS ADHESION
Adhérence instantanée ou immédiate
Adhesives
The characteristic of an adhesive to weld instantaneously two surfaces being in contact.

INSTANTANEOUS BOREHOLE LOGGING
Enregistrement des paramètres de forage; Diagraphies instantanées
Geotechnics
Process consisting in measuring and recording, following the depth, one or several physical heights, measured on the drilling machine itself during the drilling and whose variations are characteristic of crossed grounds. The recording is made as a graph. Syn. with RECORDING OF DRILLING PARAMETERS

INSTRUCTIONS (to welding, etc.)
Consigne (de soudage, etc..)
Work
Document often annexed to a work shedule that gives precise and detailed instructions on often tricky operations.

INSTRUMENT
Instrumenter
Equipment for Measure and Control
To install inside a work follow-up instruments, which can record an eventual evolution.

INSTRUMENTATION
Instrumentation
Equipment for Measure and Control
The setting inside the structure of a permanent structure of instruments intended for checking their eventual movements, their behavior (strain gauges, etc.).

INSULATING JACKET
Calorifugeage
Masonry
Syn. with LAGGING

INSULATION
Calorifuge
Materials
Syn. with HEAT INSULATOR

INTAKE
Retraite; En retrait
Construction
1. Syn. with SCARCEMENT; SET BACK
2. Of an architectural element whose main plane is located backwards the main plane of another element placed below it. Syn. with OFFSET; SCARCEMENT

INTEGRAL PROCESSING
Traitement intégral
Construction of R.C. and P.C.
Process that consists in processing a hardened concrete surface in order to give it a required aesthetic aspect. Integral processings concern the totality of the work; they consist in removing a more or less important layer of the skin of concrete. Among them one can quote grindstone polishing and the polishing (especially in prefabrication), bushhammer finish, hacking, sanding, splitting, bursting, and flame thermal processing.

INTEGRAL WATERPROOFING
Etanchéité par chape incorporée au tablier
Tightness
Syn. with TIGHTNESS BY COPING INCORPORATED TO THE DECK. See MORTAR BUILT-IN SCREED

INTERBARK
Entre-écorce
Defects (Building Materials)
A defect from wood characterized by the presence of a blade of bark included in the middle of the mass of the wood. It results a solution of continuity that decreases the strength of the wood and is rejected for most uses. Syn. with BARK POCKET; INGROWN BARK. **See Figure 4**

INTERCOLUMNIATION
Entrecolonnement
Construction
Interval separating two columns.

INTERFERENTIAL HOLOGRAPHY
Holographie interférentielle
Test of Materials
An approach of photography in relief using interferences produced by the superposition of two laser beams, one coming directly from the producing apparatus, the other reflected by the object to be photographed. This approach enables to visualize the stress field (affecting a reinforced concrete slab, for example).

INTERGRANULAR SEGREGATING
Ségrégation intergranulaire
Metallurgy
Distribution, at a solid state, of some alloy elements towards grain joints existing at the considered temperature and thus creating a difference in the chemical composition between the core and circumference of grains.

INTERIOR LINE OF A RAILING
Nu intérieur d'un garde-corps
Construction
Syn. with GUARD

INTERLOCKED GRAINS
Fils tors
Defects (Building Materials)
Syn. with SPIRAL GRAINS; TWISTED FIBERS

INTERLOCKING PILE
Enclenchement d'une palplanche
Foundation
Operation that consists in encasing a sheet pile (or a pair of sheet piles), taken from its stocking area, to the last sheet pile placed in the curtain.

INTERMEDIATE CEMENT RENDERING
Couche intermédiaire; Corps d'enduit
Masonry
Syn. with BROWNING COAT; FLOATING COAT

INTERMEDIATE LANDING
Repos
Construction
A platform or wide horizontal step that breaks the slope of a staircase and that separates two successive flights of stairs.

INTERMEDIATE PURLIN
Panne intermédiate *ou* courante
Carpentry
A frame piece located on the side and positioned between the ridge purlin and the ground plate.

INTERMEDIATE RENDERING
Corps d'un enduit
Masonry
The intermediate layer, namely the one applied after roughcasting and before the skimming coat. The intermediate rendering can be constituted by a cement mortar or by a composition mortar.

INTERMEDIATE SPANS
Travées intermédiaries
Construction
Spans located between bank spans in a work which consists in several of them.

INTERMETALLIC
Intermétallique
Metallurgy
Of the interface of two metals joined by welding, rolling, plating, or electrolytic coating.

INTERMITTENT CORNICE
Corniche coupée
Construction
A coping divided intermittently by foreign elements.

INTERMITTENT SPRING
Fontaine intermittente
Hydrology
A source whose flow is alternative, namely that occasionally run.

INTERNAL ANGLE
Angle rentrant; Cueillie
Construction
1. Angle whose junction of lines or surfaces is on a bottom in forming a corner. Syn. with REENTRANT CORNER

2. A reentrant corner constituted by the junction of two coated plane faces.

INTERNAL CONTROL ACCOUNTABLE
Responsable du contrôle interne
Works
A person appointed by a contractor to check and follow up on the status of the procedures, methods, implementation conditions, processes, products and services of the building site. He analyses the design requirements in the bid to ensure that are strictly met.

INTERNAL FRAME OF WORK
Structure interne des ouvrages
Construction
The constitution of the frame of a work. We can distinguish two types:
- **continuous structure** *(la structure continue),* characterized by:
  - the absence of solution of continuity in the work or part of work considered;
  - the equality of the mechanical characteristics (strength, modulus of elasticity) in all directions around a point.

We can here quote cast steel and cast iron constructions, and constructions in weld-assembled steel. (The continuous structure presents great advantages when the direction of forces to bear can broadly vary. It resists, on the other hand, very poorly to cracks which can be propagated without limits and in all directions.)
- **oriented structure** *(la structure orientée),* characterized by:
  - the existence of solution of continuity between two elements of the same material or between two different materials;
  - the existence of privileged directions for the transmission of stresses. That imposes the need for connection elements between various elements. We can classify in this type of structure timber constructions, masonries of quarry stone, ashlar or bricks, metal constructions assembled by rivets or bolts, reinforced or prestressed concrete constructions, steel constructions associated with the concrete taking part in the strength.

INTERNAL GEOPHYSICS
Géophysique interne
Geophysics
A branch of geophysics that concerns the surface and interior of the globe and that is subdivided itself into several branches: gravimetry, seismology, geomagnetism, volcanology, and hydrology.

INTERNAL HEATING OF CONCRETE
Chauffage interne du béton
Construction of R.C. and P.C.
Heat processing technique for concrete consisting in a heating within the core of the mass by reinforcements acting as a resistance, the wires, the electrodes, etc.

INTERNAL OUTLET (to gutter)
Souillard
Construction
Opening kept or created within the width of a wall, a string course, a stone, for the passage of a rainwater pipe.

INTERNAL OXIDATION
Oxydation interne
Defects (Metallurgy)
Any precipitation at more or less great depth, in the internal structure of a ferrous product, of dispersed oxides formed from oxygen, which has diffused from the surface.

INTERNAL PLASTICIZER
Flexibilisant
Polymers
A plasticizer integrating by chemical connection to the macromolecule and which is sometimes called *internal plasticizer.* The internal plasticizer brings a permanent modification to systems, because it participates in the reticulation by the intermediary of the resin or the hardener.

INTERNAL SAPWOOD
Lunure; Double-aubier
Defects (Building Materials)
Typical defect of oak wood that is characterized by an area or ring of sapwood not duraminized at the heart of heartwood. **See Figure 4a**

INTERNAL STRESS
Contrainte interne; Contraine latente; Tension interne
Strength of Materials
Tension and compression stress stabilizing itself inside any mechanical piece during and after its manufacture.

INTERNAL TIGHTNESS DIAPHRAGM
Ecran interne d'étanchéité
Tightness
A waterproof wall erected inside the body of an earth-fill dam to ensure tightness. This screen is generally built of cement concrete or bituminous concrete. Syn. with (WATERTIGHT) DIAPHRAGM

INTERNAL VIBRATION
Pervibration
Construction of R.C. and P.C.
The internal vibration of fresh concrete with internal vibrators. Syn. with PERVIBRATION

INTERNAL VIBRATOR
Pervibrateur; Vibrateur interne
Equipment and Tools
Syn. with IMMERSION VIBRATOR; PERVIBRATOR; POKER VIBRATOR

INTERSPAN
Entre-travée
Construction
All the girders which lean on the main beams.

INTERSTITIAL WATER
Eau interstitielle
Geohydrology
The free water that circulates inside interstices of the ground, which can be evacuated under the influence of external pressure or may return to its starting point if this pressure ceases. Also, water that circulates through masonry, rock, etc. Syn. with PORE WATER

INTRADOS
Couronne; Douelle; Intrados; Ecuelle; Sous-dalle; Intrados
Construction
1. Syn. with CROWN
2. Syn. with BOTTOM FACE; SOFFIT
3. Syn. with BOTTOM FACE; INNER FACE; SOFFIT
4. The internal curvature of a vault archstone.
5. The inferior face of a slab; level of this face. Syn. with BOTTOM FACE; INNER FACE; SOFFIT

INTRADOS CURVE
Courbe d'intrados
Construction
Drawing of the vault that ends on the springings by vertical tangents (in the other cases, when tangents are bent on the vertical side, it is an arch). **See Figure 5**

INTRADOS WATERTIGHTNESS COMPLEX
Complexe d'étanchéité d'intrados
Tightness
In a tunnel, general or partial lining (at the level of cracks) to waterproof-based coating or reinforced or nor polymers, applied on the intrados of the tunnel.

INTRINSIC CURVE
Courbe intrinsèque
Strength of Materials
For a given material supposed homogeneous and isotropic, locus of the extremities of limit stresses vectors, compatible with the strength or deformation of the material.

INTRINSIC EQUATIONS
Equations intrinsèques
Strength of Materials
The relations that exist between stresses and displacements relative to the sections of the end of a straight or bent beam.

INVAR
Invar
Metallurgy
An alloy of iron and nickel whose coefficient of expansion is infinitely small even in the event of high differences in temperature.

INVAR WIRE
Fil invar
Metallurgy
Wire used for various measurements because of its low coefficient of expansion (example: convergence measurements).

INVERSION OF SET(TING)
Inversion de prise
Defects (Hydraulic Binders)
Phenomenon that can affect some cements of slow or half-slow setting which become, in a more or less long time, of quick setting.
The inversion of setting is a variant of the phenomenon of cement false set having for origin alkaline carbonates, CO_3K_2 or CO_3Na_2, contained in some cements (by carbonation of the air). At the time of batching there is the formation of CO_3Ca whose crystallization more or less strongly stiffens the cement paste. It is called *the false-set carbonate;* it is much rarer than *false-set plaster.* In very rare cases, one can be in presence of these two types of false set. A calcium sulfate addition during the manufacture of the cement enables this inversion to be avoided.

INVERT
Radier
Construction
1. Mantle of safety in masonry set on the bed of a river to protect it from erosion caused by the action of waters.
2. Part of the lining of a tunnel joining the base of sidewalls.

INVERT GUARD
Garde-radier
Construction
Continuation of raft at the front and the back of a work, presenting a masonry noticeably thicker than the one of the foundation raft and whose aim is to protect the work from any risk of underwashings, blockages, etc. Syn. with FOUNDATION RAFT GUARD

INVERT LEVEL
Fil d'eau
Sanitary Engineering and Drainage
Syn. with CURRENT; STREAM

INVERTED ARCH
Arc renversé
Construction
Turned over vault, that is, having its convexity in contact with the ground, forming the foundation raft of some works, in particular of aqueducts or culverts in masonry. Syn. with COUNTER ARCH; INFLECTED ARCH

INVESTISON
Investison
Earthwork
Syn. with BARRIER PILLAR; PROTECTIVE BREAK.

IRON
Fer
Metallurgy
A malleable and ductile metal which, after transformation, produces steels and (cast) irons.

IRON AND STEEL INDUSTRY
Sidérurgie
Metallurgy
Art that includes all the techniques concerning the development of steels and their alloys.

IRON BAR
Fer; Barre
Building Materials: Metallurgy
1. The usual designation, although erroneous, designating the different steels of a construction in reinforced concrete.
2. Syn. with BAR

IRON CAPE
Chapeau de fer
Geology
Iron oxide thick and hard crust generally showing on the surface of the ground and coming from the superficial alteration of a metallic ores deposit. Syn. with IRON LAYER

IRON FIGHTER
Ferrailleur
Building Materials
Syn. with BAR BENDER; STEEL BENDER; STEEL FIXER

IRON GROWN BAR SYSTEM
Iron grown bar system
Temporary Constructions
Sheeting process used during the tunneling in a bad ground. It consists in threading needles in steel sections similar to a bull-headed rail, cut in level at the front. These rails are laid out flat on the extrados of the tunnel, in the area surrounding the key. A jack, whose head is equipped with a dowel which can tack in the holes in needle webs, makes it possible to

driving in them into the ground by leaning on the head of the masonry made at the back.

IRON LAYER
Chapeau de fer
Geology
Syn. with IRON CAPE

IRON OXIDE
Oxyde de fer
Painting
Natural or artificial mineral pigment, coming from iron ores and used for the preparation of paints.

IRON PAN
Alios
Geology
Sedimentary rock of detrital origin represented in the Landes (France) by ferruginous sandstone layers.

IRON FRAMEWORK
Ferraillage
Building Materials
Syn. with BAR BENDING; BAR SETTING; STEEL FIXING; (CONCRETE) REINFORCEMENT

IRON SCALE
Battiture
Metallurgy
Syn. with FORGE SCALE; HAMMER SCALE

IRON WORKER
Métallier
Metal Construction
Worker or contractor who builds metal works.

IRONSHOD STONE
Pierre ferrée
Building Materials
Rock containing veins or very hard strings that nick tools.

IRREGULAR ARCH
Cherche
Construction
Centering with irregular curve.

IRREGULAR BOND
Déharpe
Masonry
Syn. with BROKEN BOND; RAKE BACK

IRREGULAR COURSED MOSAIC
Mosaïque assisée irrégulière
Masonry
In rubble walling, bonding with horizontal courses in which stones have the same thickness but the courses do not have the same height. Edges are sharp and each quarry stone is carved in a perfect square on its facing face.

IRREGULAR DEPOSITION
Piqûre
Defects (Metallurgy)
Defect of flatness due to the deficiencies or excesses of coating on a coating surface achieved by metal spraying or electrolysis.

I-SECTION
I
Metallurgy
Metal section achieved by rolling in the shape of an **I.** This product is more widely known as **I-**girder. We can distinguish:
- **I.P.N.** (normal profile);
- **I.P.E.** (economic profile).

ISOCHROMATIC LINE
Ligne isochrome
Strength of Materials
In plane elasticity, a line such as in each point, the difference in the values of main stresses is constant.

ISOLATED COMPLEX STRUCTURE
Ouvrage complexe isolé
Civil Engineering Structure
Special construction that calls-on for a particular and complex technology (example: pushed bridge or prestressed bridge) or repetitive (example: cut-and-cover or tunnel), and forms the subject of a single contract.

ISOLATED SIMPLE STRUCTURE
Ouvrage simple isolé
Civil Engineering Structure
Standard construction not calling for a particular, complex, or repetitive technology, and being the subject of a single contract.

ISOLATED WORK
Travail *ou* Pose en recherche
Work
The specific achievement of a unique job or a small amount of work (for example, the replacement of an isolated quarry stone).

ISOMERIZED RUBBER RESIN
Résine de caoutchouc isomérisé
Polymers
Product resulting from a structural modification of the macromolecular chain of the hydrocarbon rubber that results in the removal of ethylene connections and in revealing structures of the *trans* type in this polyisoprene *cis.*

ISOPIESTIC CURVE
Courbe isopièze
Hydrology
Curved line following the hydrogram of the variation of the level of the ground water table.

ISOPRENE
Isoprène
Materials
Hydrocarbon called methyl-2 butadiene, colorless, obtained by distillation of natural rubber.

ISOSTATIC
Isostatique
Strength of Materials
Of a structure when stresses (normal stress, shearing force, bending moment) related to any section can be determinated only from the equations of statics. In the opposite case, the structure is known as *statically indeterminate.* A beam is particularly isostatic when its bearing reactions can be evaluated only from the assumptions of statics determination. The beam resting on two simple bearings, the console, and the arch with three-hinged arch are isostatic structures. Syn. with STATICALLY DETERMINATE

ISOSTATIC BEAM
Poutre isostatique
Strength of Materials
Element that rests on two supports or element in cantilever (cantilever beams are also isostatic beams).

ISOSTATIC HYDRAULIC HOISTING
Montage hydraulique isostatique
Handling
Method of setting a structure that consists in gathering together all the jacks of a lifting installation into three independent circuits, each one being connected on a different pump. All jacks of each circuit are at the same pressure, and consequently they behave as only one jack. This provision enables to have liftings using many jacks but whose operation looks like a lifting in three points.

ISOSTATIC LINE
Ligne isostatique
Strength of Materials
In plane elasticity, line such as the tangent, in any point, is directed according to one of the main stresses.

ISOSTATIC RECTANGULAR BEAM ON SIMPLE SUPPORTS
Poutre droite isostatique sur appuis simples
Strength of Materials
A beam on simple supports, or independent span, is a rectangular beam resting on two simple supports likely to develop only normal bearing reactions on the medium fiber of the beam. Generally one support is fixed and the other is mobile to enable the free expansion of the beam. The forces applied to the beam are vertical forces due to the gravity or to loads; these loads may be concentrated or distributed. **See Figure 6**

ISOSTATIC RETICULATED SYSTEM
Système réticulé
Strength of Materials
An isostatic reticulated system (or with lattice) is a system made up of rectilinear bars articulated between them at their ends; joints, common to several bars, are panel points of the system. Only outside forces applied to the system (forces given and reactions of the bearings) are applied to the panel points. It results from it that any bar *AiAj* of the system, contained between panel points *Ai* and *Aj,* is in balance throught the agency of two equal forces and opposite applied one *Ai* some, the other in *Aj;* this bar thus does not bear that a normal strain *Fij* called *strain in the AiAj bar*; by convention *ij* is positive if the *AiAj* bar is compressed, negative if the *AiAj* bar is taut. When all bars and applied forces are in the same plan, the system is a plane reticulated system.

ISOTHERMAL CURING
Autoétuvage
Hydraulic Binders
Heat treatment enabling the acceleration of the hardening of concrete by the release of its own heat of hydration. Syn. with SELF-CURING

ISOTHERMAL RELAXATION OF STEEL FOR PRESTRESSING REINFORCEMENT
Relaxation isotherme des aciers pour armature de précontrainte
Construction of P.C.
Relative loss of stress that undergoes in the course of time any steel subjected to an initial tension equal to the 80% of the guaranteed strength and kept at a constant length and temperature.

ISOTROPY
Isotropie
Strength of Materials
Quality of a material whose mechanical characteristics are the same ones in all directions, so that it gets deformed elastically or plastically, and up to a point happens to break, always in the same conditions whichever the orientation of the microstructure may be.

ITABIRITE
Itabirite
Geology
Foliated metamorphic rock containing at least 60% of iron.

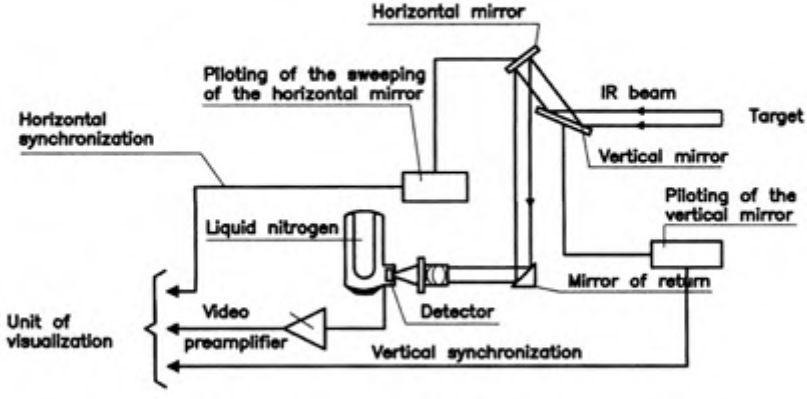
ITINERARY SURVEYING
Nivellement d'itinéraire
Topography
Determination of the altitudes of points spread over an itinerary specified in advance. It concerns in general the uniting of some points in comparison with marks known in altimetry and the calculation of these points with a closed altimetric traversing. Leveling also applies to the determination of altitudes of stations constituting the altimetric uniting skeleton map.

IVORY BLACK
Noir d'ivoire
Painting
Black pigment resulting from the calcination of bones, used in particular in the composition of fine paints. Syn. with BONE BLACK

Figures of the letter

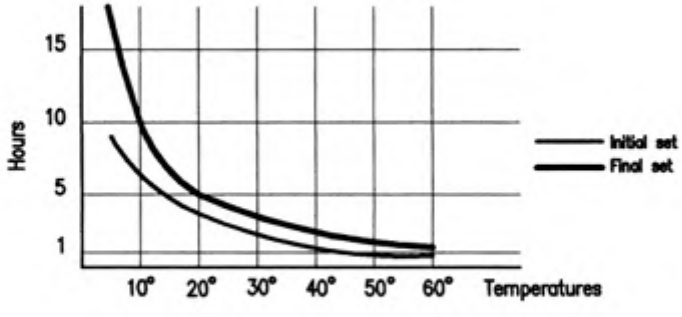


Fig. 1



INFRARED CAMERA (scheme of operating)

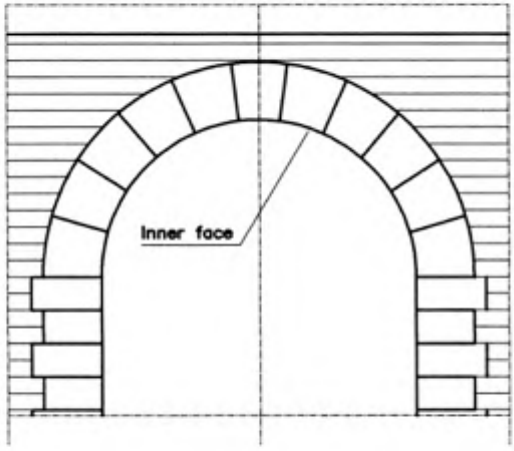
Fig. 2



Influence of the temperature on the set of cements

INITIAL SET

Fig. 3



INNER FACE

Fig. 4



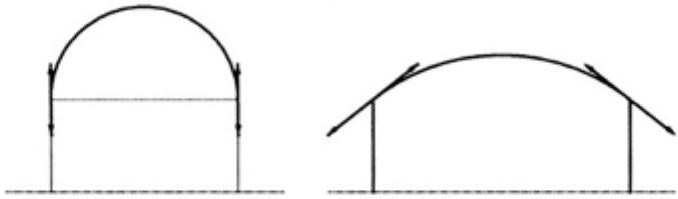
INTERBARK

Fig.4a



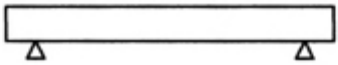
INTERNAL SAPWOOD

Fig. 5



CURVE OF INTRADOS

Fig. 6



ISOSTATIC RECTANGULAR BEAM ON SIMPLE SUPPORTS



JACK
Cric; Vérin
Equipment and Tools
1. A lifting tackle or pushing device used to displace loads a short distance.
The two main jacks used are:
- **rack-and-pinion jack *or* lever jack** (*le eric à crémaillère*), machine intended mostly for lifting a load, acting by pushing or by traction. The driving of this machine takes manually by the agency of a crank that sues after reduction of the rack whose base is equipped of a paw or a horn. This type of jack is also used in horizontal position to perform sliding along operations;
- **hydraulic jack** (*le eric hydraulique*), device for lifting loads through a piston hydraulically moved. The hydraulic pressure is obtained by pumping.

2. An apparatus used to lift objects of great weight with little physical effort. It has great thrusting and tensile power as well. Syn. with LIFTING JACK

JACK ARCH
Voûtain
Construction
In some road or railway bridges with steel deck, small surbased vault, generally made of bricks or sheet metal, leaning on the metal elements of the framework (on the distance pieces generally). All the jack arches constitute the cover. According to whether they lean on stringers or transverse girders, they are longitudinal or transverse. Jack arches only lie in the former works. **See Figure 1**

JACK HAMMER DRILL
Marteau perforateur
Equipment and Tools
A pneumatic or hydraulic tool, heavier than the pick-hammer, in which the tool (borer) undergoes a rotation of a fraction of turn between two consecutive blows. Light models (hand-driven) are supported by an articulated telescopic leg ensuring the push of the tool and run on compressed air. Heavy models are installed on grooves. Syn. with HAMMER DRILL; ROCK DRILL HAMMER

JACK PLANE
Riflard
Equipment and Toots
A spatula used by the masons to cut the excess of mortar of a pointing, to cut main planes, etc. **See Figure 2**

JACK RAFTER
Empannon
Carpentry
Syn. with CRIPPLE RAFTER

JACK STUD
Quille
Construction
A pillar of small height.

JACKBIT
Jack-bit; Taillant amovible
Equipment and Tools
The active dismountable tip of a drill steel. Syn. with DETACHABLE BIT; REMOVABLE BIT

JACKET
Chemiser
Foundation
To sheathe, to case, evoking a pile.

JACKETING
Chemisage
Construction; Foundation
1. The creation of an added new covering placing against the intrados of a work, in allowance on the former covering (shotcrete for example).
2. In the drilling of piles, interposition between the concrete and ground of a lateral supple or semi-rigid envelope (thickness from 1 to 2 mm). This envelope, or lining, is placed into the drilling before or with the reinforcing cage, just before concreting of the pile. Syn. with LINING

JACKING BRACE
Montant d'appui provisoire; Montant de vérinage
Metal Construction
The reinforcement of a metal beam which is added at the right of the bearing axis, doubling the bearing brace and that stiffens this beam during lifting maneuvers by jacking to avoid deformations.

JACKING DEVICE
Vérin de mise en précontrainte
Equipment and Tools
A device used, depending on the model, for tensioning cables or prestressing rods. **See Figures 3 and 3a**

JACKING PIT
Puits de service pour fonçage horizontal
Earthwork
Syn. with LAUNCH PIT; THRUST PIT

JACKLEG
Béquille; Béquille de perforatrice
Equipment and Tools
1. In maritime work, vertical or tilted pile that slide toward the shell of the bucket dredger. It supports in work position the stresses due to the attack of the ground by the digger tool.
2. The articulated telescopic support of a jackhammer allowing the progress of the hammer as they advanced of the boring without changing of bearing point.

JADE
Jade
Geology
A black, green or whitish very hard metamorphic rock.

JAMB
Piédroit
Construction
Syn. with PIER; SIDEWALL

JAMB
Jambage; Piédroit
Construction
1. A pillar or masonry supporting a work, an apparatus, a flat arch or again the springing of two arcades. Syn. with ARCH PILLAR
2. Syn. with PIER; SIDEWALL

JAR
Coulisse
Equipment and Tools
An instrument inserted in drill rods to give them violent shocks them in case of jamming.

JASON HAMMER
Pistolet à aiguilles
Equipment and Tools
Syn. with NEEDLE GUN

JASPER
Jaspe
Geology
A hard and opaque siliceous sedimentary rock deriving of a sludge with radiolarians and colored by stripes and stains.

JET
Ajutage; Jet
Equipment and Tools
1. Syn. with CONNECTION; FLOW NOZZLE; NOZZLE
2. Syn. with NOZZLE

JET GROUTING
Injection sous forte pression à jet dirigé ; Méthode sol-ciment
Civil Engineering
1. A soil treatment which consists in inserting under pressure a cement grout through rotary jets.
The practice monojet and practice double-jet are distinguished.
- **monojet method** (*la méthode mono-jet*), consisting in sending under pressure into the soil to be treated a cement grout through an injection nozzle in rotation. The pressure of injection is very high (> 20 MPa), for an operating range about 0.50 m. One thus carries out columns "soil-cement" in the ground;
- **double-jet method** (*la méthode double-jet*), consisting in injecting a combination air-water-grout, through a rotary nozzle with opportunity of orientation of the double-jet. The pressure of injection of the grout is minimized to 5 Mpa. Owing to the mixed air-water jet (air = 0.7 MPa, water = 20 MPa), the operating range can reach 1.50 m. With this process columns in rotation or curtain are carried out.

2. A mixture of natural soil, cement and water, compacted to give a certain cohesion to the soil in place and to improve its bearing capacity. Syn. with HIGH-PRESSURE SOIL GROUTING; SOIL-CEMENT METHOD

JET MIX
Jet mix
Public Works
A soil treatment consisting by mixing in place by hydraulic way to strengthen soils which leads to the creation of soil-cement columns.
This technique calls upon the three following distinct phenomena, independently or in combination:
- a destructuring of grounds in place as the hydrodynamical effect of a very high speed jet;
- an extraction of a part of the soil subunits in place;
- incorporation of contribution materials such as a grout jet of proportions adapted to the required result.

Two practices are used:
- **jet mix T**, a process with triple jet used inside an opened drilling. A water jet to the highest energy imparted by a pressure from 40 to 50 MPa is used to destructure the ground in place. Water, while escaping afterward by opened drilling, involves with it a fraction of the ground subunits. An air jet injected under a pressure from 0.5 to 0.7 MPa wraps the water jet notably increasing the effect of destructuring of the latter. The air jet allows, not only to increase the operating range of the water jet, but, by the emulsion which it brings about in the return of water towards outside, facilitates the extraction of a part of elements of the ground. A grout jet injected under a pressure from 3 to 5 Mpa allows the incorporation of a material of contribution in the disturbed mass of ground by the combined action of water and air jets;
- **jet mix S**, a particular case of the simplified application of the Jet mix in which three functions, destructuring, extraction and incorporation, are confused by a single grout jet of driving pressure from 30 to 50 Mpa. This process is used when one does not seek an important operating range in the little compact grounds of low cohesion or null. Jet mix S is carried out inside a nonopen drilling.

JET OUT
Forjeter; Se forjeter
Construction
Syn. with BULGE FORWARD; PROJECT

JET PIERCING
Thermoforage; Jet piercing
Work
1. Drilling by fusion used to come through hard rock benches by melting them by a process adapted to the site (oxygen + paraffin oil, aluminium powder, etc.).
2. Using a flame to bore through rock in a quarry.

JET PIPE
Lance
Equipment and Tools
Syn. with LANCE (FOR JETTING)

JET-MIX DRILLING
Colonne forée mixée
Work
A soil strengthening process, notably in the unstable embankments, by carrying out of columns drilled by means of two interlocked augers turning in opposed directions and into which is injected a binder containing lime and cement. Phases of injection, mixing and compacting are controlled automatically.

JETTING
Lançage
Foundation
A driving method into the ground of a pile or a sheet pile owing to the destructuring action of a pressurized water jet acting at the base of the element to be sunk.
In the case of a pile, the pressurized jet is brought at the base by a tube included in the axis of the pile and emerges by several openings above the pile shoe. Openings are laid out symmetrically to avoid deviations. This process is also used to install sheet piles (the lance is coupled with the element to be sunk). Jetting is used in fine and sandy grounds, to decompress and loosen the ground to facilitate penetration. It can be an additional operation of another process like driving or pile (or sheetpile) driving or with the jack. **See Figures 4 and 4a**

JIB
Avant-bec; Bras; Volée; Flèche
Handling and Temporary Construction; Equipment and Tools
1. Syn. with NOSING
2. Syn. with ARM; CRANCK
3. Syn. with BOOM; CRANE JIB

JIG
Mannequin; Dessabler
Equipment and Tools; Hydrology
1. A very rigid frame of steel structure, used as a table of assembly and allowing the positioning for welding, as well as the limitation of the shrinkage deformations of the light frames manufactured in mass production. Syn. with MANIPULATOR
2. To sift suspended matter in water (sand, silt, etc.).

JIGGER
Sasseur
Equipment and Tools
A screen used in pit for the grading classification of extracted or crushed materials. The jigger is endowed of plane screens animated by a reciprocating motion. Syn. with SIFTER

JIGGING COMPACTION
Chocage
Construction of R.C. and P.C.
Series of shocks transmitted to a mold to compact concrete found there.

JOB SITE
Chantier
Works
Syn. with BUILDING SITE; SITE

JOBBER
Tâcheron
Work
A worker who performs a job in a given time and who is paid according to a price fixed in advance.

JOGGLE
Adent; Goujonner
Carpentry; Work
1. Syn. with DOVETAIL
2. Syn. with DOWEL; GUDGEON (STONES); PIN

JOGGLE JOINT
Joint transversal de tablier; Joint de retrait
Construction
1. Syn. with STOP END AND KEY; TRANSVERSE DECK JOINT
2. Syn. with CONTRACTION JOINT; SHRINKAGE JOINT; STOP END AND KEY

JOGGLE JOINT
Embrèvement
Carpentry
An oblique halved joint with or without tenon and mortise, which is often used to connect pieces *B* working in compression with pieces *A* subjected to tension. One uses it also with round woods or logs in temporary timberwork by strengthening the connection by bolts. Syn. with COG; SKEW NOTCH. **See Figure 5**

JOGGLED AND WEDGED SCARF
Trait de Jupiter
Carpentry
A tensile heading joint made with notches with steps and tightened with a key. **See Figure 6**

JOGGLED BUTT JOINTS
Joints conjugués
Construction in R.C. and P.C.
In the manufacture of segments for prestressed concrete work built by successive cantilevers, face of each voussoir that adapts perfectly with the face of the contiguous segment. (This is possible by manufacturing the segments with continuation from each other, in the order where they will be put in the work, by casting each one of them counters the segment previously concreted. The front face of each element is used then as formwork to the back face of the following element. Segments are assembled in use by sticking with epoxydic resin.)

JOGGLED LAP JOINT
Préparation sur bords soyés
Welding
A preparation in which one of the edges comprises a dimpling of a thickness equal to that of sheet metals to be assembled so that the neutral fibers are in the prolongation one of the other one.

JOIN
Entabler
Work
To join and adjust two metal or wooden pieces of an assembly of halving-type.

JOIN BY TREENAIL
Brandir
Carpentry
To joint two nonnicked wooden pieces with a stud. Syn. with PEG

JOIN END TO END
Abouter
Construction
Syn. with BUTT; GRAFT

JOIN SIDE BY SIDE
Accoler
Civil Engineering Structure and Handling
To place side by side parts or elements of a structure. Syn. with COUPLE

JOIN UP
Ajointer
Construction
To join end to end (example: bricks, structural members, cover plates, etc.). Syn. with FIT

JOINING
Aboutement; Liaisonnement; Liaison;
Construction; Work
1. Syn. with BUTTING; GRAFTING
2. Syn. with BINDING; CONNECTION; COUPLING; LIAISON; LINKING BOND

JOINING EDGE TO EDGE
Affrontement
Building Materials
The action to put level and end to end building materials.

JOINING PAVING STONE
Morée
Building Materials
A cobblestone ensuring the connection of the roadway with the reverse.

JOINT
Soudure
Welding
1. Concerning the geomembranes, a mode of assembly of softened surfaces by solvent or more mostly by heat. Concurently a pressure is applied to the external faces of the assembly. There are several types of joints:
- **solvent junction** (*la soudure par solvant*), a mode of assembly with pressure of thermoplastic products, in which surfaces are softened using a solvent; the former is mostly eliminated by absorption, evaporation;
- **thermal junction** (*la soudure thermique*), a mode of assembly with pressure, in which surfaces are softened by heat. The former generates on two surfaces to be welded a high temperature causing a partial fusion of materials to be welded. This heat can be brought by a compressed air jet, ultrasonic sounds, magnetic field to high frequency, etc. The weld can under certain circumstances be carried out with matter contribution softened by heat;
- **automatic junction** (*la soudure automatique*), made by means of a device allowing to adjust and to keep constant the main parameters

conditioning the quality of the weld: pressure, temperature, speed.
Syn. with JUNCTION
2. The space separating two parts to be assembled by welding that takes on, after machining and when they are in contact, a morphology in V, K, U, X, etc. These various shapes of joint are afterward filled by one or several weld passes to form the weld bead, therefore the assembly of parts. (The word *joint* identifies the assembly before the performance of the welding; after the performance of the weld one uses the expression *welded joint*). Syn. with JOINT GAP

JOINT
Coup de sabre ; Articulation ; Raccord ; Entablure
Construction; Strength of Materials
1. A transverse joint without thickness reserved in masonry walls or in concrete in order to avoid the cracking or fracturing.
2. Syn. with ARTICULATION; HINGE; KNUCKLE
3. Syn. with JUNCTION; UNION; NIPPLE
4. A junction of wood or metal.

JOINT
Liaisonner
Works and Masonry
Syn. with BOND; GROUT; LINK; POINT

JOINT
Diaclase; Joint
Geology
1. A breakage not accompanied by a relative displacement of the parts that it separates.
It is a breaking of a brittle type that covers the rocky massif transversely to the stratification or to the schistosity and that affects all types of rocks and groups often in a limited number of systems which carve the mountain in parallelepipedal blocks. This breakage can be opened, closed or re-cemented, continuous or discontinuous. It plays a great role in the mechanical strength of a rocky massif because it is the circulation zone of groundwater.
2. A fracture affecting a rock (joint) or a ground (without bringing to an abnormal contact).

JOINT
Joint
Metal Construction
Concerning metal construction, every connection established in a structure and presenting a solution of continuity ensuring completely the transmission of forces. One lays out one (or several) joint when a subset is too long or too bulky:
- to be made out of only one bar or only one sheet metal;
- to be carried, and arguably lifted and assembled, in one element.

We can distinguish four types of joints. They are:
- **riveted joints** (*les joints rivés ou rivetés*),
- **bolted joints** (*les joints boulonnés*),
- **butt welded joints** (*les joints soudés bout à bout*),
- rarely **welded lap joints** (*les joints soudés à clin*).

In the first two types, the solution of continuity is obvious since the linkage of elements requires one or several special parts so-called *cover plate.* In the third type, on the contrary, the solution of continuity disappears although the joint term, devoted by the use, is preserved to define a linkage. The cover plate disappears to leave the place to a weld bead, carrying out continuity of the matter between the two parts to be joined. **See Figure 9 and 9a**

JOINT
Joint
Masonry
The space that separates two quarry stones, two bricks, etc., and which is filled with a mortar for ensuring the bond of materials; mortar itself. Joints can be horizontal, vertical, inclined or uncertain. A joint of mortar can be broken down into two parts:
- the actual joint (or pointing) that constitutes the facing on a depth from 3 to 5 cm. Its primary role being to ensure the tightness of masonry, but it also emphasizes the bond of this masonry;
- the masonry mortar or pugging mortar (see MASONRY MORTAR).

Among the primary types and morphologies of joints, we can distinguish:
- **unpolished joint** (*le joint brut*), whose mortar was not smoothed;
- **concave joint** or **bucket-handle joint** (*le joint creux*), in set back with regard to the main plane

of stones, bricks, etc. We can distinguish: weathering joints, circular joints (or circular at the bottom), and recessed joints;

- **butt joint *or* flush joint** (*le joint plat ou plein*), smoothed with the jointing tool and that surfaces the masonry facing;
- **external joint *or* English joint** (*le joint saillant ou à l'anglaise*), projecting with regard to the masonry facing (bricks or quarry stones). **See figures 7 and 8**

Syn. with POINTING

JOINT
Joint
Tightness
Zone of connection between strips, layers (or panels) of a geomembrane.

JOINT COVER
Couvre-joint
Construction
Syn. with BATTEN; BEAD; BUTT STRAP; CAPPING STRIP; COVER PLATE; COVER STRAP; FILLER; TRIM

JOINT CUTTING
Taille d'un joint
Masonry
The dressing of vertical surfaces of a stone to give an even joint at the time of the implementation.

JOINT DEGRADATION
Dégradation des joints
Masonry
The hacking or loosening of the mortar of pointings of a masonry construction.

JOINT EFFICIENCY
Efficacité du joint; Coefficient de soudure
Metal Construction; Welding
1. In a riveted steel construction, the ratio of the strength of the riveting to the intact remaining sheet metal. The efficiency grows with the diameter of the rivets used.
2. Syn. with COEFFICIENT OF WELDED JOINT

JOINT FILLER
Calfeutrage
Construction
Syn. with BLOCKING UP; PACKING; SEALING; STOPPING UP

JOINT GAP
Joint
Welding
Syn. with JOINT

JOINT LINE
Ligne de joint
Masonry
The vertical straight line formed by joints. **See Figure 10**

JOINT OF STRING COURSE
Joint en coupe; Joint de doucette
Masonry
The tilted joint of voussoirs (or archstones) directed toward the axis of the vault.

JOINT RAMMING
Matage d'un joint
Masonry
An energetic compacting of the mortar of a pointing with a caulking tool.

JOINT REINFORCEMENT
Chaînage
Construction
A brace of steel that by its judicious implementation prevents separating, the dislocation of some masonry works. Syn. with TYING

JOINT SEALANT
Mastic pâteux
Materials
Syn. with PASTY MASTIC

JOINT SIDE
Faces de joint
Nomenclature of Materials
Faces to quarry stone dressed approximately to the square with the facing. **See Figure 11**

JOINT SPACER
Queue d'hironde
Masonry
A flat metal part for keeping the spacing of two joints.

JOINT PREPARATION
Préparation des joints
Welding
An operation that consists in preparing the edges and laying out them according to the profile to be given to the joint.

JOINT WITH BUTT STRAP
Préparation avec couvre-joint
Welding
A preparation that consists of a succession of two assemblies with preparation to fillet weld.

JOINTER
Fileur
Painting
A painter who simulates on a support the joints of a stonework,

JOINTER
Fer à joints; Lissoir; Mirette; Tire-joint
Equipment and Tools
1. A mason's tool used to smooth concave pointings. Syn. with JOINTING TOOL
2. A mason's tool used to smooth recessed pointings. Syn. with JOINTING TOOL
3. A mason's tool used to finish the pointings of a masonry work.
4. A tool used to mark and smooth pointings of stones or bricks and which is made up of a wooden handle in which are fixed a crooked iron rod, of width and shape of the pointing (of a flat or semicircular section). **See Figure 12**

JOINTING
Jointement; Jointoiement
Masonry
Syn. with POINTING; TOOLING.

JOINTING
Assemblage
Civil Engineering Structure; Metal Construction; Welding
1. The set of the device being designed to join between them elements to constitute a unit that ensures the transmission of stresses from an element to another. We can distinguish two primary types of assembly, the hinged jointing and the rigid assembly:
- **hinged jointing** (*l'assemblage articulé*) only can transmit transverse shearing or compression, tensile stresses according to the axis of the elements;
- **rigid connection** (*l'assemblage rigide*), can transmit all kinds of stresses.

2. To make interdependent elementary parts to constitute a longer or more complex part or a part of work.
3. A process of connection, association of metal elements by various processes such as: riveting, huckbolting, bolting by ordinary bolts or H.T. bolts, special assemblies for thin sheets, welding and its complement brazing, gluing.
At the level of the structure, assemblies are brought up into several families:
- **jointing connection** (*l'assemblage d'attache*), which carries out either a restraint or half-restraint, or an articulation (example: cross-members on legs of a portal frame, cantilevers on poles, etc.). At the process level used one distinguishes three types:
  - *flexible connections* (*les assemblages souples*) carried out by rivets, huckbolts, black bolts, H.T. bolts on smithsonite, huckbolts on smithsonite,
  - *rigid connections* (*les assemblages rigides*) carried out by welding, or H.T. bolts on decarbonized faces,
  - *semi-rigid connections* (*les assemblage semi-rigides*) by elastic hinges which are not necessarily assemblies with the technological senses of the term;
- **end to end connection** (*l'assemblage bout à bout*), that consists in joining together two flat iron or two sections, placed in prolongation one of the other (mostly transversely in comparison with the main stress);
- **seam *or* butting connection** (*l'assemblage de couture ou de raboutage*), Syn. with END TO END CONNECTION;
- **butt strap joint** (*l'assemblage par couvre-joint*), which consists in joining together end to end two metal parts by use of two flat cover strips;
- **lap joint** (*l'assemblage à clin ou clin*), that consists in joining together two sheets by recovery; **See Figures 13 and 13a**
- **indented joint** (*l'assemblage à dents de scie*) in which various elements overlap alternatively by constant gap; **See Figure 14**
- **lift joint** (*l'assemblage à gradins*) which is carried out by successive gap of sheets or flat irons forming each parcel; ends of each sheet

thus form steps which come to get juxtaposed the ones with the others; **See Figure 15**

- **jointing by end plates** (*l'assemblage par platines d'extrémité*), which consists in joining together end to end two parts by the use of transverse plates attached at the end of each one of them;
- **overlap joint** (*l'assemblage par recouvrement*), which joins two parts in mutual contact by a plane face while overlapping and which connect rivets, bolts or weld beads.

4. The spatial arrangement of the parts to be assembled by brazing or welding, before the performance of this operation. Syn. with CONNECTION; COUPLING; JOINING

JOINTING MOVEMENT
Mouvement d'assemblage
Defects (Metal Construction)
Concerning riveted or bolted metal bridges, relative displacement between the assembled parts or between these parts and the assembly elements. This defect can lead to the breaking of the assembly.

JOINTING TOOL
Fer à joints; Lissoir
Equipment and Tools
Syn. with JOINTER

***JOISEL* APPARATUS**
Appareil *Joisel*
Equipment for Measure and Control
An instrument used to analyse the concrete ingredients of the fresh concrete. The concrete is sieved by a water stream and separated into three elements (gravel, sand, cement) that are put in three corresponding containers.

JOIST
Pièce de pont; Poutrelle
Construction; Building Materials
1. Syn. with BRIDGING PIECE; CROSS BEAM; TRANSVERSE GIRDER
2. Syn. with ROLLED STEEL JOIST; SMALL BEAM; UNIVERSAL BEAM SECTION

JOTUNITE
Jotunite
Geology
A plutonic rock.

JUMBO
Jumbo
Equipment and Tools
A self-propelled carriage equipped with several telescopic adjustable arms provided of rock drills to carry out the boring of injection or blast holes sometimes. This equipment is especially used for the tunneling in rocky grounds. Syn. with DRILL CARRIAGE

JUMPER BAR
Barre à mine; Fleuret
Equipment and Tools
1. A steel rod with a pointed end, used for digging mine blast holes by hand. This tool is also used for performing small trial borings or as a lever. Syn. with CROWBAR; JUMPING DRILL
2. Syn. with BORER; DRILL STEEL; MASONRY DRILL

JUMPING DRILL
Crayon; Barre à mine
Equipment and Tools
Syn. CROW BAR; JUMPER BAR

JUMPING JACK
Grenouille
Equipment and Tools
Syn. with CONSOLIDATING RAMMER; FROG RAMMER

JUNCTION
Raccord; Soudure
Construction
1. An element that ensures the connection and continuity of two parts. Syn. with JOINT; NIPPLE; UNION
2. Syn. with JOINT

JUNCTION BLOCK
Massif de jonction
Construction
A structure laid out between the anchor block and the abutment of certain suspension bridges. **See Figure 16**

JUNCTION CURVE
Courbe de raccordement
Topography
Syn. with TRANSITION RADIUS OF A CURVE

JUNCTION PLATE
Recouvrement
Construction
Syn. with COVERING PLATE

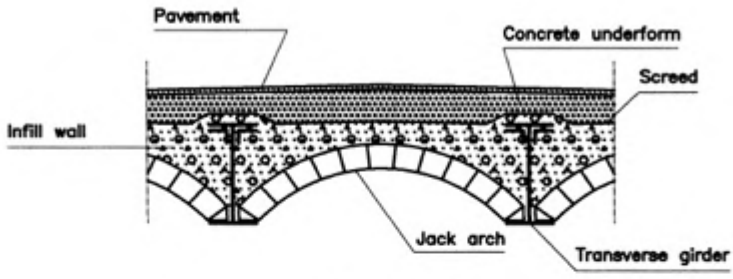
JUNK BASKET
Panier à ferrailles *ou* de repêchage
Equipment and Tools
A fishing out tool of metal remains inside a drilling hole made up as a core drill hole and being able to have at its lower end of a clog of reaming, supplied with devices of collection of metal remains (magnet) and a receiver in which accrete recovered remains.

JUVENILE WATER
Eau juvénile; Eau endogène
Geohydrology
A thermomineral liquid synthesized during volcanic rock crystallization and whose origin is found at great depths. Syn. with MAGMATIC WATER

Figures of the letter



Fig. 1



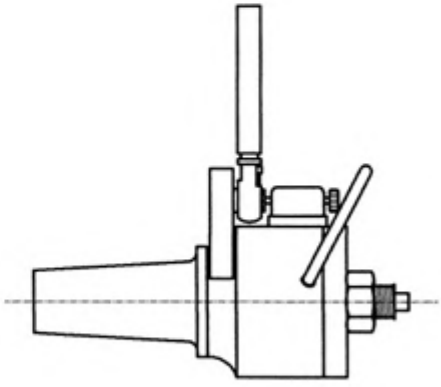
JACK ARCH

Fig. 2



JACK PLANE

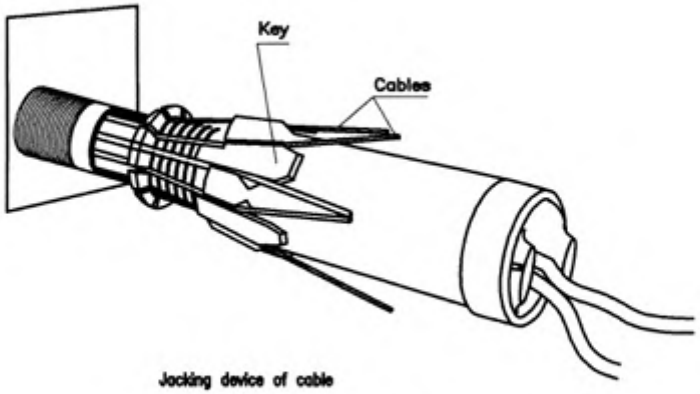
Fig. 3



Jacking device of bars

JACKING DEVICE

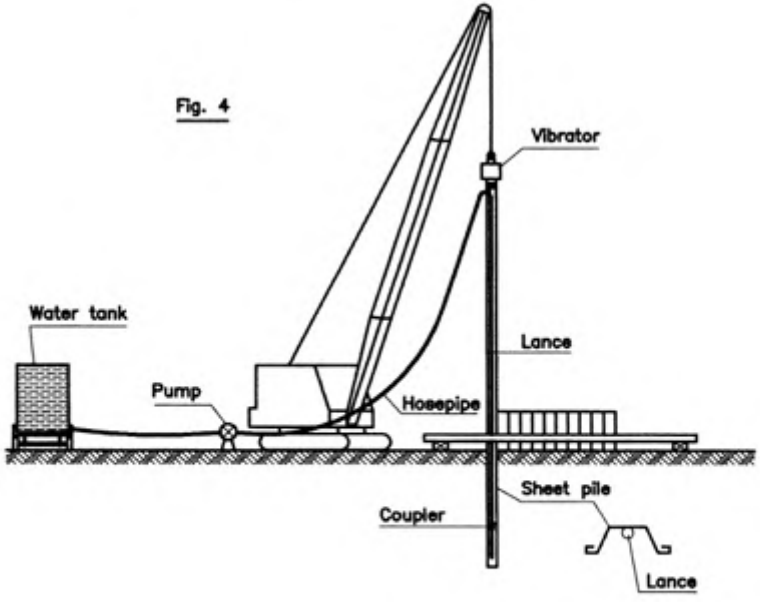
Fig.3a



Jacking device of cable

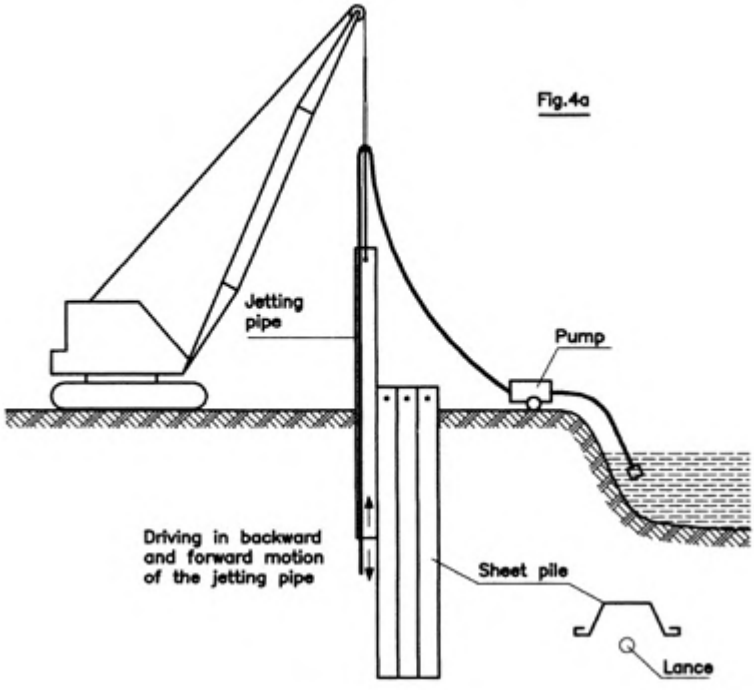
JACKING DEVICE

Fig. 4



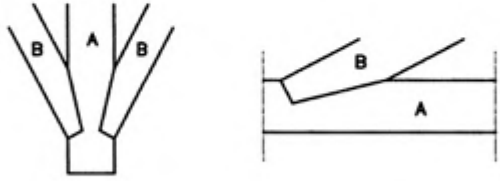
JETTING

Fig.4a



JETTING

Fig. 5



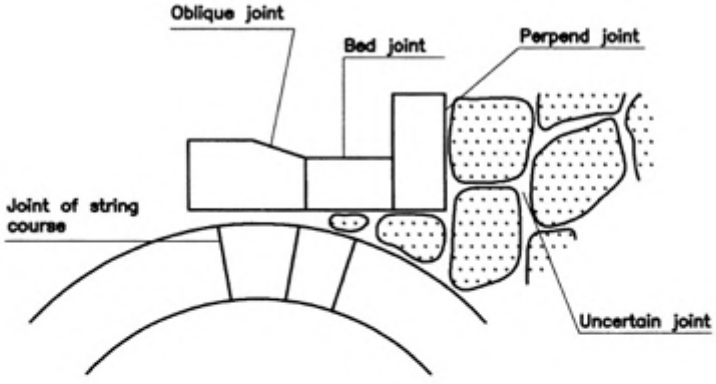
JOGGLE JOINT

Fig. 6



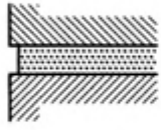
JOGGLED AND WEDGED SCARF

Fig. 7

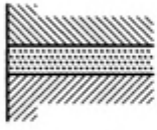


JOINT

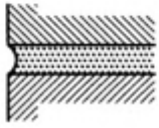
Fig. 8



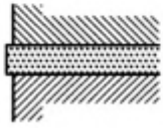
Recessed joint



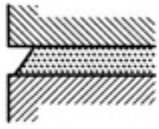
Butt joint



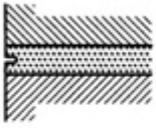
Circular joint



External joint



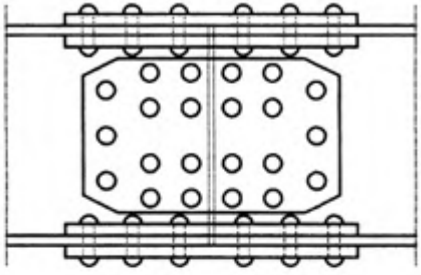
Weathering joint



Concave joint

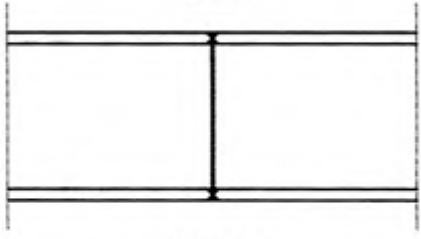
JOINT

Fig. 9



Riveted joint

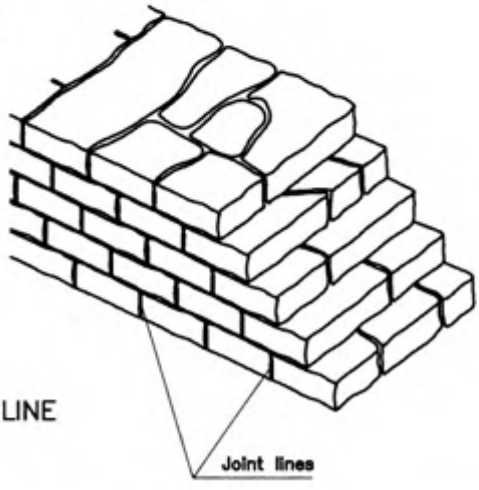
Fig.9a



Welded joint

JOINT

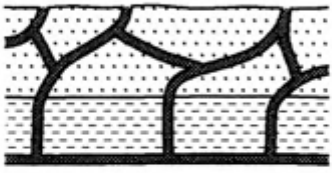
Fig.10



JOINT LINE

Joint lines

Fig.11



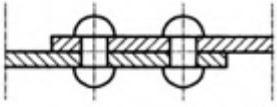
JOINT SIDE

Fig.12
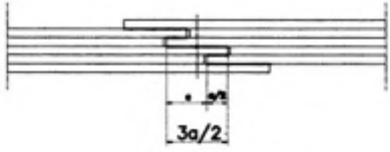


JOINTER

Fig. 13



Riveted lap joint

Fig. 14



Indented joint

Fig. 13a



Welded lap joint

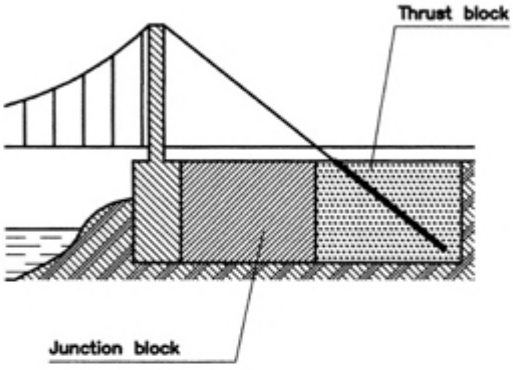
Fig. 15



Lift joint

JOINTING

Fig.16



JUNCTION BLOCK

K

KCU
Metallography
Letters which are following values of impact strength when these tests have been carried out on test bars with notch in U shape.

KCV
Metallography
Letters which are following values of impact strength when these tests have been carried out on test-bars with notch in V shape.

***K* CROSS BRACING**
Contreventement en *K*
Metal Construction
An element recalling the shape of a *K,* featured as a reversed *V* covered by a horizontal bar and enabling an average gap width between branches of the *V.* **See Figure 1**

***K* PREPARATION**
Préparation en *K*
Welding
Syn. with DOUBLE-BEVEL PREPARATION

KAOLIN
Kaolin
Geology
A white clay resulting from the deterioration of the feldspar of granites or pegmatites with white mica. The kaolin is filled with quartz grains, that constitute one of elements of this rock with the kaolinite and which, when mixed with water, becomes plastic. Syn. with CHINA CLAY

KARST
Karst
Geology
The result of the dissolution mainly met in the limestone ranges and whose relevant process is as follows: widening of joints, creation of more or less important cavities filled or not by clay, sand and with walls carpeted by calcite of chasm. Seepage waters mainly run out along of the dissolution spaces.

KARSTENITE
Karsténite; Anhydrite
Geology
Syn. with ANHYDRITE.

KARSTIC
Karstique
Geology
Relative to the karst.

KARSTIFICATION
Karstification
Geology
The formation of a karst.

KEEL
Bêche
Foundation
The part of a footing playing the role of stop and anchorage in the ground. Syn. with RIB. **See Figure 2**

KEEPER
Contre-écrou
Materials
Syn. with BACK-NUT; CHECKED NUT; COUNTER NUT; LOCK-NUT; SAFETY-NUT; SET-NUT

KELLY
Tige carrée *ou* Tige d'entraînement; Barre carrée
Equipment and Tools
1. A long rod of guidance at the end of which a skip is fitted and supported by a crane. The kelly can be tubular, eventually telescopic or simply carried out by means of universal beams to wide flange; it is normally rigidly guided by the carrier machine. The kelly should neither enable rotation of the skip nor deflection of the plumb line. This machine is used for digging process of trenches of large depth (diaphragm walls, prefabricated walls, etc.).
There also are rotary kellies enabling to drill with drilling augers of a big diameter down to a large depth by minimizing risks of deviation of the tool.
2. A device, installed on grooves, used to drive the drill steel of a rock drill.

KELLY BALL
Kelly-ball
Equipmentfor Measure and Control
An equipment for measuring the malleability of the fresh concrete and made up of a steel cylinder weigthing about 14 kg, displaying a semispherical end of 7 cm radius. The cylinder includes a rod graduated in centimeters that slides in a frame. The total is laid down on the concrete surface of the work which has been equalized, and one drops the sphere; which, when in contact with the concrete, penetrates more or less in terms of consistency. Values of the sinking of the sphere are regarded as representative of the concrete plasticity. Advantage of this approach: the real consistency of the concrete is directly measured on the surface of concrete after its process, which alleviate from taking a concrete sample (a cause of heterogeneity) and enables the measurement with the mode of real compacting of the work. **See Figure 3**

KERF
Trait; Saignée
Masonry, Carpentry and Construction
1. The mark of the cut of a stone or a structural member. Syn. with MARK
2. A notch dug in the ground by some working machines.

KEY
Claver
Temporary Construction; Masonry
1. To tighten a supporting feature against the roof of a tunnel.
2. To close a vault.

KEY
Clavette; Piocher
Equipment and Tools; Work
1. A small truncated or prismatic metal stud. Syn. with WEDGE
2. Syn. with HACK

KEY
Clef
Carpentry
1. A wooden wedge for connecting and tightening double members.
2. A piece for tightening an assembly to joggled and wedged scarf.
3. The middle of the arch of a steel frame.

KEY
Clef; Mensole; Clef de voûte, Fermer une voûte
Construction
1. A quarry stone, brick, etc., located in the longitudinal axis of a vault. Only semicircular, surbased or basket-handle-shaped arches have keys; the three-pointed arch, formed by two segments of a circle, has that springers and

feathers: the key in this case is replaced by a joint.
2. Syn. KEYSTONE
3. To close a masonry vault by fitting of the (arch stone) key.

KEY (OF SEGMENT)
Clé
Construction
A mortise-and-tenon assembly laid out on faces needed to get in contact with precast segments of prestressed concrete bridges and allows perfect adjustment of contiguous segments.

(ARTICULATION) KEY
Clef
Construction
The central point of articulation of an arch with three hinges.

KEY LINE
Ligne de clef
Construction
The intersection place of the vault with the longitudinal symmetry plane of the relevant tunnel or bridge.

KEYING
Clavage
Civil Engineering Structure
The integral union of two chunks of a work (example: two chunks of an arch) constructed independently of each other. By extension, applies to qualifying figure for chunks of work where the operation of keying is performed; for example, the segment of keying.

KEYING
Clavage; Hachement; Piochement
Masonry
1. The fitting of the archstone that constitutes the key of the string course of a vault.
2. Syn. with HACKING

KEYSTONE
Clef de voûte; Mensole
Construction
A voussoir or arch stone placed in the axis of a vault or a flat arch. Syn. with HEADSTONE; KEY. **See Figures 4 and 4a**

***KEYSTONE* ANALYSIS**
Méthode de la pyramide rocheuse
Strength of Materials
A calculation method used to justify the strength of a shotcrete coating carried out in tunnels.
This approach consists in studying the stability of a rocky pyramid located in calotte in a tunnel and which, being detached, solicit the skin of shotcrete in shearing on its basic area. This approach applies of course basically to the hard and fractured rocks, where the stability of sidewalls is largely ensured but where an unfavorable arrangement of cracks in calotte leads to successive falls of blocks, until develops a stable arch of interlocking blocks (rib).

KIBBLER
Concasseur
Equipment and Tools
Syn. with CRUSHER; MILL; STONE BREAKER

KICKER
Talonnette
Construction
Starts of a shell (or a wall) of concrete (reinforced or not) 10 cm high which is concurrently poured with the footing or the foundation raft. The kicker is used as inside thrust (and guide) to the shell's forms to be built and ensures a better connection and sealing between the footing (or foundation raft) and the shell.

KIDNEY STONE
Rognon
Building Materials
A rock mass, generally of the size of the decimeter, which one can met in a rock of different nature (for example: a flint nodule inserted inside chalk). Syn. with FLINT NODULE; NODULE

KIESELGUHR
Kieselguhr
Geology
A pulverulent variety of silica made of microscopic shells of diatomaceous fossils. Syn. with DIATOMACEOUS EARTH

KIESELGUHR CONCRETE
Béton de kieselguhr
Building Materials
Syn. with SILICEOUS CONCRETE

KILL THE STONE
Tuer la pierre
Masonry
To destroy the layer of cullet covering naturally the facing of a stone.

KILN
Four; Etuve
Earthwork; Equipment and Tools
1. In the timbered gallery method, small excavation carried out and protected under the shade of roof planks on the working face during the heading (of a tunnel). The kiln allows to sink more roof planks and to progress in the sheeting of the gallery. Syn. with CHAMBER
2. Syn. with DRYING STOVE ; STEAMROOM

KINEMATIC VISCOSITY
Viscosité cinématique
Rheology
The quotient of the dynamic viscosity of a fluid by its density at the considered temperature.

KINETIC TESTS
Essais cinétiques
Test ofMaterials (Metallurgy)
Tests for studying the ability of a metal to withstand certain forms of aggression. Tests of dry or electrochemical corrosion constitute the most important of these measurements.

KING POST
Aiguille; Poinçon
Carpentry
A vertical timber on which principal rafters become assembled. (One also says *crown post).* **See Figure 5**

***KNAPEN* PROCESS**
Procédé *Knapen*
Sanitary Engineering and Drainage
A wall drainage process consisting in evacuating the existing moisture inside the masonry by means of atmospheric siphons of porous fired clay.

KNEE
Genouillère
Construction Term
Syn. with KNUCKLE JOINT; TOGGLE JOINT

KNEE *K* CROSS BRACING
Contreventement en *K* brisé
Metal Construction
A *K*-shaped element whose oblique branches are bent to enable a faily large opening. The elbow is set at the panel point of a diagonal (or brace) of the lattice linking branches of the *K* with the external rectangular frame. **See Figure 6**

KNIFE FOOTING
Semelle couteau
Foundation
A footing used as a foundation to a pole built on a concrete or masonry wall. Its width is that of the pole, which is itself that of the wall.

KNOB
Loupe
Defects (Building Materials)
Syn. with EXCRESCENCE

KNOCKING UP
Rebattage
Building Materials
Syn. with RETEMPERING

KNOLL DIGGING WORK
Travail en butte
Earthwork
An earthwork process in which a power shovel or a crawler excavator works on a higher level in comparison with its position.

***KNOOP* METHOD**
Méthode *Knoop*
Metallography
The hardness test of the microconstituents of alloys in which special diamond impressor is used.

***KNOOP* TEST**
Essai *Knoop*
Test of Materials (Metallurgy)
A metal hardness test similar to the Vickers test, the impressor there being a pyramid whose base is a very flattened rhombus.

KNOT
Alliement
Equipment and Tools
Syn. with RUNNER

KNOT
Noeud
Building Materials
An inclusion inside the trunk of a tree coming from a branch gradually included by the increase in this trunk. There are several types of knots:
- **knot peg** *(le noeud cheville ou bouchon),* dead knot which does not adhere with the neighboring fibers;
- **dead *or* encased knot** *(le noeud mort ou noir),* which comes from dead branches on foot (boards containing are unsuited to the use);
- **dead knot** *(le noeud non-adhérent),* of which only one quarter of the area (to the maximum) of the annual rings are in continuity with surrounding wood;
- **nonpenetrating knot** *(le noeud non traversant),* which appears on only one face of a cut-up timber piece;
- **partially intergrown knot** *(le noeud partiellement adhérent),* whose annual rings are in continuity with the surrounding wood on an extent contained between one quarter and three quarters of the area;
- **splay knot** *(le noeud plat),* which is divided parallel to its axis and that appears on the face of a timber piece;
- **side knot** *(le noeud tranchant),* which leads up to on the edge of a timber piece more or less perpendicular to this one;
- **through knot** *(le noeud traversant),* which appears on the two opposite faces of a converted timber piece;
- **unsound knot** *(le noeud vicieux),* characterized by a beginning of rot and which was detached from adjacent fibers;
- **live knot *or* intergrown knot** *(le noeud vif ou vivant),* which comes from a branch in growth; it is noted that the tissue is in complete continuity with the mass of wood;
- **grouped knots** *(les noeuds groupés),* near to each other of such type that the grain of surrounding wood is deviated around them as if their unit formed one knot. Knots are classified according to their dimension as:
  - *pin knot (oeil-de-perdrix):* diameter < 5 mm;
  - *small knot (petit noeud):* diameter from 5 to 15 mm;
  - *medium knot (noeud moyen):* diameter from 16 to 25 mm;
  - *very large knot (très gros noeud):* diameter > 40mm.

See Figure 7

KNOT AREA
Patte-de-chat
Defects (Buildings Materials)
Syn. with CAT'S PAW. **See Figure 7**

KNOT BRUSH
Goupillon
Equipment and Tools
Syn. with BRUSH

KNOT NOTCH
Potiche
Test of Materials
A notch made on the knots of timber pieces to know defects of them.

KNOTCHED TROWEL
Berthelée
Equipment and Tools
A trowel used to trim and cut renderings.

KNOTTY WOOD
Bois noueux; Raboteux
Defects (Building Materials)
1. Wood with many knots.
2. Syn. with UNEVEN (SURFACE)

KNUCKLE
Articulation
Construction; Strength of Materials
1. Syn. with ARTICULATION; HINGE; JOINT
2. Syn. with HINGE; SWIVEL

KNUCKLE JOINT
Genouillère
Construction
Syn. with KNEE; TOGGLE JOINT

KNUCKLE JOINT PLIERS
Pince à genouillère
Equipment and Tools
A device with two arms, hooked at a lifting tackle, acting as scissors for lifting stones. **See Figure 8**

***KOHLRAUSCH'S* PRACTICE**
Méthode de *Kohlrausch*
Test ofMaterials (Metallurgy)
A measuring test of the thermal conductibility of metals which is carried out on a sample formed by a wire or a rail of small section.

***K*-PERMEABILITY**
Perméabilité *K*
Geohydrology
The volume of gravity water flowing during a unit of time through a unit of the aquifer section, under a hydraulic gradient equal to 1 and a temperature of 20°C. The K-permeability characterizes the water runoff of gravity in the reservoir rocks. It has dimensions of velocity meters per second. The permeability is a function of the diameter of grains (according to the expression $K = 100\ d^2$), of the porosity and parameters of water like the temperature, viscosity, and density.

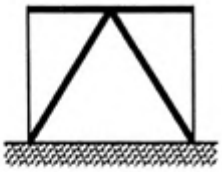
***K* PERMEABILITY FACTOR**
Coefficient de perméabilité *K ou* Continuité hydraulique
Hydrology
A number equal to the quotient of the velocity (expressed in m/s) by the corresponding hydraulic gradient. Syn. with COEFFICIENT OF PERMEABILITY *K;* HYDRAULIC CONDUCTIVITY

***KUNZ* PROCESS**
Procédé *Kunz*
Construction
A sheeting method used during the heading of a tunnel that consists in using a composite centering made up of a formed main centering of two U-irons curved to the internal profile of the tunnel, complete with lagging, according to the plan of their web, assembled and kept to a certain spacing. This centering is leaned onto a transverse sole on which also rest raking shores of strengthening of irons. In the gap of two irons are introduced special pieces called *staples,* fixed by wedge sets laid on the other sides on flanges of U-shaped irons, the end of staples coming keeping a hoop, or secondary centering, which sustains boards of sheeting. An I-shaped section, installed between the main centering and secondary centering, supports, overhanging, a curved head beam on which are leaned roof planks. To start concrete process, one puts the lagging on the main centering and someone else replaces, progressively, staples by the wood stays keeping three or four boards at the same time by means of shims, which left behind (discarded). Secondary centerings are recovered. Stays are removed, after drying of masonry, and holes clogged.

Figures of the letter

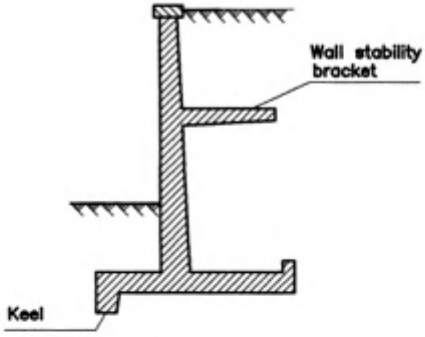


Fig. 1



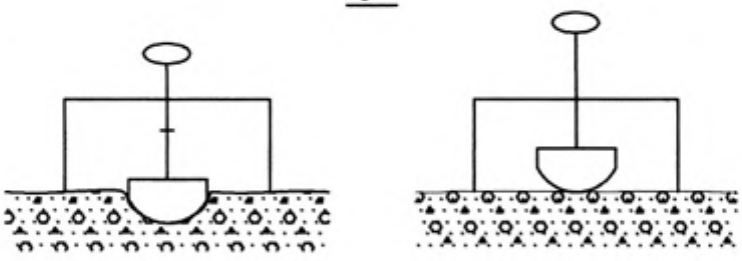
K CROSS BRACING

Fig. 2



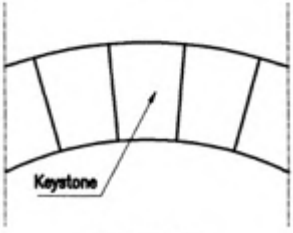
KEEL

Fig. 3



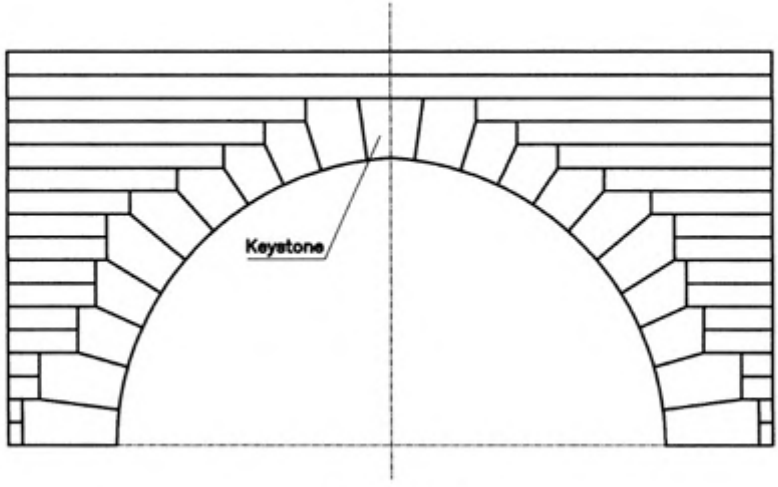
KELLY–BALL

Fig. 4



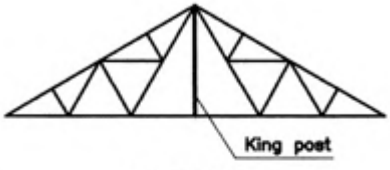
KEYSTONE

Fig. 4a



KEYSTONE

Fig. 5



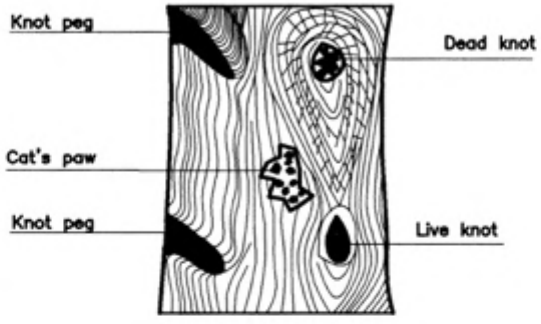
KING POST

Fig. 6



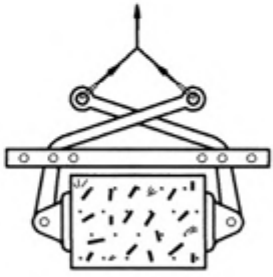
KNEED K CROSS BRACING

Fig. 7



KNOT

Fig. 8



KNUCKLE JOINT PLIERS

L

***L.C.H.* CUP**
Coupe *L.C.H.*
Equipment for Measure and Control
An instrument for measuring the viscosity of paints on the building sites.

***LABASSE* PRACTICE**
Méthode *Labasse*
Strength of Materials
An approach of design intended for justifying the resistance of shotcrete linings in tunnels and that consists in seeking the confining pressure which must create the supporting to keep up the convergence at a value fixed in advance. This approach applies if the work, because of excavation, is surrounded by a decompressed zone (broken), namely primarily in the case of galleries under thick cover.

LABORER
Manoeuvre
Work
1. An unskilled worker.
2. Syn. with EARTHWORK CONCTRACTOR; NAVVY

LACK OF COMPACTNESS OF CONCRETE
Manque de compacité d'un béton
Defects (Building Materials)
A concrete defect characterized by a gravelly aspect of surfaces and in particular of angles.

LACK OF FUSION
Manque de fusion
Defects (Welding)
Syn. with UNWELDED

LACK OF HOMOGENEITY
Manque d'homogénéité
Defects (Building Materials)
A general term that applies o.s. to the materials whose cohesion or agglomeration of various constituents is disturbed by the presence of foreign bodies, an inadequate connection, surfaces of discontinuity, etc. For a stone for example, this defect brings about the presence of strands, soiled cracks, presence of shells, etc.

LACK OF METAL
Manque de métal
Defects (Welding)
Defect in a weld bead that appears as a cavity instead of a small extra thickness.

LACK OF PENETRATION
Manque de pénétration
Defects (Welding)
A serious defect affecting a weld whose bead does not cross the thickness of pieces to be

welded. The resistance of a such assembling is almost null.

LACK OF REINFORCEMENT COVERING
Manque d'enrobage des armatures
Defects (Construction of R.C. and P.C.)
The covering of reinforcements (by the concrete) smaller than that pointed out in the regulation or that imposed by the environment (aggressive atmosphere). Aftermath of this defect: marks of rust, cracks, chippings, bare reinforcements, corrosion of steels, and nonadherent reinforcements.

LACUSTRINE CLAY
Argile lacustre
Geology
Material deposited in lakes and ponds.

LADDER
Echelle
Equipment and Tools
Device allowing to move vertically from a level to another and containing two uprights and rungs regularly spaced. This device can be equipped by a crook at the top or a safety hoop. There are simple ladders, extension ladders, etc.

LADDER STAIR
Taquet d'échelle
Equipment and Tools
A kind of corbeled step fixed on the staves (of a ladder) and intended for being of use as platform to a worker so that he can work under better conditions or to place tools or materials.

LADINIAN
Ladinien
Geology
Formation of medium Trias that corresponds to the French conchiferous limestone.

***LAFARGE* METHOD**
Méthode *Lafarge*
Hydraulic Binders
The calculation of the setting time executed on a neat cement paste of normal consistency whose mixing is carried out over one duration for 1, 2, and 5 min. The refusal to driving of the Vicat needle after 2, 5, 10, 15 and 20 min is then measured.

LAGGING
Calorifugeage; Enfilage; Couchis de voûte
Masonry; Earthwork; Temporary Construction
1. An insulating material, mostly limited to the chases in tunnels, to avoid the frost of the won water. This protection is set in work in the tunnels where the frost is frequent and intense. Syn. with INSULATING JACKET
2. The putting in place of supporting elements (sheeters generally) at the periphery of a gallery needed to be dug in a running ground. These elements are threaded by pushing, driving, or vibropiling.
3. Syn. with FORM (OF THE VAULT)

LAITANCE
Laitance
Construction of R.C. and P.C.
1. A white or gray deposit appearing on a concrete facing following the concreting and coming from the mixing of cement in the water.
2. The rising of a grayish or whitish liquid, that is a water and cement mixture on the surface of a slab for example, during the vibration or after troweling.
Syn. with CEMENT GROUT; DUSTING; MILK
3. A cement watered in water.
There are two types of laitance:
- **limpid** *(les laitances claires),* containing less than 5% of cement in the water and which are routinely used to cement aquiferous grounds met in the shaft sinkings or in the galleries;
- **dense** *(les laitances épaisses),* used as grout in masonry work or to block quite open breakages, to cement grounds.

***LAME'S* COEFFICIENTS**
Coefficients de *Lamé*
Strength of Materials
Coefficients that connect the stress tensor to the strain tensor and are expressed in function of the longitudinal elasticity modulus and the Poisson's ratio.

LAMELLAR RIP
Déchirure lamellaire
Defects (Metallurgy)
A cracking parallel to the rolling plan inside a sheet metal.

LAMELLAR ROCK
Roche feuilletée
Geology
Syn. with FOLIATED ROCK

LAMELLAR STONE
Pierre feuilletée
Defects (Building Materials)
A rock which splits into sheets, scales.

LAMELLAR TEARING
Arrachement lamellaire
Defects (Welding)
A damage which cannot occur in the welded construction when a normal stress is exerted through the thickness of the product. This defect is related with the behavior of the metal toward the direction of the thickness. One also says *following the short across of the sheet metal.*

LAMELLAR WRENCHING
Arrachement lamellaire
Defects (Welding)
Syn. with LAMELLAR TEARING

LAMINAR FLOW
Ecoulement laminaire
Geohydrology
Current in weakly permeable grounds. These are aqueous films are displaced to a relatively slow regime in the ground.

LAMINATE
Laminer
Metallurgy
Syn. with ROLL

LAMINATED STEEL BEARING
Appareil d'appui en acier laminé soudé
Construction
A bearing device that has the same field of use that the bearing of cast steel and that is made up of thick plates of rolled steel jointed by weld in superposed plates or in the form of reconstituted pendulum.

LAMINATED VENEER
Bois lamellé
Building Materials
Syn. with LAMINATED WOOD

LAMINATED WOOD
Bois lamellé
Building Materials
A wood reconstituted by lamination. Syn. with LAMINATED VENEER

LAMINATION
Feuilletage
Defects (Building Materials)
The detachment into thin plates of some mortar or shotcrete coating due to the action of aggressive waters or to the frost or to both.

LAMINATION OF A BRICK
Feuilletage d'une brique
Defects (Building Materials)
The disintegration of a brick into parallel beds with regard to the pressing plane.

LAMING
Lamage
Metal Construction
Syn. with COUNTERBORING; FACING.

LAMPBLACK
Noir de fumée
Painting
A pigment used in painting that results from the calcination of various organic substances.

LANCE (FOR JETTING)
Lance
Equipment and Tools
A rigid metal tube of small diameter for throwing water under pressure (7 to 10 bars) close to an element (pile, sheet pile) to be driven into the ground to facilitate its penetration. Syn. with JET PIPE

LANCE HOLDER
Porte-lance
Work
A worker (or robot) who, in the work of mechanical application (concrete or mortar), ensures the carrying out of this one.

LANCER
Lancer
Equipment and Tools
A rocker beam of frame on which come to fasten the ropes or cables of a flying scaffold, for example.

LAND CHAIN
Chaîne d'arpenteur
Topography
Syn. with CHAIN MEASURE; SURVEYING CHAIN

LAND CLEARING BY BURNING
Essartage
Public Works
Syn. with CLEARING; GRUBBING

LAND COFFERDAM
Fouille d'assèchement de sol
Sanitary Engineering and Drainage
An excavation that penetrates inside the nappe (groundwater, alluvial sheet of water, free sheet of water, etc.) neighboring a work to irrigate the water or limit the turbulence of its flow so as to protect this work of ominous effects of this presence (underwashing, percolation, etc.).

LAND DRAINAGE
Drainage
Sanitary Engineering and Drainage
Syn. with DRAINAGE; DRAINING

LAND GRADER
Niveleuse
Equipment and Tools
Syn. with GRADER

LAND MEASURING
Arpentage
Topography
Syn. with LAND SURVEYING; TOPOGRAPHICAL SURVEYING

LAND PLAN
Plan terrier
Topography
A drawing on which are illustrated the terrains necessary to the execution of works of the public estate.

LAND SURVEYING
Arpentage
Topography
The assessment of the area of lands. Syn. with LAND MEASURING; TOPOGRAPHICAL SURVEYING

LAND SURVEYING DOCUMENT (measuring or mapping land)
Document d'arpentage
Topography
A plan arranged by a geometer in the context of a change of boundary of a plot (of land). This document records the agreement of the two owners on the new limitation and legally will serve for the updating of the cadastral map.

LAND SURVEYOR
Géomètre
Topography
Syn. with GEOMETER; GEOMETRICIAN; SURVEYOR

LAND TIE
Tirant d'ancrage
Building Materials
Syn. with ANCHOR ROD; TENSIONAL BAR; TIE ROD

LAND TIE ROD WITH COMPRESSED PLUG
Tirant à scellement comprimé
Building Materials
An element whose principle is to transmit a tensile stress at the lower end of a metal tube sealed by injection in country rock. In this way the sealing bulb works in compression and taut reinforcement is protected by a compressed external tube. The external tube includes a metal lower part with manchettes and a vacant higher part of plastic. The implementation is as follows:
- drilling, installation of the external tube,
- sealing injection of the lower part of this tube,
- putting in place of the reinforcement,
- test and wedging.

If necessary, the reinforcement can be removed and the injection of sealing resumed. This process is applied to the reinforcements in bar form.

LAND TIE ROD WITH PREPROTECTION
Tirant à préprotection
Building Materials
An element which is protected all along of its sealing zone by a tight, imputrescible and incorrodable sheath. The sheath must follow lengthenings of the reinforcement and must transmit tensile forces to country rock. For these reasons, the sheath is of crenellated plastic. The

filling of annular space reinforcement/sheat is made in workshop, hence the preprotection term, with cement or epoxy pitch. The tie rod is implemented by a mainline way; tube-à-manchettes for the injection of sealing in country rock is laid out beside the reinforcement/preprotection/sheath set. This process is applied to the bars and strands.

LANDED JOINT
Joint mouliné
Masonry
A joint dressed by rolling.

LANDING
Palier
Construction
The horizontal plan located between two flights of a staircase.

LANDING STAGE
Appontement
Construction
Syn. with PIER; QUAY

LANDING TREAD
Marche palière
Construction
The step of a staircase whose tread run is on one level with a landing or an intermediate landing.

LANDSLIDE
Eboulement
Geomorphology
The fall of materials that have crumbled. Syn. with FALL

LANDSLIDE
Glissement de terrain
Geomorphology
An earth movement in parcel of a part of an embankment or a slope without breakdown in the mass. This phenomenon is mainly due to the presence of a clayey layer lubricated by water that cannot make one's way through it, thus destroying the adhesion of sublying grounds and causing their slip. Dimensions of a landslide are defined by the width, length (total and of the failure), and depth:
- width: distance between flanks;
- total length: distance between the crown and thumb;
- length of the failure: distance between the crown and foot;
- depth of the slip: distance between the failure surface and undisturbed soil.

There are several types of landslides:
- **planar** *(le glissement plan),* which follows a standard plot whereas causes may be varied:
  - *slip of a thin layer* of poor characteristics on a substratum,
  - *slip of a material of deterioration* or on a level lubricating (example: silts on clay),
  - *slip by extension of a little resistant layer.*

  These landslides often occur during carrying out of unimportant work by suppression of the foot stop; the latter can be brought about by an erosion of the foot (underwashing of a watercourse). These movements can be related with the movements of the nappe, and, in this case, the limit between the planar slipping and creep can be badly defined;
- **rotational *or* cylindrical slide *or* rotational slide** *(le glissement rotationnel),* into which a swing of the slipped mass along a curved surface more or less circular it occurs; it is in this type of movement that one identifies best various characteristic figures such as escarpments, border of foot, etc. These movements can be simple or complex. Simple movements have a close or comparable failure surface with a circle and their study calls upon approaches of the mainline analysis of soil mechanics. Simple landslides can be superficial or deep:
  - *creep slide or detritus slide (les glissements superficiels),* whose figures of the failure circle are numerous; one can quote: crest slip and slip of foot,
  - *deep landslides (les glissements profonds),* which affect especially embankments on soft soil where the failure circle is tangent with the substratum when the latter is not too deep.

  Complex landslides often have a noncircular failure surface. Noncircular failures can have various causes:
  - anisotropy of structure,
  - mechanical anisotropy,
  - characteristic mechanics varying in-depth; the suppression of a stop of foot involving a regressive failure or collapse. In this category of slip one can quote: stepped slippings, by suppression of stop, regressive, and the composite slips. Syn. with EARTH SLIDE.

See Figures 1 to 1e

LANDSLIDE ANGLE
Angle d'éboulement
Geotechnics
Syn. with ANGLE OF REPOSE

LANDSLIDE CONSOLIDATION
Consolidation des glissements
Work
The stabilization of landslides by compacting of clay to good characteristics, ground nailing, retaining wall (with or without anchorage by tie rods), overload of feet with cribs, spoil bank for expanding clays, drainage galleries, rubble drains, subhorizontal drainage drillings, injection of fissures to avoid the water seepage in the head of the slipping, improvement of the soil bearing capacity (electro-osmosis, electrochemical consolidation, cooking, freezing), plantation of hygrophilic species (herbs then bushes), stakes, cloth, or wire mesh.

***LANGA VANT'S* CALORIMETER**
Calorimètre de *Langavant*
Equipment for Measure and Control
An instrument for determining the heat of hydration of cements by measurement of the heating of a standard mortar. This instrument is formed by a Dewar bottle, closed by an insulated cork and placed inside a rigid envelope that serves it as support. The mortar is placed inside a tinned cylindrical container that is inserted into the calorimeter after filling.

***LANGAVANT'S* JAR**
Bouteille de *Langavant*
Equipment for Measure and Control
An utensil for determining the heat quantity of hydration released by a cement during its set.

LANTERN
Lanterne
Geotechnics
At the time of the Lefranc test, cavity located at the base of the tubing which can be filled with coarse gravels or be isolated by a tight plug, an inflatable obturator, etc, and into which the water of the test is injected or pumped. **See Figure 2**

LAP
Repliure
Defects (Metallurgy)
A rolling or forging defect appearing on the surface of metal pieces having been hot-worked and that brings about an oxidized fold of the skin forming an angle of a slight amplitude with the surface.

LAP JOINT
Clin
Metal Construction
See JOINTING

LAP SIDING
Bardage à clin
Construction
Syn. with BEVELED SIDING

LAP WELD
Soudure à recouvrement
Welding
A jointing process used to fix flat pieces one on the other; the weld is known as *frontal* (or *head-on*) when it is perpendicular to the direction of the strain. It is known as *lateral* when it is parallel to the direction of the strain.

LAPIAZ
Lapiaz
Geomorphology
More or less parallel grooves furrowing a sloping chalky surface due to the streaming of carbon dioxide-laden waters that dig the rock.

LAPPING
Croisure; Recouvrement
Temporay Construction; Masonry
1. A circle of steel for sheeting pits during drilling for supporting the country rock from the phenomenon of decompression called *intake to the void.* Syn. with HOOPING; TIE RING
2. The projecting of a stone on another which is to it contiguous.

LARCH
Mélèze
Building Materials
A range of pine of which wood is more though one and tenacious than the oak. This tree has a good resistance to rot and aggressiveness of atmospheric agents. Under water it has an indefinite lifetime and acquires a very great hardness. Its density range from 0.45 to 0.67.

LARDING
Lardoire
Construction
A metal armoring of which are equipped certain wooden piles. Syn. with SHEAT

LARGE AUGER
Boulonnière
Equipment and Tools
A large gimlet used by carpenters to bore holes intended for receiving bolts.

LARGE CANTILEVER
Grand encorbellement
Construction
Syn. with LARGE CORBELED CONSTRUCTION; LARGE CORBELING

LARGE CORBELED CONSTRUCTION
Grand encorbellement
Construction
A horizontal work built overhanging above a free space (ravine, watercourse, channel of communication, etc.) for delivering passage to a channel of communication. This construction can constitute a new work or also an adjustment of an existing way. In the first case, the construction comprises two parts:
- an outside cantilever to horizontal general direction;
- a retaining wall.

Syn. with LARGE CANTILEVER; LARGE CORBELING

LARGE CORBELING
Grand encorbellement
Construction
Syn. with LARGE CANTILEVER; LARGE CORBELED CONSTRUCTION

LARGE HEAD NAIL
Clou à bateau
Materials
A wrought iron nail with broad head about 5 cm long.

LARGE STONE COURSE
Grand appareil
Masonry
A type of bonding of ashlar masonry in which the height of each course is at least 35 cm.

LARGE WICKER BASKET
Manne
Equipment and Tools
A basket used to carry demolition rubbles.

LARMIER
Larmier
Construction
A plinth or string molding used as an ornament on a bridge pile.

LARVA
Larve
Defects (Building Materials)
Syn. with GRUB

LASER CUTTING
Coupage laser
Metal Construction
The thermal cutting of metal performed step by step, either by the action of a laser beam which ensures the melting or the volatilization of the object to be cut, with the resulting products being evacuated by a jet of gas; or by the conjoined action of a laser beam, which keeps the metal to be cut at the beginning temperature, and a jet of oxygen (or air) that both oxidizes the metal and evacuates cinders.

LASER FLEXIGRAPH
Flexigraphe à laser
Equipment for Measure and Control
A gauge of the flexibility of beams or deck of bridge under the rolling load effect.
The principle of the measurement consists in measuring the displacement of a luminous spotlight on a photodetector cell fixed to the half-span of the deck. A change in the position of the spotlight is translated into a variation of electrical tensions proportional to the displacement. The sensitivity of these measurements is about a tenth of a millimeter. Nevertheless, if the luminous ray had to cover an important course, its propagation would be altered and the precision would suffer from it.

LASER GRADING SIZE METER
Granulomètre à laser
Equipment for Measure and Control
Syn. with LASER GRANULOMETER

LASER GRANULOMETER
Granulomètre à laser
Equipment for Measure and Control
Equipment for measuring the dimension of particles (fines) making up an aggregate and whose principle is as follows: particles being in suspension in the water intercept a laser beam. The figure of diffraction obtained has an intensity that decrease with the distance from the center according to a curve which depends on the size particles distribution of the observed sample. Syn. with LASER GRADING SIZE METER

LASH
Cingler
Building
To draw a line on a facing, a slab, etc., with a line impregnated with coloring matter. Syn. with CHALK A LINE

LASHING
Amarrage
Handling
The fixing of a rope to a fixed element to hold another of it.

LAST COURSE
Calage. Arase
Masonry
Syn. LEVELING COURSE

LAST-COURSE STONES
Arases
Masonry
Low-bond stones used to level the course of a wall.

LATCH
Linguet
Handling
A safety device placed on a lifting hook that stands in the way of the accidental unhooking of the raised loads.

LATERAL GROWTH
Croissance latérale
Defects (Metal Construction)
The period during which the germs of the corrosion cover all the surface of the attacked metal.

LATERAL ROAD
Rocade
Public Works
Syn. with BYPASS; PARALLEL ROAD

LATERAL SONAR
Sonar latéral
Equipment for Measure and Control
Equipment mainly used to inspect immersed foundations of structures.
The lateral sonar equipment comprises a fish that is moved in the water near the surface by a turbine boat of weak draught. The actual lateral sonar is an equipment with ultrasonic sounds whose emission is directed laterally toward the bed of the river according two lobes. Each lobe of emission very narrow, in the order of 2°, more largely is horizontally displayed vertically, in the order of 40°, and can be tilted in comparison with the horizontal of 0.5°, 10°, or 20°. Any proper electronics allows to arrange on recording paper an image by a solid drop shadow of the relief of the bottom and obstacles encountered as would do it a picture in low-angled light.
This practice allows to detect besides disorders being able to concern immersed parts of works, underwashings, settlings of alluvia, movements of enrockments, etc.. **See Figures 3 and 3a**

LATERAL WELD
Soudure latérale
Welding
Assembly of which weld bead is parallel to the direction of the strain.

LATERITE
Latérite
Geology
A clayey sedimentary red rock, which lost almost the totality of silica after washing by waters, and containing hydrates of alumina and iron in high concentration. The upper part of the laterite is hardened; it forms a sterile and thick shell.

LATERLOG
Latérolog
Test of the Materials (Foundation)
An electrical logging used in the event of drilling in the ground with use of a drilling fluid with saltwater. This type of logging allows, by measurements of the resistance of small zones of

the made one's way through formation, to obtain informations on the porosity of zones invaded by the fluid.

LATEX CONCRETE
Béton de latex
Building Materials
Any bituminous concrete obtained by addition of latex.

LATH
Limande; Liteau; Latter
Construction; Building Materials
1. A flat and thin wooden board with which one covers joints or defects of some pieces, or which is used as rule.
2. A piece of fir tree or poplar, of square (25 x 25 mm) or rectangular section (20 x 38 mm). Syn. with BATTEN
3. To put in boards. Syn. with BATTEN

(WELDING) LATH
Latte
Welding
A long, narrow and thin part, mostly of metal, used in some welding processes as support of the first run of deposited metal. Syn. with BACKING STRIP

LATHING
Lattis
Construction
A panel of boards joined by assemblies, diagonal braces, bolts, etc. Syn. with LATHWORK

LATHWORK
Lattis
Construction
Syn. with LATHING

LATTICE
Treillis
Metal Construction
Structure of a beam, pole, truss, in which the solid web (or batten plates) is replaced by a trussed network of secondary bars. **See Figure 4**

LATTICE GIRDER
Poutre à treillis *ou* triangulée
Construction
A compound element whose web was replaced by a lattice of bars assembled at 45° or 60°.

In a lattice girder, bars work in tension or in compression. Bars whose lower end deviates from the bearing work in tension. Latticed bars whose lower end approaches the bearing, work in compression. Syn. with TRUSS GIRDER. See **Figure 5 and 5a.**
There are several types of lattice girders:
- **girders with parallel chords** *(les poutres à membrures parallèles), with:*
  - *N-truss girders (les poutres à treillis en N),* whose diagonals alternate with stanchions. N-girders can be several types, *Pratt, Howe, Daydé:*
    - *Howe girder* (*la poutre Howe*), with simple triangulation, comprising two chords, stanchions and diagonals and which can be constant or variable height. Panel points of load can be either bottom panel points, or top panel points. In this type of girder, diagonals are compressed and stanchions tended; **See Figure 5b**
    - *Pratt girder* (*la poutre Pratt*) with simple triangulation, comprising two chords, stanchions and diagonals. It can be constant height or camelback. Panel points of load can be either bottom panel points, or top panel points. In this type of girder, only the top chord and stanchions are compressed. Usually, a *Pratt* girder having an odd number of panels comprises a central panel into which two diagonals crosses. Therefore, this girder comprises a superabundant bar; **See Figure 5c**
  - *K-truss girder (la poutre à treillis en K),* which comprises upper half-diagonals and lower half-diagonals of opposed slants, connected in the middle by stanchions; **See Figure 5d**
  - *rhomb truss girder (la poutre losange),* of which diagonals draw a succession of rhombuses; **See Figure 5e**
  - *Vierendeel truss girder (la poutre Vierendeel),* in which chords to strong inertia are connected solely by restrained rigid stanchions constituting a continuous file of frames. With not confusing, in the case of variable height, with the bowstring beam.
  - *V-truss girders (les poutres à treillis en V),* also called *Neuville* girders if panel points of lattice are assembled in a rigid way and *Warren* girders when panel points are endowed with an articulation. The Warren girder has parallel chords connected between them in the vertical direction by diagonals forming a succession of V and can be equipped or not with distributors stanchions. In this type of girder, the top chord is

compressed as diagonals directed toward the high part of the axis of symmetry of the beam considered. One also distinguishes derived *Warren* girder, which is a variant of the *Warren* girder by the addition of new bars, known as bars of secondary, tertiary, etc.. triangulation, (primary triangulation since of the triangulation of the initial *Warren* girder) intended for introducing new panel points of load. Derived triangulations can comprise or not distributors stanchions; **See Figures 5f and 5g**

- *X-truss girders (les poutres à treillis en croix de Saint-André (ou X)),* of which one of the diagonals is taut and the other compressed in each panel forming Saint-Andrew'crosses alternated with stanchions;
- *multiple lattice girders (les poutres à treillis multiples),* of which stanchions, when they exist, are designed to share uniformly stresses between various diagonals of the lattice; **See Figures 5h and 5i**
- **nonparallel chord trusses** *(les poutres à membrures non parallèles),* either in N- or X-lattice, or with simple stanchions, and which are beams *Daydé* lattice girders, arched chords, *Pauli, Lohse, Schwedler,* etc: **See Figures 5j to 5n**
- *Daydé truss girder (la poutre Daydé triangulée en N) ;* **See Figure 5k**
- *Pauli truss girder (la poutre Pauli)* in X-lattice and vertical stanchions whose top and bottom chords are arched; **See Figure 5o**
- *Lohse truss girder (la poutre Lohse)* in V-lattice whose two top and bottom chords are arched; **See Figure 5l**
- *Schwedler truss girder (la poutre Schwedler)* in X-lattice with vertical stanchions of which the bottom chord is straight and of which the top chord in the shape of two arches of hyperbole are joined together in the central part by a horizontal part; **See Figure 5q**
- *continuous girder with camel back (la poutre continue de hauteur variable),* made up of a horizontal bottom chord (than the level of the deck) and of a curvilinear top chord. Two chords are joined together by a lattice and are leaned onto intermediate pilings; **See Figure 5r**
- *girder to independent chords with discontinuous tie beam (la poutre à membrues indépendantes avec poutre de rigidité discontinue),* which consists of an arch with tensional member of which top chord comprises an articulation in central part; **See Figure 5s**
- ***Gerber* girder** *(la poutre Gerber),* general name of the lattice girder assembled in cantilever.

LATTICE MAST
Pylône
Construction
Syn. with MAST; PYLON; TOWER

LATTICE (*or* TREILLIS) MAST
Poteau à treillis
Construction
A metal element of which solid web is replaced by a lattice. This type of pole can be assembled by riveting or welding.

LATTICE WORK
Treillis
Metal Construction
All diagonals of a lattice girder.

LAUAN
Méranti
Building Materials
A tree of the rain forests that gives a wood from brown rosy to red color and whose density is contained between 0.6 and 0.75. This wood is little used in carpentry. Syn. with SERAYA

LAUNCH
Lancer
Handling
To carry out the launching of a work.

LAUNCH GANTRY
Portique de lancement
Equipment and Tools
A device formed by a lattice steel construction, used to put in place precast cantilever voussoirs of bridges, beams, etc. The launch gantry is put in on the deck of the bridge already built and is progressively moved of the progress. **See Figure 6**

LAUNCH PIT
Puits de service pour fonçage horizontal
Earthwork
A timbered excavation of a mostly rectangular section, dug up to the level of the work to be deepened. Inside the pit is put in the pushing

device which is often overlapped by a hoisting gantry crane allowing the supply of elements to be deepened. Syn. with JACKING PIT; THRUST PIT

LAUNCHING
Lançage; Poussage
Handling
1. The setting of a work by longitudinal displacement of which the process is carried out like follows.
The work is built on a proper area ofthe starting bank, behind the abutment and in the prolongation of its final site. Lower parts (beams or concrete slab) rest on rollers (roller brackets, rouleurs sans-cesse-express, balls, etc.). Rollers are also laid out on the head of abutments and, if necessary, piles.
One advances the bridge, which rolls on rollers (the front end work being cantilevering during a part of the operation), up to what its front end rests on rollers of the abutment of arrival; the work is then gone up at its final situation with jacks. The bridge can be built before launching (at least for its main structures) throughout the length; it also can be built by partial lengths and set up by successive operations. The movement of the bridge is obtained by pushing from starting bank and, if necessary, by traction from the bank of arrival. One uses, possibly, a launching nosing fixed ahead of the structure and/or a counterweight at the back. Launching often involves metal bridges (with straight bottom beams). There is different practice of launching from which one distinguishes: the rotation launching, launching with intermediate piling (barge, hulk, etc.) and the launching on cradle.
See Figures 7to 7c
2. A setting process of a bridge deck that consists in launching it gradually pushing it above the breach to be cleared, the deck being built on the edge of this breach progressively with the advance of its end.
Two methods are used: or well the deck is pushed on the only one side, or well two half-decks, manufactured on the two sides, are pushed and rejoined in the middle of the breach. Displacement is obtained with jacks, the deck being supported on Teflon plates to decrease at the maximum frictions. When the span to be cleared is important, the deck is equipped with a nosing or is braced at the head to avoid a too important sag of the overhanging part. Decks thus launched can be with box or ribbed slabs.
Syn. with PUSHING FORWARD

LAUNCHING RAIL
Rail de lançage
Equipment and Tools
A steel piece of small width and strong thickness sometimes fixed under the bottom boom of a beam to ensure the guidance in the process of launching by passage in the throats of bracket rollers.

LAUNCHING TAIL
Queue de lançage
Temporary Construction
A device fastened at the back of a deck during a launching and intended for fixing a standing rope.

LAVA
Lave
Geology
A volcanic rock that gives an excellent building stone.

LAVA CONCRETE
Béton de lave
Building Materials
A material whose skeleton is mainly composed of lavas.

LAY BARE
Affouiller
Hydrology
Syn. with ERODE; UNDERMINE, WASH AWAY

LAY BARE (THE FOUNDATION)
Déchausser
Earthwork
1. To excavate, create an excavation near a foundation.
2. To undermine, to erode the base of a construction. (used when mentioning the physical action of some natural phenomena; the principal being the mining by surface waters).

LAY ONE
Plaquer du mortier
Building Materials
To plaster a surface with a strongly compacted mortar.

LAYER
Assise; Forme; Lit
Construction; Masonry; Building Materials
1. Syn. with BED; COURSE (OF MASONRY)
2. Syn. with BED
3. Syn. with BED

LAYER
Lit; Gisement; Gîte
Geology
1. Syn. with BED; STRATUM
2. Syn. with BED; DEPOSIT; VEIN

LAYER
Banc
Building Materials
In quarries, the entire stone layer bordered by two consecutive beds of stratification.
We can distinguish:
- **roof layer** *(le banc de ciel)* left above pillars and which makes cover (case of an underground quarry);
- **loam bank** *(le banc franc)* constituted by a calcareous hard stone bed with grains slightly apparent and free from fossils from where is extracted the ashlar (freestone);
- **royal bank** *(le banc royal)* formed by a calcareous stone bed with very fine grains, cutting itself easily and which provides the ashlar of higher quality;
- **flight bank** *(le banc de volée)* thinly adherent on the bench located below, and which can be detached almost effortlessly.

Syn. with BANK; BENCH; FORM

LAYER DISEASE
Maladie en plaques
Defects (Building Materials)
Damage that can be observed in the stone and that is characterized by a surface separation of its crust. The layer disease is due to the sulfur bacteria which multiply inside the structure of the stone and which, by complex chemical reactions, transforms by hydration the calcium sulfate located under the crust into gypsum. The gypsum having important expansive properties, makes take off the crust.

LAYER LINE
Ligne de lit
Masonry
Syn. with BED LINE.

LAYER *or* BED OF PUDDLE CLAY or CONCRETE
Corroi
Temporary Construction and Hydraulic Works
A bed of clay or rammed concrete of which are coated the bottom and walls of canals, barrages, etc., to do them tight.

LAYING OUT (OF RAILWAY TRACK)
Assiette
Public Works
Syn. with BOTTOM; ROADBED

LAYING RUBBLE
Moellon gisant
Masonry
A stone bonded on its bed without preliminary cut.

LAYING TO BLOWING BATH
Pose à bain soufflant
Masonry
A technique of carrying out of masonry that consists in bonding on a mortar bed from 2 to 3 cm thick, quarry stones or bricks that are pressed then inserted with mallet so that the mortar ebbs. This process avoids the repointing which is in principle the last operation in the carrying out of a construction.

LAYOUT
Implantation
Topography
A job that consists in tacking on the ground, in planimetry, according to the data of a plan or from proper technical data, the nodes of angle determining a layout by means of stakes or other markers. In altimetry, it can also consist in placing markers whose altitude is beforehand given. Syn. with PEGGING OUT. **See Figure 8**

LAYOUT (PLAN)
Plan de masse
Topography
A master drawing, in general on a small scale, that locates constructions with regard to the others and with regard to the boundaries of the terrain.

LAYOUT IN CONTIGUOUS (CABLE) BUNDLE
Disposition en faisceau jointif
Defects (Construction)
A defect of design in the bridge cables consisting in collecting elementary cables, constituting thus in bottom part a water trap. Besides, the access at the elementary cables for visual examination or electromagnetic control becomes impossible.

***LE CHATELIER* CONTRACTION**
Contraction *Le Chatelier*
Hydraulic Binders
The shrinkage phenomenon of a binder.
To the continuation of the reaction of hydration of the cement, the absolute bulk of hydrates formed is lower than the initial absolute bulk (sum of initial absolute bulks of the water and anhydrous cement). It can be observed with a tight container overcame of a capillary and containing a disaerated cement paste, the water filling the remaining bulk. One observes that the water level in the capillary decreases as they advanced than the hydration continues. Le Chatelier's contraction is, after complete hydration, in the order of 10% of the initial paste volume. **See Figure 9**

***LE CHATELIER* NEEDLE-TYPE MOLD**
Aiguille de *Le Chatelier*
Assaying Equipment
A 165-mm metal rod ended by a cylinder of 30 mm diameter and 30 mm tall. The unit is called *needle* and is used in laboratory to test the stability toward expansive agents of hydraulic binders.

***LE CHATELIER* WATER BATH**
Bouilloire de *Le Chatelier*
Assaying Equipment
An instrument used for testing cement's expansion.

LEACHING
Lixiviation
Defects (Concrete)
1. A damage that mainly concerns the concrete works and that brings about runouts and whitish stains on the surface of facings. The hardened concrete contains water and if the latter contains free CO_2, the lime (that contains cement) changes into carbonate form of which the solubility at the normal temperature is 165,000 mg/l. This bicarbonate percolates through the pore spaces of the concrete, recoveries, etc. To the open air, the bicarbonate carbonates and covers the facing. The result of leaching (runouts and stains) takes the name of *carbonation.*
2. The dewatering of certain solid components of a paint film by the water kept or renewed at its contact.

LEAD
Plomb; Plomber
Metallurgy
1. A grayish metal of great density. This grayish color is the result of the superficial oxidation that tarnishes quickly its aspect normally shining. It is a soft metal, very malleable and ductile.
2. To cover a surface by leading.

LEAD MONOXIDE
Litharge
Painting
Oxide of lead that makes siccative the oils into which colors are mixed.

LEAD PAINT
Peinture au minium
Painting
Syn. with CALCIUM PLUMBATE PRIMER

LEAD SPAR
Céruse
Painting
A white fine powder that is a carbonate of lead obtained by oxidation of the lead by the acetic acid; used as pigment in the paints. Syn. with WHITE LEAD

LEADER
Descente d'eau
Sanitary Engineering and Drainage
A standpipe stood against a wall intended for the storm water draining. Syn. with RAINWATER PIPE; STACK PIPE; WATERSPOUT

LEADER SHOE
Dauphin
Construction
Syn. with RAINWATER SHOE

LEADERS
Jumelles
Equipment and Tools
Syn. with FALSE LEADERS; GUIDE PILE

LEADING
Plombage
Metallurgy
An operation that consists in covering a metal surface by a pure or allied lead film, and whose primary execution processes are:
- **hot leading** *(le plombage à chaud);* after pickling, the coating is obtained by temporary immersion of steel objects into a molten bath of lead or lead alloy;
- **leading by plating with the squirt gun** *(le plombage par métallisation au pistolet);* the coating is obtained by molten lead throwing on objects to be protected, by means of a squirt gun. Before the throwing, steel objects are cleaned by sandblasting;
- **electrolytic leading** *(le plombage électrolytique);* the coating is obtained by electrolytic deposition;
- **homogenous leading** (known as homogeneous) *[le plombage à la goutte (dit homogène)];* the coating is obtained by supply of molten lead with the blowtorch, the successive and jointed drops being aligned so as to cover all the surface to be protected;
- **leading by plating** *(le plombage à la feuille);* the coating is obtained by the fixing of lead sheets on surface to be protected (dubbing).

LEAFING
Pelliculant
Materials
Of a matter that has the property to spread out to form a thin film on the surface of a material.

LEAFING PIGMENT
Pelliculant
Painting
Of a pigment in the shape of lamellar particles, able to form a continuous and uniform film.

LEAFING POWER
Pouvoir pelliculant d'un pigment
Painting
The ability of certain lamellar pigments to get placed themselves on the surface of a suspension medium and to be kept there until completely drying, to form screen there.

LEAK DETECTION
Détection des fuites
Test of Materials
Syn. with LEAK INVESTIGATION

LEAK INVESTIGATION
Détection des fuites
Test of Materials
A nondestructive control method having some similarities with a pneumatic test to low pressure. This control allows to detect porosities, holes, fissures in the mechanical or soldered joints, and in cast pieces. Syn. with LEAK DETECTION

LEAK TESTING
Essai d'étanchéité
Welding
Test for detecting the presence of possible throughing discontinuities in a weld. The test consists in painting the weld with a penetrating fluid then to observe the opposite face so as to divulge there a possible appearance of the fluid.

LEAKAGE WATER
Eau d'infiltration
Defects (Civil Engineering Structure)
A water of zenithal origin or coming from the environment (river, groundwater table, enclosing terrain) that seeps through masonry or concrete to reemerge on their facing. These waters often cause more or less serious disorders (washing of joints, frost susceptibility, impoverishment of the binder, underwashings, etc.).

LEAN CONCRETE
Béton maigre ou creux
Building Materials
A material composed of a small amount of cement (in general 150 kg/m^3) whose skeleton is generally composed of two volumes of pebbles or gravel for one volume of sand. This material is generally used as slope concrete or to carry out works for which strength is only a secondary factor (for example, filling cavities). Syn. with LEAN-MIX CONCRETE

LEAN MORTAR
Mortier maigre
Building Materials
A mixture poorly proportioned in cement (150 to 200 kg of cement per m^3 of sand) that is used in some provisional masonries, protective screeds, being able to be easily demolished.

LEAN PAINT
Peinture maigre
Painting
A product containing very few oils.

LEAN-MIX CONCRETE
Béton maigre ou creux
Building Materials
Syn. with LEAN CONCRETE

***LEBACQ* PROCESS**
Procédé *Lebacq*
Building Materials
Wood treatment process that combines the soaking and suction.

LEDGE
Corniche
Construction
Syn. with CORNICE

LEDGE (OF ARCHSTONE)
Balêvre
Masonry
Overhang of the archstones or voussoirs of a vault on the intrados or tympanum.

LEDGE (OF STONE)
Balêvre
Masonry
Overhang of a stone in comparison with others, nearby of a joint. **See Figure 10**

LEDGE PIPE LAYING
Pose en saillie dite en remblai indéfini
Earthwork
The installation method of pipes or ovoids to open. An overhanging pipe is laid appreciably on the surface of the undisturbed soil then covered by a filling.

LEDGE ROCK
Bedrock
Geology
A basic rocky ground on which rests a mineral-bearing alluvium.

LEDGER
Filière
Temporary Construction
The horizontal pole of a wooden scaffolding fastened perpendicularly to the standards with ropes.

***LEFRANC* TEST**
Essai *Lefranc*
Geotechnics
An usual approach of the in situ measurement of soil permeability, consisting in injecting or pumping water inside a cavity of known size, carried out beforehand in the ground at the base of the tubing. The Lefranc test allows to evaluate the local permeability of the soil.
The test can be done on the constant level (in the permeable soils): one injects or pumps until the stabilization of the level inside the drilling; or variable (in the little permeable grounds): one follows the evolution of the level inside the drilling according to time. The practice most routinely used is that on the constant level by injection. For the same level, the injection or pumping must be continued obligatorily until what pumped or injected flow is constant. Moreover, for the same test, it is necessary to operate to several levels. The Q(t) flow seeping through the wall of the cavity is, at a given moment, proportional with:
- *the coefficient of permeability Lefranc* k_L *of the soil,*
- *the variation h(t) of the hydraulic head,*
- *the diameter D of the cavity.*

$$Q(t) = m \times k_L \times h(t) \times D$$

The factor m *only depends on the form of the cavity and the position of this last one with regard to the boundaries of the aquifer.* **See Figure 11**

LEG
Aile; Jambage
Nomenclature of Materials; Equipment and Tools
1. Each of the two branches of a corner iron or a channel section.
2. The pan of a pile-driving plant formed by a steel structure which bears the entablature, the guidance device of the rammer in the fall as well as its mechanism of ascent. Syn. with STANDARD

LEG-FRAME GIRDER
Poutre à béquilles
Construction
A beam which is formed by a straight beam *B1 B2* that rests on bearings *A1* and *A2* through the channel of beams *B1 A1* and *B2 A2,* called *legs,*

restrained in *B1* and *B2* on the straight beam. The beam *B1 B2* can be prolonged on both sides by cantilever *B1 C1* and *B2 C2*. Bearings *A1* and *A2* can be articulations or restraints. When *A1* and *A2* are articulations, the beam with legs is a particular case of the arch articulated at the springings; when *A1* and *A2* are restraints, the leg-frame girder is a particular case of the restrained arch.
Usually, leg-frame girders are particular cases of portal frames which can comprise several stages. **See Figure 12**

LENGTH (OF PILE)
Longueur
Foundation
Concerning a pile, distance measured along the axis.

LENGTH OF FAILURE
Longueur de rupture
Geomorphology
In a landslide, the distance separating the crown from the foot.

LENGTH OF ROUND
Longueur de volée
Explosives
The length of tunnel released by the explosion of mines.

LENGTH OF STRAIGHT ANCHORING
Longueur de scellement droit
Construction of R. C.
The length on which must be covered in the concrete a bar of diameter *d* subjected to a stress *S,* to transmit to the concrete by adhesion the totality of the strain that it endures.

LENGTH OF TRANSMISSION
Longueur de transmission
Construction of P.C.
The bond length in the concrete of a steel prestressing cable. The length of transmission is function of the diameter of the cable. For example, for an 18-mm-diameter cable, the length of transmission will be 5 m, whereas for a 9-mm-diameter cable, the length of transmission will not be more than 2 m. However, this length is also conditioned by the tensile force applied to the cable as well as concrete's resistance to bond.

LENGTHENING JOINT
Enture
Carpentry
The connecting by the jointing end to end of two or several wooden pieces so as to obtain only one longer piece. This jointing can work in compression or in tension. Syn. with HEADING JOINT; SCARF (JOINT); SPLICE

LENGTHENING OF A POST
Baïonnette
Construction
The extend of reduced section beyond of the main barrel in certain posts of a strong section. This piece bears the trusses of roofs when one or several roll beams rest on the main barrel. Syn. with BAYONET. **See Figure 13**

LENGTH-WEAR ACTION
Action de longue durée
Strength of Materials
An action of constant or variable magnitude being exerted in a prolonged way and whose characteristic value must correspond to a considerable likelihood to be reached during the landmark duration selected.

LENGTHWISE-SHAPED SHEET
Tôle profilée en long
Metallurgy
A metallurgical steel product which can take on various transverse profiles, of variable thickness going from 10 to 150 mm with a maximum slope of 5 mm/m.
Various commercial profiles assume a shape into:
- edge,
- sloped edge,
- cocked hat,
- with three or four segments.

Formerly, this product was called *sheet to variable thickness.* **See Figure 14**

LENS
Lentille; Rognon
Defects (Building Materials)
A defect affecting the structure of a stone characterized by a lens-shaped inclusion formed by a harder matter and different color.

LENZITES ABESTINA
Lenzites abestina
Defects (Building Materials)
A variety of discoloration fungus so-called of *substrate* more known under the name of *heart rot* (of wood).

***LEROND* FLANGE**
Poutrelle à ailes larges
Building Materials
An iron and steel product of which the width of the flanges is higher than 0.66 times the nominal height of the section and higher than 300 mm.

LEVEE
Levée
Civil Engineering
A footpath made particularly to:
- clear a sloping ground building on the hillside a small work having a horizontal traffic area in plan whose bank of the edge of the slab side hillside rests directly on the ground by the agency of a sole and empty space side, rests on a succession of posts whose height fills the difference in level;
- circulate on the top of a dike put up along a watercourse;
- cross a marshy area or liable to flooding and that consists of a work of small width comprising a deck resting on successive pilings. Generally the headroom under this type of work is very small (1 m generally) but sufficient not to block the free circulation of water.

The levee can consist of a simple embankment into which ducts are laid out so that water can circulate freely from one side to another. Syn. with DIKE; MOUND

LEVEL
Affleurer; Araser; Régaler
Masonry; Construction and materials; Work
1. To level contiguous beds of stones, bricks, building blocks, or any other building material.
2. To equalize or cut an overhanging part on an alignment to obtain an uniform level or a plane and regular face. Syn. with CUT OFF
3. To spread and level on the ground a heap of materials intended for being usefull of form.
4. To equalize the surface of a terrain or a fill after removing or supplying materials. Syn. with SPREAD AND LEVEL

LEVEL
Arasement; Niveau; Niveler
Geomorphology; Topography; Earthwork
1. The wear away until principal overhangs of the relief remove.
2. The altitude of a point in comparison with a horizontal plan serving as reference.
3. To make horizontal and even a surface making remove the unevens (to level a ground, a screed, etc.).

LEVEL CURVE
Courbe de niveau; Courbe isotype; Courbe hypsométrique
Topography
A line passing by points of similarly altitude on the ground and represented on a drawing. Syn. with CONTOUR LINE

LEVEL DOWN
Araser; Déraser
Masonry
1. To raise a masonry by leveling its courses.
2. To lower (for example) the level of a wall or to pollard its top.

LEVEL INDICATOR
Mire-jalon; Nivelette
Equipment and Tools
A square or rectangular panel alternatively paints in red and white, fixed at the end of a stake and used for ground leveling operations (the sight telescope is fixed, it is the stake which one goes up or goes down to determine the height of ground to be banked up or to be withdrawn).

LEVEL MARK
Repère
Topography
Syn. with INDEX MARK; REFERENCE MARK; REFERENCE POINT

LEVEL PROBE
Sonde niveau
Equipment for Measure and Control
Equipment for measuring water levels in a well or a piezometer. It is made up of a drum on which is rolled up a graduated tape; at the end of this tape is situated the probe which is supplied by batteries. The principle consists in going down the probe into the piezometer or the well;

as soon as the probe arrives at the touch of the water, it gives off a resonant or visual beep. One then reads on the tape the dimension of depth reached. Syn. with SOUNDING LINE

LEVEL SECTION
Palier
Civil Engineering
The portion of a channel of communication of which longitudinal profile is appreciably horizontal.

LEVEL UP
Dresser une construction; Niveler
Civil Engineering Structure; Topography
1. Syn. with BUILD
2. To check the horizontality of a surface or to measure it.

LEVEL WITH MICROMETER SCREW
Nivelle à vis micrométrique
Equipment for measure and Control
An equipment that shows the angle of inclination of a base fixed on a pier (for example) with the horizontal given by the instrument. **See Figure 15**

LEVELER
Régaleur
Work
A worker in charge to spread out material contributions and to level slopes and levels.

LEVELER MACHINE
Aplanisseuse
Equipment and Tools
Public work vehicle having two or several blades for leveling the irregularities of a roadway brought about by vehicle traffic.

LEVELING
Arase; Arasement
Foundation; Construction
1. The level of the top part of a foundation pile after its implementation and before trimming.
2. The horizontal top level of a foundation block. Syn. with TOP SURFACE
3. The raising or lowering on a same level of similar parts of a work.

LEVELING
Dressage; Mise de niveau
Work; Civil Engineering Structure
1. The elimination of irregularities of a surface so as to make it perfectly flat. Syn. with TRIMMING
2. The determined height for the implementation of a work.

LEVELING
Nivellement
Topography
An operation that consists in taking down on the terrain of the points in order to determine their altitude with regard to a marker of which the altitude is known.
We can distinguish:
- **leveling by walking *or* differential leveling** *(le nivellement par cheminement),* which consists in performing altimetric plottings in taking measurements and displacements of turning point in only one direction with at each new stationing a reading *in foresight* and reading *in backsight* (see TRAVERSING; **See Figure 16**
- **leveling by gyration *or* leveling without changing place** (*le nivellement par rayonnement)* that consists in performing altimetric plottings of a surface of terrain by carrying out the same turning point of the sight in several directions. In each displacement of turning point, one also carries out readings *in foresight* and *in backsight.* **See Figure 17**

Syn. with SURVEYING

LEVELING
Ravoirage; Régalage
Work
1. The leveling of a ground, a slab by material supply on a horizontal support to reach wished relative elevation.
2. The spreading out and levelling of materials on a ground (earth, sand, etc.) as they advanced to their supply so as to give them wanted overhang and slopes. Syn. with FINAL GRADING; STRIKE-OFF

LEVELING COURSE
Arase; Arasement
Masonry
1. Stone or brick finishing a wall and of a thickness such as its top level is the same those surrounding courses.

2. The horizontal top level of a bonding of masonry.
Syn. with LAST COURSE ; TOP SURFACE
3. The top bed of a course of masonry laid out in a perfectly horizontal plan and which arrived at its final height. Stones of course being designed to put a row of level are called *levelling courses.*
See Figure 18

LEVELING DOWN
Dérasement
Masonry
1. The recutting of stone beds of the same course so as to bring them all at the same level.
2. The partial pulling down of a too high wall so as to return it at a lower level.

LEVELING DOWN THE VERGES
Dérasement
Civil Engineering
Shoulders of a roadway situated at the same level that this last one.

LEVELING STAFF
Jalon-mire
Topography
A rule with two fixed targets used in the stadia work measurements.

LEVELING STRUCTURE
Ouvrage de nivellement
Civil Engineering Structure
In the classification of the civil engineering structures following their function, construction being designed to carry the channel of communication on different levels from those of the undisturbed soil when that is necessary to allow to observe the conditions of declivities or curvature. According to the position of the channel of communication with regard to the undisturbed soil we can distinguish the:
- *channel of communication located* ***above*** *the undisturbed soil* (embankment, bridge or viaduct);
- *channel of communication located* ***below*** *the undisturbed soil* (trench, underground, tunnel).

LEVER DOLLY
Levier d'abattage
Equipment and Tools
Syn. with HOLDING-UP LEVER.

LEVIGATION
Lévigation
Test of Materials (Building Materials)
A grain size analysis approach for studying elements lower than 50 µm. One deduces the dimension of the pelites by their fall velocity in a fluid environment less dense than they; the fluid is driven by an upward movement.

***LEVY*-TYPE FACING MEMBRANE**
Masque *Lévy*
Construction
The upstream mask of a barrage of masonry, comprising a succession of watertight facing arches.

LEWIS
Louve
Equipment and Tools
Syn. with DEVIL'S CLAW; LEWISSON; STONE LIFTING BOLT.

LEWISSON
Louve
Equipment and Tools
Syn. with DEVIL'S CLAW; LEWIS; STONE LIFTING BOLT.

LIABILITY
Responsabilité
Law
The civilian legal arrangement is binding legally a builder to repair according to the trade practices the defect and their aftermath, including the total repair if there is collapse, arisen in a construction in a given lapse of time.

LIABILITY TO FROST DAMAGE
Gélivité
Geomorphology
The sensitivity to the congelifraction of certain rocks. Syn. with FROST SUSCEPTIBILITY

LIABLE TO RUST
Oxydable
Metallurgy
Of a metal susceptible to undergo the effects of oxidation. Syn. with OXIDIZABLE

LIAISON
Liaisonnement; Liaison
Works
Syn. with BINDING; CONNECTION; LINKING BOND; COUPLING; JOINING

LICHEN
Lichen
Defects (Building Materials)
A complex organism in which coexists in symbiotic contact seaweeds and fungus. This organism, very former, is a parasite of the stone. We can distinguish calcicol lichens from silicol lichens. Two groups of lichens can besides be distinguished: endolithic lichens whose the vegetative part (thallus) or fungus develops inside the rock and epilithic lichens whose only filaments (hyphas) of mycelium penetrate the stone. Calcicol lichens can be part of two groups, silicol lichens are epilithic.

LIERNE
Lierne
Equipment and Tools
A transverse piece being designed to connect the stiffeners of a prop for avoiding buckling of it.

LIFETIME
Temps de travail
Adhesives
After application of an adhesive on the surface of two materials to be assembled, gap of time which passes between the moment in which jointing is possible and that in which it is made impossible owing to the loss of the adhesive capacity of the product. Syn. with WORKING LIFE; WORKING TIME

LIFT
Chabler
Handling
To hoist stones at wanted level with a lifting rope.

LIFT NAVIGATION LOCK
Ecluse à sas
Hydraulic Works
Syn. with CHAMBER NAVIGATION LOCK

LIFT TRUCK
Chariot élévateur
Handling
A handling vehicle equipped in the front by two vertical grooves on which slide a pitchfork or a skip. This machine is used on sites to supply in height or to carry over a short distance materials or equipments. Syn. with FORKLIFT TRUCK

LIFTING
Vérinage
Handling
The vertical or horizontal displacement of a load, a deck, etc., with jacks. **See Figure 19**

LIFTING (OF THE ROOF)
Relevage
Work
An operation by which the roof of a gallery in progress is raised to modify the longitudinal profile of the work in progress or to follow a surface discontinuity of the extrados of the tunnel, or also, when a gallery was sunk.

LIFTING APPLIANCE
Appareil de levage
Handling
A movable or fixed device for lifting loads to transport them from a point to another. Equipments or lifting appliances contain, notably, cranes, travelling cranes, gantries, winches, hoists, jacks, arms of handling, elevators. Syn. with HOISTING MACHINE; LIFTING GEAR; LIFTING TACKLE

LIFTING BEAM
Palonnier
Equipment and Tools
Auxiliary equipment inserted between the hook intended for the lifting of a load and the latter when it must be seized in two distant points. The lifting beam is mostly made up of a beam working in compression and suspended at the hook by tilted double slings so that the system constitutes a triangle. Points of slinging of the load are directly below of the end of the beam. **See Figure 20**

LIFTING BY STEEL PRESTRESSING CABLES
Levage par câble de précontrainte
Handling
A lifting up method of load by means of steel prestressing cables passing through special hydraulic actuating cylinders put in at the top of

the support intended for receiving the load. The lifting speed is about 10 m/h.

LIFTING CURVE
Courbe de relevage
Construction of P.C.
The part of a steel prestressing cable contained between the rectilinear section and the anchorage.

LIFTING GEAR
Appareil de levage
Handling
Syn. with HOISTING MACHINE; LIFTING GEAR; LIFTING TACKLE

LIFTING HEMP ROPE
Chablot
Equipment and Tools
A rope of hemp used by builders to lift, assemble, tie materials.

LIFTING JACK
Chèvre
Equipment and Tools
1. A tripod-shaped device used to lift light loads, that can be of wood or constituted by metal sections and whose feet are connected by space bars. This device comprises a pulley on its top.
2. A tripod of trial boring.
Syn. with BOOMLESS DERRICK; HORSE; SHEAR LEGS; TRACK LIFTING JACK

LIFTING LUG
Oreille de levage
Handling
A device bolted or welded onto a beam, a bridge covering, etc., used as hanging point to the cables to handle (lifting, sliding along, etc.) one or a part of work.

LIFTING PLUG
Raccord de levage
Equipment and Tools
Syn. with LIFTING SUB

LIFTING ROPE
Chable; Echarpe
Equipment and Tools; Handling
1. A thick lifting rope passing generally by a pulley.
2. A rope used by builders to hoist ashlars. Syn. with SLING

LIFTING SUB
Raccord de levage
Equipment and Tools
A tool adjusted at the top end of the drill collar of a stand of drill pipe to facilitate its handling. Syn. with LIFTING PLUG

LIFTING SYSTEM
Système de relevage
Equipment and Tools
Device that place automatically in rest position tools, pieces, organs which have just acted (of a mole for example).

LIFTING TACKLE
Appareil de levage
Handling
Syn. with HOISTING MACHINE; LIFTING GEAR

LIFTING UP
Levage
Handling
All handling operations applying to the hoisting and presentation of structural elements (metal or different), in a bid to their putting in the field, of their assembly or putting into position. Syn. with HOISTING; RAISING

LIGHT ALLOY
Alliage léger
Metallurgy
An aluminum-based metal product combined with copper, silicon, magnesium or zinc.

LIGHT GROUT-INTRUDED CONCRETE
Béton colloïdal léger
Building Materials
A material essentially used in shotcrete whose proportion is the following: cement, siliceous fine sand, water, with the addition of a powerful colloid and a surface-active air-entraining agent.

LIGHT SOIL
Sol léger ; Terrain léger
Earthwork; Geology
1. A ground easy to excavate, with cohesionless elements (example: sandy grounds).
2. A sandy muddy soil or sand.

LIGHTENED MINERALOGICAL ANALYSIS
Analyse minéralogique allégée ou Analyse allégée
Test of Materials
An approach of quantitative investigation doing not playing a part of qualitative mineralogical determinations on the sample. The qualitative composition being postulated a priori.

LIGHTING
Elégissement
Construction
1. The action to lighten; the result of this action.
2. A recess performed in a piece or a work with intent to light up.

LIGHTWEIGHT CONCRETE
Béton léger
Building Materials
A material whose skeleton is composed of light aggregates. It is cellular, pozzolan, expanded clay, cavernous, etc. concrete. There are light concrete delivered ready for use that are composed of a Portland cement paste and of two kinds of expanded-ball polystyrene aggregates and S or cross-shaped elements, containing no admixture. They are put in place only by settling.

LIGHTWEIGHT CONCRETE BLOCK
Bloc de béton léger de pouzzolane ou de laitier expansé
Building Materials
A hollow concrete material. This building material is not hygroscopic, but frost-riven.

LIGNITE
Lignite
Geology
Syn. with BROWN COAL

LIME
Chaux
Building Materials
An artificial or natural product stemming from carbonated rocks with high content in silica and/or alumina that makes set to the air or in water.

LIME AND CEMENT CONCRETE
Béton de ciment et de chaux ; Béton de ciment éteint; Béton de ciment étendu
Building Materials
A material whose binder is an intimate mixing of suitably studied proportions of cement and lime.

LIME BATH
Enchaux
Building Materials
A bath of lime water.

LIME CONCRETE
Béton de chaux
Building Materials
Any standard concrete whose binder is hydraulic lime.

LIME MILK
Lait de chaux
Materials
Syn. with LIME WASH; MILK OF LIME

LIME WASH
Lait de chaux
Materials
Syn. with LIME MILK

LIME WATER
Eau de chaux ; Lait de chaux
Building Materials; Materials
1. The result of filtration of lime water.
2. A mixing of lime with a great quantity of water. Syn. with LIME WASH

LIME-AND-CEMENT MORTAR
Mortier bâtard
Building Materials
A product made up of sand, water, cement, and lime (the batching ratio between the two binders is variable according to the destination of the mortar). This material has the advantage to present a good adhesion on its support, a good resistance from atmospheric agents and minimizing risks of hairline cracking. It is sometimes used as undercoatings with roughcasting, renderings, and repointing. Syn. with COMPOSITION MORTAR

LIMEKILN
Chaufour
Equipment and Tools
A furnace into which the lime is baked.

LIMESTONE
Calcaire; Roche calcaire; Pierre à chaux
Geology; Building Materials
1. Sedimentary rocks containing at least 50% carbonate of calcium, mostly represented by calcite.
We can differentiate the chalky itself from dolomitic rocks that contain a notable quantity of double calcium and magnesium carbonate. Sometimes called graystone, limestones were popular for building because they combined relatively easy workability with good weather resistance.
There are several types of limestones:
- **seaweed limestone** *(le calcaire d'algues),* built limestone partly erected from some chalky seaweeds;
- **pyrite limestone** *(le calcaire ampéliteux),* a composite limestone containing a great proportion of (iron) pyrites;
- **clayey limestone** *(le calcaire argileux),* used to manufacture hydraulic limes and cements;
- **biogene limestone** *(le calcaire biogène),* a mud variety resulting of the accumulation on the marine bottom of pelagic organism *testums*;
- **bituminous limestone** *or* **stinkstone** *(le calcaire bitumineux),* a composite limestone containing hydrocarbons;
- **bryozoan limestone** *(le calcaire à bryozoaires),* built limestone that one finds notably in the Belgium;
- **cerith limestone** *(le calcaire à cérithes),* a rock of accumulation that is met notably in the Parisian Basin and that contains ceriths (of lengthened conical form from 1 to 3 cm long);
- **compact limestone** *(le calcaire compact),* a fine-grained rock frequent in the Parisian region;
- **built limestone** *(le calcaire construit),* a rock having been erected by sea animals (coral reefs and lamellibranchia shells);
- **coquina** *or* **oyster shell lime** *(le calcaire coquillier (dur ou tendre)),* rock containing shells. We can distinguish:
  - *hard limestone (le calcaire dur),* which results of an agglomeration of its grains and shells by cementing,
  - *soft limestone (le calcaire tendre),* which results of an agglomeration of its constituents by compression;
- **coral limestone** *(le calcaire corallien),* erected by sea animals (cnidaria);
- **detrital limestone** *(le calcaire détritique),* formed by chalky rock remains that can be cemented;
- **entrochals limestone** *(le calcaire à entroques),* a material of accumulation largely formed by crinoids (remains of bodies organized to the crystallized state). It possesses a homogeneous and compact structure (Euville's and Lerouville's limestones);
- **foraminiferal limestone** *(le calcaire à foraminifères),* material of accumulation such that nummulitic limestones, with miliol, etc.;
- **fresh water limestone** *(le calcaire grossier),* which contains or not fossil shells and that possesses a loose texture;
- **calacareous deposit in the lakes** ***or*** **lacustrine limestone** *(le calcaire lacustre ou laguno lacustre)* with thinnest grains that mostly is little fossiliferous (some shell remains of alive animals in freshwater) and that is formed on the bottom of lakes. This is a yellowish or grayish white rock owing to the presence of clay and is sometimes pierced of vermicular holes (Souppes or Château-Landon's stone);
- **lithographic limestone** *(le calcaire lithographique),* homogeneous rock with thinnest grains;
- **marly limestone** *(le calcaire marneux):* see **clayey limestone;**
- **metamorphic limestone** *(le calcaire métamorphique),* rock having undergone effects of the metamorphism and that is came about to the marble;
- **nummulitic limestone** *(le calcaire nummulitique),* formed by nummulites or that contains a great quantity of it;
- **oolitic limestone** *(le calcaire oolithique),* which contains small free or associated spheres, cemented by a natural binder. These small spheres look like fish eggs (diameter < 2 mm): these are ooliths which often contain remains of shells, quartz, etc.;
- **organogene limestone** *(le calcaire organogène)* formed by marine animals. Among organogenous limestones one distinguishes notably the chalk, tufa, freshwater limestone, coral limestone;

- **pisolitic limestone** *(le calcaire pisolithique)* similar to oolitic limestone except that spheres have a diameter higher than 2 mm. It is usually of sea origin;
- **deposit limestone** *(le calcaire de précipitation)* particularly strong (oolitic limestone, ribbon);
- **rudist limestone** *(le calcaire à rudistes),* built limestone having been erected by lamellibranchia grouped in family and not in colonies;
- **alm** *(le calcaire sapropélien),* a composite rock with black breakage and white patina, that contains badly recognizable organic carbon;
- **siliceous limestone** *(le calcaire siliceux),* rock containing silica.
- **vermiculated limestone** *(le calcaire vermiculé),* rock whose beds are spangled by drawings of confused worms.

Syn. with CALCIUM CARBONATE ROCK

2. A natural calcium carbonate extracted in quarry for manufacturing lime.

LIMESTONE MOLD SHELL
Vergelé
Geology
A soft and enough coarse chalky stone formed by aggregation of chalky sand appearing especially formed by milioliths. Its mass is often mixed with conchiferous mussels remains. It has some properties common with lambourde, but it is stronger and less marly than the latter.

LIMESTONE PLATEAU
Causse
Geology
A chalky ground generally showing karstic relief forms. Syn. with CAUSSE

LIMESTONE SLATE
Calcschiste
Geology
Syn. with CALCAREOUS SLATE

LIMIT DIMENSIONS
Dimensions limites
Metrology
The two admissible extreme dimensions of a piece between which has to be found the effective dimension, limit dimensions themselves being included.

LIMIT EQUILIBRIUM
Equilibre limite
Geotechnics
The balancing of a definite ground by the Coulomb-Terzaghi relationship.
Indeed, the breaking of a mass to internal friction will happen when the maximal tangential tension due to an external action will reach the value given by this relationship.
So that one will have $t < C' + (n-u)\tan\varphi'$. earth will be in limiting equilibrium;
t = shearing stress in a sand mass,
n = normal stress to the shearing plan,
C' = effective cohesion,
u = pore water pressure,
$\tan\varphi'$ = coefficient of effective internal friction.
The exceeding of the limit equilibrium does not occurs instantaneously throughout the surface called *breaking surface*; it occurs on a facet with partial slipping and local revision of the soil. The stress increasing, the slipping gradually earns until the total breaking of the mass. Syn. with ULTIMATE EQUILIBRIUM

LIMIT OF ADMISSIBLE LOAD
Limite de charge admissible; Taux de travail
Geotechnics
Concerning soil mechanics, limit determined by the static loading test. In this respect, the smallest of allowable loads is given like follows:
- that under which the residual sinking is 3 mm;
- 2/3 of that under which the residual sinking is 10 mm;
- half of that under which the residual sinking is 20 mm.

Syn. with LOAD LIMIT; MAXIMUM LOAD

LIMIT STATE
Etat-limite
Strength of Materials
State in which a condition required of a construction, or one of its elements, is strictly satisfied.
There are two types of limit state:
- **ultimate limit state** *(l'état limite ultime)* in order that is reached the maximal value of the supporting ability; there is then the risk of ruin of the work. Ultimate limit state concern:
  - static balance,
  - strength,
  - form stability of the construction or one of its elements;

■ **service limit states** *(les états-limites de service ou d'utilisation),* which are designed to ensure of a durable manner the good behavior of the work under mechanical stresses, natural hygrothermic or consequent for example of the most unfavorable uses that it will have great odds to have bearing during of its existence. This are limit states whose occurrence is the most probable, these also are, the most often, the most determining in the case of the prestressed concrete for the economy of projects.
For the concrete, different service limit states to consider are:
○ *limit state of distressing (état limite de décompression),* characterized by a null stress on the fibre the least compressed of the section or part of section to be justified,
○ *limit state of crack formation (état limite de formation de fissures),* characterized by a tension stress of the concrete equal at its characteristic tensile strength on the most taut fiber of the section or part of section to be justified,
○ *limit states of cracks opening (états limites d'ouverture de fissures),* characterized by concrete tensile stresses on the most taut fiber of the section or part of section to be justified.
Each of these limit states is accompanied by a limitation of the compressive stress of concrete.

LIMIT STATE DESIGN
Calcul à l'état limite
Strength of Materials
A design approach of the elements of a reinforced or prestressed concrete construction in which actions as well as the strengths of materials are evaluated by a static approach; stresses being to the most equal to the limit values taking account of real relationships stresses-deformations of materials.

LIMIT VELOCITY OF SEDIMENTATION
Vitesse limite de sédimentation
Geology and Materials
The constant speed reached by a solid particle in free fall in a fluid when the resistance forces due to the viscous friction balance the weight of the particle.

LIMIT ZONE
Zone de liaison
Welding
Border between the molten zone and the zone thermically concerned at the time of an operation of welding.

LIMNIMETER
Limnimètre
Equipment for Measure and Control
Syn. with STAFF GAUGE; WATER LEVEL GAUGE

LINE
Cordeau; Ligne; Trait
Equipment and Tools; Work; Masonry; Carpentry and Construction
1. A thread used to align courses of a masonry. Syn. with BUILDER'S LINE; STRING LINE
2. A string kept in tension to point out an alignment. Syn. with STRING
3. A line for marking a mark or a datum line. Syn. with DATUM LINE

LINE DRAWING
Epure
Drawing
1. A layout, by means of lines representing the axes of bars, of the ensemble arrangement of a beam, a framework, a frame, etc.
2. A static graph layout allowing studying in the lattice constructions the distribution of forces that solicit the bars as well as their deformations.
Syn. with DRAWING; LINEAR DIAGRAM; LINEAR PLOT; FULL-SCALE WORKING

LINE GAP
Jour de ligne
Masonry
The space located between the line and the wall under construction. The line gap is determined by line plane tables placed at the angles of the wall.

LINE OF FIRE
Ligne de tir
Explosives
The electrical circuit that connects the exploder with the detonator.

LINE OF LESSER RESISTANCE
Ligne de moindre résistance
Earthwork
The slice thickness of the rock broken away by the shooting of a row of mine blasts during the driving (of a tunnel) with explosive.

LINE OF PLAN
Ligne d'épure
Drawing
Line whereby is ordered the main axis of a piece on the drawing of a structure, or a volume on the drawing of any construction. **See Figure 21**

LINE OF TWIST
Ligne de torsion
Strength of Materials
The locus of twist centres of sections of a beam solicited in free or impeded left twist. In free plane or left twist of a straight beam, the line of twist is a rectilinear axis.

LINE PIN
Chevillette
Equipment and Tools
Syn. with CLIP NAIL.

LINE PLANE TABLES
Bridous
Masonry
Wooden small boards set at the corners of walls under construction that help to determine the line gap.

LINE SUPPORT
Broche
Masonry
A board equipped with split(s) in which the builders fix the ends of lines that are used to guide them to build masonry walls either in alignment, in thickness or both of them at once. Syn. with BATTER BOARD

LINEAGE
Lignage
Work
A marking carried out with a chalk line on pieces to be cut up.

LINEAR CHALK STONE
Bavette
Defects (Geology and Civil Engineering Structure)
A linear calcareous concretion that forms downward, from a vault.

LINEAR CUTTING
Erosion linéaire
Geomorphology and Hydrology
The ablation of the river bed by the action of streams and materials that they carry.

LINEAR DEFORMATION
Déformation linéaire du béton
Defects (Construction of R.C. and P.C.)
In prestressed concrete, deformation due to the shrinkage and the shortening under the influence of the prestressing.

LINEAR DENSITY OF A TEXTILE
Masse linéique d'un textile; Titre d'un textile
Materials
The mass per unit of length of a textile which is expressed in *tex* and that is equal to the mass in grams of 1000 mL of this thread textile product (the *tex* is a decimal and metric direct unit).

LINEAR DIAGRAM
Epure
Drawing
Syn. with DRAWING; LINE DRAWING; LINEAR PLOT; FULL-SCALE WORKING

LINEAR MASS
Masse linéique
Materials
The mass per unit of length of a material.

LINEAR MISALIGNMENT
Défaut d'alignement
Defects
1. A deformation or discontinuity in plane of the line formed by a parapet, a sidewalk curb, ends of upstream cutwater. These defects can be origin, stabilized, or also evolutionary.
2. A transverse gap or discontinuity in level at the right of two join metal pieces jointed by welding.

LINEAR PLOT
Ligne d'épure
Drawing
A line that shows a bar or a force in the plot of a construction studied by means of graphic statics.

LINEAR POROSITIES
Soufflures alignées
Defects (Welding)
Blowholes that impairs a weld bead and distributed according to a line parallel to the axis of the weld.

LINER
Cale
Materials
A piece of adjustment for anchorage device called *to wedging.*

LINER PLATE
Liner plate
Temporary Construction
A pressed plate used to sheet the roof of undergrounds under heading in soft grounds. It formed by a bent panel with a wavy surface, bored on its edges of holes intended for assembling between panels.

LINING
Boisage; Coffrage; Revêtement; Chemisage; Fourrure; Alignement
Temporary Construction; Building Materials; Construction; Topography
1. Syn. with CASING; TIMBERING
2. Syn. with COFFERING
3. Syn. with CLADDING; COATING; FACING; REVETMENT; SHEATHING
4. Syn. with JACKETING
5. Syn. with BUSHING; FISHPLATE; PACKING
6. Syn. with ALIGNMENT; ALIGNING

LINING
Blindage
Civil Engineering Structure
In hydraulic tunnels to strong inside pressure or covered at high speed, continuous metal covering ensuring the tightness and participating conceivably to the resistance of the work. (It do not confuse this definition of sheeting with sheeting of supporting.)

LINING
Chemise; Gaine; Cuvelage
Construction; Foundation; Masonry
1. An added coating or cladding of a work for strengthening or protecting a part of this work.
2. A thin steel tube belonging of the shaft of a bored pile. There are two types:
• **semirigid pipe liner** *(la chemise semi-rigide),* which is used to sheathe drilled piles and that is generally made of spiraled sheet metal of thickness equal or less to 1.5 mm, strengthened or not by undulations that double or triple their crushing strength, and exceptionally of soldered smooth sheet metal;
• **flexible pipe liner** *(la chemise souple),* which is used to sheathe bored piles and that is constituted by a plastic film of PVC, a synthetic lattice with very thin square meshes, a polyester felt, a rubberized membrane, or also of a more rigid plastic envelope. Syn. with SHEAT; SLEEVE
3. A self-supporting structure whose base is located in the water table and that is intended for forming a tight bulk resisting to hydrostatic uplifts.
4. Syn. with TANKING; WATERTIGHT CEMENT RENDERING

LINING
Mise en ligne
Construction
Arrangement given at two lines to be used as guide to set up a wall.

LINING BY PLATING
Revêtement par placage
Metallurgy
A coating obtained by applying on the parent metal a metal sheet of different nature; the adhesion between the two metals being mostly carried out by rolling of the whole after possible preparatory special surface processing. Syn. with COATING BY PLATING; SHEATHING BY PLATING

LINING WITH FASCINES
Fascinage
Foundation
A construction in fascines used in layer of foundation for cofferdams or dike construction in terrain susceptible to washing away. Faggots are also used in consolidation of unstable slopes. Syn. with HURDLE WORK; FASCINE WORK.

LINK
Etrier; Liaisonner
Building Materials; Work and Masonry
1. Syn. with BINDER BAR; BINDING; SECONDARY REINFORCEMENT; STIRRUP; TIE
2. Syn. with BOND; JOINT; POINT

LINK UP
Recueillir
Foundation
During an underpinning of foundation, to connect brought back parts to those existing and preserved.

LINKING BOND
Liaisonnement; Liaison
Works
Syn. with BINDING; CONNECTION; COUPLING; JOINING; LIAISON

LINOLEATE
Linoléate
Painting
A complex metal salt of lead, manganese, iron, etc., formed by acid components of the linseed oil (cooked) with corresponding metals. The bonding of the first coat of red lead on steel ensues from the forming of a complex of iron and lead linoleates. It is necessary several days so that the reaction is complete.

LINTEL
Linteau; Chapeau; Linceau
Carpentry; Construction
1. Syn. with HEAD BEAM
2. A lintel connecting two heads of posts.

LINTEL COURSE
Plate-bande
Construction
A vault whose bottom face is horizontal; the headband is formed by voussoirs (the name which takes archstones in this case). Syn. with STRAIGHT ARCH

LIP
Balêvre
Defects (Masonry)
Fragment or spall impairing a stone in the area around of a joint.

LIPARITE
Liparite
Geology
A microlithic eruptive rock of the granites family. Liparites are quartz-laden porphyries whose older are pink; the latest rocks are mostly gray, white, or black.

LIPPING
Alaise
Carpentry
Syn. with EKE PIECE ; EXTENSION

LIPS OF A CRACK
Lèvres d'une fissure
Construction
Faces in opposite of a crack.

LIQUID
Liquide
Materials
A grout injection category including solutions and emulsions.

LIQUID (WATERTIGHTNESS) COPING
Chape liquide
Tightness
A waterproof blanket appearing in liquid form and that mostly is a polymer-based product.

LIQUID LEVEL RECORDER
Limnigraphe
Equipment for Measure and Control
A tape recorder of water level put in place on a well, a drilling or in a river, and which can be equipped with a system of remote data transmission. We mainly can distinguish two types of liquid level recorders:
- **float gauges** *(les limnigraphes à flotteurs);*
- **liquid level recorders with pressure measurement** *(les limnigraphes à mesure de pression).* The simplest liquid level recorder and most usually used is that with float. It consists of a box containing an unfolding drum on which a pointer connected with the float plots level variations. Syn. with WATER LEVEL RECORDER

LIQUID MEMBRANE
Film
Building Materials
A film of product applied on a support.

LIQUID PRODUCTS (IN SOLUTION OR EMULSION)
Produits liquides (en solution ou en émulsion)
Materials
A range of tightness materials that are used:
- in **solution,** to impregnate concrete already hardened;

▪ in **emulsion,** for impregnation on wet concrete.

LIQUOR
Liqueur
Welding
An aqueous solution or light oil containing thin ferromagnetic particles in suspension for examining with magnetoscope weld beads by the wet process.

L-IRON
Equerre
Metallurgy
A sharp-angled corner iron. Syn. with SQUARE

LIST SAWING
Débit sur liste
Carpentry
A sawmill cut peculiarly to the frame carried out by the sawyer with square sawings and lengths according to the order of the client.

LITHIC
Lithique
Building Materials
Of a material that contains remains of rocks (lithic sandstone).

LITHOCLASIS
Lithoclase
Geology
A cracking or fracture affecting a rock.

LITHOGENESIS
Lithogenèse
Geology
The phenomenon of transformation of mud into solid rocks.

LITHOLOGICAL
Lithologique
Geology
Is said of what concerns the nature of rocks.

LITHOLOGICAL ANALYSIS
Etude lithologique
Mineralogy
Analysis of mineralogical identification of various elements constituting a stratum of ground.

LITHOLOGY
Lithologie
Geology
1. The science of rocks that is devoted to the only macroscopic study or to the study of only sedimentary rocks.
2. The study of the nature of rocks constituting a geological formation.

LITHOPONE
Lithopone
Painting
Basic white pigment for paint obtained by coprecipitation of sulfide of zinc (30%) and sulfide of barium (70%). The lithopone has a great opacifying capacity.

LIVE BOOM
Elinde
Earthwork
A suction pipe for dredging muddy or sandy deposits. Syn. with SUCTION BOOM

LIVE LENGTH OF A PILE
Longueur utile d'un pieu
Foundation
The distance measured from the location of trimming stop and the toe of the pile. Syn. with WORKING LENGTH OF A PILE

LIVE LOADS
Charges roulantes
Strength of Materials
Actions which have at once the character of a variable situation along of the beam that bears them and the character of an intensity equally apt of variations under the effect of different factors. Syn. with MOVING LOADS; ROLLING LOADS

LIVE ROCK
Pierre vive ; Vif
Building Materials; Nomenclature of Materials
1. A rock that hardens as much in a quarry as in place.
2. Healthy and hard part of a quarry stone.
Syn. with SOLID ROCK

LOAD
Charge
Geotechnics; Strength of Materials; Metallography
1. The pressure stress that can or not endure a ground in well-determined conditions.
There are several types of load:
- **maximum** *(la charge limite),* breaking load of the soil, sometimes wrongly called, *breaking load;*
- **nominal** *(la charge nominale),* maximum stress increased of a safety margin;
- **intrinsic** *(la charge intrinsèque),* ultimate stress increased of a safety margin;
- **breaking** *(la charge de rupture),* the smallest of maximum loads (modified by the effect of group) and ultimate;
- **allowable *or* safe (*or* admissible)** *(la charge admissible),* the smallest of nominal loads (modified by the effect of group) and intrinsic. The allowable load is sometimes called *useful load;*
- **working load** *(la charge de service),* the stress deduced of the loads carried to the ground;
- **creep load** *(la charge de fluage),* the characteristic parameter taken from the static loading test.

2. A pressure, an outside stress that acts onto a structure.
There are several types of load:
- **breaking load *or* ultimate strength** *(la charge de rupture),* which brings about by a tensile, compression, shear, bending, or twist load, that exceeds thinly the sill of strength of a structure and that falls out the dislocation, the total or partial fracture of this structure. It corresponds at the strength limit states;
- **working load** *(la charge de travail),* which brings about by a stress acting on a body; one also called *load* or *stress strain;*
- **elasticity maximum load** *(la charge limite d'élasticité),* which brings about by the maximum load that one can apply on a body without obtaining permanent deformations. When a force is applied on any body, there is always deformation. If, when one removes the stress force, the deformation disappears and the piece resumes its definitive shape, one tells that the produced deformation is elastic. If, on the contrary, the deformation remains, one tells that it is permanent. All the theory of strength of materials is based on their elasticity.

Syn. with STRESS
3. Concerning the steel tensile test, stress that they can or not undergo.
There are several types of load:
- **maximal load** *(la charge maximale),* the greatest load supported by the tensile bar during the test;
- **ultimate load** *(la charge ultime),* load which bears the tensile bar at the same instant of the breaking;
- **load to the apparent elasticity limit** *(la charge à la limite apparente d'élasticité),* load in order that, for the first time, the lengthening of the tensile bar continues to increase without that the load increases, or while this one decreases;
- **unitary load** *(la charge unitaire),* which is at every turn the test the quotient of the load by the initial section of the tensile bar;
- **unit load to the conventional elasticity limit** *(la charge unitaire à la limite conventionnelle d'élasticité),* the unit load to which corresponds a nonproportional lengthening equal to a prescribed percentage of the initial length between marks.

LOAD
Charger
Geotechnics
1. Speaking about the ground surrounding a space in an exploitation, a construction site, a gallery, a tunnel, to show a great tendency to inflate and to push to reduce the space.
2. Speaking about the grounds located above the roof of a gallery, a tunnel, etc., to show a tendency to subside and weigh down heavily onto sidewalls (or the supporting at the time of work of heading).

LOAD BEARING
Porteur
Construction
Syn. with BEARER; CARRIER

LOAD CAPACITY OF A PILE
Force portante d'un pieu
Foundation
The load that can bear without shortcoming a pile when it is embedded into the ground, on the basis of safety margins.

LOAD CHAIN
Chaîne portante
Handling
In a lifting appliance, chain that supports the burden to be raised at one of its ends.

LOAD LIMIT
Limite de charge admissible; Taux de travail
Geotechnics
Syn. with LIMIT OF ADMISSIBLE LOAD; MAXIMUM LOAD

LOAD-BEARING CONCRETE
Béton porteur
Building Materials
A material devoted to the manufacture of load-bearing elements of a construction and fulfilling to some imposed characteristics such as strength.

LOAD-BEARING UNIT
Elément porteur
Construction
Part of a construction or construction essentially solicited by vertical loads and which transmits to the bearings the loads and stresses resulting from the different supported loads. All bearing units constitutes the frame.
In this category, two kinds of bearing units can be distinguished:

- **principal bearing units *or* main load-bearing members** *(les éléments porteurs principaux)* which are main beams, arches, and cables;
- **secondary bearing units *or* secondary load-bearing members** *(les éléments porteurs secondaires)* such as distance pieces, longitudinal girders, etc., which distribute loads between the main bearing units.

LOAD-BEARING UNITS AND INCORPORATED DECK
Eléments porteurs et tablier incorporé
Construction
The simplest constructive form which is made up of a simple, more or less complex, slab (flagstone, R.C. slab; etc.).

LOAD-BEARING UNITS ABOVE DECK
Eléments porteurs placés au-dessus du tablier
Construction
Constructive form in which the bearing units can be constituted by beams, arches, or cables located above the deck.

LOAD-BEARING UNITS UNDER DECK
Eléments porteurs placés sous le tablier
Construction
A constructive form in which the bearing units are constituted by beams or arches supporting a deck.

LOAD-BEARING WALL
Mur porteur
Construction
A vertical load-bearing structure to medium folia plan, sometimes cylindrical. Syn. with BEARING WALL

LOADER
Chargeur; Chargeuse; Loader
Equipment and Tools
1. A hydraulic or mechanical plant whose mission is to load or supply materials.
2. A construction vehicle whose role is to resume materials from their stocking location and to load them on a vehicle. Portable conveyors, loaders and tractor-loaders are loading machines. Syn. with LOADING MACHINE
3. Automatic vending machine of batches of a well-determined product.
4. An earthmover provided by a powerful plowshare similar to that of scrapers and by a lifting belt of 1.20 m width that allows the continuous loading of heavy trucks.

LOADING
Chargement
Handling
1. Operation that consists in putting materials in a wheelbarrow, a skip, etc.
2. All materials loaded in a skip, a wheelbarrow, etc.

LOADING CAPACITY
Portance
Civil Engineering
The ability of a roadway to endure loads of traffic.

LOADING MACHINE
Chargeur
Equipment and Tools
Syn. with LOADER

LOADING OF A MASONRY
Mise en charge d'une maçonnerie
Hydrology
The pressurizing of water that circulates inside the ground around a work (abutment, revetment, extrados, etc.) and that exerts hydrostatic pressure on masonries.

LOADING SHOVEL
Chargeuse-pelleteuse
Equipment and Tools
Syn. with BACKHOE LOADER; BUCKET LOADER

LOADS CARRIED TO THE GROUND
Descente de charges
Strength of Materials
All stresses which are exerted to the bearing points of a structure.

LOAM
Glaise; Wagage
Geology; Hydrology
1. Clayey earth, fatty to the touch, very plastic and waterproof. Syn. with CLAY; POT CLAY; TILE CLAY
2. Silt of river.

LOAMY
Glaiseux
Geology
Of a ground composed in majority of loam. Syn. with CLAYEY

LOCAL DEPARTMENT
Service vicinal
Civil Engineering
The Highways Department in charge of the maintenance and establishment of departmental and communal paths.

LOCAL DEPTH
Epaisseur locale
Earthwork
Thickness of a metal coating covering a piece measured on a landmark surface of 1 dm^2 in a given place.

LOCAL DISAPPEARANCE
Disparition locale
Defects (Masonry)
A localized defect concerning the renderings on a more or less large surface and which is characterized by gaps.

LOCALIZED (CLUSTERED) POROSITY
Nid de soufflures
Defects (Welding)
A defect characterized by a grouping of blowholes inside a weld bead.

LOCATION PLAN
Plan de situation
Topography
The representation on a small scale, arranged with existing documents and whose goal is to point out the site of the concerned construction in relation to easily identifiable topographic details.

LOCK
Ecluse; Esparcier; Sas
Hydraulic Work; Sanitary Engineering and Drainage; Construction
1. A construction with gates at each end designed to admit and release the water necessary to raise or lower a boat in a canal. Syn. with SLUICE
2. A small lock of wood or sheet metal for closing an irrigation channel.
3. In a canal, gap which separates the two gates (entry and exit) of the lock.

LOCK GATE
Porte d'èbe
Construction
The gate of a lock of a closed basin whose beak is turned toward the basin and whose opening can be done under the only thrust of the tide.

LOCK HEAD
Tête d'écluse
Construction
The part of a lock located upstream and downstream side of the lock chamber.

LOCK PLATE
Platine
Construction
The end plate of a section of metal pole of which the jointing with that of the consecutive section ensures the mechanical continuity of the unit constituting the metal pole. **See Figures 22 and 23**

LOCK WALL
Bajoyer d'écluse; Mur bajoyer
Construction
1. The pier supporting the walls of a lock. Syn. with CHAMBER WALL; SIDE WALL OF LOCK
2. A side wall supporting lock gates.

LOCKNUT
Contre-écrou; Frein d'écrou
Materials; Equipment and Tools
1. A nut blocked by tightening against another nut for preventing the unscrewing of this last. Syn. with BACK NUT; CHECK NUT; COUNTER NUT; SAFETY-NUT
2. Syn. with LOCKWASHER; NUT RETAINER

LOCKNUT
Frein d'écrou
Equipment and Tools
Syn. with LOCKWASHER; NUT RETAINER

LOCKWASHER
Frein d'écrou
Equipment and Tools
Syn. with LOCK NUT; NUT RETAINER

LODE
Filiére
Building Materials
In the ashlar deposits, fissure which separates vertically or obliquely the continuity of beds; this break-up line, also called *break,* results from movements of Earth's crust.

LODESTONE
Magnétite
Building Materials
Syn. with MAGNETITE

LOESS
Loess
Geology
An exclusively fine and homogeneous wind deposit having a muddy texture but poor in sand. This deposit having taken form during dry periods (presumably interglacial), in consequence of a driving by winds. Usually, loesses are clearly yellow, sweet to the touch, soft and friable.

LOG
Log; Coupe de sondage; Grume
Geotechnics; Building Materials
1. Syn. with DRILL LOG
2. Every felled timber, cleared of its branches and covered with its bark.

LOGGING
Diagraphie; Logging
Geotechnics
1. Syn. with BOREHOLE LOGGING
2. The carrying out of a drill log.

LONG BORER
Esseret
Equipment and Tools
A long auger used by the carpenter. Syn. with SLOT BORER; SLOT DRILLER

LONG PRODUCT
Produit long
Metallurgy
A rolled metallurgical product of extended range and in which we can distinguish: sections known as universal beams and analogs, standard sections (or bars), small sections I, U, rounds, square irons, reinforcing bars, flat irons, corner irons, Z-irons, T-bars, half-rounds, special sections, machine wire, railway track equipment, sheet piles, products for tubes.

LONGHORN BEETLE
Capricorne
Carpentry
Syn. with CAPRICORN BEETLE

LONGITUDINAL BEAM
Longrine
Foundation
A reinforced concrete or metal beam forming distance piece between heads of piles, footings or foundation blocks. Syn, with RUNNING LENGTHWAYS BEAM

LONGITUDINAL CRACK
Fissure longitudinale
Defects (Welding)
A discontinuity that can be observed in a weld bead and whose primary direction is close to that of the axis of the weld bead.

LONGITUDINAL CULVERT
Aqueduc longitudinal
Civil Engineering Structure
A work (arched or not) which extends parallel to the side walls of a lock.

LONGITUDINAL DRAINAGE
Assainissement longitudinal
Sanitary Engineering and Drainage
A work which allows to collect and drain off streaming waters from platforms or slopes, water seepage on the bottom level of foundations structures, or underground waters, and which is consisted of:
- in *filling,* by ditches (covered or not), prefabricated ditches and benching concrete. They are mostly put up at the foot of a slope;
- in *excavation,* by ditches (covered or not), prefabricated ditches put up preferably to open roof or then buried and which become collectors;
- of *deep drainage devices* (drains, collector drains, collectors).

LONGITUDINAL GRAIN SAWING
Sciage à bois de fil
Work
The cutting up of wood with the grains.

LONGITUDINAL JOINT OF DECK
Joint longitudinal de tablier
Construction
A longitudinal device ensuring the continuity of the pavement (roadway) between two decks joined while enabling their own movements.

LONGITUDINAL MOVEMENT
Déplacement longitudinal
Handling
The putting into position of a deck by longitudinal transfer also called *launching.*

LONGITUDINAL PROFILE
Profil en long; Coupe longitudinale
Drawing, Road; Railway; Geomorphology; Hydrology; Civil Engineering Structure; Topography
Syn. with LONGITUDINAL SECTION

LONGITUDINAL REINFORCEMENT OF COMPRESSION
Armature longitudinale de compression
Construction of R.C. and P.C.
Reinforcements placed in the compressed parts.

LONGITUDINAL RIB
Nervure d'une dalle orthotrope
Construction
A longitudinal element regularly laid out under the sheet metal of bridge covering to stiffen it and to transmit loads to the transverse girders.
Syn. with RIB OF ORTHOTROPIC SLAB

LONGITUDINAL SECTION
Coupe longitudinale; Profil en long
Drawing; Railway; *Geomorphology and Hydrology; Road; Topography; Civil Engineering Structure*
1. The representation of a work, any piece, shown along its longitudinal axis.
2. The profile of a symmetrical piece in a plan containing the axis of symmetry.
3. The characteristic of a line resulting from declivities met all along its course.
4. A curve that represents on the vertical plan the layout of a watercourse between the spring and the mouth and gives the value of the medium slope according to the sections of the course. The profile can show shelfs due to harder rocks.
5. A profile made up of elements of straight lines connected by curves. The incline of the right is called *gradient* when it rises in the direction of the mileage, *slope* on the opposite direction. A horizontal road is known as *on the level.*
6. A longitudinal section arranged:
- on an axis beforehand materialized and geometrically known,
- on an axis of existing line, axis defined by simple visual assessment, or,
- on an axis marked out on a plan arranged before, planimetric and altimetric elements being extracted graphically from this document.

In fact, it is a longitudinal section with dimensions of the ground following the axis of an area within right of way (road, railway track, etc.). Graphics is mostly arranged on different scales for lengths and altitudes. **See Figure 24**
7. The section of the work according to the vertical plan passing by its axis.
Syn. with LONGITUDINAL PROFILE.

LONGITUDINAL SECTION ANALYZER
Analyseur de profil en long (A.P.L.)
Equipment for Measure and Control
Plan of control of the longitudinal profile of a roadway, which consists of a tractor trailer drawn by a motor car at constant speed.
A rocking beam with a measuring wheel is articulated on a ballasted frame. The measuring wheel is always kept in a contact with the pavement by a spring suspension and ballast. The frame is connected to the towing vehicle by a Cardan catch. Vertical movements of the wheel result in an angular motion of the beam measured compared to the horizontal beam of an inertial pendulum. This measurement is ensured by a sensor detecting the angular motion, connected to the pendulum and giving an electrical value which is recorded after amplification of the signal. Undulations of the wearing surface of up to about 100 mm are then recorded.

LONGITUDINAL SHEARING
Cisaillement longitudinal *ou* Effort rasant
Strength of Materials
A strain acting parallel to the axis of a bent piece and having tendency to make slip the longitudinal fibres one on the other.

LONGITUDINAL SLEEPER
Longrine
Construction
A timber piece equipping some metal railway bridges onto which rests the rail. The longitudinal sleeper is placed longitudinally on a beam or on a central girder.

LONGITUDINAL SLIP
Glissement longitudinal; Effort rasant
Strength of Materials
A phenomenon of shearing in the longitudinal direction, concurrent to any bending, except the pure bending, so that there is longitudinal slip only if there is shearing stress *T*. It ensues from the law of the subsequent shear strength of balance occurring on adjacent faces of an elementary cube considered in the bent section. If the material is isotropic and homogeneous, one deduces from it that the strength of shearing stress τ in the web is not uniform and present its maximum directly below of the axis of inertia. If construction is composite and constituted by a concrete slab firmly attached by connectors to a hot-rolled beam or welded reconstituted joist, the longitudinal slip creates tremendous shear stresses and bending in the connectors, maximal stresses when *T* is maximal and null when T= *0*.

LONGITUDINAL STIFFENING GIRDER
Poutre de contreventement
Construction
In a steel deck bridge, beam whose essential function is to stand on the way of the torque of lateral bending due to the strains exerted by the wind on the whole of the bridge and, possibly, on the overloads which it bears, it transmits these strains to bearings.

LONGITUDINAL TENSILE BAR
Armature longitudinale de traction
Construction of R. C. and P. C.
Reinforcements placed in the tightened parts.

LOOSE BLOCK
Bloc lâche
Geomorphology
A rock mass pulled off from the country rock by open fissures and ready to fall down.

LOOSE FORMATION
Formation meuble
Geology
A formation of which elements are not cemented between them (gravels, sands, silts, etc.).

LOOSE GROUND
Fardeau
Earthwork
At the time of underground earthworks, earth or rocks is in danger to crumble or fall in.

LOOSE SOIL
Sol meuble
Earthwork
Ground which one can excavate easily, namely to low cohesion.

LOOSE TONGUE
Pigeon
Carpentry
A corner assembly with independent tenon.

LOOSENESS
Jeu
Metal Construction
In riveted or bolted metal works, damage characterized by an insufficiency of tightening between pieces in an assembly (play of rivet, loosened bolt, rivet or bolt broken or missing), hence it can result a movement of some of them. Syn. with PLAY

LOOSENING
Déchaussement; Repiquage; Dégravoiement
Foundation; Masonry; Defects
1. Uncovered foundations of a construction, consecutive to the creation of work or an accidental cause. Syn. with BARING
2. The movement of a masonry element resulting from its breaking of seal.
3. The hacking of rendering on an old wall mostly carried out before the application of a new rendering. Syn. with SCABBING
4. The laying bare of foundations of a work by removal of materials (gravel) due to the action of running water.

LOOSENING (OF RIVETS OR BOLTS)
Desserrage (de boulons ou de rivets)
Defects (Metal Construction)
In a metal work, damage due to an insufficiency of tightening between the pieces of an assembly, hence it can result a movement of some of they being able to go until the breaking of the assembly. Loosening can also be had to the vibrations brought about by traffic.

LOP OFF
Egobler
Building Materials
To remove the destroyed branches of a tree.

LOPSIDED
En aile de moulin
Defects (Building Materials)
Said of something imperfectly dressed. Syn. with WARPED

LORRY
Camion; Binard
Equipment and Tools; Handling
1. Syn. with ROADTRUCK; TRUCK
2. A wagon equipped by two or four lower wheels used to transport great burdens. Syn. with (LOW) DRAY

***LOS ANGELES* TEST**
Essai *Los Angeles*
Test of Materials
A test for measuring the ability of materials intended for building pavement (roadways) and which consists, such as the Deval test, in a self-destruction test (breaking up), according to some specification very precise. One deduces from this test the proportional coefficient with the loss of weight, in dusts form, at the end of the test. The quality of a material and its ability for the construction of pavements (roadways) are as much the best than this coefficient is lower; it is 12 to 20 for granites, 20 to 40 for limestones, etc.

LOSS OF CIRCULATION
Perte de circulation
Foundation
During the carrying out of a drilling, loss of drilling fluid due to spaces, cracks or to the great permeability of the met ground.

LOSS OF GROUND
Décompresion
Foundation and Earthwork
Syn. with DESTRESSING

LOSS OF RIVER
Perte de rivière
Hydrology and Geomorphology
The reduction or disappearance of the subaerial flow of a river by seepage in porous rocks, mostly limestone. Syn. with RIVER DISCHARGE

LOSS OF TENSION OF A STEEL PRESTRESSING CABLE
Perte de tension d'un câble de préontrainte
Construction of B.P.
The lessening of the original tension which was exerted on a steel prestressing cable at the time of its tensioning and which is due at various phenomena of friction inside the cable duct. The force which is applied at the end of a cable at the time of its tensioning does not transmit completely along the cable; a part is absorbed by frictions. In addition, the cable, after blocking of its anchorage, undergoes in the time losses of

tension brought about by various phenomena that are *differed losses of tension.* The primary losses of tension observed are:

- **by friction** *(les pertes de tension par frottement)*; when one exerts a force *F* at the ends of a cable, by means of jacks, the cable lengthens and this lengthening is braked by frictions steel-cable duct:
  - friction due to the curvature of the cable duct by pulley effect,
  - friction due to the undulations of the sleeve inherent to the defects of adjustment (unavoidable minimum).

  It results an important loss of tension along the cable from the tightened end. This loss of tension occurs at the moment even the tensioning;
- **by reentry of wires or cables, during the overtightening of the structure** *(les pertes de tension par rentrée des fils ou câbles, lors du blocage de l'ouvrage),* phenomenon that occurs with certain systems of prestressing during the sinking of the male cone;
- **due at a nonsimultaneity of cable tensioning** *(les pertes de tension pour cause de non simultaneité de mise en tension des câbles),* when a beam comprises several cables, the tensioning of each one of them brings about an elastic shortening of the concrete. First tightened cables undergo this shortening and the consecutive loss of tension is in the order of some kg/mm^2;
- **by shrinkage and creep of the concrete** *(les pertes de tension par retrait et fluage du béton),* which lead to a concrete contraction; this phenomenon brings about a loss of tension in cables;
- **by steel relaxation** *(les pertes de tension par relaxation de l'acier),* internal phenomenon of adaptation of the structure of the metal causing a drop in stresses in time, without there being the modification of dimensions. Consecutive losses of tension vary according with the nature of steel and importance of the initial tension.

LOST STONE
Pierre perdue
Masonry
A stone which, in the thickness of a wall, is drowned into a mortar bath and which does not shows no face in facing. **See Figure 25**

LOUVER
Ventelle
Construction
Open spaces in a louver board.

LOUVER BOARD
Ventellerie
Construction
A wooden or masonry work built across a waterway to collect and store water. It has one or more openings used as sluices.

LOW SPINDLE
Esponton
Construction
The lower part of bars of a steel railing, ended in spindle form.

LOW STEEL
Acier doux
Metallurgy
Syn. with MILD STEEL; SOFT STEEL

LOW WALL
Murette
Earthwork
In the Franco-Belgian method of heading, start of construction of the masonry vault between the last raking shores of working and from the level of the springings about 0.50 m height.

LOW WATER
Etiage
Hydrology
1. The lowest medium level of a watercourse that reflects the zero of the scale of waters. The low water is the outcome of a slow drying up of the feeding of watercourses.
2. The lowering of a watercourse at its lowest level.
3. Low water in a river resulting from momentary barrage removal.
Syn. with LOWEST WATER LEVEL

LOW-CYCLE FATIGUE
Fatigue oligocyclique
Metallography
The fatigue of a metal test bar subjected to alternate forces strong enough that the breaking happens at the end of a small number of cycles.

LOWER THE CREST
Ecrêter
Civil Engineering
To lower and to level shoulders of a metaled road to dress them.

LOWER THE TOP OF WALL
Retondre
Work
To eliminate at the top of a wall a ruined part.

LOWER ULTIMATE EQUILIBRIUM
Equilibre limite inférieur
Geotechnics
The state of a soil at the limit of the balance when the thrust exerted at the base of the mass is equal to the inverse thrust opposing to the breaking of the foot (just at the moment that precedes the breaking).
A screen leaning to an earth mass is subjected on the pan of this one to actions, that one can replace by their resultant *P*. The screen will remain in balance so that it will be susceptible to exert at least a reaction *P'* equal and reverse *P*. If the value of *P* is such that the screen displaces by slipping on its base or by swinging around its lower edge; the balance of the mass will be broken and a corner of earth will detach, determine a breaking surface passing by the foot of the screen. Along of this breaking surface, the ground remaining on the spot will exert strains of friction directed toward the free surface and tending to stand in the way of the going down of the corner of earth. This instant that precedes the breaking, the corner of earth is in balance under the influence of three actions:
- its peculiar weight *Q*;
- the reaction *P* of the screen;
- the resultant *R* of reactions exerted on the corner of earth by the ground.

This state is told *lower ultimate equilibrium.* The action exerted by earth on the screen is called *active earth pressure* or *pressure.*

LOWERING
Ensellement
Earthwork
The lowering of the ground situated between two heights.

LOWERING ON THE BRIDGE BEARING
Descente sur appuis
Handling
An operation that consists in bringing a deck at its definitive level and that comes true by landings, with jacks. Each landing reflects the height of elementary profiles constituting temporary bearings. This maneuver mostly made continuation to the launching or sliding along operations, the deck being above its definitive site and in a position heightened in comparison with its final level.

LOWERING WEDGE
Coin de décintrement; Détente
Equipment and Tools; *Temporary Construction*
1. A mostly skew-shaped timber piece used to build vaults of an opening lower than 15 m. The system consists in doing rest centerings on their supports by the agency of two or several superposed wooden wedges arranged between two sole pieces. Striking on one or the other of ends of wedges, one can obtain a raising or a lowering of the centering.
2. Syn. with PAGE; STRIKING WEDGE

LOWEST WATER LEVEL
Etiage
Hydrology
Syn. with LOW WATER

LOW-HEAT CEMENT
Ciment à faible chaleur d'hydratation
Hydraulic Binders
A hydraulic binder that only releases a small quantity of calories during its set and hardening reaction. It is notably the case of the C.L.K..

LOW-SLUMP CONCRETE
Béton ferme
Building Materials
A material that shows a slump from 0 to 4 cm (±1cm) during the slump cone test.

L-SECTION
L
Metallurgy
An L-shaped metal section obtained by rolling.

LUG
Oreille
Various
An overhanging used as support, bearing or means of prehension.

***LUGEOGRAPH*™ APPARATUS**
Lugeograph
Geotechnics
An instrument that measures and records continuously, without operator action, three characteristic magnitudes of the ground permeability, according to a procedure in line with the practiceology defined by Lugeon:
- the pressure of the injected water measured at the level of the test inside the drilling;
- the instantaneous flow of the injected water, measured on the pump circuit repression;
- the volume absorbed by the ground during the duration of the landing.

These three measurements are recorded concurently on a plot unfolding according to time.

***LUGEON* NUMBER**
Lugeon
Geotechnics
The measuring unit of soil permeability defined by absorption in liters per minute and linear meter of trial boring under a pressure of 10 bars.

***LUGEON* TEST**
Essai *Lugeon*
Geotechnics
A test for determining the cracking degree of rocks. For that, a clear water is injected into a drilling and by isolated slices from this drilling, of a length mostly included between 1 and 3 m.
The test is carried out into two phases:
- *first phase:* the pressurizing is carried out by landings up to a maximum pressure of 10 bars; the maximum pressure kept for 10 mn. Afterward, one measures the volume injected. One mostly admits that the value unit corresponds to a coefficient of permeability K ranging between 1×10^{-7} and 2×10^{-7} m/s for drillings of a usual diameter (50 to 100 mm). One sometimes observe, during successive landings, that the increase in flow becomes lower than that of the pressure. It is then the sign which the injection is made in the relatively broad cracks and which the flow passed from the laminar rate of flow to the turbulent rate of flow;
- *second phase*: one applies decreasing pressures in respecting same landings. If the flow, to 5 bars, became higher, one explains it by an extension of cracks obtained by clearing (washing of a clayey garnishing) or by uprising. Before any interpretation, it is useful to compare the natural pressure of the ground with the pressure that was exerted by water. **See Figure 26**

LUMPY BINDER
Liant motté
Defects (Hydraulic Binders)
Following to an excessive airing, formation of lumps in a powdered product. These lumps can not crumble under the finger pressure.

LUNETTE
Lunette
Construction
In a cradle vault, lateral penetration of another cradle, straight or skew, possibly crawling or conical, similarly springing, but of less elevation.

LUTE
Lut; Luter
Materials
1. A mastic used to fill joints. Syn. with LUTING; PUTTY
2. To fill a joint with mastic.

LUTETIAN
Lutétien
Geology
A formation of the palaeogenous system that is represented by the limestone in the vicinity of Paris.

LUTING
Lut
Materials
Syn. with LUTE; PUTTY

LUTITE
Lutite
Geology
A rock of an extremely variable composition formed by particles whose dimension is lower than 50 µm. The original sediment is sludge or

mud. When the rock is limestone, one speaks about calcilutite.

LYCTUS BEETLE
Lyctus
Defects (Building Materials)
A russet-red-brown xylophagous insect who does not attack coniferous trees but the sapwood of certain leafy species. Larvae form galleries parallel to the grains of the wood and accumulate behind them a compact wormhole of impalpable consistency. Adult insects emerge out of the wood by circular openings from 1 to 2 mm diameter. Syn. with POWDERPOST BEETLE

LYDIAN STONE
Lydienne
Geology
A siliceous sedimentary rock of biochemical origin.

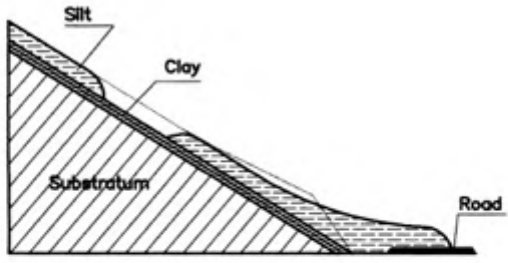
LYMEXILE BEETLE
Lymexile
Defects (Building Materials)
A flabby xylophagous insect and of lengthened form who attacks the wood by piercing holes perpendicular to the grains. It does not endure freshwater.

LYSIMETER
Lysimètre
Equipment for measure and Control
An instrument for measuring quantities of rainwater filtering through the ground.

Figures of the letter

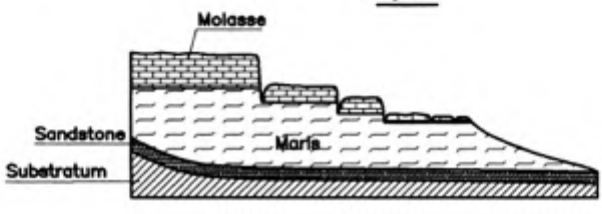


Fig. 1



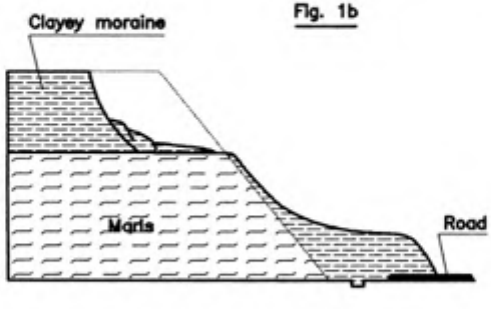
Planar landslide

Fig. 1a



Planar landslide by blow-up

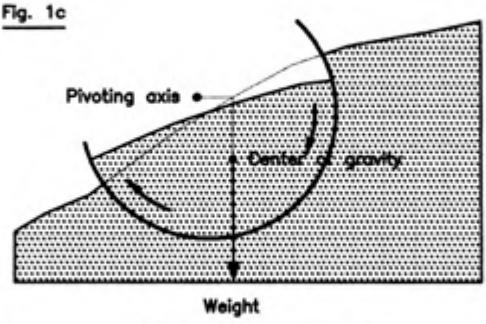
Fig. 1b



Rotational landslide

LANDSLIDE

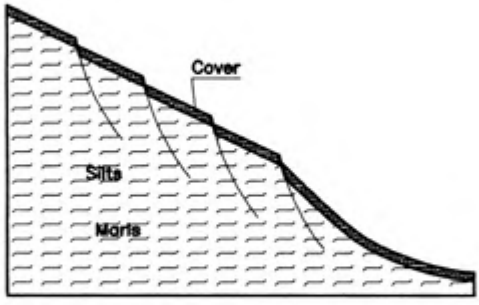
Fig. 1c



Landslide (mechanical plan)

LANDSLIDE

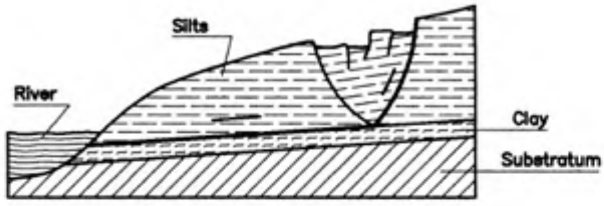
Fig. 1d



Stair landslide

LANDSLIDE (Other morphologies)

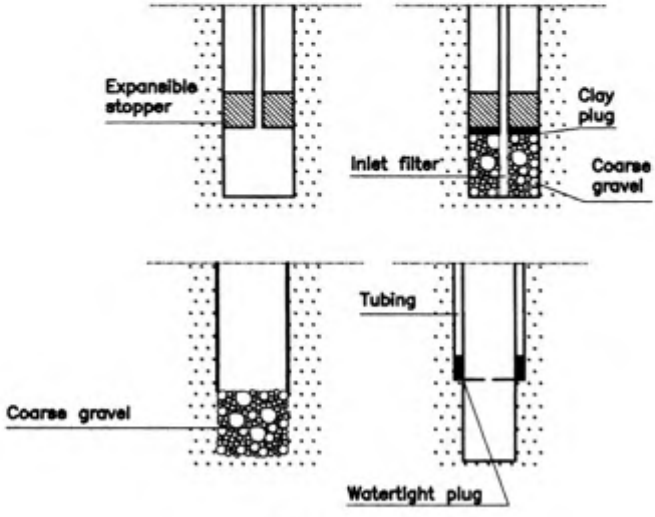
Fig. 1e



Sliding by stop suppression and collapse

LANDSLIDE (Other morphologies)

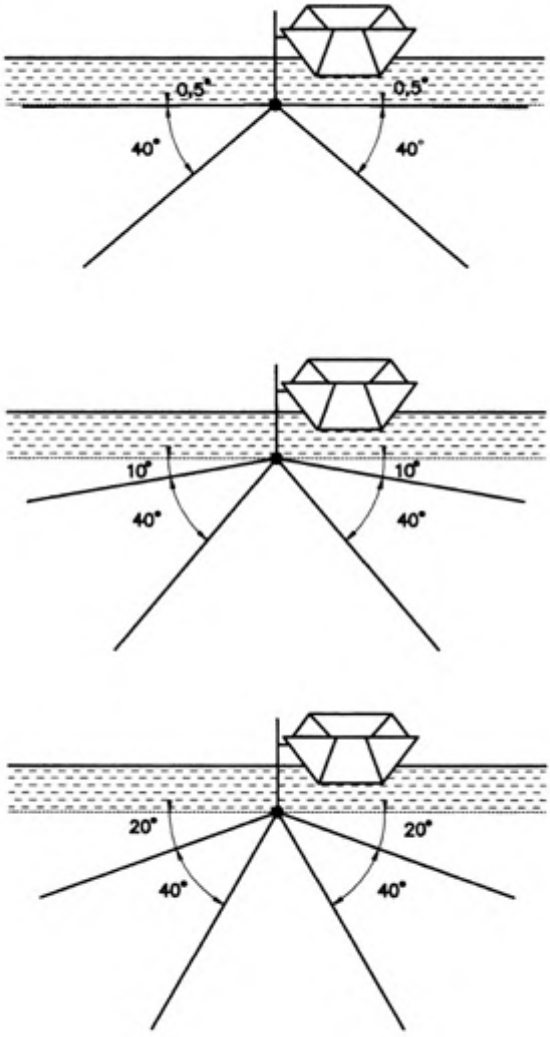
Fig. 2



Some types of lanterns

LANTERN

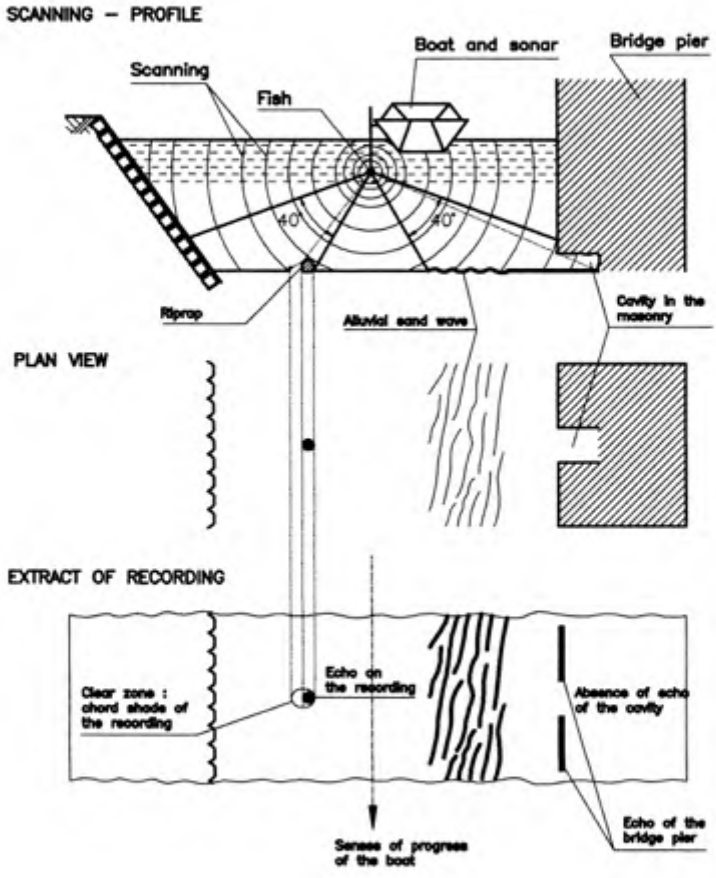
Fig. 3



The 3 positions of the lobe of scanning of the sonar

LATERAL SONAR

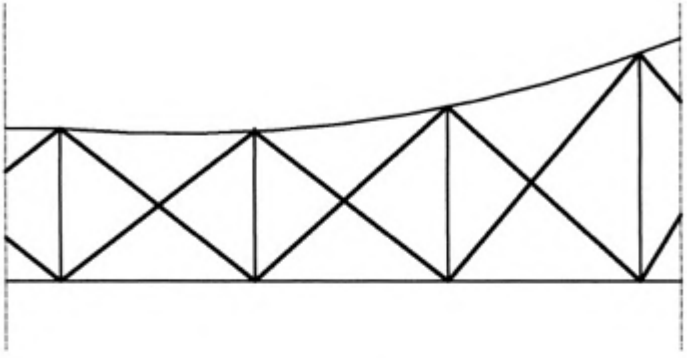
Fig. 3a



Principle of the interpretation of the recording

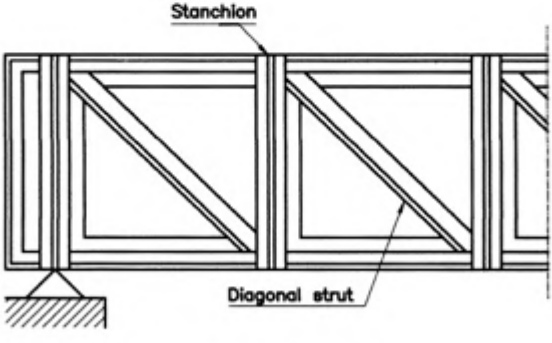
LATERAL SONAR

Fig. 4



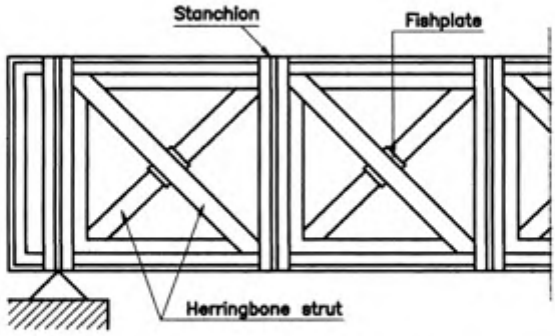
LATTICE

Fig. 5



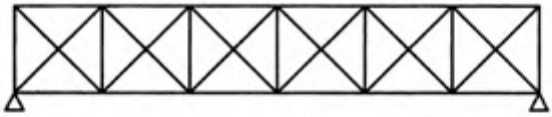
LATTICE GIRDER

Fig. 5a



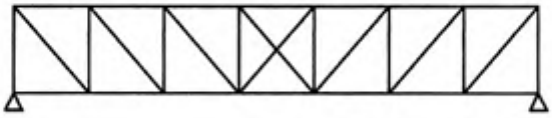
Lattice girder (details)

Fig. 5b



X–lattice girder with parallel flanges; the Howe girder

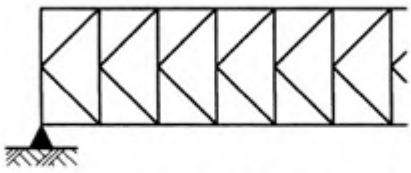
Fig. 5c



N–lattice girder with parallel flanges; the Pratt or Monié girder

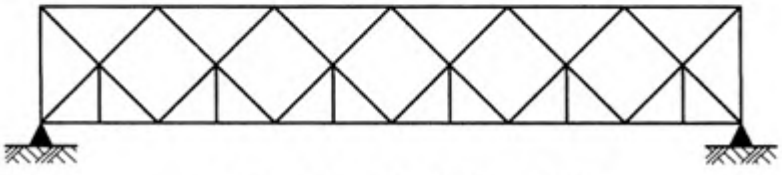
LATTICE GIRDER

Fig. 5d



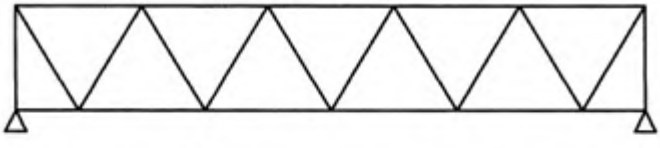
K–lattice girder with parallel flanges

Fig. 5e



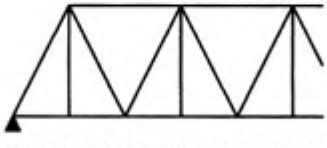
Rhomb lattice girder with parallel flanges

Fig. 5f



V–lattice girder with parallel flanges: Neuville or Warren type

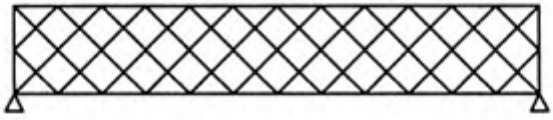
Fig. 5g



V–lattice girder with parallel flanges
of the Warren type with stanchions

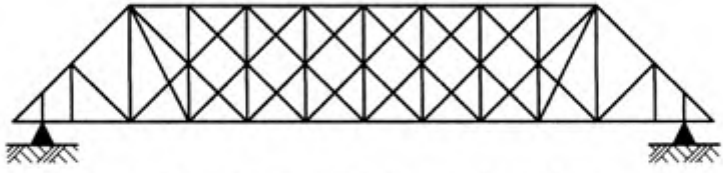
LATTICE GIRDER

Fig. 5h



Multiple lattice girder with parallel flanges

Fig. 5i



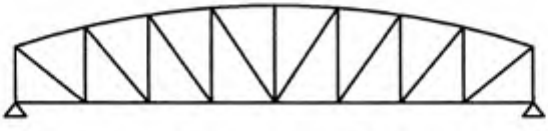
Trapezoidal girder with multiple lattice and parallel flanges

Fig. 5j



Turned parabolic girder with nonparallel flanges

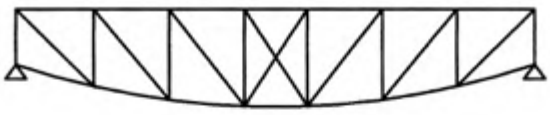
Fig. 5k



N–girder with nonparallel flanges: Daydé girder

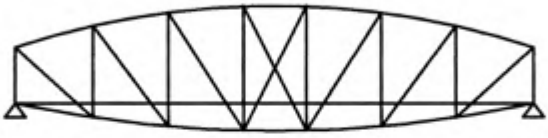
LATTICE GIRDER

Fig. 5l



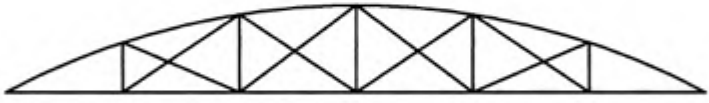
Lattice girder with nonparallel flanges

Fig. 5n



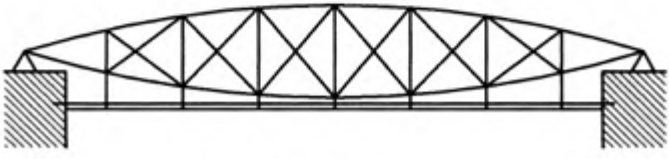
Girder with arched flanges

Fig. 5n



Parabolic lattice girder

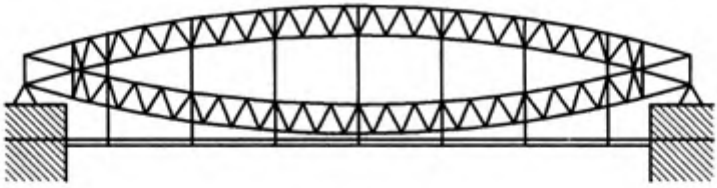
Fig. 5o



PAULI girder

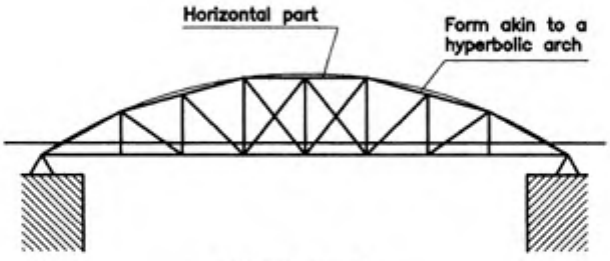
LATTICE GIRDER

Fig. 5p



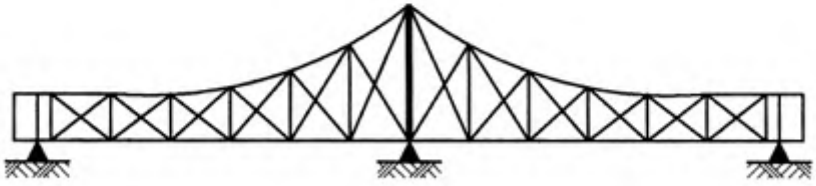
LOHSE girder

Fig. 5q



SCHWEDLER girder

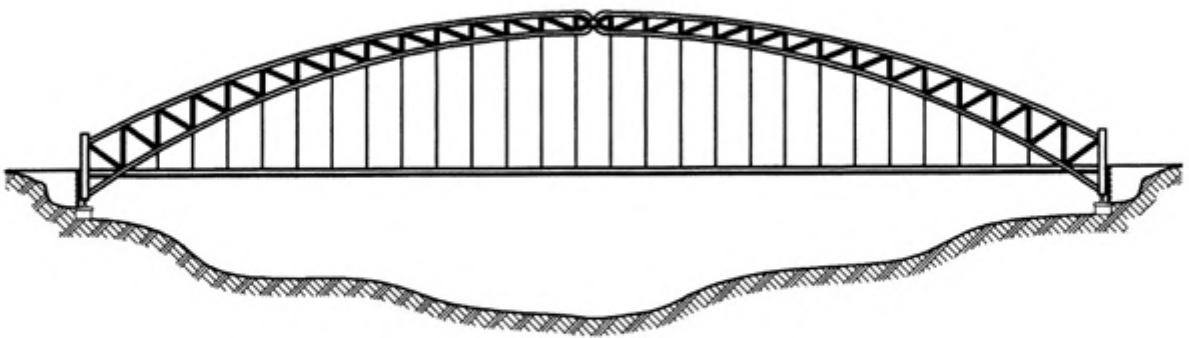
Fig. 5r



Continuous girder with camelback

LATTICE GIRDER

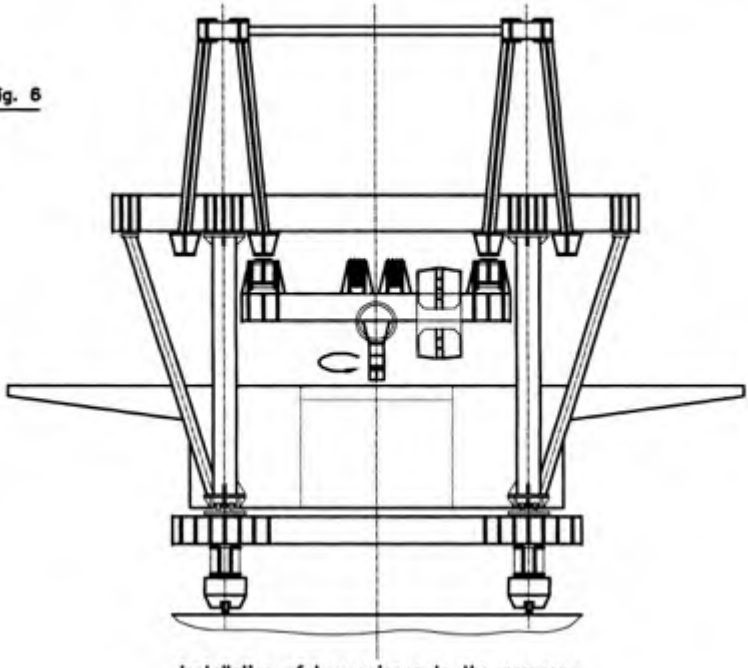
Fig. 5s



Girder with independent flanges and discontinuous tie beam

LATTICE GIRDER

Fig. 6



Installation of box caisson to the progress

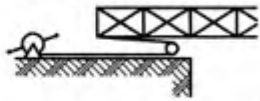
LAUNCH GANTRY (handling of segments)

Fig. 7



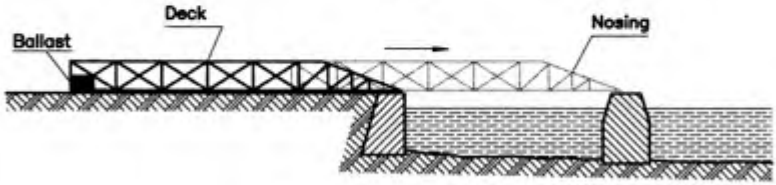
Launching with a winch installed on opposite bank

Fig.7a



Launching with a winch installed on the bank of launching

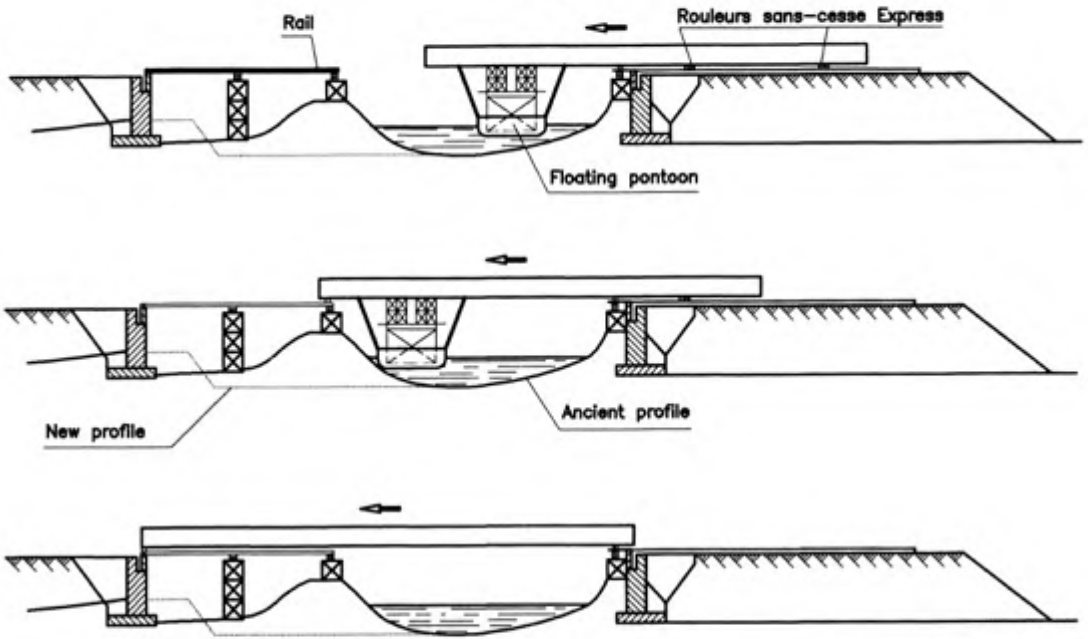
Fig.7b



Launching with nosing

LAUNCHING

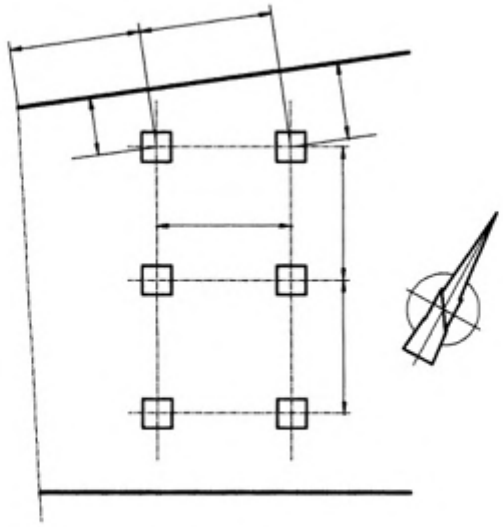
Fig.7c



Launching by lifting of a bridge with the help of a floating pontoon

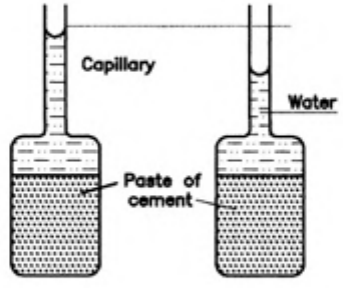
LAUNCHING

Fig. 8



LAYOUT

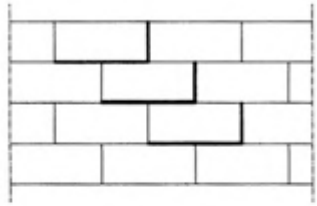
Fig. 9



Time t = 0 Time t > t0

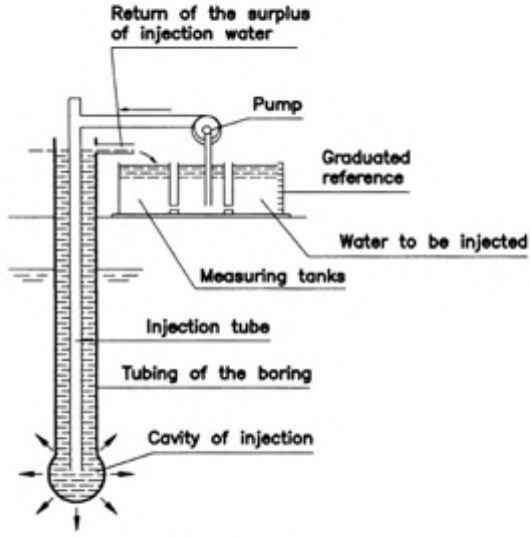
LE CHATELIER CONTRACTION

Fig.10



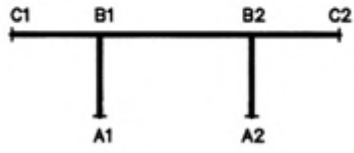
LEDGE

Fig.11



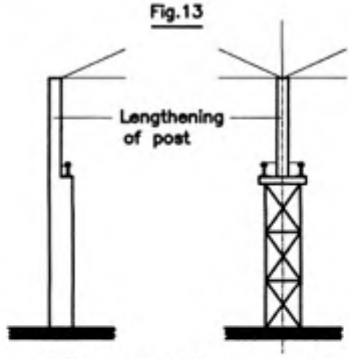
LEFRANC TEST

Fig.12



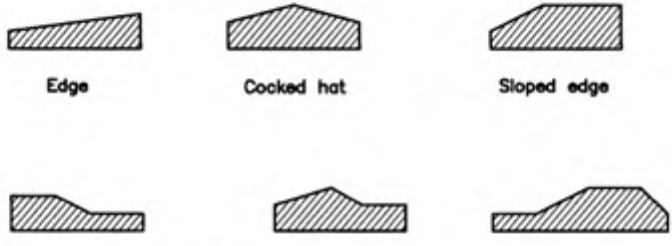
LEG–FRAME GIRDER

Fig.13



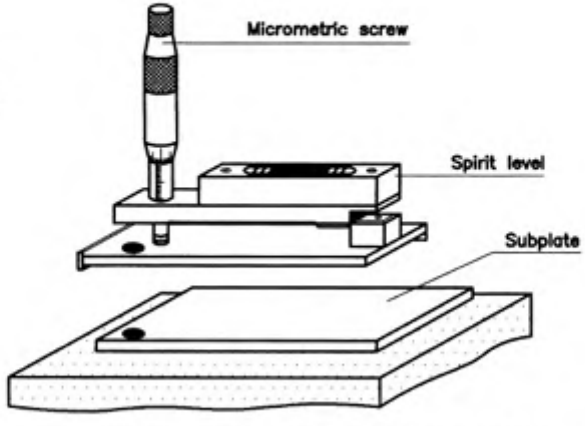
LENGTHENING OF POST

Fig.14



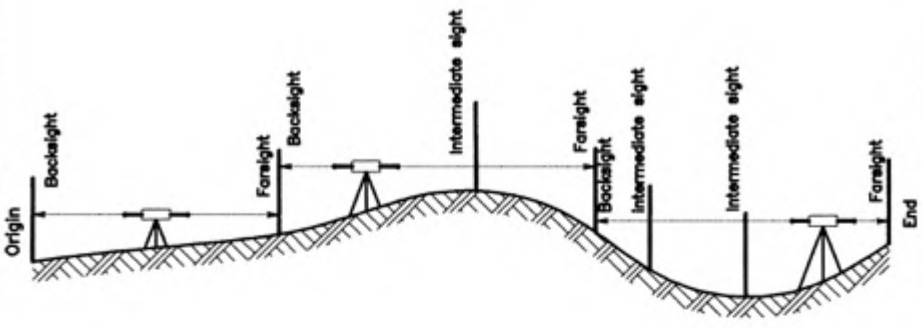
LENGTHWISE–SHAPED SHEET

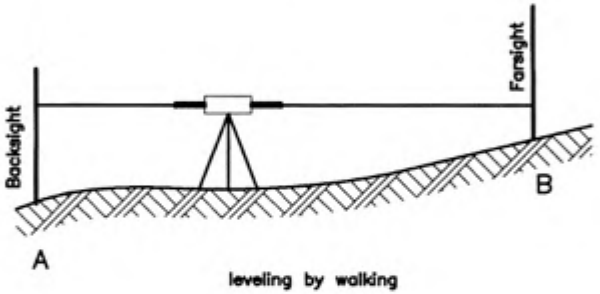
Fig.15



LEVEL WITH MICROMETRIC SCREW

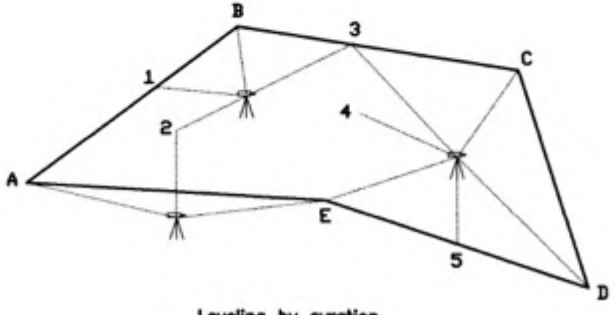
Fig.16





leveling by walking

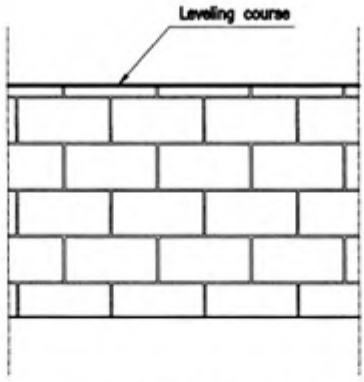
Fig.17



Leveling by gyration

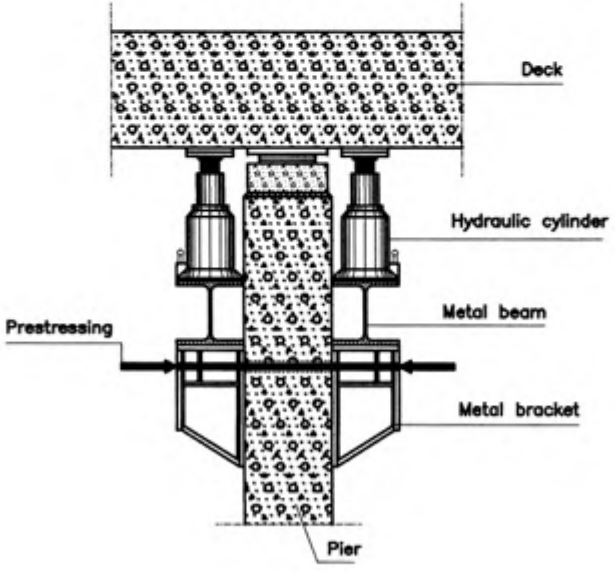
LEVELING

Fig. 18



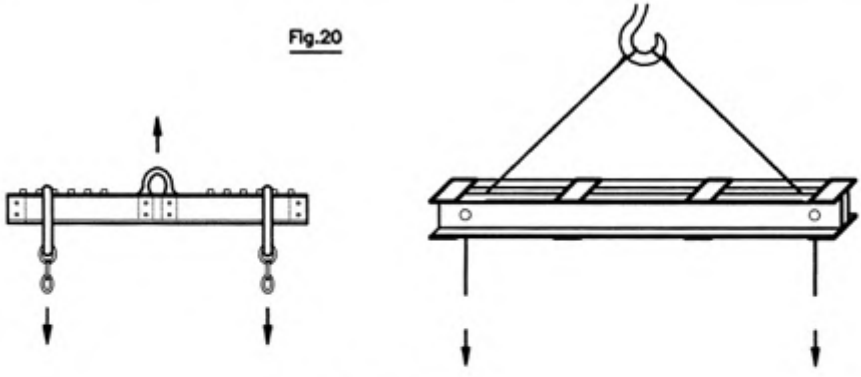
LEVELING COURSE

Fig.19



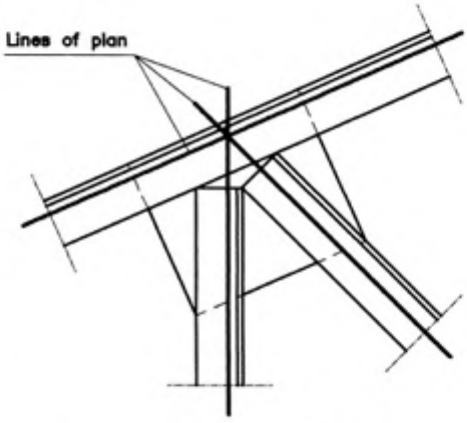
LIFTING

Fig.20



LIFTING BEAM

Fig.21



LINE OF PLAN

Fig.22

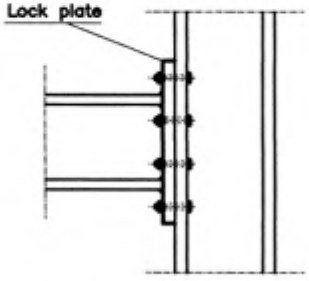
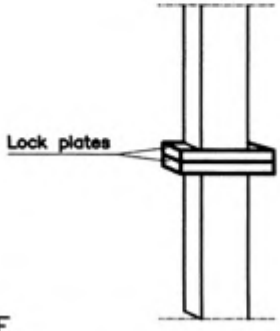
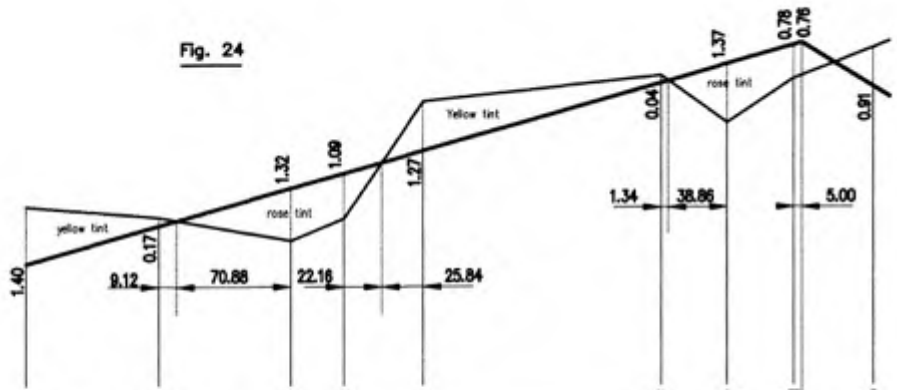


Fig.23



LOCK PLATE

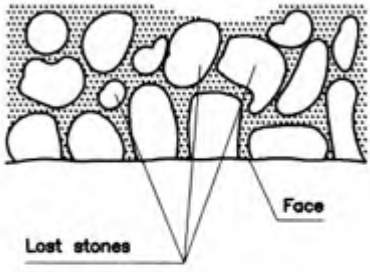
Fig. 24



Number of sections	0	1	2	3	4	5	6	7	8
Altitudes of the project	53.80	54.70	55.59	55.95	56.49	58.10	58.55	58.00	58.12
Altitudes of the plot	55.20	54.81	54.21	54.86	51.16	58.14	57.18	58.22	59.03
Partial distances		80	80	32	48	144	40	40	48
Drawed distances		80	160	192	240	384	424	464	512
Outline of the project		Right line on 80 m	Curve of R=600m on 12m		Right line on 87m	Curve of R=600m on 130m		Right line on 234 m	
Gradients		Ramp of 0.0112 on 469 meters							Rake of

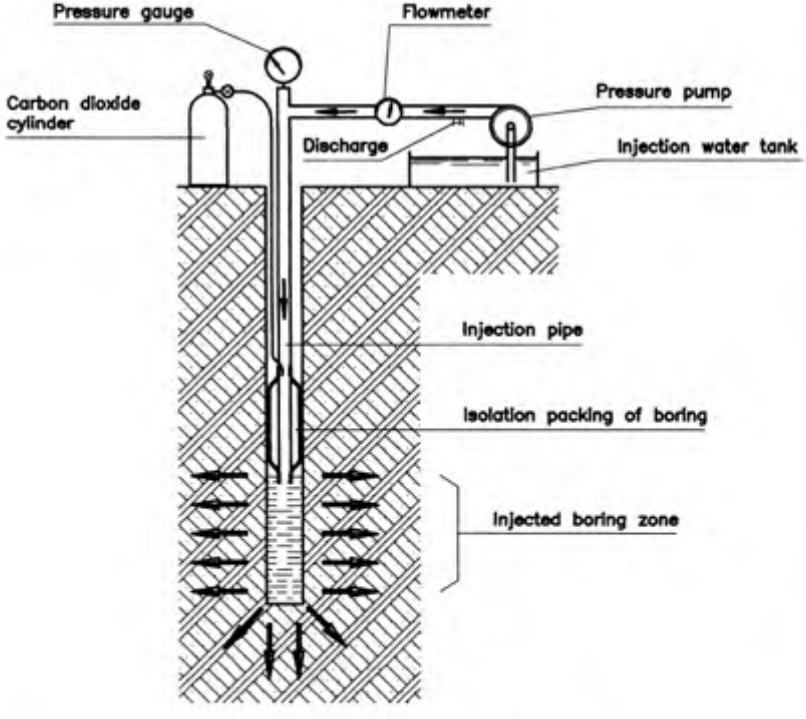
LONGITUDINAL SECTION

Fig.25



LOST STONE

Fig.26



LUGEON TEST

M

MACADAM
Macadam
Materials
Stones and bitumen mixture that mostly constitutes a pavement or a sidewalk surfacing.

MACHINE TROWEL
Hélicoptère
Equipment and Tools
Syn. with HELICOPTER; POWER FLOAT; ROTARY FLOAT

MACHINING
Usinage
Metal Construction
The metalwork is generally produced in factory. In general terms, we can distinguish the machining by:
- formation of shavings (sawing, drilling, etc.),
- mechanical cut (shearing, melting, etc.),
- deformation of metal (folding, bending, forging, etc.).

Syn. with TOOLING

MACHINIST
Machiniste
Work
A worker that works under lance holder and which is in charge of the supplying, the starting and adjustments of an air-placing machine.

MACLE
Macle
Geology
The association of two or several crystals of the same nature in a given way. Macles mostly meet in the minerals such as the gypsum or quartz. Syn. with TWIN CRYSTAL

MACROCONGELIFRACTION
Macrogélivation
Geomorphology
The cutting up of the limestone into large blocks by the frost effect.

MACROGRAPHER
Macrographe
Test of Materials
A specialist in macrographic examinations.

MACROGRAPHY
Macrographie
Metallography
1. The analysis and observational science of the structure of metals carried out to the naked eye or magnifying glass.

2. The representation of a metal piece with all its visible details to the naked eye or magnifying glass.

MACROMOLECULAR MATERIAL
Matériau macromoléculaire
Polymers
A product combining a macromolecular substance with various other substances such as extenders, admixtures, etc. Macromolecular substances, also called *polymers* or *high polymers* are classified into three categories:
- **natural** *(les naturelles),* organic (natural rubber, etc.) or mineral (various silicates, etc.);
- **artificial** *(les artificielles)*;
- **synthetic** *(les synthétiques),* (polymers prepared by polymerization, polycondensation, etc.).

Syn. with HIGH POLYMER; POLYMER

MACROMOLECULE
Macromolécule
Polymers
A molecule having a very great molecular mass.

MACROSCOPE
Macroscope
Assaying Equipment
An optical instrument that allows to examine and photograph macrostructures (grain, cracks, inclusions, etc).

MACROSCOPIC
Macroscopique
Test of Materials
Of what can be observed to the naked eye or with an optical instrument of low magnification.

MACROSCOPY
Macroscopie
Test of Materials
The sounding of a material to the naked eye or magnifying glass.

MACROSTRUCTURE
Macrostructure
Nomenclature of Materials
Structure of a material (in particular of a metal) such as it can be observed to the naked eye or with an optical instrument of low magnification.

MADE-UP STEP
Marche composée
Construction
The stair of a staircase whose goining of the step and riser are two assembled distinct pieces.

MAGISTRAL LINE
Magistrale
Construction
Concerning a retaining wall, intersecting line of the outside facing and on top of the tablet or the coping. This line is projected in *M* such as on the drawing. **See Figure 1**

MAGMATIC ROCK
Roche magmatique
Geology
A deep-seated or surface rock resulting from the complete or partial crystallization of a magma. This rock is located at more or less great depth in the lithosphere, and that arrives on the surface according to various processes. This rock is also called *endogenous rock, crystalline rock, igneous rock,* or *eruptive rock.*

MAGMATIC WATER
Eau juvénile; Eau endogène
Geohydrology
Syn. with JUVENILE WATER

MAGNESIA
Périclase
Hydraulic Binders
The free magnesium oxide which finds in crystallized form in some cements. The magnesia appears when the magnesium content is too high; in fact the excess which crystallizes to give the oxide the free magnesium (MgO).

MAGNETIC ARC BLOW
Soufflage magnétique
Defects (Welding)
The deviation of the arc under the influence of magnetic forces generated by the welding current. The magnetic arc blow is especially observed in direct current, with rotary machines.

MAGNETIC COLLOID
Colloïde magnétique
Metallography
A solution into which very fine iron or magnetite particles are put in suspension and that is used to

put in a prominent place of some metallographic structures.

MAGNETIC GAUGE
Jauge magnétique
Equipmentfor Measure and Control
Instrument for measuring the thickness of paint films and that is calibrated with a nonferrous metal reference gauge, of a thickness close to the film to be measured.

MAGNETIC PASTE
Pâte magnétique
Welding
A product made up of ferromagnetic particles finely divided, delivered in paste form and which is used to prepare a suspension for checking by magnetic particle.

MAGNETIC-PARTICLE INSPECTION
Magnétoscopie
Metallography
The sounding of a metal piece by subjecting to a magnetic field. Its principle is as follows: the piece to be sounded is coated with a liquid containing magnetic particles; a magnetic field perpendicular to the possible defects to be detected is created with electrodes, the presence of defects disturbing the lines of flow.

MAGNETIC-PARTICLE TESTING
Contrôle par magnétoscopie
Test of Materials (Welding)
Method of checking allowing to position superficial defects in ferromagnetic materials when these ones are placed in a magnetic field and that fine ferromagnetic particles are deposited on the examined surface.

MAGNETITE
Magnétite
Building Materials
An heavy aggregate of iron oxide based ore whose medium density ranges from 4 to 5 according to the source. This aggregate is used for manufacturing concretes to strong density. Syn. with LODESTONE

MAGNETOMETER
Magnétometre
Equipment for Measure and Control
Instrument for measuring magnetic field and which is used in geophysical prospecting. We can distinguish two principal types of magnetometers: the proton magnetometer and the differential magnetometer.

MAGNETOMETRY
Magnétometrie
Geophysics
A geophysical prospecting method that consists in studying the variations of the terrestrial magnetic field. This one can indeed be disturbed locally by the presence, in the basement, of rocks more sensitive magnetically than others. Magnetic anomalies reveal the shapes of the crystalline platform covered by sedimentary grounds. One uses magnetometers for measurements on the ground, but one employs more routinely magnetometers put inside a streamlined case dragged by a plane, what allows the fast prospecting of vast marine or terrestrial extents, accompanying the informations given by aerial photography.

MAGNETOSCOPE
Magnétoscope
Equipment for Measure and Control
An instrument that allows to study the structure of a metal and to detect there the possible presence of defects (cracks, inclusions, etc.).

MAGNETOTELLURICS
Magnétotellurique
Geophysics
A geophysical prospecting method based on the measurement of the resistance of underlying grounds.

MAHOGANY DOUSSIE
Doussié
Building Materials
A tree of rain forests that produces a brown-red wood whose density ranges from 0.70 to 0.90.

MAIN BAR
Filant; Gros fer
Building Materials
1. Straight reinforcement of a bar setting (crookless in particular).

2. Syn. with MAIN IRON

MAIN BEAM
Poutre maîtresse; Poutre principale ; Entrait
Construction; Carpentry
1. A longitudinal beam transmitting to the bearings the totality of loads of the deck. Main beams are connected between them transversely by transverse girders and distance pieces. They carry the cover, whose strong elements can constitute the top chord of beams.
2. Syn. with TIE BEAM

MAIN CONTRACTOR
Maître d'oeuvre
Civil Engineering Structure
Syn. with PROJECT MANAGER

MAIN CROSS-CUT
A travers-banc
Construction
Of every excavation or subterranean work carried out perpendicular to the family of main discontinuities of the ground.

MAIN DRILL ROD
Maîtresse-tige
Equipment and Tools
Syn. with DRILL COLLAR; MAIN ROD

MAIN EARTHWORKS
Gros terrassements
Earthwork
Work designed for the execution of deep trenches, embankments of great height, tunnels, briefly the displacement of important bulks of earths.

MAIN ESCARPMENT
Escarpement principal
Geomorphology
Vertical or inclined surface, often concave of a landslide, boundering the slipping at its top end and prolonged in-depth by the slip surface.

MAIN GIRDER (or BEAM)
Filet
Construction
A large beam of wood, reinforced concrete, steel, etc., distributing loads on two sidewalls. **See Figure 2**

MAIN IRON
Gros fer
Building Materials
An essential iron of a steel or reinforced concrete construction. Syn. with MAIN BAR

MAIN PART (OF THE BRIDGE)
Corps d'un ouvrage
Construction
The part that forms the cover of a bridge (slab, vault, deck, etc.).

MAIN PLANE
Nu de mur
Construction
Syn. with REFERENCE SURFACE; WALL LINE

MAIN RAFTER
Arbalétrier
Carpentry and Temporary Construction
Syn. with PRINCIPAL RAFTER; RIDGEBEAM

MAIN ROD
Maîtresse-tige
Equipment and Tools
A rod placed at the beginning of a drill string hardly above the bore bit and whose aim is to give more weight to the unit in order to act on the efficiency of the tool. This rod is of a weight higher than the ordinary rods of the drill string. Syn. with DRILL COLLAR; MAIN DRILL ROD

MAIN SEWER
Collecteur
Sanitary Engineering and Drainage
1. A cleaning out work, and sometimes possible access, that ensures the collection of waters from drains or a platform. Concerning sewerage, designates a gallery for collecting and carrying wastewaters.
2. A buried device for ensuring the continuity of a sewerage device to open roof to the clearing of an obstacle.

MAIN TIE
Entrait;Tirant
Temporary Construction and Carpentry
The horizontal or tilted base of a centering_of vault construction that can rest on dead shores or corbels. Syn. with TIE BEAM

MAIN WALL
Gros mur
Construction
A wall carrying loads and that is inherently envisaged for this function. Syn. with STRUCTURAL WALL

MAINTENANCE
Entretien; Maintenance
Civil Engineering Structure
1. An operation whose objective is to maintain a work in a compatible state with the conditions of use of it is intended (paint, repointing, etc.).
2. All operations of maintenance and renewal of pieces or materials of a work.

MAJOR PERMEABILITY
Perméabilité en grand
Geology
The seepage and circulation power of waters that affects the fractured or jointed rocks; it also involves dewaterings or the carrying out of harnessings owing to the possible loadings of foundations.

MALLEABILITY
Malléabilité; Ductilité
Building Materials
1. The property which has a material to lose its shape without breaking (for a metal, the malleability varies according to the temperature).
2. Syn. with DUCTILITY

MALLEABLE (CAST) IRON
Fonte malléable
Metallurgy
A product whose properties have been modified by annealing at high temperature accompanied or not of an oxidizing action. This material has all qualities of the iron.

MALLET
Maillet; Batte
Equipment and Tools
1. A hard wooden large hammer with two heads used by stone cutters to strike on the head of chisels and gradines. Syn. with BEETLE; MAUL; WOODEN HAMMER
2. Syn. with EARTH RAMMER

MALTHENES
Malthènes
Materials
Products that constitute the solvent environment of asphaltenes and that include oils of paraffinic or naphteno-aromatic nature and resins, heavier, with a character distinctly aromatic. Malthenes constitute one of the primary families composing bitumen; others being asphaltenes, carboids, and carbenes.

MANDREL
Mandrin
Equipment and Tools
Syn. with DRIFT

MANGANESE
Manganèse
Metallurgy
A bright gray transition metal mostly used in alloy with steel.

MANGANESE GREEN
Vert de manganèse
Painting
A mineral pigment made up of barium permanganate. Strong to alkalis but broken down by acids, it has an excellent covering and coloring power.

MANGANESIAN
Manganésien
Metallurgy
Is said of what contains manganese (example, manganesian steel).

MANHOLE
Trou d'homme; Regard de visite
Construction
1. An opening carried out or fitted in a work allowing the passage of a person in order to be able to reach at some parts of this work. This opening is generally closed by an inspection cover. Syn. with ACCESS HOLE; INSPECTION PIT
2. Syn. with INSPECTION HOLE; APERTURE

MANIPULATOR
Mannequin
Equipment and Tools
Syn. with JIG

MAN-LOCK
Sas à air; Ecluse à sas
Foundation
Syn. with AIR LOCK; MATERIALS LOCK

***MANNHEIM* RATIO**
Coefficient *Mannheim*
Test of Materials (Building Materials)
The difference of areas delimited by grading curves of aggregates, before and after the Mannheim test.

***MANNHEIM* TEST**
Essai Amédée *Mannheim*
Test of Materials (Building Materials)
An attrition and wear test by blows carried out on the aggregates. Aggregates (5 kg) are inserted into a rotary drum of 70 cm diameter and 52 cm width containing eight identical cast iron balls of 640 g each one. The number of rotations is fixed at 240. One compares the grain size analysis of dry aggregates before and after the test and one deduces some by calculation the variation of the medium size of fine gravels (expressed in 1/100 mm). A simplified trial consists in dividing aggregates before and after the trial on two successive round-hole sieves.

MANOGRAPH
Manographe
Equipment for Measure and Control
A pressure gauge that records the pressures of a fluid. Syn. with PRESSURE GAUGE

MANOMETER
Manomètre
Equipment for Measure and Control
Syn. with PRESSURE GAUGE

MAP
Carte
Topography
The conventional representation, usually plane, of real or abstracted phenomena, localizable in the space.
There are several types of map:
- **chorographic map** *(la carte chorographique),* derived map whose scale is sufficiently minimized to allow the representation of general topographical lines of a region or a continent;
- **derived map** *(la carte dérivée),* obtained by generalization of the basic map with or without reduction of the scale;
- **thematic map** *(la carte thématique),* representative on a noticed background, a particular localizable phenomenon, of various nature, qualitative or quantitative (geology, climatology, etc.);
- **regular basic surveying map** *(la carte topographique régulière de base)* whose conventional graphic representation of observed phenomena is the most complete and the most precise.

Syn. with TOPOGRAPHIC MAP; SURVEYING MAP

MAP CRAZING
Faïençage
Defects (Building Materials)
Syn. with CRACKING; CRAZING; HAIRLINE CRACKING

MAP OF THE MAXIMUM BEATING OF AN UNDERGROUND WATER LEVEL
Carte des battements maximaux d'une nappe
Hydrology
A representative document of the amplitude of variations undergone by the piezometric surface between two periods of high and low waters.

MARBLE
Marbre
Geology
A metamorphic rock deriving from the carbonated sequence. Among primary categories, we can distinguish chalky marbles with largely dominant calcite and the dolomitic marbles.

MARBLING
Marbrure
Defects
1. A defect that can be observed on the facing of some concrete works, characterized by a veined aspect similar to marble. This defect is due to the use of formworks of bad quality.
2. The partial alteration of a paint film that appears as stains having the aspect of veins of a different dye from that of the whole.

MARGIN DRAFT
Ciselures relevées
Nomenclature of Materials
Syn. with DRAFT; DRAFTED MARGINS

MARGINAL SELVAGE
Eponte
Geology
Syn. with VEIN WALL

MARINE CLAY
Argile marine
Geology
A material of continental origin deposited in sea environment, and usually modified by the diagenesis.

MARK
Hoche; Piquer; Baliser
Masonry; Carpentry; Topography
1. Each small wooden upright embedded into a masonry intended for tightening the lines or strings which must appear the thickness of a wall under construction. Syn. with REFERENCE MARK; THICKNESS MARK
2. To point out the cuts and making-up to be carried out on the members (of a frame).
3. To plant sighting marks.

MARK OUT
Aborner; Piqueter; Tracer
Topography; Construction
1. To delimit a terrain with boundary marks.
2. To mark on the ground an alignment, axis, etc., with stakes.
3. To delimit a work on the ground.

MARK OUT A STRUCTURE
Planter un ouvrage
Topography
To mark on the ground with stakes or surveyor's staffs the layout on the ground of a work to be built.

MARK OUT THE BOUNDARY
Borner; Bornoyer
Topography
1. To position boundary marks delimiting a property.
2. Syn. with BONING

MARKER
Jalon; Piquet; Taquet
Topography; Earthwork
1. A bar or tube of steel painted in red and white successive large stripes that is used as reference mark of alignment. Syn. with (RANGE) POLE; SIGHTING MARK; (SURVEYOR'S) STAFF
2. Syn. with PEG; STAKE
3. A stake embedded in the ground that is used as reference mark during earthworks.

MARKER RULE
Jalonnette
Topography
A graduated rule on which slide a bracket that allows to measure the depth of a trench bottom in relation to a leveled stake spot. (Operation is simple: the rule is gone down into the excavation and one makes slide the bracket up to the contact of the peak of the stake.)

MARKERMAN
Jalonneur
Topography
The assistant of a topographer who installs surveryor's staffs.

MARKING
Balisage; Piquetage; Trusquinage
Topography; Carpentry; Metal Construction
1. All preliminary operations for locating on the ground some points or lines of basis for the alignment of a railway track, a roadway or a fluvial way.
2. The locating of the place of the joints on the members that make up a frame work.
3. The drawing of parallel lines with marking gauge.

MARKING GAUGE
Trusquin
Equipment and Tools
Marking out instrument generally used on a surface plate, made up of a block on which is vertically fixed a rod; on the latter slide a device which bears a scriber. This instrument is intended for marking out parallel and perpendicular lines on metal pieces. **See Figure 3**

MARKING-OFF BOARD
Aire de traçage
Carpentry
A plane surface sufficiently wide to perform a full-scale lay-out of a plot.

MARL
Marne
Geology
A sedimentary rock intermediate between the clays and limestones, made up of a homogeneous mixture of clay (hydrated alumina silicate) and limestone (lime carbonate); according to the prevalence of one or the other of components, it is called *clayey marl* or *chalky marl.* Of grayish color and subjected to the cooking, the marls allows to obtain limes and cements.

MARL PIT
Marnière
Building Materials
The place where marl is extracted. Syn. with CLAYPIT

MARLY
Marneux
Geology
Said of what contains or looks like marls.

MARMOREAL
Marmoréen
Geology
Of a rock showing morphological or physical analogies with the marble. Syn. with MARMOREAN

MARMOREAN
Marmoréen
Geology
Syn. with MARMOREAL

MARMORIFORM
Marmoriforme
Geology
Is said what look like marble.

***MARSH* FLOWMETER**
Cône de *Marsh*
Equipment for Measure and Control
A flow cone for checking the viscosity of cement grouts and whose principle is similar to the flowmeter. **See Figure 4**

***MARSHALL* TEST**
Essai *Marshall*
Test of Materials
A crushing test of a cylindrical hydrocarbon mixture test specimen, carried out between two generatrixes diametrically opposite, in a bid to determine the composition of the product giving the best stability.

MARTELINE
Marteline
Equipment and Tools
A hammer pointed on a side, set with diamonds of the other, designed to nig and to smooth down the stone without detaching some fragments.

MARTELINE CHISEL
Ciseau en marteline
Equipment and Tools
A chisel of which cutting edge is set with diamonds such as one of the ends of the marteline and that has the same use.

MARTENSITE
Martensite
Metallurgy
A solid solution of carbon and iron, chemically homogeneous. Martensite is one of the steel constituents.

MARTENSITIC STEEL
Acier martensitique
Metallurgy
An alloy of which chromium and carbon content are respectively 13% and 0.3%. This steel takes the quenching and sometimes contains molybdenum, nickel, copper. This metal is mostly used in a hardened and temper state; it is magnetic.

MARTYR
Martyr
Equipment and Tools
Syn. with PACKING

MASH HAMMER
Massette
Equipment and Tools
Syn. with CLUB HAMMER

MASK WALL
Mur masque
Construction
A dwarf wall interdependent of the abutment and intended for hiding the end of a deck.

MASON
Maçon
Masonry
A worker specialized in the masonry constructions; also says itself building contractor. Syn. with BLOCKLAYER; BRICKLAYER; BUILDER; STONE MASON; WALLER; WALLING MASON

(STONEWORK) MASON
Limousin; Limousinant
Masonry
A labor mason that builts any masonry except ashlar construction.

MASON SQUARE
Equerre-niveau
Equipment and Tools
Syn. with SQUARE LEVEL

MASONRY
Maçonnerie
Masonry
A construction carried out by juxtaposition of elementary solid materials such as bricks, quarry stones, ashlars, concrete blocks, etc., constituting a set of given shapes and sizes and mostly bonded between them by a binder. It is divided thus into: ashlar masonry, rubble walling; stonework, gritstone work, brickwork, finally plaster works and various renderings. By extension, this word also points to the works made of not reinforced concrete.
According to the nature of materials we can distinguish in particular:
- **concrete masonry** *(la maçonnerie de béton),* work carried out with concrete not reinforced whose dimensions of aggregates are adapted with the nature, form and dimensions of the work;
- **brickwork** *(la maçonnerie de briques),* carried out with solid or perforated bricks bonded in tile or header or according to a combination of these arrangements;
- **stonework** *(la maçonnerie de moellons),* which is carried out with stones (limestone, gritstone, granite, etc.), squared or not, mostly bonded with a mortar, to constitute a construction whose bonding is specified by drawings when quarry stones are apparent or then built in an irregular and unspecified way when it is about a rubble work;
- **blockwork** *or* **breeze-block** (manufactured concrete blocks) [*la maçonnerie de parpaings (blocs de béton manufacturé)*], which constitutes a construction with regular course in which concrete blocks are bonded with mortar;
- **ashlar *or* freestone masonry** *(la maçonnerie de pierres de taille)* in which each element as well as the bonding are the subject of a drawing (dimensions, arrangement, etc.). According to the arrangement and morphology of these materials, we can distinguish:
  - **coursed masonry** *(la maçonnerie appareillée)* in which constitutive quarry stones are dressed and bonded according to a drawing preestablished to the dimensions fixed by this drawing (this definition also applies to the brickworks or the blockworks);
  - **ashlar masonry** *(la maçonnerie de grand appareil),* carried out with large elements (ashlars);
  - **coursed rubble masonry** *(la maçonnerie assisée),* carried out with bricks, concrete blocks or quarry stones with regular courses (quarry stones have a regular height in each course);
- **backup masonry *or* rubble work masonry** *(la maçonnerie de blocage ou de remplissage),* ordinary masonry (not coursed) used to achieve the body of a work (between facings of a pile for example);
- **composite walling** *(la maçonnerie composite),* carried out with several kinds of materials whose relative arrangement can have a purely aesthetic aim or, more usually, to be studied with a preoccupation of resistance of the unit. In this respect, strongest materials are laid out in vertical and/or horizontal chain bond ensuring the bond of less noble materials used in filling. This connection is carried out by toother bonding of dressings that presents steps into which the filling masonry commits;
- **chequered masonry** *(la maçonnerie en (ou à) échiquier),* carried out in such way that the joints are oblique;
- **heterogeneous masonry** *(la maçonnerie hétérogène),* which shows a lack of unit, it is namely made up of materials of different nature

(example: masonry mixed with quarry stone and brick);

- **roughcast masonry** *(la maçonnerie hourdée),* in which elements are bonded between them by means of a mortar whose mechanical characteristics intervene more or less in the resistance of the unit;
- **bonded masonry** *(la maçonnerie en liaison),* an arrangement such as vertical joints of a bed correspond on the level to the middle of the stone or brick of the immediately lower bed;
- **uncoursed polygonal rubble masonry** *(la maçonnerie mosaïque ou appareil non assisé polygonal),* in which joints are laid out in regular form, such as in hexagon;
- **mixed masonry** *(la maçonnerie mixte),* which comprises, crosswise or sideway, of materials of different nature;
- **rubble stone masonry** *(la maçonnerie de moellons bruts),* roughcast masonry carried out with rough stones such as they come out of quarry, only get the mud off, cleaned off, and cleaned if necessary. According to the stones which one lays out, rough masonry comprises a structure more or less roughly coursed. This type of masonry is especially used as rubble work masonry;
- **random rubble work** *(la maçonnerie en opus incertum ou à joints incertains),* built with crudely tooled or rough quarry stones and that shows thereby irregular joints and laid out in all directions;
- **ordinary masonry** *(la maçonnerie ordinaire),* carried out with ordinary or rough quarry stones;
- **veneer masonry** *(la maçonnerie parementée),* roughcast masonry that is much neater than the rough rubble walling. We can distinguish two bondings for this type of masonry:
  - *polygonal coursed not bond,*
  - *coursed regular bond*;
- **dry stone masonry** *(la maçonnerie de pierres sèches),* in which carefully tooled stones are laid out without mortar. This type of masonry cannot resist important strains and is only used to coat slopes and to build low height walls. (Not to confuse with the dry stone masonry arranged by hand which only is one simple more or less stable stacking, of stones not tooled.);
- **dry masonry** *(la maçonnerie à sec),* carried out with stones without binder (cement or mortar). One also says masonry of/or dry stones and, in the case of ashlars, with dry joints);
- **heavy masonry** *(la grosse maçonnerie)* that constitutes the shell of foundations and large walls.

See figures 5 to 5c

MASONRY ANCHOR
Moufle; Patte à scellement
Construction; Materials
1. A steel reinforcement trapped in a masonry that prevents the space of walls.
2. Syn. with WALL ANCHOR

MASONRY BUTTRESS
Butée
Construction
Masonry block that minimizes the thrust of a vault.

MASONRY CEMENT
Ciment à maçonner
Hydraulic Binders
A product that contains the same active elements than the Portland cements but in small proportions. Its strength is less high with regard to the Portland cements.

MASONRY DRILL
Fleuret
Equipment and Tools
Syn. with BORER; DRILL STEEL; JUMPER BAR

MASONRY GARNISHING
Garnissage
Masonry
The filling out of mortar and rubbles supplementing a main structure masonry.

MASONRY IMITATION
Décoration
Masonry
Outside renderings completed by joints to feign beds of stone courses.

MASONRY INVESTIGATION
Reconnaissance de maçonnerie
Masonry
An investigation that allows to be aware of the well-preserved of a masonry giving obvious signs of internal degradations (facing making a hollow sound, seepages, etc). These

investigations are carried out by endoscopy, opening of window, etc.

MASONRY MORTAR
Mortier de hourdage
Building Materials
One of the two constituents of the joint that ensures a transmission as homogeneous as possible of strains between stones or bricks.

MASONRY TIE
Agrafe
Masonry
Syn. with CLAMP IRON; DOUBLE DOVETAIL MASONRY TIE; METAL CRAMP; WALL TIE;

MASONRY WORK
Ouvrage en maçonnerie
Civil Engineering Structure
A construction made up of stones or bricks with limited sizes and bonded between them with mortar.

MASON'S HAMMER
Masse
Equipment and Tools
A large parallelepipedal hammer used by stonecutters.

MASON'S LEVEL
Niveau de maçon
Equipment for Measure and Control
Syn. with PLUMB LEVEL; VERTICAL LEVEL

MASON'S LINE
Ligne
Masonry
A line used by builders to build walls of same thickness, or to mark out on a wall horizontal lines; this operation is called *to draw the line.*

MASON'S MARK
Marque; Marque de tâcheron
Masonry
1. A conventional sign focused on an ashlar to point out to stonecutter the way in which it must be cut or to stone mason his way of bedding.
2. Syn. with BANKER MARK

MASON'S MATE
Gâcheur
Construction of R.C. and P.C. and Masonry
Worker in charge of the preparation of the mortar, the concrete or the plaster. Syn. with BUILDER'S MATE

MASS
Masse
Building Materials
All stone benches of a quarry.

MASS CENTER
Centre de gravité
Strength of Materials
Syn. with CENTER OF GRAVITY; CENTER MASS

MASS EFFECT
Effet de masse
Metallurgy.
Syn. with MASS REACTION

MASS MOVEMENT
Mouvement de masse
Geomorphology
The flow of a volume of earth or rock without dissociation of elements that makes up it.

MASS OF FALLEN EARTH
Eboulis
Geomorphology
Syn. with DEBRIS; SCREE

MASS REACTION
Effet de masse
Metallurgy
For hardened and tempered steel, a phenomenon that translates into the progressive diminishing of hardness and strength of a hardened piece, from the surface to the heart of a section given; this diminishing, for a section given, is much less great than in steel of richer alloys; to the degree that:
- for a given steel, mechanical characteristics will be all the more degraded after quenching and tempering to a certain limit; this limit depends on the hardness of the steel and the conditions of cooling;
- for a bar of determined dimensions, mechanical characteristics after quenching and tempering will remain much less degraded in

hardness when the steel is sufficient for the mode of quenching envisaged.
Syn. with MASS EFFECT

MASSING
Massage
Defects (Painting)
The partial or total hardening of a paint in its container making it unusable.

MASSIVE ROCK
Roche massive
Geology
A stone not stratified, little fissured, hardly offering plan of cleavage.

MAST
Pylône; Mât
Construction; Equipment and Tools
1. In lift bridges, vertical element along whose moves each end of the deck.
2. In drawbridges, vertical element on the top of which is articulated the equalizer.
3. A headframe of light metal frame used to carry out some trial borings.
4. Syn. with LATTICE MAST; PYLON; TOWER

MAST QUOIN
Coin d'élambrai
Equipment and Tools
Syn. with WEDGE FOR MAST HOLE

MASTER BORER
Maître-sondeur
Work
The supervisor of drilling.

MASTER MASON
Maître-maçon
Civil Engineering Structure
A builder's supervisor or building contractor.

MASTIC
Mastic
Materials
Syn. with FILLER; PUTTY; STOPPING COMPOUND; STOPPING UP

MASTIC (ASPHALT)
Asphalte coulé
Tightness
A sealing product obtained to hot of which mixture consists of natural asphalt powder rock, bitumen of addition, fines (in some circumstances only), sands and gravels (mineral skeleton), in focused proportions for each type of asphalt. These perfectly **full** mixtures, are applied by hot pouring, without compacting.

MAT
Radier
Construction
Syn. with FOUNDATION RAFT; GROUND SLAB

MATERIAL
Matériau
Building Materials
Each body, solid or liquid, artificial or natural, likely to be used under rough form or worked to carry out works. Materials are broken into two groups:
- **resistance materials** *(les matériaux de résistance)* that take part in the stability of works (main structure);
- **treatment and protective materials** *(les matériaux de traitement et de protection)* which are mostly implemented on a support belonging itself to the first group (finishings).

The choice of building materials is determined according to several criteria noticing of various preoccupations: mechanical resistance to the strains, physicochemical resistance, life span, aesthetics, cost price.

MATERIAL FOR NONBEARING ELEMENTS
Matériau pour éléments non porteurs
Materials
A product used to carry out nonbearing elements and whose implementation does not intervene (or poorly) in the final strength of the work. They are bitumens, tar, renderings, mastics, etc.

MATERIAL REMOVAL
Débourrage
Earthwork
The withdrawal of materials having been used to stuff an excavation, a drilling, etc. Syn. with

BAILING-UP REMOVAL; TAMPING REMOVAL

MATERIALS RANGE
Gamme des matériaux
Building Materials
Syn. with MATERIALS SERIES

MATERIALS SERIES
Gamme des matériaux
Building Materials
The nomenclature of materials used in Civil Engineering construction. The range of materials is very extensive and varied; two categories there are distinguished: structural materials being designed to the carrying out of the load-bearing structural units and nonstructural materials being designed to the carrying out of nonload-bearing elements. Syn. with MATERIALS RANGE

MATRIX
Matrice
Geology; Metallurgy
1. Cement of some rocks.
2. The primary constituent of an alloy.

MATRIX OF RIGIDITY
Matrice de rigidité
Strength of Materials
A matrix that makes corresponding the intensity of forces to displacements of points of application of these forces according to their line of action. (This matrix is square and symmetrical.)

MATTNESS
Matité (d'un film de peinture)
Painting
A physiological impression produced by a film lit in white light, when the speculary reflective luminous flow is appreciably less important than the diffused luminous flow. Opposite quality of the bright. Syn. with FLATTNESS; DEADNESS

MATTOCK
Pioche; Décintroir
Equipment and Tools
1. Syn. with PICK; PICKAXE
2. Builder's hammer with two perpendicular cutting edges being of use to part the joints, to square the roughing out the holes, or to pick the renderings.

MATTRESS
Hérisson
Foundation
1. A bed of large stones dry layed on edge resting directly on the ground or an underlayer. The matress is intended for being of use as foundation to a screed, a paving, etc. Syn. with PITCHED FOUNDATION; SOLING. **See Figure 6**
2. The laying of quarry stones of a matress.

MATURING
Maturation
Building Materials
A natural or caused progressive evolution of the concrete or mortar hardening that begins at the final set and displays over a period of several months.
One generally considers that any concrete or mortar has reached its maturity for 90 days under standard conditions ofhardening.
Indeed, from 24 h to 28 days the strength grows quickly, from 28 to 90 days this growth evolves much more slowly and from 90 days the evolution is negligible.

MATURING PERIOD
Période de mûrissement
Polymers
The first phase of the chemical reaction of polymerization of an epoxydic resin; it is about the beginning of reaction between components (base and crosslinking agent).

MATURITY METER
Maturomètre
Equipment for Measure and Control
A gauge allowing to follow the evolution of the concrete maturing.

MAUL
Maillet
Equipment and Tools
Syn. with BEETLE; MALLET; WOODEN HAMMER

MAXIMAL COMPACTNESS
Compacité maximale
Building Materials
A mortar or concrete to minimum empties, namely the sum of cement + sand (+ gravel for

the concrete), of absolute volumes of solid elements, that go into their unit of volume.

MAXIMAL DIMENSION
Dimension maximale
Metrology
The greatest of the two limit dimensions.

MAXIMAL MOVEMENT
Déplacement maximal
Strength ofMaterials
Limits that does not must to exceed the distorted part of a criticizable piece at the risk to see its functions not to be correctly ensured. Syn. with MAXIMAL WAY

MAXIMAL SERVICE ELONGATION
Elongation maximale de service
Building Materials
The difference in width of a joint of putty or elastomer between the two extreme positions that it can reach.

MAXIMAL WAY
Déplacement maximal
Strength of Materials
Syn. with MAXIMAL MOVEMENT

MAXIMAL YIELD OF SHOTCRETE
Rendement maximal d'un béton projeté
Building Materials
A sprayed material giving a minimum of loss for a speed of mechanical application and a given distance substrate/gun.

MAXIMUM LIFTING
Levée
Handling
The maximum height to which a load can be hoisted by a lifting appliance.

MAXIMUM LOAD
Limite de charge admissible; Taux de travail; Charge limite
Geotechnics. Hydrology
1. Syn. with LOAD LIMIT; LIMIT OF ADMISSIBLE LOAD
2. The maximal load that a river stream of a given limit power can transport, either 4 kg of pebbles from 2 to 4 cm diameter or 10 kg of coarse sand, or 40 kg of impalpable silts. The stream does not transports anything if it only meets stony elements of at least 8 cm diameter.

MAXIMUM STRESS
Contrainte limite
Strength of Materials
The maximal conventional value of the concrete compressive stress to which official regulations allow to subject a prestressed element.

MAYONNAISE
Mayonnaise
Defects (Civil Engineering Structure)
The emulsion of clay that forms at the time of the passage of trains under the influence of the alternate strains and that going up on the ballast level by the phenomenon of pumping, in the railway tunnels not equipped with an invert.

MEALORUB™
Méalorub
Materials
An extender of the cutback made up of rubber powder.

MEANDERING
Sinuosité
Hydrology
Loops formed by waterways due to the geological or flow conditions. Syn. with LOOP

MEANS OF GUIDING TRAFFIC
Balisage
Civil Engineering
All devices (others that the signaling and lighting) set up along roads to guide the traffic and to ensure its security.

MEASURE
Relever les cotes
Drawing
To measure the dimensions of a piece or a work in order to do the plan of it, to carry out a quantitative survey in the interest of financial payment or for an assessment.

MEASURE BY SQUARING
Mesurer par équarissement ou par équarrissage
Building Materials
The calculation of the volume of a stone considering the theoretical volume of a perfect

parallelepiped, instead of the real volume more difficult to calculate owing to its natural irregularities or of cut. This method is also applied for woods.

MEASURE THE GROUND
Arpenter
Topography
Syn. with SURVEY

MEASURE UP A PROFILE
Etablir un profil
Topography
To measure the sloping of a ground by a number of altimetric turning points following the line of sight of the surveying instrument.

MEASUREMENT
Mensuration; Mesurage
Topography; Metrology
1. The whole of a topographic skeleton map.
2. The measuring, the carrying out of a survey.

MEASUREMENT BY *WENNER* PRACTICE
Mesure par la méthode *Wenner* ou Méthode des quatre piquets
Geotechnics
A measuring process of the grounds resistivity that unfolds in the following way: four metal stakes are embedded into the ground in line at equal distance, then one connects to a direct current source the two extreme stakes and one measures the intensity of the power. For concluding the operation, the potential difference between the two interior stakes is measured.

MEASUREMENT OF BEARING FORCES
Mesure de forces d'appui
Civil Engineering Structure
The periodic reading of stresses that allows to follow the evolution of the bearing reactions of prestressed concrete decks under the influence of the constrained differed deformations. This measurement is taken with flat jacks of Freyssinet type or jacks with extra-plats piston.

MEASUREMENT OF CONTENT IN FINE ELEMENTS
Mesure de la teneur en éléments fins
Test of Materials
A special trial performed on a sand sample. The content is determined by washing of the sand with the sieve of 1/10e. As a general rule, the content in fine elements of sand must be lower than 3%.

MEASUREMENT OF DRIVING ENERGY
Mesure de l'énergie de battage
Geotechnics
The energy assessment that allows to realize of the hardness of soils made one's way through using a special core drill called *Standard Penetration Test.* One measures the energy necessary to drive this apparatus into the ground while appropriating disturbed samples.
The principle is as follows: the core drill used for this trial is sunk inside the layer to be studied, by driving, with a rammer of 63.5 kg falling from a height of 75 cm: the core drill is initially sunk of 15 cm into the ground, the N_1 number of blows necessary being written down; then are written down numbers of blows N_2 and N_3 necessary to make it twice penetrate the succession of 15 cm extra into the studied layer, value S.T.P. being equal with the sum of the values N_2 and N_3.

MEASUREMENT OF THE SPEED OF ULTRASONIC WAVES
Mesure de la célérité d'ondes ultrasonores
Test of Materials (Concrete)
A detection system of hairline cracks in concrete whose principle is as follows: starting from a transmitter, a wave train is sent through of the material; its start tallies with the release of a chronometer whose stop is monitored by the arrival of the signal on a receiver. Displayed time and it covered distance make possible to deduce the medium speed of going through. An increase in the time of course corresponds to an increase of obstacles, which are here air spaces created by hairline cracking. Measurements are carried out on compressed concrete test specimens.

MEASUREMENT OF THE THICKNESS OF A PAINT FILM
Mesure de l'épaisseur d'un film de peinture
Test of Materials (Painting)
The quantitative assessment intended for checking with special instruments the thickness of a paint film to make sure that the minimal thickness was indeed applied. **See Figure 7**

MEASURING (WITH A LAND CHAIN)
Chaînée
Topography
Measurement carried out with the chain measure.

MEASURING PORTAL
Portique de mesure
Equipment for Measure and Control
The part of the slump cone constituted by two vertical uprights, distant from about 300 mm and connected rigidly with the top part by a cross member on which slide vertically a reading rule likely to be immobilized by a screw of pressure.

MEASURING SYSTEM OF ULTRASONIC OUTPUT
Système de mesure de débit ultrasonique (Manning)
Equipment for Measure and Control
An instrument that records variations of level of a liquid by ultrasonic measurements and converts them into a maximum percentage rate of flow. Variations are recorded on paper. This system is used to perform measurements of the rate of water flow in tunnels.

MEASURING TAPE
Décamètre à ruban; Ruban
Equipment for Measure and Control
A measuring ribbon making 10 m. Syn. with TAPE; TAPE LINE; TAPE MEASURE

MEASURING UNIT OF READY-MIX CONCRETE
Unité de mesure du béton prêt à l'emploi
Building Materials
A cubic meter of concrete compacted to the refusal taken as landmark unit in France and in some European countries.

MECHANICAL APPLICATION
Projection
Works
Syn. with GUNITING; SHOTCRETING

MECHANICAL BLASTING
Abattage mécanique
Building Materials and Earthwork
A process of rocks dislocation by a machine working by shocks or wear away. Two types of tools are routinely used: the pick and the cutting wheel.

MECHANICAL CHARACTER OF A MATERIAL
Caractère mécanique d'un matériau
Strength of Materials
Every characteristic likely to define its behavior under the ffect of given stresses (notably elastic limit, breaking stress, elastic modulus, breaking elongation).

MECHANICAL CHARACTERISTICS OF A ROCK
Caractéristiques mécaniques d'une roche
Geology
All properties (strengths, modulus of deformation, fracturation, differed deformations) that characterize the behavior of a rock or a rocky mountain.

MECHANICAL EFFECT
Effet mécanique
Equipment and Tools and Strength of Materials
The power transmitted by a force, by a machine

MECHANICAL ELEVATOR
Elévateur mécanique *ou* à main
Handling
Syn. with MECHANICAL LIFT

MECHANICAL FLOAT
Talocheuse
Equipment and Tools
Syn. with HELICOPTER; MACHINE TROWEL; POWER FLOAT; ROTARY FLOAT

MECHANICAL IMPEDANCE TEST OF A PILE
Essai d'impédance mécanique d'un pieu
Test of Materials
A test that consists in checking various criteria of quality of a cast-in-situ pile such as:
- length and section of the pile,
- presence of defects,
- stiffness of the anchorage bed of the pile,
- average quality of the concrete.

This trial proceeds in the following way. A sinusoidal vertical force F is applied on the head of a pile, kept by way of a vibration exciter. One measures with a sensor the sinusoidal velocity V on the head of the pile for an excitation frequency f. The F/v ratio is called mechanical impedance and his reverse V/F mechanical admittance. The analysis of the curve that

represents the mechanical admittance in terms of the frequency of excitation allows to obtain information on the various parameters of quality quoted above.

MECHANICAL LIFT
Elévateur mécanique *ou* à main
Handling
An equipment for lifting materials or equipments at the level of a work station of a construction.
Syn. with MECHANICAL ELEVATOR

MECHANICAL NAVVY
Ecavateur; Roue-pelle; Fraise à trancher
Equipment and Tools
Syn. with EXCAVATOR

MECHANICAL SHEATHING
Revêtement mécanique *ou* Matoplastie
Metallurgy
A protective film obtained by crushing of metal particles on the parent metal prepared beforehand, within of a chemical environment and with a means of impact constituted by glass balls.

MECHANICAL SHOVEL
Pelleteuse
Equipment and Tools
A movable plant of clearing and earthmoving mounted on pneumatics or caterpillar tread, made up of a chassis on which rests a cabin which can turn to 360° around a vertical axis. From this cabin is detached an arm hydraulically articulated at the end whose is driven (always hydraulically) a bucket or clamshell grab. The arm can also be equipped with an auger to perform drillings, of a pitchfork or rock breaker. In earthwork this machine is specially used to work in knoll digging or excavation digging. The mechanical shovel is often called (wrongly) *power shovel* and often also (with more right reason) *hydraulic shovel.* The mechanical shovel can, when it is assembled on tires, being transformed into a general-purpose railroad machine with the help of special equipment.

MECHANICAL SPECIFICATIONS OF CONCRETE
Caractéristiques mécaniques des bétons
Building Materials
All qualities that must have the concrete and that depends on many factors.
The essential quality of a concrete is its resistance to the compression stresses, resistance that depends especially on the proportion of water and binder masses going into its proportions (hence the importance of proportionings). The tensile strength is about 12 times slighter than the compressive strength, and mainly depends of the adhesion of the binder with aggregates. Other mechanical properties (rigidity, tightness, frost resistance ,resistance to the chemical agents, etc.) vary as its compactness.

MECHANICAL SPECIFICATIONS OF THE ROAD
Caractéristiques mécaniques d'une chaussee
Civil Engineering
Characteristics defined by the alignment, the cross and longitudinal section, and that must satisfy with the conditions of speed, intensity and weight of vehicles.

MECHANICAL SURFACE PREPARATION
Préparation mécanique
Welding
A preparation of surface by removal or matter contribution to favour the anchorage of the weld deposit by increasing of the bond surface and/or creation of specific reliefs.

MECHANICAL TESTS
Essais mécaniques
Geotechnics
Tests for determining the shear strength of the ground and to anticipate settlements of the various layers of ground according to the time and of the weight of a work.

MECHANICAL TROWEL
Truellemécanique
Equipment and Tools
A device constituted by a mortar tank in truncated pyramid form connected to a flexible piping by which arrives the compressed air. The mortar is sprayed with a large nozzle.

MECHANICALVIBRATION
Vibration mécanique
Various
Small movements that concern a mechanical set near a position of balance. A vibration is defined

with one or several frequencies; it is also characterized by its amplitude.

MECHANICAL WEAR
Usure mécanique
Building Materials
The removal of matter resulting from normal or not mechanical phenomena acting to the friction, roll or repeated shocks.

MECHANICAL-BALL STRAIN GAUGE
Déformètre à bille mécanique
Equipment for Measure and Control
Syn. with DEFORMETER

MECHANISM OF HANDLING
Mécanisme de manutention
Temporary Construction
In the articulated formworks, device allowing the form striking, transportation, and the replacing of the formwork.

MEDIAN
Médiane
Building Materials
In grading, the size of a grain that is in an intermediate grading range such as grains of size higher than this size is equal in weight with the whole of those of lower size.

MEDIUM ARCH
Arc moyen
Strength of Materials
The locus of the centers of gravity of all normal sections of a bottom face.

MEDIUM FIBER
Fibre moyenne
Strength of Materials
The curve described by an area element surrounding the center of gravity of the straight section of a beam.

MEDIUM SHEET
Tôle moyenne
Metallurgy
A product whose thickness is at least equal than 3 mm but lower than 4.76 mm.

MEDIUM VELOCITY OF A WATERCOURSE
Vitesse moyenne V d'un cours d'eau
Hydrology
The ratio of the flow of a watercourse according to its wetted cross section: $V = Q/S$, in which Q = flow in m^3/s and 5 = wetted cross section)

MEDIUM WEIGHT AGGREGATE
Granulat de poids moyen
Building Materials
A granular substance whose real density is contained between 1200 and 3000 kg/m^3 but is mostly close to 2600 kg/m^3 (example: siliceous aggregates, silicocalcareous, etc.).

MEEHANITE (CAST) IRON
Fonte meehanite
Metallurgy
A gray (cast) iron to highest mechanical strength obtained from a white (cast) iron worked out with 50% to 80% of steel, overheated and inoculated in the pocket of casting with silicocalcium.

MEGAPASCAL
Mégapascal
Metrology
A measuring unit of pressure and stress. Symbol: MPa; 1 MPa=1 N/mm^2.

MELANOPHYRE
Mélanophyre
Geology
An eruptive rock that is a sort of diabase having a porphyritic structure. After crushing it is used as metalling material.

MELT(ING) WATER
Eau de fonte
Hydrology
A liquid that comes from the summer snow fusion, spit of ice or the inlandsis (continental glaciers).

MEMBER
Pièce
Construction
Each element of the assembly of a framework.

MEMBRANE
Film; Diaphragme
Building Materials; Metal Construction
1. Syn. with FILM; PLASTIC FILM
2. Syn. with DIAPHRAGM; PARTITION

MEMBRANE DENSITOMETER
Densitomètre à membrane
Equipment for Measure and Control
An instrument intended for the precise and rapid measurement on site, of the volume of holes from 1 to 3 dm^3, dug in a coating, a ground or a layer of roadway. It allows, knowing the weight of extracted materials of this hole, to determine the density on the spot of the material.

MEMORANDUM BOOK
Calepin
Masonry
A working drawing of the shaping of ashlars going into a building (shapes, dimensions, nature of the cutting, etc.).

MEMORANDUM BOOK OF BOND
Calepin d'appareil
Masonry
The exact representation of the arrangement of the stones, bricks, etc., (bonding) with their dimensioning and the locating of various elements.

***MENARD* ANCHORING**
Ancrage *Ménard*
Nomenclature of Materials
A process that consists in introducing into a drilling a dilator made up of a flexible rubber tube especially reinforced and whose diameter can increase from 50% to 60% when it is internal pressurizing. The hole is filled with mortar, then the dilator pressurizing with the compressed air.
After set of the first mortar, tie rods are introduced inside the dilator and one carries out an anchorage with normal mortar. This process is used in the case of friable or sandy rocks. **See Figure 8**

***MENARD* PERMEAMETER**
Pointe perméamétrique *Ménard*
Equipment for Measure and Control
A measuring device of the permeability of grounds provided with a filter and constituted by a tube of powdered bronze 87 mm long and 60 mm in diameter. The permeameter is setting by driving at the wanted level by injecting water. The principle consists in injecting water under pressure in permanent regime and writting down the flow for several successive landings. This trial is appropriate in the fine soils and silts having a low permeability and into which a drilling would not be suitable.

***MENARD* PRESSURE-PERMEAMETER**
Pressio-perméamètre *Ménard*
Equipment for Measure and Control
A device intended for measuring the ground permeability which itself consists of three contiguous cells, gone down and flattened inside a drilling, by which one inject some water under pressure and that allow to obtain a cylindrical field of flow for the central cell, whose one measures the flow and pressure after stabilization (permanent regime).

MENILITE
Ménilite
Geology
A flint that appears in the marls with gypsum of the Parisian region.

MERCURY PROTOCHLORIDE BATH
Bain de protochlorure de mercure
Building Materials
A treatment process of woods that consists in immersing them for 8 to 10 days in a solution made up of one part of the corrosive sublimate for 50 parts water.

MERCURY-PUMP POROSIMETER
Porosimètre à mercure
Assaying Equipment
A measuring device of the porosity of a geological layer using the forcing of the mercury at a pressure rising enough in the pores of the rock to be tested.

MERLON
Merlon
Civil Engineering; Earthwork
A protection block of earth built at the foot of a slope with intent to contain and stop falls of earth, collapses or landslides. This block is intended for protecting a channel of communication; very often it is preceded uphill by a scree chamber effortlessly clearing by earthmovers. **See Figure 9**

MESH
Maille
Equipment and Tools
Network of interlaced wires following a very precise spacing of a fabric of sieve.

MESNAGER IMPACT STRENGTH
Résilience _Mesnager_
Metallography
An impact test carried out on a notched metal test bar and of given sizes.

MESNAGER SEMI-HINGE
Semi-articulation _Mesnager_
Construction
Articulation of a reinforced concrete bridge, constituted of a concrete prism made one's way through by two layers of crossed bars. These are this bars that support the totality of the strain, the concrete being only intended for protecting them from oxidation. They are strongly anchored in the two pieces to be articulated.

MESOZOIC ERA
Mésozoïque
Geology
Syn. SECONDARY ERA.

METAL
Empierrer
Civil Engineering
To cover with a layer of stones a path, a ground, etc., in order to create a traffic area for example. Syn. with PITCH

METAL BASE
Embase métallique
Foundation
A rectangular or square distribution sole formed by a stacking of sections or rails resting on a slope concrete correctly leveled.

METAL CIRCLE
Ceinture métallique
Construction
Concerning the repairs of works, device that can be constituted of flat irons or other sections surrounding the masonry, united by bolted assemblies allowing a tensioning of the circles. The circle(s) is (are) intended for strengthening a failing masonry (enclosing of a fractured pier, for example). Syn. with RING GIRDER

METAL CRAMP
Agrafe
Masonry
Syn. with CLAMP IRON; DOUBLE DOVETAIL; MASONRY TIE; WALL TIE;

METAL INERT-GAS PROCESS
Procédé M.I.G.
Welding
An arc welding method under a shield of inert gas using a fuse wire electrode.

METAL PIER
Pile métallique
Construction
An element made up of four verticals (principal rafters), joined on the head by a platform supporting the bridge-support apparatuses. Verticals are connected between them by crosspieces and diagonals. Feet of principal rafters are mostly embedded into a concrete foundation block. **See Figure 10**

METAL SAMPLE
Peuille
Metallurgy
A sample of metal taken by cut in an ingot in order to check its quality by chemical analysis.

METAL SLIDING PLATE OF BEARING APPARATUS
Plaque de glissement métallique d'appareils d'appui
Construction
A device made up of two plane rolled steel plates, one fastened on the pier cap and the other under the deck and being able to slip one on the other one. An alternative: the bottom plate can be convex. This type of bearing is reserved for metal decks, cased composite beams, reinforced or prestressed concrete slabs having a span lower than 20 m. One also says *plate of friction.*

METAL SPRAYER
Métalliseur
Metallurgy; Equipment and Tools
1. A specialist who carries out a metalizing (or plating).
2. Generally, device used to carries out a metal spraying. Syn. with METALLIZER

METAL SPRAYING
Metallisation
Metallurgy
Syn. with METALLIZATION; PLATING

METAL STRUCTURE
Ossature
Construction
Syn. with FRAME; SKELETON CONSTRUCTION; STRUCTURE; ETC.

METAL TENSILE STRENGTH
Résistance à la traction d'un métal
Test of Materials (Metallurgy)
The quotient of the maximum load recorded during the traction of a test bar by the initial section of this test bar. It allows to determine the conventional elasticity limit, lengthening after breaking expressed as a percentage, constriction, etc.

METAL-ACTIVATE GAS PROCESS
Procédé M.A.G.
Welding
An arc welding process with a fuse electrode under a shield of carbon dioxide.

METALLIC CEMENT
Ciment des carriers; Ciment métallique
Building Materials
A product obtained by mixing stone powder with zinc oxide powder and muriatic acid. It is used to repair stones and to point.

METALLIC COATING
Revêtement métallique
Metallurgy
Any layer of metal laid down on a surface and obtained by a process of recovery such as the surface of the deposited metal is rather homogeneous and modifications of the basic material in the interface rather negligible, so that the quality of the layer is defined by its thickness.

METALLIC PAINT
Peinture métallisée
Painting
A product containing metallic pigments in dispersion. Syn. with PAINT WITH A METALLIC FINISH

METALLIFEROUS
Métallifère
Metallurgy
Of materials containing metal.

METALLIZATION
Métallisation
Metallurgy
Syn. with METAL SPRAYING; PLATING

METALLIZATION
Métallisation
Metallurgy
A technique of surface processing or application of metal protective coating on another metal surface to be protected. This coating forms with steel a genuine battery, and the action varies according to the polarity of the battery thus formed.
Among the processes most used, we can distinguish;

- **chemical displacement of metal to be deposited** *(par déplacement chimique du métal à déposer),* from one of its salts mostly in solution (chemical coppering of iron);
- **electrolytic coating** *(par revêtement électrolytique)* (chromium plating, coppering, zinc plating, etc.);
- **hot immersion into a metal or molten alloy** *(par immersion à chaud dans un métal ou un alliage fondu).* This process was formerly used to cover iron and steel with zinc (galvanization), tin (tinning), lead (leading) or aluminum (aluminum coating);
- **superficial thermochemical processing in a solid, liquid, or gaseous medium** (case-hardening) *(par traitement thermochimique superficiel en milieu solide, liquide ou gazeux (cémentation)).* This process consists in laying down coats of aluminum (calorizing), zinc (sherardizing), chromium (chromizing), molybdenum and tungsten;
- **paint containing metallic powders in suspension** *(par peinture contenant des poudres métalliques en suspension);*
- **metal spraying with the gun** *(par métallisation au pistolet);*
- **vacuum plating** *(par métallisation sous vide).*

These last two processes, industrially most recent, are mostly regarded like actual metal sprayings (other processes are galvanization, case-hardening, chromizing, etc., according to the process and metal used). In metal spraying with a squirt gun, the metal or molten alloy is thrown into fine droplets onto the surface to be covered, where it is solidified by forming a protective coat. Metal looks in wire form, driven

in the flame of the blowtorch (Schoop process) or in powder form, aspired in the flame of this one (Schori process) or subjected to a jet of plasma produced by an electric arc. A process less ordinary consists in throwing metal beforehand molten and arriving by gravity in the gun where a hot compressed air blast pulverizes it. Usually, metal spraying with zinc, lead, tin, aluminium is performed. Metallization with the squirt gun is mainly used to protect steels from corrosion.
Syn. with METAL SPRAYING; PLATING

METALLIZE
Métalliser
Metallurgy
To cover with a protective coat of metal. Syn. with PLATE

METALLOGRAPHER
Métallographe
Metallography
A technician specialist in the study of the structure of metals.

METALLOGRAPHIC REACTIVE
Réactif métallographique
Metallography
A solution of chemical or electrochemical attack allowing to reveal the metallographic structure of alloys.

METALLOGRAPHY
Métallographie
Metallography
A field of the science of materials which aims in studying metals and their alloys, considered as materials distinct from other solid bodies. Metallography consists in studying and analyzing the structure (intern or superficial) of metals, as those their alloys, before or after various processing which they can undergo (thermal, mechanical processing, etc.) and includes primarily mechanical tests (hardness, strength, ductility, fatigue), tests of structure (macrography and micrography), physical tests (mass, thermal properties, etc.), chemical tests (corrosion).

METALLURGY
Métallurgie
Metallurgy
A technique of extraction and exploitation of ores, their transformation into semifinished products, and their working to obtain finished products, suitable for use.

METALWORK
Métallerie; Tôlerie
Metal Construction; Metallurgy
1. The complete manufacture and installation of metal structures, whatever is the importance.
2. Shaping and manufacturing metal sheets. Syn. with SHEETING

METAMORPHIC
Métamorphique
Geology
Related to metamorphism.

METAMORPHISM
Métamorphisme
Geology
The transformation of the texture and mineral composition of a rock in the solid state under different conditions from those of its formation (temperature, pressure, etc.) (not to be confused with anatexis, where there is fusion).

METARAL
Métaral
Metallurgy
Of microscopic components of steels chemically homogeneous, which are ferrite, graphite, cementite, and austenite.

METASOMATISM
Métasomatose
Geology and Geomorphology
A process of transformation of rocks under the effect of seepage waters and atmospheric agents.

METEORIC
Météorique
Various
Indicates what originates from atmosphere.

METHACRYLIC RESIN
Résine méthacrylique
Polymers
A particular acrylic resin in which, in each atom of carbon of the principal chain bearer of one of the substituent radicals characteristic of these resins, is also fixed a methyl radical.

METHYL CHLORIDE
Chlorure de méthyle
Materials
Solvent used to clean stains or tools used to implement some resins.

METHYL METHACRYLATE
Résine acrylique
Polymers
Syn. with ACRYLIC RESIN

METHYLENE BLUE TEST (called more simply *test to the blue)*
Essai au bleu de méthylène
Geotechnics
A test of which aim is to characterize globally (quality and quantity) the clayey fraction present either in a clayey ground, or in a sand or in the aggregates generally.
This trial consists in determining the quantity of necessary methylene blue to cover a monomolecular layer the total surface (external + internal) of clayey particles of a material kept in suspension in the water. The end of the titration occurs when the quantity of blue introduced exceeds the ability of adsorption of the material. This sill is determined either by the told practice of the stain test or by colorimetric measurement. This quantity of blue brought to a weight of 100 g of dry material is called the value some blue and symbolized by VB.

METHYLENE BLUE TEST BY TURBIDIMETER METHOD
Essai au bleu de méthylène par la méthode turbidimétrique
Building Materials
An improvement of the mainline blue test of which aim is to measure and to check the cleanliness of the aggregates. A luminous beam crossing turmoils or colored liquid mediums is lessened following two mechanisms. These mediums are characterized by a coefficient *A,* told *adsorbance,* that is equal to the logarithm of the incidental luminous intensity ratio and transmit:

$$A = \log_{10} \frac{I_0}{T}$$

This coefficient varies, in general, in a linear manner according to the concentration in coloring matter or in solid matter in suspension. In the latter case, the adsorbance is called turbidity. This test consists in forming a suspension having turbidity given, then to follow the variation of the absorbance of this suspension under the influence of successive addition of blue of methylene. The value of A is used as guide in the supervision of the test.

METHYL-ORANGE ALKALINITY
Titre alcalimétrique complet (TAC)
Hydrology
The content in bicarbonates, carbonates, alkaline hydrates or alkaline-earth that contains water.

MICA
Mica
Geology
A hydrated silicate that is in abundance in metamorphic and plutonic rocks.

MICASCHIST
Micaschiste
Geology
A metamorphic rock containing a high proportion of micas. It is an extremely foliated crystalline schist.

***MICHAELIS* MACHINE**
Machine *Michaelis*
Assaying Equipment
A device used to carry out the tensile test on concrete cubes.

MICRITE
Micrite
Geology
The cement (calcite) of most limestone rocks.

MICROBLISTERING
Microbullage
Defects (Painting)
A defect affecting paint films resulting in the appearance of tiny bubbles. It is in these zones of microblistering that corrosion will develop preferably.

MICROBLOWHOLES
Microbullage
Defects (Construction of R.C. and P.C.)
A defect that can be observed of some formed concrete surfaces, characterized by a plurality of minibubbles distributed by zones or on all the surface. This damage of facing can be due to the

use of unmolding products or to notorious differences of temperature inside the mold.

MICROBUBBLE AGENT
Aérateur
Hydraulic Binders
An admixture mixed into the concrete with the intention to obtain a concrete of which internal structure is spangled with microbubbles of air.

MICROCONCRETE
Microbéton
Building Materials
Concrete that presents a fine grading skeleton (aggregates < 10 mm).

MICROCRACKING
Microfissuration
Defects (Building Materials)
A particular alteration of the irreversible modifications of the texture of a material under the influence of mechanical stresses that brings about by formation or extension of hairline cracks. Syn. with HAIRLINE CRACKING

MICROCRYSTALLINE ROCK
Roche microcristalline
Geology
An eruptive rock of which crystals are not visible to the naked eye.

MICRODIORITE
Microdiorite
Geology
A microgranular eruptive rock of diorites family having a high content in silica and quartz.

MICROEARTH CRUST
Micro-écorce
Geology
The shallow bed of ground (a few meters).

MICRO-FAILURE
Microfissure
Defects (Construction of R.C. and P.C.)
Syn. with HAIRLINE CRACK

MICROFELSITE
Microfelsite
Geology
A vitreous eruptive rock of granites family that is formed by a quartz and feldspar mixture.

MICROFLAW
Microcrique
Defects (Metallurgy)
A tear of negligible size that affects a metal.

MICROFRACTOGRAPHY
Microfractographie
Test of Materials
The observational and analysis science of breakages of materials carried out with a microscope.

MICROFROST WEATHERING
Microgélivation
Geomorphology
The cutting up of the limestone into small angular fragments under the freezing effect.

MICROGABBRO
Anamésite
Geology
Syn. with ANAMESITE

MICROGRAPHIC STRUCTURE
Structure micrographique
Metallography
The composition and arrangement of a metallurgical product observed by micrography methods.

MICROGRAINED
Microgrenue
Defects (Building Materials)
Of a surface that presents small irregularities hardly visible to the naked eye.

MICROGRAPHY
Micrographie
Test of Materials
1. The examination with the microscope of the structure of a metal or alloy. Micrography informs about the number of physical constituents of the metal, their size, distribution, and proportions.
2. The photography of a microstructure.

MICROGRAVIMETRY
Microgravimétrie
Test of Materials
A measuring technique that puts in obviousness the anomalies of the gravity due to various

ground densities and that are mostly used to detect subterranean cavities.

MICROHARDNESS METER
Microduromètre
Assaying Equipment
Instrument for determining the hardness of a material but which is applied only to one negligible part of its surface.

MICROMETRIC LENS
Loupe micrométrique
Equipment for Measure and Control
Syn. with MICROMETRIC MAGNIFYING GLASS; MICROMETRIC TELESCOPE

MICROMETRIC MAGNIFYING GLASS
Loupe micrométrique
Equipment for Measure and Control
A biconvex lens on which is illustrated a micrometric scale intended for measuring the opening of cracks. Syn. with MICROMETRIC LENS; MICROMETRIC TELESCOPE

MICROMETRIC TELESCOPE
Loupe micrométrique
Equipment for Measure and Control
Syn. with MICROMETRIC LENS; MICROMETRIC MAGNIFYING GLASS

MICROMORTAR
Micromortier
Building Materials
Any mortar of which largest aggregates do not exceed 1 mm.

MICRONIZATION
Micronisation
Materials
An operation of grinding materials with the intention of reducing them into particles in order to be able to use them in operations of sanding, blast cleaning, etc.

MICROPILE
Micropieu
Foundation
A pile of small diameter (< 25 cm) driven into the ground or worked on the spot after drilling. Among the latter category, we can distinguish the *cast-in-place root piles* and *needle piles;* one respectively points to them by *type 1* and *type 2.*

MICROPORE
Micropore
Geology
An intergranular cavity that affects notably sedimentary rocks and which has formed during lithogenesis. Micropores result from the stop of the growth of crystals by dewatering of the dissolved salts for example, of the presence of residual fluids, or posterior dissolutions.

MICROSANDBLASTING
Microsablage
Work
A scouring process of metal surface or masonry facing with finest sand. By extension is also said of a scouring carried out with other finest abrasives.

MICROSCOPIC CRACK POLYGON
Microfissuration
Geology
All thinnest inter- and intracrystallines cracks conditioning largely mechanical rock properties. Microfissuring is characterized by the presence of nonadherent surfaces of a small amplitude.

MICROSILICA
Fumée de silice; Microsilice
Building Materials
A by-product of the silicon industry recovered in the smoke emitted by electric furnaces of manufacture. This smoke appears as a powder more or less gray, finest and very volatile.
Microsilicas after processing can then be used as additives in the manufacture of mortars and concretes. Mixed with the cement, they endow on this one particular properties in particular: to decrease the phenomena of scum, to improve adhesion with aggregates and reinforcements, to increase the concrete compressive strength. The essential characteristic of microsilicas is to change the microstructure and porosity of derivatives containing cement. Syn. with CONDENSED SILICA FUME; SILICA FUME

MICROSEISMIC TRANSPARENCY
Microsismique par transparence
Test of Materials (Foundation)
A control method of deep foundations, in particular of precast or cast-in-situ concrete foundation piles.

The check consists in carrying out a drilling into the ground closer possible of the pile to be tested. In the ground, distinctly deeper than that reached by the pile, is descended a tube which is then filled with water or drilling mud. On the head of the pile repeated blows are transmited (or on the structure which overcomes it). Hydrophones put in at various levels inside the tube collect resonant waves. The time of course of the resonant wave between the head of the pile and hydrophone is measured with precision and the results are reproduced on a graph. This test enables to appreciate the quality of concrete, to know the real length of the pile and to detect possible faults (cracks, inclusions, etc). **See Figure 11**

MICROTEST™
Jauge magnétique du type microtest; Microtest
Equipment for Measure and Control
An instrument for measuring by direct reading the thickness of a coating (of paint, metal spraying, etc.) ranging between 0 and 500 µm. The reading is made with a graduated wheel that one turns up to the release of a spring; the figure which stands then opposite the fixed mark points out the thickness of the coating.

MICROTUNNELER
Microtunnelier
Equipment and Tools
Syn. with MICROTUNNELING MACHINE

MICROTUNNELING MACHINE
Microtunnelier
Equipment and Tools
A boring machine allowing to carry out circular galleries up to about 3 m in diameter. The machine is remote-controlling since an outside control station to the work to be created.
The principle of functioning is as follows. The microtunneler functions as a mole. The machine is came down into a launch pit directed in the axis of the gallery, stalled on its cradle and pushed by jacks having a stroke about of 2 m. The circular drilling head grinds the ground to the working face. When 2 m of gallery were dug, jacks retract and an element of segment or piping is then placed on the cradle and operation of pushing is renewed. A high pressure water circulation is kept on the drilling head. On its return this water of mucking out carries crushed excavated materials until a sedimentation tank located on the surface. To tacke the axis of the gallery to be bored, a laser beam targets, since the launch pit, a leveling staff placed at the rear of the machine. All information is transmitted straight on the surface, at the position of piloting, where the operator can correct possible variations of axis acting on articulation jacks of the drilling head. Syn. with MICROTUNNELER

MICROWAVE HEATING
Chauffage par micro-ondes
Construction of R.C. and P.C.
External process of heat treatment for concrete by means of a generator microwave machine that diffuses these in the direction of the concrete mass to be treated. These microwaves heat up the water contained in the concrete and consequently accelerates some the set and the hardening.

MIDRAIL
Sous-lisse
Construction
The intermediate rail of a railing or a barrier, stopped every post.

MIGMATITE
Migmatite
Geology
A rock of the regional metamorphism which has received a matter contribution coming from abyssal magmas.

MILD STEEL
Acier doux
Metallurgy
An iron and steel product used to make building materials (universal beams, sections, sheet metals) not requiring great strength. Its carbon content is around from 0.1% to 0.2%. Syn. with LOW STEEL; SOFT STEEL

MILIOLE
Miliole
Geology
A foraminifera having formed chalky benches of excellent quality from where is extracted a very appraisal building stone. Limestone with milioles form the *royal bench.*

MILK
Laitance
Construction of R.C. and P.C.
Syn. with CEMENT GROUT; DUSTING; LAITANCE

MILKINESS
Opalescence
Defects (Painting)
The aspect of a varnish film of which initial transparency is faded in its mass. Syn. with OPALESCENCE

MILKSTONE
Pierre de lait
Geology
A variety of clay.

MILL
Concasseur
Equipment and Tools
Syn. with CRUSHER; KIBBLER; STONE BREAKER

MILL SCALE
Calamine
Defects (Metallurgy)
Syn. with SMITHSONITE

MILLED PRODUCT
Produit broyé
Painting
A paste obtained by grinding of white or colored pigments, mixed or not with fillers, with some binders or other grinding liquids.

MILLED STONE
Pierre moulinée
Defects (Building Materials)
Syn. with DISINTEGRATED STONE

MILLISECOND DETONATOR
Microretard
Explosives
The name of an explosive of which the firing process is a multiple of 25 ms. Syn. with SHORT-DELAY DETONATOR

MILLSTONE (GRIT)
Meulière
Geology and Building Materials
A siliceous sedimentary rock abundant in the Parisian region (Beauce and Brie) from which we can distinguish two types: the cavernous (made of cells), the compact (also called *hard core*). Formerly, the millstone was used to build permanent structures. It is an excellent building stone having a good frost resistance and which was very much used despite its difficulty of cut. Syn. with MILLSTONE QUARRY

MILLSTONE BLOCK
Meulière plaquette
Building Materials
A millstone of which the two faces are about parallel.

MILLSTONE PIT
Meulière
Building Materials
A quarry from where the millstone is extracted.

MILLSTONE QUARRY
Meulière; Pierre de meule
Geology and Building Materials
Syn. with MILLSTONE (GRIT)

MILLSTONE QUARRY PIT
Molière
Building Materials
A former term indicating a millstone grit quarry.

MINE
Miner
Explosives
To pose mines for working.

MINE EXPLOSIVE
Explosif de mine
Explosives
Of any explosive substance suiting to the mining work, as in mines and quarries as in public works.

MINE TIMBER
Bois de mine
Temporary Construction
A round piece of small dimensions, intended notably to the propping-up of galleries. Syn. with PITWOOD

MINER
Mineur
Work
A specialist in demolition or worker who drills blastholes.

MINER PINCHING TOOL
Pointerolle
Equipment and Tools
Syn. with MOIL POINT; POINT TOOL

MINERAL
Minéral
Mineralogy
A substance in a crystallized state going into the composition of rocks.

MINERAL SPECIES
Espèce minérale
Mineralogy
A defined chemical compound having, but exception, a crystallographic identity.

MINERAL SPIRIT
White spirit
Painting
Syn. with TURP SUBSTITUTE; WHITE SPIRIT

MINERAL THINNER
Diluant minéral
Painting
An extender conferring to the paints mechanical resistance and/or to the inclemency characteristics, because of their nature or morphology. Syn. with INORGANIC THINNER

MINERAL WATER
Eau minérale
Geohydrology
A natural water containing dissolved substances that give it particular properties (sulfurous water, saline, ferruginous, etc.).

MINERALIZATION AGENT
Minéralisateur
Materials
1. An element, substance which has mineralizing properties.
2. A substance that facilitates the crystallization of amorphous bodies.

MINERALIZER
Minéralisateur
Hydraulic Binders
A product of mineral origin (example: silica) appearing in colloidal or powder form. Contrary to the organic materials, it going into chemical combination with hydrated components of the cement and of the lime of hydrolysis to form stable mineral compounds.

MINERALIZING
Minéralisant
Materials
Of an additive, a substance that brings minerals.

MINERALOGIST
Minéralogiste
Mineralogy
A specialist in the study of minerals.

MINERALOGY
Minéralogie
Mineralogy
A particular field of the geology that studies and counts minerals, namely the homogeneous natural solids that make up rocks.

MINER'S AUGER
Sonde à cuillère *ou* à tarière
Geotechnics
An equipment allowing soils survey which is formed by a rod, usually square iron, made up of that can be dismantled sections and supporting at its lower end a tool of attack: scoop or auger for soft grounds, bore bit for hard ground. One wields the miner's auger such as a corkscrew driving it into the ground well vertically and transmitting to him a rotational movement by means of a horizontal handle of operation. One takes out every now and again the scoop which filled with earth and one thus obtains samples of met grounds. (It is the principle of the miser and scoop drill.) Syn. with SCOOP DRILL

MINETTE
Fraidronite; Minette
Geology
A rock formed by feldspar, amphibolite, and mica used to carry out metallings or the confection of cobblestones.

MINI-JOMINY WELDABILITY TEST
Essai de soudabilité dite *mini-Jominy*
Welding
A test for determining by hardness measurements the structures obtained under a weld bead while comparing the cooling speeds. A test specimen of small diameter (6 mm) is quickly rising in temperature then abruptly cooled at an end. One plots, thanks to an optical pyrometer the heating and cooling curves that allow to have a better knowing of thermal effects in various points of the surface of the test specimen.

MINIMAL BREAKING LOAD OF A LIFTING ROPE
Force de rupture minimale d'un câble
Equipment and Tools
The product of the square of the nominal diameter of a cable (in mm^2) by the nominal strength to the tension of wires (in N/mm^2) and by a coefficient peculiar to the type of construction of the cable.

MINIMAL DEPTH
Epaisseur minimale
Construction
The local dimension of a coating measured in the place where this one is the weakest.

MINIMAL DIMENSION
Dimension minimale
Metrology
The smallest of the two limit dimensions.

MINIMAL PERCENTAGE OF REINFORCEMENTS
Pourcentage minimal d'armatures
Construction of R.C. and P.C.
The percentage of reinforcements calculated to obtain the allowable maximum stress in the concrete and the reinforcements.

MINIMAL POROSITY OF CONCRETE
Porosité minimale d'un béton
Building Materials
Porosity whose water batching and the minimum time of flow after placing are respectively the critical water batching and the critical flow time.

MINING BY BLASTING
Abattage à l'explosif
Building Materials and Earthwork
Syn. with BLASTING BY EXPLOSIVES

MINIPILE
Mini-pieu
Foundation
A small cast-in situ foundation pile of reinforced concrete whose maximum diameter exceeds rarely 25 cm (truncated or cylindrical-shaped) and whose length reaches at most 6 m.

MINITUNNEL
Mini-tunnel
Civil Engineering Structure
A small circular subterranean work about 1.50 m diameter that is carried out by boring or by driving.

MINOR BED
Lit mineur
Hydrology
In the transverse profile of a watercourse, medium width occupied by the water flow during the most of the year, namely outside in times of flood. **See Figure 12**

MINOR PERMEABILITY
Perméabilité en petit
Geology
The seepage and circulation power of waters that can be observed in sandy, alluvial formations, and stratums of alteration; it leads, during diggings, to drainages, dewaterings and sinkings of groundwater.

MINUTES
Minute
Contract
The original document (drawing, estimate, report, etc.).

MIRROR
Miroir
Geotechnics
The interface between two geological stratums whose the most compact plays the role of a reflexion stratum for waves emitted by seismic probing instruments.

MIRROR WIDTH
Largeur au miroir
Hydrology
The width of the wet section on the open surface of a watercourse.

MISALIGNMENT
Mésalignement
Defects
The lateral gap between two pieces, two elements, assembled or joined end to end.

MISCIBILITY
Miscibilité
Materials
The property of what is miscible; that one can mingle with another body or another substance to form a homogeneous unit.

MISER
Sonde de *Palissy*
Assaying Equipment
See MINER'S AUGER; SCOOP DRILL.

MISRUN
Malvenue; Reprise
Defects (Metallurgy)
1. A defect affecting a casting, due to defective casting conditions.
2. Defect of a casting whose outside aspect reveals an inhomogeneous surface made up of several superimposed layers of metal.

MIST DRILLING
Forage à la mousse
Work
A technique used to drill through permeable subterranean rocky beds by replacing the drilling mud by gas or air mixed with a foaming agent.

MISTAKE
Loup
Defects
Syn. with BOTCH; DEFECT; FAULT

MITER
Onglet
Work
A slantwise cup forming an angle of 45° with the longitudinal axis of the piece. **See Figure 13**

MITER BOX
Boîte à coupe
Equipment and Tools
A tool of guidance for a saw.

MITER CUT
Coupe d'onglet
Work
Cut in timber or metal at an angle of 45°.

MIX
Malaxer; Gâchée
Building Materials
1. To mingle intimately several substances of different natures (example: to mix some concrete, mortar).
2. Syn. with BATCH

MIX DESIGN
Composition des bétons
Building Materials
All weight proportions of various categories of dry aggregates, binder, volume of water, and possibly admixtures to be mixed into the mixture, necessary to obtain a cubic meter of concrete in place. Syn. with DESIGNATION; PROPORTIONS

MIXED DRILLING PRACTICE FOR BORED PILES
Forage mixte pour pieux forés (Méthode de -)
Work
A drilling process that consists in using a tubing on a some depth and to does not use it for the continuation of operations. One has there recourse when top beds of ground that must make one's way through the drilling are unstable and/or necessitate the use of a work tube, moreover in aquatic site, from a barge or backfill recently put in place. One can then continue the drilling, without tube, under bentonitic mud, if underlying layers allow it, and up to the depths that cannot be reached by a lonely work tube.

MIXED ROCK
Roche brouillée
Geology
A broken rock reduced into angular blocks mixed together.

MIXER
Mélangeur; Brasse; Agitateur; Malaxeur
Equipment and Tools
1. An equipment used to mix injection grouts. Common mixers are devices turning at speeds from 1500 to 3500 rpm; the casual mixer only

comprises one axle with blades, the mixer to high turbulence comprises two rotor blades turning in opposite direction. Syn. with MIXING MACHINE
2. Equipment for mixing melted bitumen.
3. Syn. with AGITATOR; MIXING PADDLES; STIRRER
4. Syn. with ASPHALT MIXER

MIXING
Gâchage; Malaxage; Enrobage; Délayage
Building Materials; Work; Hydraulic Binders
1. The combining of the various constituents of mortar or concrete to obtain a homogeneous product.
2. The intimate mixing of the various constituents of a product to homogenize the whole (example: mortar, paint).
3. To make a mixture of aggregates with a binder so as to form a more or less homogeneous mass.
4. A process that consists in putting in suspension in the water clay and some limestone during the manufacture of the cement by wet process. Syn. with DRAGGING-OUT; TEMPING

MIXING CYCLE
Cycle de malaxage
Building Materials
Duration of manufacture of concrete that begins with the successive introduction of the various concrete ingredients and ends by dumping the tank.

MIXING MACHINE
Malaxeur; Mélangeur
Equipment and Tools
1. A device being designed to mix in a homogeneous way the different concrete ingredients of the fresh concrete by relative displacement of them with regard to the others. The mixing is forced by movable rotor blades toward the tank (fixed) whereas, inside the concrete-mixer, the mixing is free and is carried out by gravity in the tank (mobile) often provided with fixed blades. We can distinguish the mixer with vertical axis of rotation and mixer with horizontal axis of rotation. Syn. with CONCRETE MIXER
2. Syn. with MIXER

MIXING PADDLES
Agitateur
Equipment and Tools
Syn. with AGITATOR; MIXER; STIRRER

MIXING PLANT
Centrale de malaxage
Equipment and Tools
An installation being an integral part of a concrete-mixing plant. We can distinguish two types of mixing plant:
- *station* equipping concrete-mixing plants that has a mixer with fixed position into which all the concrete ingredients are introduced and that, after brewing of materials, pours the concrete batch into the delivery truck mixer;
- *stations* told *of batching* that postpone in the truck mixer, the operation of mixing of concrete ingredients beforehand batched.

MIXING TANK
Cuve de malaxage
Equipment and Tools
Syn. with MIXING VAT

MIXING VAT
Cuve de malaxage
Equipment and Tools
A container into which all elements going into the concrete proportion are mixed. These tanks of mixers or concrete mixers can be with a horizontal axis or vertical axis. The tank is to movable rotor blades in the mixers. (In civil engineering structure, the mixer with inclined axis is formally dissuaded.) Syn. with MIXING TANK

MIXING WATER
Eau de gâchage
Building Materials
The necessary water for concrete or mortar manufacture constituted by the water supply more the water contained in the aggregates. Its role is triple:
- it hydrates the binder;
- it wets aggregates;
- it facilitates the placing of the concrete or the mortar.

Syn. with GAUGE WATER; GAUGING WATER

MIXTURE RATIO
Dosage d'un béton, d'un mortier
Building Materials
The quantity of each component used in the manufacture of concrete or mortar. The batching of concrete for example, is described in kilograms of binder per cubic meter of concrete in place. Syn. with PROPORTION; RICHNESS OF THE MIXTURE

***MLPC* CROSS-SECTION PROFILOGRAPH**
Transverso-profilographe MLPC
Equipment for Measure and Control
A device designed to measure road cross sections. A probe in the form of a rubber roller is connected to a carriage moving along a metal ruler 4 m long which constitutes the basis of measurement. The carriage carries a pen and a magazine equipped with a roll of recording paper. The horizontal and vertical movements of the probe are recorded on the chart by the pen, the ordinates in true scale and the abscissa in varying scales according to requirement.

MOAT
Douve
Hydraulic Works
Syn. with STAVE

MOBILE CATWALK
Passerelle de visite mobile
Equipment and Tools
A self-propelled vehicle allowing the installation under a work to be inspected of an inspection footbridge that one reaches through a vertical column. **See Figure 14**

MODEL OF VAULT
Cerceau
Equipment and Tools
A thin metal piece (or wooden piece) being of use as template, used to form cradle vaults.

MODIFICATION
Modification
Civil Engineering Structure
The fitting carried out aftertward to a structure or a part of structure. It is a matter primarily of strengthenings or widenings imposed by the evolution of the traffic, about adjustment of the access to a work, the installation of a conduct hung on the deck of a bridge, etc.

MODIFIED *DEVAL* TEST
Essai *Deval* modifié
Tests of Materials (Building Materials)
A trial intended for testing the abrasion resistance of aggregates whose progress of operations is identical to the Deval normal test, the lonely difference residing in the fact that in each cylinder are added two spheres of (cast) iron.

MODIFIED HYDRAULIC BINDER-BASED MATERIAL, PREMEASURED
Matériau à base de liant hydraulique modifié, prédosé
Building Materials
A premeasured mixture in factory of hydraulic binders, aggregates, additions, water, with or without a synthesis binder or admixtures. (Fibers can be mixed into the mixture to constitute a reinforcement).

MODIFIED KELLY BALL DEVICE
Kelly-ball modifié
Equipment for Measure and Control
An almost identical device to the kelly ball, but that differs from the method and weight of the device. The modified kelly ball weighs 12.5 kg. Moreover, the test does not take place any more on the concrete of the work, but on a sample. For that, one fills to the close-cropped edge a basin of 35 cm diameter and 25 cm tall and on operates as for normal kelly ball.

MODIFIED SAND EQUIVALENT
Equivalent de sable modifié
Test of Materials (Building Materials)
A complement to the determination of the standardized sand equivalent that allows to differentiate various fines (clay, silt, silica, limestone, etc.) by way of a very concentrated solution of silicate of sodium. This one coagulates muddy clayey elements and accelerates thus their settling velocity; fine elements such that limestone or silica are insensitive to this solution and remain therefore in suspension at the time of the flocculation.
The test of the modified sand equivalent is carried out in two time:
- *determination of the VSE sand equivalent according to the standardized practice (if the*

result is higher than 85, the second part of the test is not necessary),

- *determination of the VSE according to the described practice hereafter. This complementary test consists in separating by preliminary coagulation clays and silts of the other fillers or fines contained in the sand. This operation is carried out by way of a solution of sodium silicate at 38° Baumé approximately. The test tube was filled with the solution of sodium silicate up to the first mark, and one introduces the sand to be studied. Then one proceeds at the immediate washing of the sand with a standardized washing solution that one introduced up to the second mark of the test tube. (Agitation and imbibition times are suppressed so as to not destroy the coagulation of muddy and clayey elements.) After 20 mn of rest, the modified sand equivalent is calculated according to the same process that the standardized test by measuring the proportion of fines and sandy elements coagulated in comparison with the mixture flocculat + sand. Values of the modified sand equivalent and standardized are postponed in defined inequalities below:*

either standardized VSE ≥ 85.

or modified VSE < to :

$$\frac{\text{Found value of standardized SEV} - 37}{1.37}$$

If one of the inequalities is verified, the sand is considered clean. If no inequality is verified, the sand is reputed inappropriate for the use for concrete or mortar. (Noted: the expression of the inequality is deduced from the equation of the right of regression that links the standardized sand equivalent to the modified sand equivalent.)

MODILLION
Modillon
Construction
Important overhanging of a stone in comparison with a tympanum, supporting outside the bearing surface a crowning termination of work. The modillion can be only a simple decorative element therefore none supporting load. **See Figure 15**

MODULE
Module
Hydrology; Architecture; Equipment and Tools
1. The annual medium flow of a watercourse calculated over one year.
2. A conventional measurement determining the dimensions of various parts of a construction which are mostly integer multiples.
3. Concerning grading, side of mesh of a sieve that is defined with a number called *module of corresponding dimension.* The AFNOR module is the integer nearest of the product by 10 of the decimal logarithm of the opening of sieve holes, expressed in micrometers. Syn. with STANDARD

MODULUS
Module
Strength of Materials
The ratio of two characteristic physical magnitudes (dimensions, strains, etc.) that is expressed in a unit according to those of the terms of ratio (the modulus of inertia, of elasticity). We mainly can distinguish:

- **modulus of elasticity *or* elastic modulus** (*le module d'élasticité*), tension per unit of section under which a prismatic body, subjected to a strain in the direction of its length, would lengthen or shorten of a quantity equal to the primitive length, supposing that such a deformation is possible;
- **longitudinal modulus of elasticity *or* Young's modulus** (*le module d'élasticité longitudinale ou module de Young*), normal stress, virtual since inapplicable, able to double the length of a bar solicited in tension in the elastic field. Its value is represented by the angular coefficient of the tension curve in the elastic phase. The Young's modulus is used to study deformations under normal stresses and comes into, for this reason, in the design formulas of the sag and deformations of isostatic and hyperstatic systems;
- **section modulus** (*le module d'inertie*), quotient of the moment of axial inertia in comparison with an axis passing by the center of gravity, by the distance from this axis of inertia to the fiber which one studies the normal stress during the simple plane elastic bending. It is written *I/v*. **See Figure 16**

MODULUS OF ELASTICITY *E*
Module d'élasticité *E*
Masonry
A modulus that characterizes the deformation property of the renderings containing hydraulic binders, under the influence of stresses. It is one

of the most important characteristics as regards the cracking resistance of a rendering.

MODULUS OF SUBGRADE REACTION
Module de réaction
Geotechnics
A numerical expression equal to the quotient of the variation of the vertical stress on a rigid plate by the variation of the vertical settlement of the plate.

MODULUS OF UNIFORMITY
Coefficient d'uniformité *ou* de Hazen
Geotechnics
Syn. with COEFFICIENT OF UNIFORMITY; *HAZEN'S* RATIO; UNIFORMITY COEFFICIENT

***MOHR* CIRCLE OF STRESS**
Cercle de *Mohr*
Strength of Materials
A circle that intervenes in the study of the distribution of stresses around a point.

***MOHS* SCALE**
Echelle de dureté; Echelle de *Mohs*
Mineralogy
A mineralogical classification based on the following principle: each of the minerals scratches the mineral classified below it and is scratched by the one above.
1 - Talc (fat touch);
2 - Gypsum (scratched by a fingernail);
3 - Calcite (cut by a knife);
4 - Fluorspar (easily scratched by a knife);
5 - Apatite (id.);
6 - Orthoclase (scratches glass);
7 - Quartz (id.);
8 - Topaz (id.);
9 - Corundum (id.);
10-Diamond (id.).
Syn. with HARDNESS SCALE

MOIL POINT
Aiguille; Pointerolle
Equipment and Tools
1. Sharp ended rod of steel which one adapts to a tool (pneumatic drill, concrete breaker, etc.) to attack in demolition or to work hard and strong materials.
2. A shock tool of metal having the shape of a pointed rod at the one of its ends and used to key, bore holes, rake out pointings, etc., in masonries. This tool can be hand-driven and one drives in it by striking on the head using a hammer or a sledgehammer, or pneumatic or electric and it then equips a pneumatic drill, a chipping hammer, etc. Syn. with MINER PINCHING TOOL; POINT TOOL

MOIRE EFFECT
Moirure
Defects (Painting)
A sort of initial imperfections or changes of the color affecting the dullness of a film by sinuous areas and giving it a shimmering aspect.

MOIST METHOD
Méthode humide
Welding
Syn. with WET METHOD

MOIST MIXTURE
Mélange mouillé
Building Materials
Syn. with WET MIXTURE

MOISTURE CONTENT (OF THE WOOD)
Degré d'humidité du bois
Building Materials
The ratio of the weight of the quantity of water eliminated by drying at 100-110° C to the weight of the sample thus dried.

MOISTURE *or* WOOD MOISTURE CONTENT
Humidité *ou* Taux d'humidité d'un bois
Building Materials
The quantity of water that contains a wood and that is expressed as a percentage of its weight to the anhydrous state.

MOISTURE CONTENT MEASUREMENT OF GROUND BY RADIOMETRY OF MICROWAVES AND INFRARED
Mesure de la teneur en eau d'un sol par radiométrie des micro-ondes et infrarouges
Geotechnics
A method that allows to evaluate quantitatively the moisture content of an upper bed of the ground and that is based on the spontaneous microwave emission of a ground raised at a given temperature (ambient). One measures, on the one hand, the temperature of radiation by means of a microwave radiometer and, on the

other hand, the surface of the temperature of the homogeneous ground and with consistent emission in temperature by the infrared radiometer.

MOISTURE DENSITY
Densité humide
Geotechnics
The weight of a soil, water included, contained in this same unit of volume of soil.

MOISTURE METER
Humidimètre
Equipment for Measure and Control
An instrument for determining the dampness ratio of a substrate before application of the first paint coat. It is formed by two points driven into the support allowing to measure, by passage of an electric current, the resistance of the circuit constituted in this way by the coating and which depend on the dampness that it contains.

MOISTURE-ABSORBENT FORMWORK
Coffrage absorbant
Temporary Construction
A formwork in which special materials that cover the surface of the concrete contiguous to the formwork, are capable of absorbing the humidity. The use of a such coating has the effect the elimination of a part of the free water (in excess) in the external layers of concrete and, thereby, leads to an extra compactness of the concrete.

MOLASSE
Molasse
Geology
A clayey sandstone containing many carbonated organic remains (mollusc shells, etc.), mica spangles and grains of glauconite. This stone is used to build masonry works.

MOLD
Moisissure
Defects
1. The development on the damp surface of wood of the ascomicetal fungus and/or *fungi imperfecti* causing stains variously colored and not bringing about deep modifications of the color and the mechanical properties of wood. Syn. with FUNGAL GROWTH
2. An alteration brought about by the development, under favorable environments, of spores of fungi and other thallophytes which are likely to find a food in the organic and/or mineral constituents of a paint film. Molds, also called *biological clogging,* become visible generally only on films exposed at the humid and hot atmospheres (25°C) and safe from the direct light. Molds result in deteriorations of the color, which are not whereas secondary demonstrations, such as staining and/or speckles.
3. Range of fungi usually called *mildew.*

MOLD
Moule
Assaying Equipment
A standardized container into which the concrete, grout, etc., is placed, intended for various tests. Syn. with CARDBOARD MOLD; TESTING MOLD. **See Figure 17**

MOLD
Moule; Coffrage
Temporary Construction
1. A formwork intended for the forming of concreted horizontal pieces and intended for keeping up the concrete until it obtains a sufficient strength to become self-supporting. For vertical formwork, it takes the name of *wall form;* formwork being the general term. Syn. with FORMWORK
2. Syn. with CASING; CONCRETE FORMING; FALSEWORK; FORM; FORMWORK; SHUTTERING;

MOULD
Mouler
Work
To pour concrete into a mold (example: to pour a slab).

MOLD
Pistolet
Drawing
A small board of which the contour and recesses have different curves and that the designer uses to guide its pencil, its drawing pen. Syn. with CURVE; FRENCH CURVE

MOLD OIL
Huile de décoffrage
Construction of R.C. and P.C.
Syn. with FORM OIL; RELEASE AGENT

MOLDED CONCRETE
Béton moulé
Building Materials
Syn. with CAST CONCRETE

MOLDED POST
Poteau moulé
Construction
Syn. with COLUMN

MOLDER'S RAMMER
Batte
Equipment and Tools
Tool for grinding friable substances.

MOLDINESS
Moisissure
Defects (Building Materials)
The result of the aggression by fungi proliferating in a humid environment (coated facings, wood, etc., exposed to the humidity).

MOLDING
Moulure; Sacome
Architecture; Construction
1. Any linear ornamentation of various profiles. **See Figure 18 and 18a**
2. A projecting molding.

MOLDING GAUGE
Sacome
Equipment and Tools
A template used by the stonecutter or the builder to profile a molding.

MOLDING PLANE
Doucine
Construction
Syn. with OGEE; TALON

MOLDING TABLE
Table de moulage
Equipment and Tools
A tray sometimes used in prefabrication supporting heavy moulds into which the concrete is cast and which undergoes a number of shocks causing the compacting of the concrete.

MOLDING TOOL
Rondelle
Material
A hook-shaped tool used by the stonecutters to finish moldings.

MOLE
Taupe
Equipment and Tools
A cutter-boom machine used to dig tunnels and which works in a continuous way (Blaireau, Alpine, etc.).

MOLE POINT
Pointe taupe
Equipment and Tools
A conical auger for carrying out horizontal drillings. This tool works in rotation and repels the earth against the wall of the drilling. Syn. with CONICAL AUGER

MOLTEN METAL
Métal fondu
Welding
A solidified melting bath.

MOLTEN ZONE
Zone fondue
Welding
The volume busy by the melting bath.

MOMENT
Moment; Point
Strength of Materials; Building Materials
1. A common-core syllabus to several definitions of mechanics and strength of materials whose the identity of principle is mostly represented by the product of a force, a mass or area, by a distance called *lever arm* linearly counted or to the square. In statics or dynamics, we can distinguish the moment of a force, moment of a plane system of parallel forces, moment of a plane system of any forces, moment of a torque.
In strength of materials, one taps various moments: bending, of inertia, etc. We can distinguish:
- **moment of a force toward point** (*le moment d'une force par rapport à un point*), which corresponds to the product of this force by its lever arm (the lever arm is the perpendicular lowered of the point on the direction of the force);

- **bending moment** (*le moment fléchissant*), which corresponds to the algebraic sum of moments of all forces (actions and reactions) located on a same side of a section of beam, for example;
- **moment of inertia of a material body toward axis** (*le moment d'inertie d'un corps matériel par rapport à un axe*), which corresponds to the sum of the products of all elements of mass of a material body by the square of the respective distances from these elements to this axis;
- **moment of inertia of a surface toward axis** (*le moment d'inertie d'une surface par rapport à un axe*), which corresponds to the sum of products of all elements of this surface by the square of the respective distances from these elements to this axis.

2. The level, threshold where a product, a material, changes of state.

MONITOR
Monitor
Equipment and Tools
Syn. with GIANT

MONITOR SYSTEM
Système de contrôle d'exécution
Welding
A device that appreciates automatically one or several parameters during a welding cycle and consequently can give indications on the quality of the weld in progress.

MONKEY
Singe
Assaying Equipment
A hand-driven winch equipped of a simple or double crank.

MONKEY TAIL
Queue de sonnette; Crosse
Temporary Construction; Construction
1. A timber piece assembled with the false leaders of a pile driving which kept up them in place so that the rammer can slip along these false leaders.
2. Syn. with SCROLL

MONOCALCIUM ALUMINATE
Aluminate monocalcique
Hydraulic Binders
CaO, Al_2O_3, one of the hydrated constituents of the cements.

MONOFIBER YARN
Fil monofilament
Building Materials
Syn. with MONOFILAMENT YARN

MONOFILAMENT YARN
Fil monofilament
Building Materials
A wire made up of a single filament with or without twist. This monofilament must be sufficiently hard-wearing and flexible to be woven, knitted, plaited, etc. Syn. with MONOFIBER YARN

MONOLITH
Monolithe
Construction
1. The part of a work made up of a single block, of stone for example.
2. A concrete work (reinforced or not), poured preferrably in only once.

MONOLITHIC
Monolithique
Construction
Of a work, or of a part of work, made up of a single block (stone, concrete).

MONOLITHISM
Monolithisme
Civil Engineering Structure; Construction of R.C. and P.C.
1. The state of what is monolithic.
2. The fact that two pieces concurrently poured and crossing (beam and post, web and beam), coexist in the same point of the space without one can say if the concrete of the common solid belongs more to the one than to the other.

MONOMER
Monomère
Polymers
A substance formed by molecules of small mass likely to combine between them or with molecules of other monomers or oligomers to form a polymer. Syn. with MONOMERIDE

MONOMERIC UNIT
Motif monomère
Polymers
A structural element (or constitutional unit) of a polymer, not differing from the corresponding molecule of monomer only by the state of reactive functions.

MONOMERIDE
Monomère
Polymers
Syn. with MONOMER

MONOMINERAL
Monominérale
Geology
Of a rock of which all minerals are identical.

MONORAIL
Monorail
Equipment and Tools
An installation including a rail resting on two bearings. On this rail, circulate carriages from which skips, hoists, etc., are suspended

MONOXILE
Monoxyle
Building Materials
Is said what is carved in a single wooden piece.

***MONTE CARLO* PRACTICE**
Méthode *Monte-Carlo*
Civil Engineering
A practice of the settlement design of any backfill that consists in calculating a large number of times the final settlement of the ground by allocating to the parameters of the calculation formula, values drawn randomly according to the laws of distribution observed for these parameters, then to make a statistical analysis of the results of these calculations.

MONTMORILLONITE
Montmorillonite
Geology
A clayey mineral largely constituted of silicon, famous for its properties of swelling when it is confronted with water.

***MONYPENNY-STRAUSS* TEST**
Essai de *Monypenny-Strauss*
Test of Materials (Metallurgy)
A test whose aim is to determinate the resistance from the intergranular corrosion of austenitic stainless steels. It is a test of corrosion in a sulfuric and copper sulfate acid medium.

MONZONITE
Monzonite
Geology
A granular magmatic rock.

***MOONEY* CONSISTOMETER**
Consistomètre *Mooney*
Equipment for Measure and Control
An instrument for measuring the consistency of an elastomer or elastomer-based mixture.

MOORING BAR
Barre
Masonry
A metal element applied against a masonry facing with the purpose to fortify it from toppling. The mooring bar is pierced in its center by a metal rod embedded in the masonry.

MOORING RING
Organeau
Construction
A ring of steel of strong size used to moor cables. Syn. with ANCHOR RING

MORTAR
Mortier; Egrugeoir
Building Materials; Equipment and Tools
1. A plastic material made up of a homogeneous mixing of sand, water, and a binder (lime, cement, resin or a mixture of these binders) and incidentally of admixtures. The batching of each constituent is very precise. Mortars are used to carry out many works such as renderings, sealings, screeds, countercopings, pointing, the repair of chippings, etc.
We can distinguish:
- **two-component mortars** (*les mortiers à deux elements*), solely made up of sand and a binder;
- **three-component mortars** (*les mortiers à trois éléments*), made up of sand and a mixture of two binders: cement and hydraulic lime or cement and fat lime (lime cement mortars), cement and resin.

2. A tool which serves to bruise.

MORTAR AND CONCRETE PERMEABILITY
Perméabilité des mortiers et des bétons
Building Materials
The property of a hardened mortar or concrete to be came through, in a given time, by a more or less great volume of liquid. The permeability is related to the porosity, namely to the absolute volume of voids uniformly distributed, that with the presence in the mass of relatively broad channels. The permeability of concrete is practically related to the microscopic cracking occurring through the agency of shrinkage.

MORTAR BATH
Bain; Bain de mortier
Masonry
1. A mortar prepared to lay in full bed ashlars, quarry stones or paving stones. Syn. with BED
2. The considerable quantity of mortar into which are dipped stones intended for carrying out a masonry. Syn. with MORTAR BED

MORTAR BEATER
Bouloir
Equipment and Tools
A tool for mixing mortar.

MORTAR BED
Bain de mortier
Masonry
Syn. with MORTAR BATH

MORTAR BEDDING
Pose à bain de mortier
Masonry
A method of construction used for elements of reduced size. Stones (or bricks) are bonded on a bed of mortar of variable thickness depending on whether of quarry stones or bricks and one beds it with a wooden sledge hammer to compact the pointing and to give it the wanted thickness.

MORTAR BOX
Auge; Gâcheur
Equipment and Tools
1. A container in which builders prepare their mortar. Syn. with MORTAR TROUGH
2. A container, generally made of sheet metal, for manufacturing small quantities of mortar or plaster. Syn. with GAUGE BOARD

MORTAR BUILT-IN SCREED
Chape en mortier incorporée
Tightness
A mortar damp-proof course implemented from the end of the concrete pouring in order to ensure an intimate bond between them. This screed of 25-mm thickness about forms with the concrete a practically interlocked homogeneous unity. For its carrying out two processes are used:
- the process which consists in plating the fresh mortar on the surface of the concrete then to sprinkle it with special products and to rub in on a some depth;
- the process which consists in plating a mortar richly measured out on the concrete before this last one made its set.

MORTAR COVERING
Chape en mortier
Tightness
Syn. with CEMENT MORTAR SCREED; MORTAR FINISH

MORTAR FINISH
Chape en mortier
Tightness
A coating indiscriminately carried out with hydraulic lime or cement and that can be covered by an asphalt coat. Syn. with CEMENT MORTAR SCREED; MORTAR COVERING

MORTAR *or* CONCRETE GUN
Lance de projection (béton ou mortier projeté)
Equipment and Tools
Syn. with CEMENT GUN; GUN

MORTAR GUN
Machine à projeter
Equipment and Tools
A device of concrete (or mortar) throwing equipped with a tank that receives the mixture (dry or wet) mixed as a preliminary and that propels it in a carriage conduct thanks to compressed air.
There are several types of mortar guns:
- **discontinuous mixing machine** *(la machine à gâchage discontinu),* which is equipped with three essential elements:
  - an upper mixer with horizontal axis therein different constituents are mixed,

- a receiving hopper of mixed materials located under the mixer,
- a repression mechanical pump with screw or piston that propels materials in a carriage conduct;
- **continuous mixing machine** *(la machine à gâchage continu),* which receives the dry mix (industrially or in situ prebatched) inside a hopper that transmits it in a sieve. The mixture is taken again by a feeding screw. The feeding is done round the clock and it mixture is sent in pressure towards the lance by the agency of a carriage pipe;
- **rotor machine** *(la machine à rotor),* used for dry shotcreting of mortar or concrete and whose principle of operation is as follows. The mixed, dry or thinly wet concrete, is poured inside a hopper. From this hopper it goes down into the cells of a rotor which it fills entirely by gravity. After a half-rotation of the rotor, the concrete is expelled by a flow of compressed air toward the repression piping. Variations of flow are obtained by the change of rotor or its speed of rotation;
- **airlock machine** *(la machine à sas),* used for dry shotcreting of mortar or concrete and that is made up of two superimposed chambers: an upper chamber of supply and a lower work chamber, equipped with a pocket wheel driven by a compressed-air engine. The two chambers are closed alternatively by a bell valve and are then pressurization. The dry or thinly wet concrete is introduced into the supply chamber then into the working chamber. The pocket wheel brings the concrete ahead of the start of the repression pipes where it is evacuated by a flow of compressed air. During this time the upper chamber is again filled.

Syn. with AIR-PLACING MACHINE; CEMENT CONCRETE GUNITE MACHINE; CONCRETE GUN; CONCRETE PLACING GUN. **See Figure 19**

MORTAR MIX TOOL
Rabot
Equipment and Tools
A long-handled tool used by builders for mixing mortar.

MORTAR OF A GROUND
Mortier d'un sol
Geology
All particles of a diameter lower than 0.4 mm (in sieve).

MORTAR YIELD
Rendement d'un mortier au dosage de...
Building Materials
The volume of mortar practically obtained by 1 m^3 of sand blended with the binder and mixed. The yield of a mortar varies with the quality of the binder and its batching, but it varies even more with the nature of sand and conditions of use of the mortar (dry, wet, compressed mortar).

MORTAR-MADE (WATERTIGHTNESS) COPING
Chape en mortier rapportée
Tightness
A waterproof blanket that consists in pouring a cement mortar screed, from 3 to 4 cm thick, on a support of concrete as soon as that the latter began its period of hardening. The screed is leveled with a screed board, troweled and possibly smoothed. Syn. with SEPARATE SCREED

MORTISE
Mortaise
Construction
The female notch carried out in a piece intended for receiving a male part called *tenon,* fitting together exactly; the unit forming a joint. Generally, the mortise is emerging, on the contrary case, it is known as *one-eyed.* Its section can be square, rectangular, circular, etc. Syn. with MORTISED HOLE

MORTISED HOLE
Mortaise
Construction
Syn. with MORTISE

MOSAIC
Mosaïque
Topography
The summary plan obtained by assembling and connecting aerial photographies reduced to a medium scale.

MOSAIC FACING
Parement à joints incertains; Parement à mosaïques
Construction
A surface made of uneven stones in their dimensions as in their shape. Stones are bonded in order to encase so as possible the ones in the others, each stone affecting generally the form of an uneven pentagon or hexagon.

MOSAIC PAVING
Pavage mosaïque
Civil Engineering
The roadway or sidewalk pavement carried out with cubic cobblestones laid by hand in order to avoid rectilinear rows. Cobblestones are posed in quarter-circle onto a concrete bed and the joints are filled with cement, sand, or by an emulsion of bitumen.

MOTOR DRILL AND BREAKER
Marteau piqueur
Equipment and Tools
Syn. with CONCRETE *or* ROCK BREAKER; PICK-HAMMER

MOTOR PUMP
Motopompe
Equipment and Tools
Syn. with POWER-DRIVEN PUMP

MOTORIZED BARROW
Brouette automotrice; Motobrouette; Brouette motorisée
Equipment and Tools
Syn. with BUGGY; PEDESTRIAN-CONTROLLED DUMPER; SELF-PROPELLING WHEELBARROW; POWER BARROW

MOTORIZED GRADER
Motograder
Equipment and Tools
A finishing grader that rejects excavated materials in windrows on the sides.

MOTORIZED PAVER
Motopaver
Equipment and Tools
A self-propelled plant that performs at once the coating and the spreading of premixed coated materials on a roadway. The coating is always carried out to cold.

MOTORIZED TIPPER
Motobasculeur; Dumper
Equipment and Tools
A small multipurpose machine, very much used, that constitutes a means of carriage on the small building sites or extra equipment on the great building sites. It is a machine equipped which four wheels, directed by a wheel and whose driver sat on a seat. The carrying bucket is placed ahead and tip up around an axle carried by the chassis. The bucket can contain (according to the manufacturers) from 350 to 4000 L (usually from 800 to 900 L). **See Figure 20**

MOTTLING
Tachage
Defects (Painting)
A defect characterized by the inappropriate appearance of stains of various colors on the surface of a paint film and which can be due to a bad cleaning of the substrate (dirt) or to the covering capacity of the paint used.

MOUND
Levée
Earthwork
A filling of earth. Syn. with BANK; EMBANKMENT; LEVEE

MOUNTAIN OAK
Durelin
Building Materials
Syn. with CHESTNUT OAK

MOUNTING
Affût
Equipment and Tools
Syn. with FRAME

MOUSTACHE
Moustache
Work
The mark of intersection on the walls left by the drilling tool during the carrying out of diaphragm walls in cohesive soils.

MOUTH OF A DITCH
Gueule d'un fossé
Sanitary Engineering and Drainage
The width of the top opening of a ditch in its transverse profile. **See Figure 21**

MOVABLE BUSH HAMMER
Bouchardeuse mobile
Equipment and Tools
A tool composed of a framework on wheels; on this framework pneumatically actioned granulating hammers are fixed. This tool is used for the bush-hammer finish of large horizontal surfaces (especially mortar screeds).

MOVABLE LIFTING APPARATUS
Equipage mobile de levage
Handling
A device used to handle segments in the construction by successive cantilevers of prestressed concrete structures.
The machine is constituted by a wagon equipped with a lifting winch moving on a track (launching beam). This handling device is supported by overhanging parts some already constructed of the deck and it operates successively the lifting, transfer, and the putting into position of segments. Segments to be handled are had on a tray, then hoisted, and implemented at their final site.

MOVABLE LIFTING GEAR
Chatte
Equipment and Tools
A tractor-drawn hoist equipped with a jib with skip ordered by cables. It is tracked or pneumatic-mounted.

MOVABLE SCAFFOLDING
Chèvre roulante
Temporary Construction
A four-wheel scaffolding assembled on the ground near of the wall to be build and sufficiently high to ensure the lifting up to the ending of this wall; a lifting pulley is fixed to the frame of this one.

MOVE AWAY
Evencer; Eventer
Handling
To distance materials from a wall or a scaffold during their lifting, with a verboquet, for example.

MOVEMENT
Travail du bois
Building Materials
The shrinkage or swelling which is observed in the dried wood, and/or some woody products, in correlation, with changes of their balance in humidity.

MOVEMENT JOINT
Joint de rupture
Construction
1. A cut accommodated (or that creates) in a construction in predetermined places, and intended for absorbing movements of masonry which could be due to the differential settlements of foundation or any other cause. (In a masonry vault the break joint is located in the haunches, tilted at 60° on the vertical.)
2. A cut that separates in a construction two materials of different nature.
Syn. with BREAK JOINT

MOVEMENT OF WATER BETWEEN JOINED PARTS
Cheminement des eaux entre pièces
Defects (Construction)
Circulation of water that occurs when contact between two joined parts is not perfect and the space between these parts is not obstructed. It appears then either as run of rust or stalactites of calcite, when the water has percolated through the concrete or masonries.

MOVING CONSTRUCTION GIRDER
Cintre autolanceur
Handling
A metal frame structure intended for the handling of deck, part of deck or segment. It is made up of a carrier metal lattice girder and a nosing. The centering leans on the end of the already achieved deck and on a pier or an abutment; it bears the formwork into which the concrete deck is poured up to a point located beyond the pier (point of null moment). When the concrete has reached a sufficient hardening, it is prestressing. The centering, equipped of its nosing, is then displaced, by means of jacks, to pass to the next span, and so on. Moving construction girders are of varied types. We can distinguish notably: centerings *by over* that carry the formworks by means of suspenders and the centerings *by underhand* in which formworks are pushed on the load-bearing elements. The deck to be build can be in caissons or with beams or in ribbed slab. **See Figure 22**

MUCK
Marin; Sol organique
Earthwork; Geology
1. All excavated materials coming from the working in the underground work.
2. A material comprising at least 30% of its dry weight of components of organic origin, results from the decomposition of refuses of vegetable or animal origin. We can distinguish in this class: the topsoil, peat, sludge.

MUCKING
Déblaiement
Handling
Syn. with CLEARING AWAY; REMOVAL

MUCKING OUT
Marinage; Déblocage
Earthwork
All loading and carriage operations of excavated materials during a tunnel boring. Syn. with TUNNEL LOADING. **See Figure 23**

MUCKING OUT BY PUMPING
Marinage par pompage
Earthwork
A method of treatment of excavated materials (mucks) that makes them plastic and allows directly to transport them of the bottom in containers placed in the surface. This transport is ensured by a special piston pump (sludge pump).
The principle of operation: the breaking away material is poured by a belt conveyor into the mixing hopper of a pump placed directly behind the working face. After addition of a bit of bentonite, materials are homogenized in the mixing hopper to form a pumpable mixture with a water content about 20%. The debit can range from 20 to 50 m^3/h over the distances from 500 to 600 m.

MUD AVALANCHE
Coulée boueuse et de blocaille
Geomorphology
Movement of land related to transportation of material by water and to landslides. Material from landslides often augments the flow and is then picked up by the current. Others time, a mixture of water, soil, loose rock debris, etc., is produced. Most frequently, the material of a landslide is transported by the water of a glacier or a stream. In this case, a mud flow forms. Syn. with MUD FLOW. **See Figures 24 and 24a**

MUD BAILER
Bogue
Equipment and Tools
A spade used for removing muds (of a trench, for example).

MUD BANK
Vasard
Hydrology
An agglomeration of a mixture of sand and sludge.

(DREDGER'S) MUD BARGE
Marie-salope
Equipment and Tools
Syn. with HOPPER BARGE; MUD DREDGER

MUD CRATER
Cratère de boue
Defects
Damage that can be observed on the inverts of tunnels, notably pertaining railways and appears as of hillocks reminding that of a volcano with emission of mud at the center. The mud crater is due to the dislocation or to the cracking of the invert and it is the phenomenon of pumping that raises the mud on the surface.

MUD DREDGER
Marie-salope
Equipment and Tools
Syn. with HOPPER BARGE; (DREDGER'S) MUD BARGE

MUD FLOW
Coulée boueuse et de blocaille
Geomorphology
Syn. with MUD AVALANCHE

MUD FLUSH
Boue de forage
Materials
Syn. with DRILLING MUD

MUD GUARD
Bavette
Construction
A corner iron fastened at the underface and the tip of a gravel guard plate and that is intended for

avoiding the rising of water by capillarity. The mud guard stands in contact with the ground and to the back of the gravel guard dwarf wall.

MUD GUN
Mitrailleuse à boue
Equipment and Tools
In drilling, tube of repression of the drilling mud toward reprocessing tanks after its use.

MUD HOUSE
Magasin à boue
Work
A place reserved for the storage of materials necessary to the manufacture of the drilling mud on the big building sites where diaphragm walls, cast-in-situ piles, wells, etc. are created.

MUD LOCK
Clapet à boue
Foundation
An opening specially fitted in the ceiling of a pneumatic caisson that allows the evacuation of excavated materials without loss of air pressure.

MUD PUMPING
Pumping
Defects
A phenomenon that affects the railway platforms not equipped with invert and resting on a clayey soil.
The passage of the convoys brings about an up-and-down movement of the crossties. When the clay is saturated with water, this movement has as a consequence the mixing of the clay (mayonnaise) that goes up then through the ballast by the effect of pumping also due to this movement. This phenomenon is more emphasized directly below of the rail joints. Syn. with SLEEPER PUMPING

MUDDY RIVERBED
Vasard
Hydrology
The bed of an aqueduct or river, consisting of sandy or muddy deposit.

MUDDED WALL
Mur emboué
Foundation
A concrete wall poured in a deep trench filled with drilling mud; diaphragm wall for example.

MUDMAT
Béton de propreté ou de forme
Building Materials
Syn. with BLINDING CONCRETE; MATTRESS; MUDSILL; OVERSITE CONCRETE; SLOPE CONCRETE.

MUD-PRESSURE SHIELD
Bouclier à pression de boue
Earthwork
Device used to ensure the stability of the face when classic shields (that is to say air-pressure shields) cannot be used. This shield is equipped with a tight partition, ahead of which bentonite is spilled under pressure. To maintain a constant bentonite pressure in the working chamber, a reserve of compressed air works as a stabilization spring. The tab of the shield is constituted by a great circular metal ferrule divided into three sections. The furtherance of the whole is ensured by a hydraulic jack battery resting on the covering of the tunnel. Syn. with SLURRY SHIELD. **See Figure 25**

MUDSILL
Béton de propreté ou de forme
Building Materials
Syn. with BLINDING CONCRETE; MATTRESS; MUDMAT; OVERSITE CONCRETE; SLOPE CONCRETE.

MUDSTONE
Argilite
Geology
Syn. with ARGILLITE ; BEDDED CLAY

MUFFLE
Mouflette
Equipment and Tools
A small pulley block.

MULTIFIBER YARN
Fil multifilament
Building Materials
Syn. with MULTIFILAMENT YARN

MULTIFILAMENT YARN
Fil multifilament
Building Materials
A wire made up of several filaments with or without twist. Syn. with MULTIFIBER YARN

MULTIFILM COPING
Chape multicouche
Tightness
A prefabricated tightness product made up of a set of bituminous sheets linked between them by hot-laid mixture coats. Syn. with WATERTIGHTNESS MULTIFILM. **See Figure 26**

MULTILAYER TIGHTNESS REVETMENT
Revêtement multicouche
Tightness
A built-up roofing made up of several tight sheets stuck between them. This material is delivered in rolls which one unfold on the support to be protected and are afterwards hot or cold-stuck. Some complexes known as *nonadherent* are solely unfolded on the support and only the strips are stuck between them; they constitute a *floating screed.*

MULTIPASS
Multipasse
Welding
Of a weld bead carried out in several passes.

MULTIPLE-SPAN BRIDGE
Pont à travées multiples
Civil Engineering Structure
A work of which the beams or deck rest, besides the ends, on intermediate bearings. We can distinguish:
- **bridges with independent spans** *(les ponts à travées indépendantes),* constituted by a round the clock succession of straight or oblique decks, whose each end rests on a pile, a piling or an abutment, and which are separate the ones with regard to the others (decks can be linked up between them by special devices having any mechanical influence on their independence);
- **integral spans bridges** *(les ponts à travées solidaires),* in which the decks (straight or oblique) or beams are of a single length and rest on intermediate bearings.

MULTIWHEEL ROLLER
Rouleau à pneus
Equipment and Tools
A plant made up of a box-shaped chassis, ballasted and carried by two lines of tires under low pressure. The compacting is carried out by the pressure and vibrations which transmit the tires to the ground. The roller with oscillating wheels ensures a better compacting than the multiwheel roller. Syn. with PNEUMATIC-TIRED ROLLER

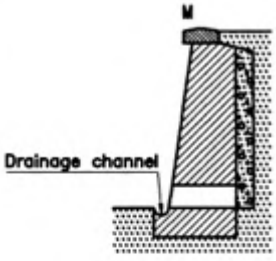
MUSHROOM POST
Poteau champignon
Construction
A slender element of reinforced concrete whose top is widened in order to offer a more important bearing surface.

MUSIC STRING
Corde à piano
Materials
A polished, high-tensile-strength, cold-drawn wire with higher tensile strength and higher torsional strength used to manufacture cables, etc. Syn. with PIANO STRING; PIANO WIRE

Figures of the letter

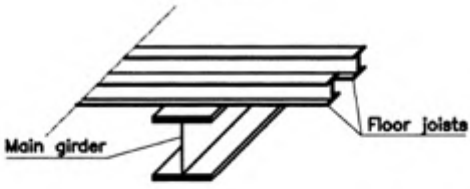


Fig. 1



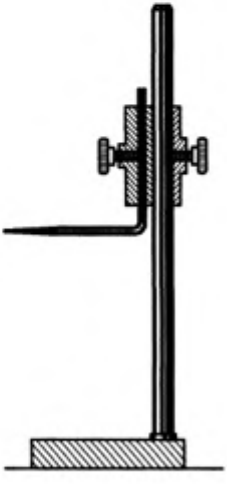
MAGISTRAL LINE

Fig. 2



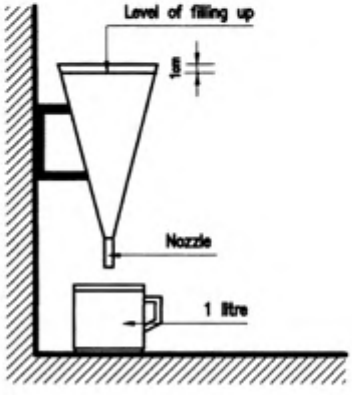
MAIN GIRDER

Fig. 3



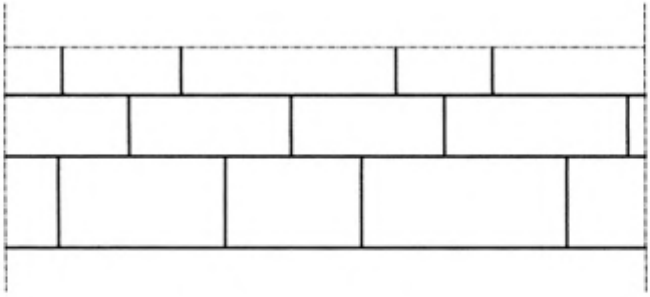
MARKING GAUGE

Fig. 4



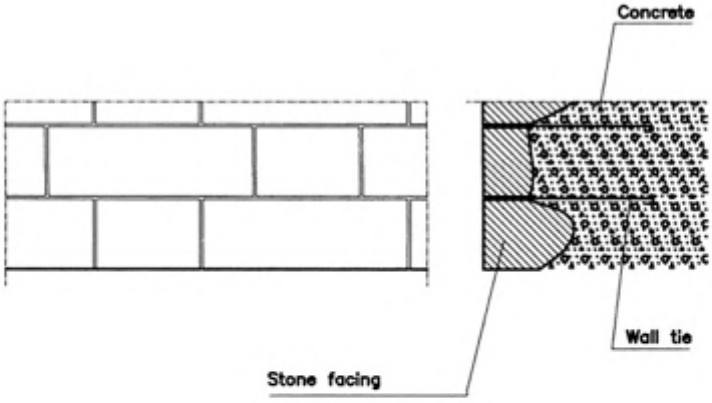
MARSH FLOWMETER

Fig. 5



Irregular coursed rubble masonry

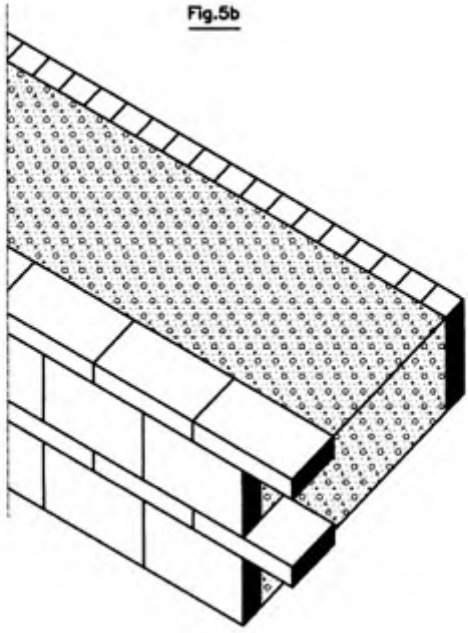
Fig.5a



Compound masonry

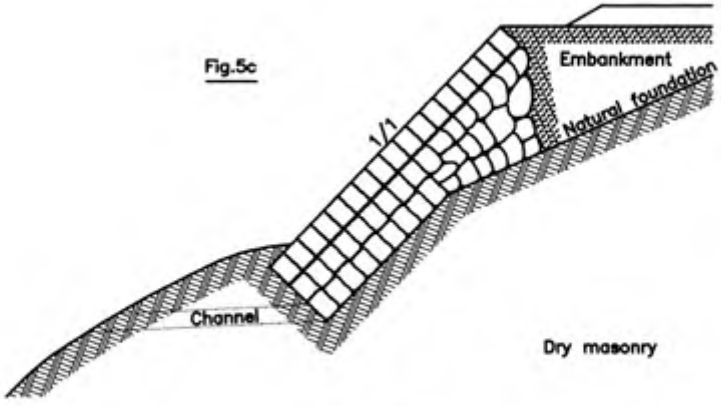
MASONRY

Fig.5b



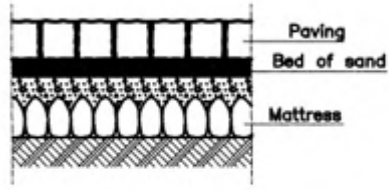
Compound masonry

Fig.5c



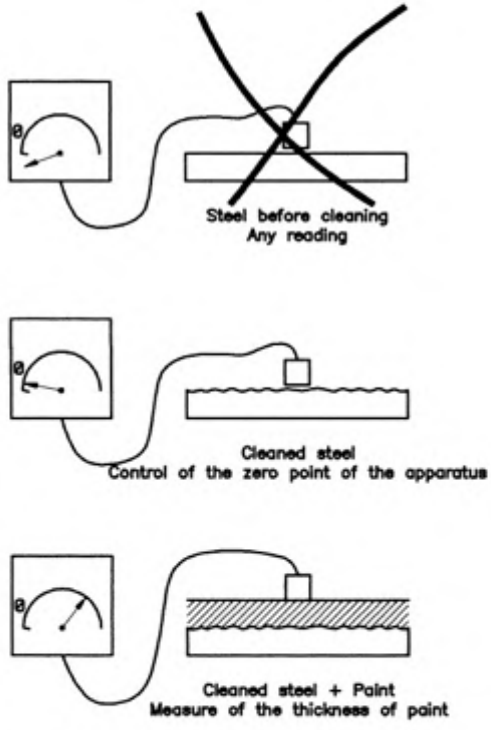
MASONRY

Fig. 6



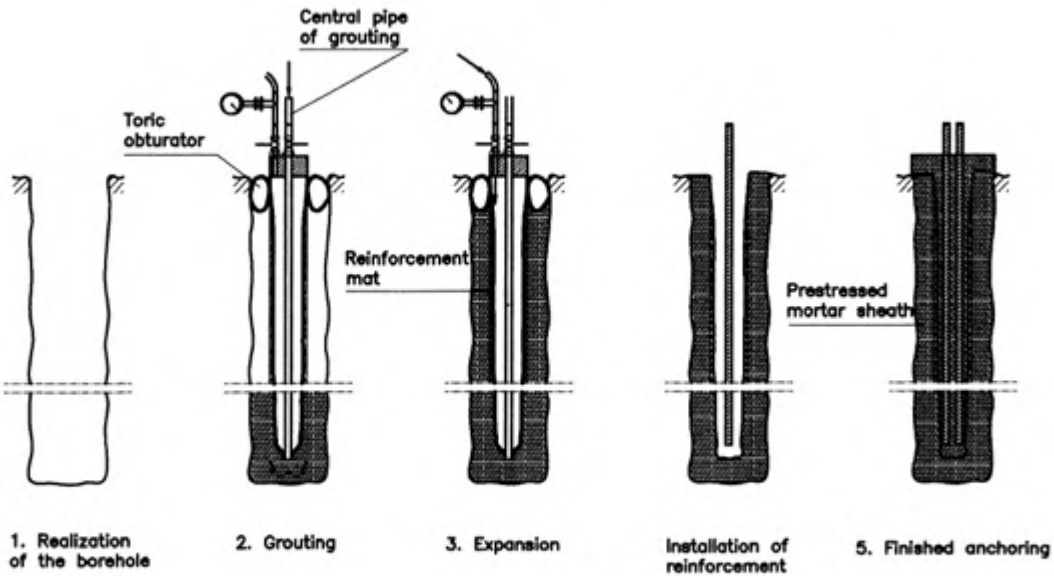
MATTRESS

Fig. 7



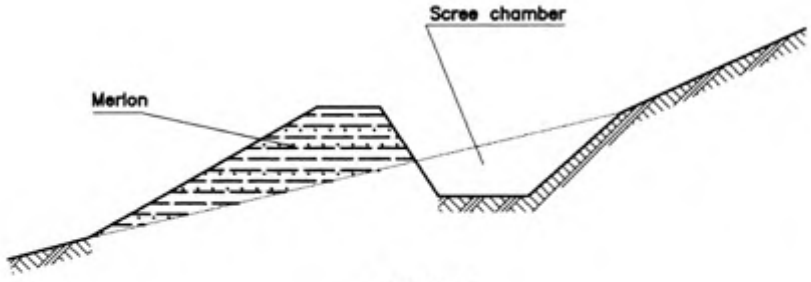
MEASUREMENT OF THE THICKNESS OF A PAINT FILM

Fig. 8



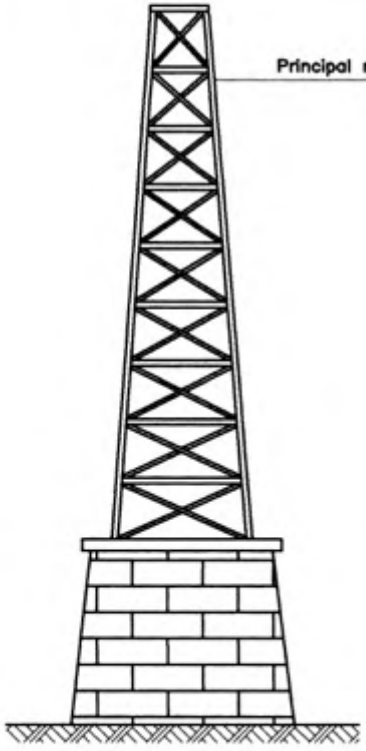
MENARD ANCHORING

Fig. 9



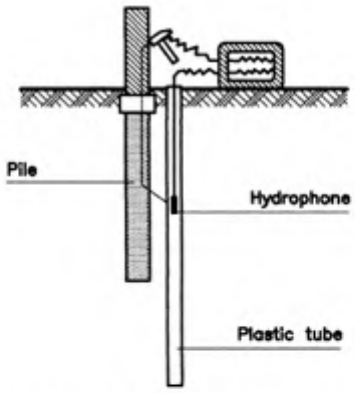
MERLON

Fig.10



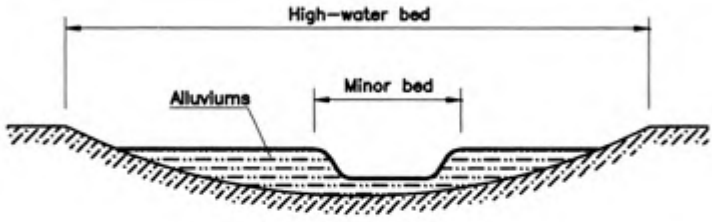
METAL PIER

Fig.11



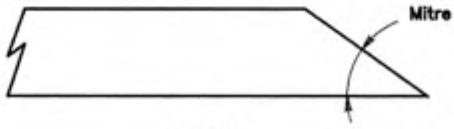
MICROSEISMIC TRANSPARENCY

Fig.12



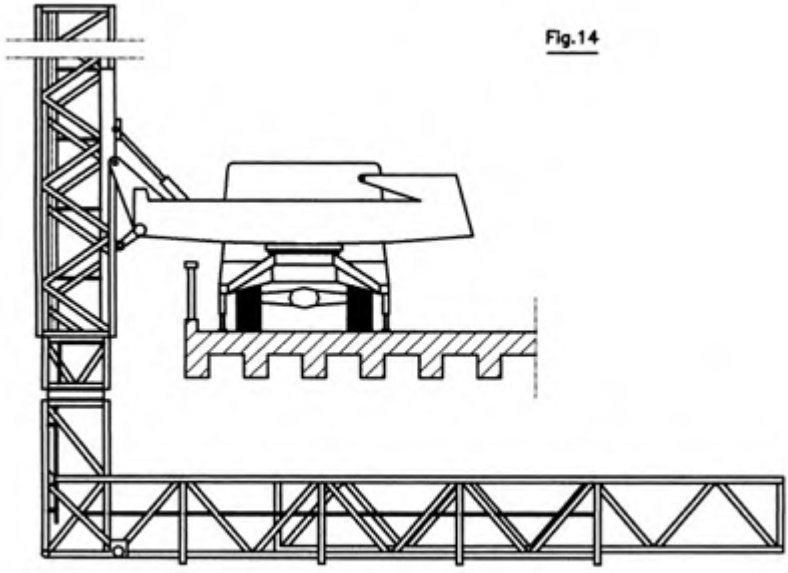
MINOR BED

Fig.13



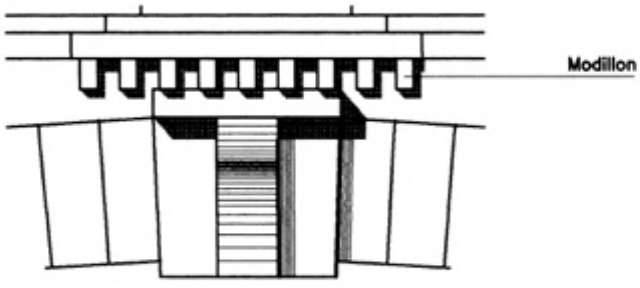
MITER

Fig.14



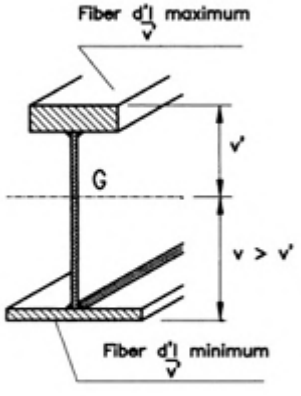
MOBILE CATWALK

Fig.15



MODILLON

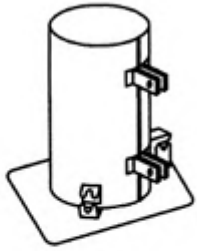
Fig.16



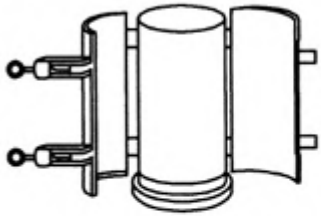
Section modulus

MODULUS

Fig.17



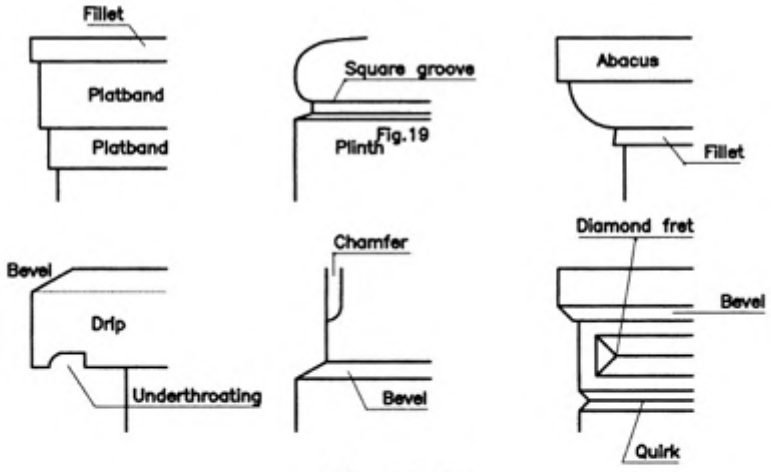
Metal mold



Cardboard mold and metal countermold

MOLD

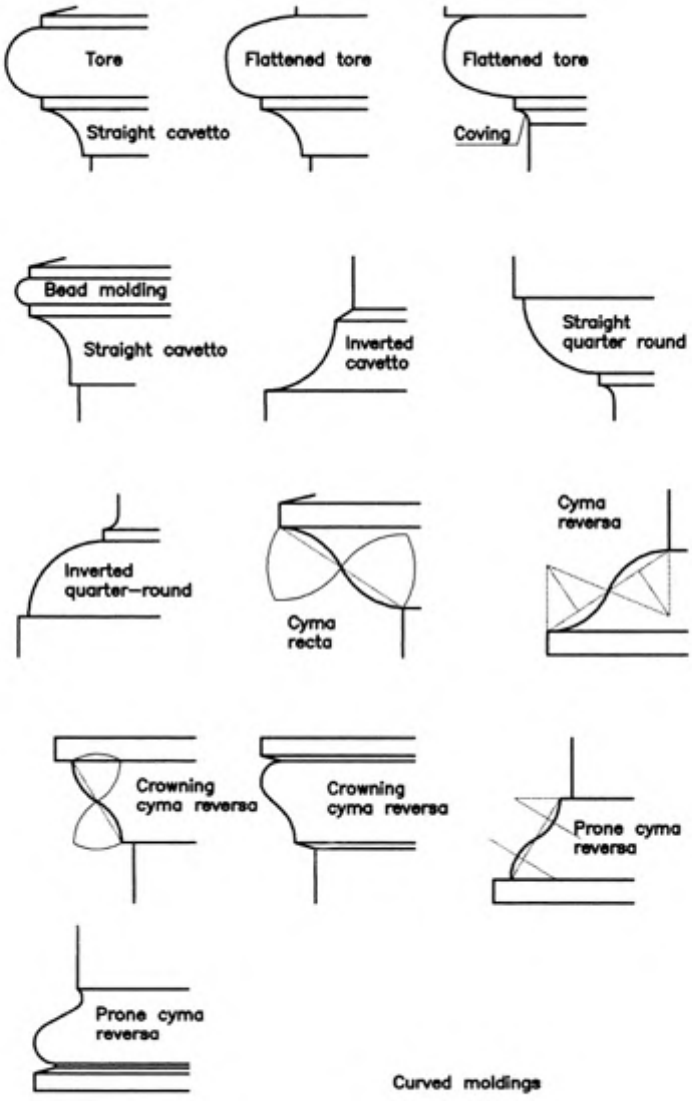
Fig.18



Plane moldings

MOLDING (different types)

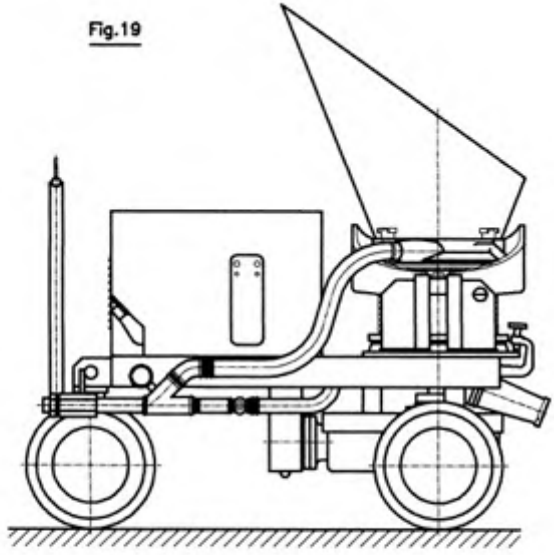
Fig.18a



Curved moldings

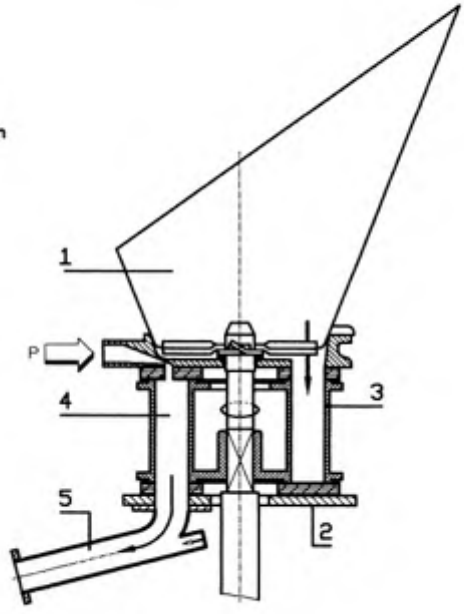
MOLDING (different types)

Fig.19



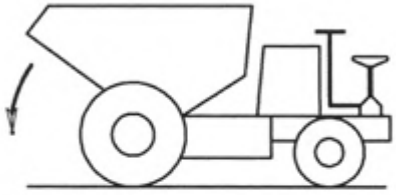
Nomenclature

1 = hopper
2 = plate of cover of the chain
3 = rotor with alveoles
4 = alveoles of the rotor
5 = orifice of escape
P = compressed air arrival



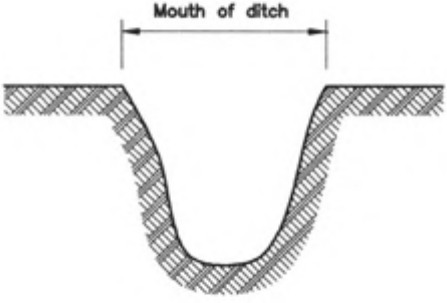
MORTAR GUN (dry method)

Fig.20



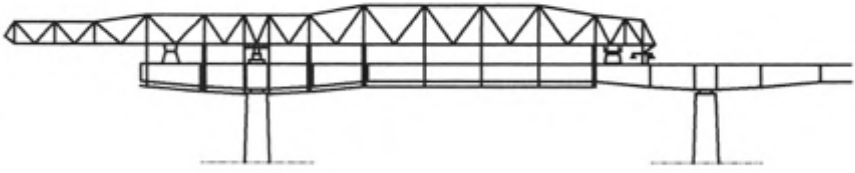
MOTORIZED TIPPER

Fig.21



MOUTH OF DITCH

Fig.22



MOVING CONSTRUCTION GIRDER

Fig.23

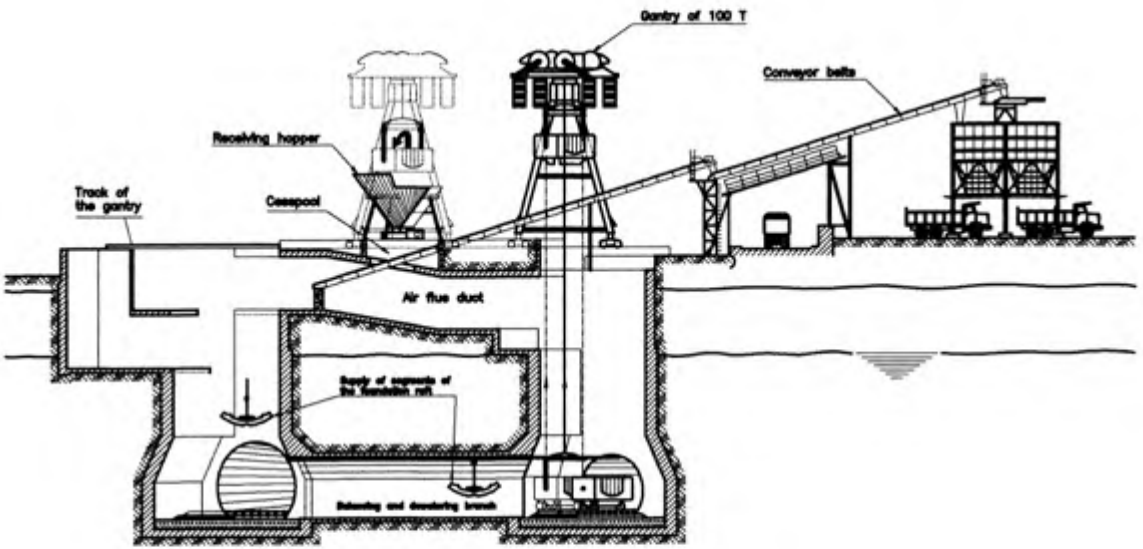
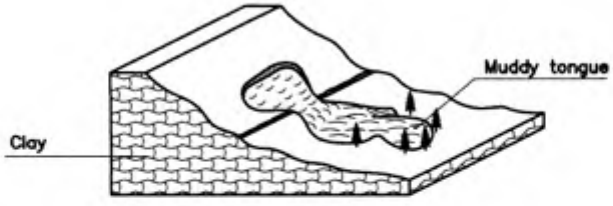


Diagram of mucking out installations in surface

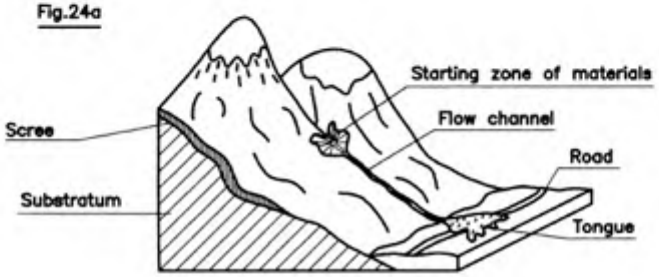
MUCKING OUT

Fig.24



Muddy flow

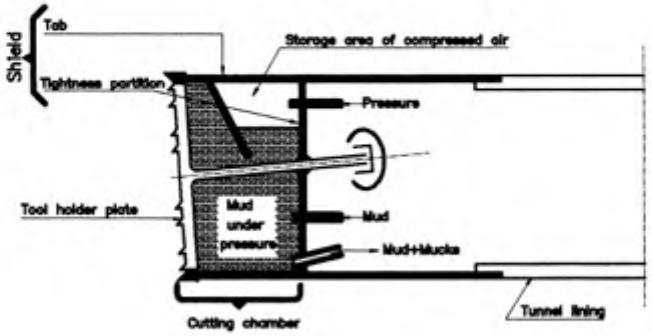
Fig.24a



Scree flow

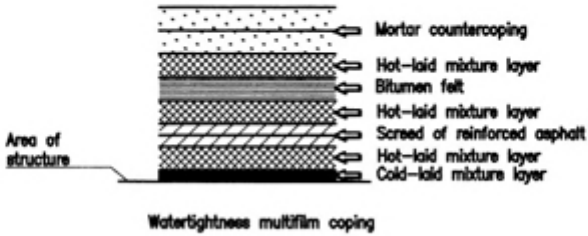
MUD AVALANCHE

Fig.25



MUD–PRESSURE SHIELD (plan)

Fig.26



MULTIFILM COPING



NAIL
Pointe
Buildings Materials
Syn. with TACK

NAIL DRAWER
Pince; Pied-de-chèvre; Pied-de-biche
Equipment and Tools
Syn. with CLAW BAR; NAIL DRIVER; PINCH BAR

NAIL DRIVER
Chasse-clou; Enfonce-pointe
Equipment and Tools
1. A sharpened steel drift used to drive nail heads deeper. This tool can also be used to remove nails by hitting them on the spike. Syn. with NAIL PUNCH
2. A hand tool fitted with a hollow handle with a base. A steel piston slides into this handle. One end is equipped with a percussion rod in which the nail head lodges itself. The other end is to be hit by a sledgehammer.

NAIL DRIVER
Pied-de-chèvre; Pied-de-biche
Equipment and Tools
A tool in which one end looks like a cranked iron bar. The end of the crooked part is wider a sloping. (Sometimes it has a V-shaped notch and the other end is usually a spike). This tool is mainly used to lift heavy loads off the ground, or to take nails off wooden boards, etc. Syn. with CLAW BAR; NAIL DRAWER; PINCH BAR

NAIL FLOAT
Chemin de fer; Nu
Equipment and Tools; Masonry
1. A stonecutter's tool used to scrape on soft or half-hard stones. It is made of a small wooden plane, fitted with fixed and toothed blades of steel. Syn. with FRENCH DRAG. **See Figure 1**
2. Syn. with DEVIL FLOAT; REFERENCE.

NAIL PUNCH
Chasse-clou
Equipment and Tools
Syn. with NAIL DRIVER

NAIL SET
Chasse-pointe
Equipment and Tools
Syn. with BRAD PUNCH; NAIL PUNCH; SHARP POINTED BIT;

NAILED WALL
Paroi clouée
Civil Engineering Structure
A supporting structure composed of a gravity wall with vertical or inclined facing, based on the grounds already in place.
The process consists in placing a shotcrete face work directly against the ground, which has been purged beforehand. This face work is reinforced with a wiremesh and held with needles or usually a passive tie-rod anchorage, then inserted, through the mesh, into subhorizontal or inclined drillings, filled with grout or mortar. This mortar is made of cement, which seals the needles or the tie rods to the ground. Then the shotcrete sticks to the ground and the wiremesh.

NAILHEAD
Pointe de diamant; Tête de clou
Nomenclature of Materials
1. A worked out part (molded or cut) in the shape of a pyramid, more or less flattened.
2. Part of a nail that is hit.

NAILING
Clouage
Carpentry
Use of nails to connect several wooden pieces together.

NAMEPLATE
Plaque signalétique
Equipment and Tools
A plate fixed on an equipment or a machine on which its characteristics are listed. Particularly used with cranes, lift plot. Syn. with RATING PLATE

NAPPE
Nappe
Geohydrology
The underground water occupying a field in which it lies in easy intercommunication.
There are several types of underground water:

- **groundwater *or* underground water *or* water table,** water table lying at a low depth compared with the level of the ground and which thickness varies according to the rainwater (or snow) that percolates through the ground. It supplies wells and sources; **See Figure 2**
- **artesian aquifer** is located deeper than that mentioned above; **See Figure 2a**
- **alluvial sheet of water,** which corresponds to the alluvia of surface watercourses and is mostly in balance with watercourse water. The sheet of water varies according to the evolution of the rate of flow.

NARROW END
Collet
Construction
1. In a staircase, value of the lap on the internal side, in quarterspace flights.
2. The end of a step at the right of its sealing or its restraint.

***NARROW GAP* WELDING PROCESS**
Procédé de soudage *narrow gap*
Welding
An American process of automatic welding, with a reduced molten volume, and used for thick materials. The preparation uses straight edges set close together (6 to 9 mm) on a support base (for the first pass). It is an extension of the MAG process: the head comprises two thin torches (< 4 mm), each of them equipped with a wire guide and two distinct gas outputs. Wires are bent when they exit the machine, to the left for the head torch and to the right for the follower, which deviates each arc toward the adjacent parent metal wall. These torches follow each other about every 10 cm. One carries out two caterpillars by pass, then the successive layers are set on top of each other. The machine has several functioning modes: return, flat, descent, or cornice.

NARROWS
Pertuis
Hydraulic Constructions
Concerning a navigable river with sluicing waters, narrow place where a barrage is set to retain water.

NATIONAL STANDARD BODY
Organisme national de normalisation
Civil Engineering Structure
A nationally recognized organization whose primary function (according to national standards, and its statutes or the law of the country) is to prepare and/or publish national standards and/or to approve standards prepared by other bodies.

NATIVE ELEMENT
Elément natif
Materials
Element that occurs in nature uncombined.

NATM
Nouvelle méthode autrichienne
Earthwork
See NEW AUSTRIAN TUNNELING METHOD

NATRONS
Natrons
Mineralogy
Carbonated minerals formed from hydrated sodium carbonate. These minerals form a rock that looks like salt, effortlessly soluble, that one overwhelmingly meets in hot deserts.

NATURAL ASPHALT
Asphalte naturel
Materials
A material that result of the polymerization of natural hydrocarbons.

NATURAL ASPHALT POWDER
Poudre d'asphalte naturel
Building Materials
A product obtained by the calibrated grinding of asphaltic rock.

NATURAL CLEFT STONE
Pierre délitée
Building Materials
A quarry stone or ashlar that shows bed strands or from which beds pan into folias for various causes (frost, bedding, etc).

NATURAL CONSOLIDATION
Consolidation
Earthwork
The natural settlement of a backfill, a trench, etc., by the fact of its peculiar weight thanks to the evacuation of the air and water it contained and that causes the increase of the ground resistance to shear. (Not to be confused with the compacting that is an achieved operation machines conceived to that end.)

NATURAL EARTH
Terre naturelle
Geology
Matter neither excavated nor stirred up.

NATURAL FIBER
Fibre naturelle
Building Materials
Matter of animal origin (wool of sheep, horsehairs, etc.) vegetable (cotton, linen, jute, etc.) or mineral (asbestos) origin.

NATURAL HYDRAULIC LIME
X.H.N. (Chaux Hydraulique Naturelle)
Hydraulic Binders
Hydraulic binder resulting from the baking of more or less clayey natural limestones, combined with their reduction into powder followed or not by their grinding. During the latter, grappers or other constituents (cinder, slag, pozzolan) can be added as well as fillers, usually calcareous.

NATURAL MICA-BEARING RED OXIDE
Oxyde de fer micacé naturel
Painting
A pigment going into the composition of anticorrosive paints.

NATURAL PIGMENT
Terre
Painting
Generic name for natural mineral pigments obtained by mere physical processing of rocks. Their shades are usually less bright than artificial pigments and most of them are constituted of iron oxides fixed on minerals similar to clay.

NATURAL POZZOLANA
Pouzzolane naturelle
Building Materials
A scoriaceous volcanic product mainly composed of alumina silica and ferric oxide, and that looks like a clay brought at high temperature.

NATURAL RESIN
Résine naturelle
Nomenclature of Materials
A product of vegetable origin or rarely of animal origin. It always contains acid and neutral components.

NATURAL RUBBER
Caoutchouc naturel
Materials
A product provided by the hevea of which latex is collected (thin particles of rubber in the water). Raw rubber is obtained by drying and helps to obtain a range of products, from pure gum to ebonite when mixed with various ingredients.

NATURAL SEASONING
Dessiccation naturelle
Building Materials
Wood preservation process that consists in drying it naturally in an aired place. This two-years process makes the material sun and rain resistant.

NATURAL STRESS
Contrainte naturelle
Strength of Materials
A tension existing in whichever point of a ground before any work of earthmoving (excavation, trench, heading) is done. This stress is due to the presence of sublying.

NATURAL WATER
Eau naturelle
Hydrology
A liquid matter which contains dissolved gases and mineral substances.

NATURAL WATER CONTENT
Teneur en eau naturelle
Geotechnics
The ratio (w) between the weight of water contained in a ground sample and that of dry materials constituting this sample. Two methods allow to value this content, by drying or burning:
- *burning method,* of which equipment is composed of: a precise scales, china dishes of 500 g capacity (or metal tray), methylated spirits, a sampling spade.

The process is the following: one moistens the spade then takes at least 200 g of ground if it is thin and homogeneous (grains of less than 2 mm) or about 500 g if the ground is heterogeneous or if its elements exceed 2 mm. One quickly displays samples into the dishes (counted and tared before the test). One mixes afterward methylated spirits (from 20 to 50% of the weight of the ground) and makes it burn completely. If necessary, one carries out several successive burnings processes, pulverizing the ground at the maximum. One then weighs the desiccated sample to find out the moisture content. This practice is mainly used on the building sites;
- *determination by drying,* of which principle of sampling is identical to the earlier method. The moisture content is expressed as a percentage and is determined by weighing a sample before and after drying at 105°C during 24 h or 60 °C if the ground contains gypsum or organic matters.

The knowledge of the moisture content of the ground is very important for earthworks, particularly for compacting.

***NAVIER'*S TRAPEZIUM**
Trapèze de *Navier*; Diagramme de *Navier*
Strength of Materials
A convex or concave rectangular trapezoid obtained by the sum of a symmetrical concave rectangular trapezoid (symmetrical or dissymmetrical profile) representative of simple bending stresses and of a rectangular representative of a possible normal stress uniformly distributed in the section. The calculation of the sum is obviously carried out respecting the direction, therefore the sign of stresses: + for tension, - for compression. **See Figures 3 and 3a**

NAVIGABLE CLEARENCE
Rectangle navigable
Construction
Syn. with NAVIGABLE GAUGE

NAVIGABLE GAUGE
Rectangle navigable
Construction
The gauge necessary and reserved under an arched bridge crossing an inland waterway, which must to allow the navigation as long as the height of water does not exceed navigable high waters. Syn. with NAVIGABLE CLEARANCE

NAVVY
Terrassier
Earthwork
A contractor society or worker who carries out earthworks. Syn. with EARTHWORK CONTRACTOR; LABORER

NAVVY PICK
Pic
Equipment and Tools
Syn. with PICKAXE

NEAT CEMENT
Pâte de ciment
Hydraulic Binders
A cement and water mixture gifted of a certain unctuousness and plasticity.

NEBULIZATION
Nébulisation
Building Materials
An in situ wood treatment method that consists in sending disinfectant products in fog form in the zone of woods to be processed. Fine droplets of these fogs deposit on all woods a protective film that penetrates into cracks and crevices opened to the atmosphere.

NECK MOULDING
Congé
Construction
A portion of cylindrical or toric surface connecting the sides of an internal angle. Syn. with COVING

NEEDLE
Aiguille
Hydraulic Work; Carpentry; Construction; Building Materials
1. A timber set on end to close an opening for the control of water; it may be vertical or tilted; a form of stop plank.
2. A bolted steel bar connecting two structural members to keep their spacing or relieve them.
3. Concerning bow-string bridges, element that connects and hangs up the deck to the arch. Syn. with TENSIONAL BAR
4. An aggregate of lengthened form which is only accepted in small proportions compared with the whole of aggregates going into the proportions of concretes.

NEEDLE
Larder
Masonry
Syn. with STAB

NEEDLE BEAM SYSTEM
Système des poutres aiguilles; Needle beam system
Temporary Construction
A practice of sheeting applied to galleries with appreciably circular profiles, dug into bad ground.
The principle is the following: on the top of the excavation to be carried out, a narrow axial of about 5m long drift is dug. The roof is supported by panels constituted of close boards assembled by segments. Every end segment is supported at its butts by trench jacks which rest in the crevices accommodated on the sides of the drift. Afterwards, one proceeds, in the excavation bottom, to the installation of a needle beam constituted of a strong structural member tightened by bolts between two sections. This piece is stalled, on the head, on a broad grid of boards; it rests, behind, with a pole and lateral tie rods, on the covering of the previous ring, concreted the day before. The timbering of the roof is then pressed on this beam by a file of trench jacks. Afterward one carries out striking down each span of which is symmetrically pressed on the beam by the same process, and so on, until the springing and even below, if the tunnel is circular. The erection of the masonry is carried out as the trench jacks are removed; if the covering is concreted, one transversely dispose of boards supported by a walling, which is abandoned.

NEEDLE ELIMINATION GRIZZLY
Grille de déplatage
Equipment and Tools
A grid made of angle sections posed in reversed V, regularly spaced, that is used by quarry workers to eliminate flat elements (needles, scales) contained in the aggregates stemming from the crushing of some materials. Syn. with BAR SCREEN. **See Figure 4**

NEEDLE GUN
Pistolet à aiguilles; Dérouilleur
Equipment and Tools
A hand-held mechanical device of which barrel contains a beam of hardened steel needles which can move independently from one another, and which are used to remove the rust of metallic pieces or to clean weld beads. Syn. with JASON HAMMER

NEEDLE PILE
Pieu-aiguille
Foundation
A drilled pile from 80 to 200 mm diameter, endowed of a reinforcement and concreted by grouting of cement or mortar grout. It is part of the family of micropiles. By its structure, it is an anchoring tie rod submitted to a high strain compression. Its implementation consists in:
- carrying out a drilling of which drilling method and tools are adapted with environments to be came through;
- setting up, inside the drilling, a metal reinforcement which can take various forms (one or, tubes, beams);
- sealing this reinforcement in the environment by a grout strongly batched with cement and mixed with an admixture intended for avoiding shrinkage.

NEEDLING
Epinglage
Masonry
A consolidation process of cracked masonries or facing detachment that consists in putting in place into a drilling a high-tensile steel bar, then to fill in the annular space by various processes (injection, perforated tube, sealing with resin). The two parts of masonry are so linked up by the reinforcement. Syn. with ANCHORAGE

NEGATIVE SIDE FRICTION
Frottement négatif
Foundation
Syn. with NEGATIVE SKIN FRICTION

NEGATIVE SKIN FRICTION
Frottement négatif
Foundation
The descending stress exerted on the shaft of a pile by the ground during settlement. Syn. with NEGATIVE SIDE FRICTION

NEOPRENE ™
Néoprène
Polymers
A synthetic elastomer obtained by polymerization of the chloroprene, used to manufacture sections, bearings, etc. This term is often wrongly used to identify the elastomer bearing plates of the bridges; neoprene is a registered trademark and not an inherent product.

NERVE OF A GLUE
Nerf d'une colle *ou* d'un joint de collage
Adhesives
The quality of a joint that offers a sufficient immediate cohesion to stand in the way of the separation of two supports freshly assembled, through the agency of forces which would tend to bring back them to their initial shape.

NERVOUSNESS
Nerveux
Building Materials
The specificity of a wiry wood.

NERVURE
Arête d'une voûte
Construction
Syn. with GROIN OF A VAULT

NET SECTION
Section nette
Metal Construction
The section of a shaped bar, without holes of rivets or bolts.

NETTLE TREE
Micocoulier
Building Materials
Tenacious and elastic wood of leafy trees category which possesses the same structure as the elm and the same qualities as the ash. The Provence neetle tree has a grayish white wood with greenish stains; its density ranges from 0.6 to 0.8.

NETWORK OF CAST-IN-PLACE DEEP PILES
Réseau de pieux racines
Foundation
Set of piles forming reinforcement in the ground. This structure is formed in situ directly in the ground, which can be of any nature. Contrary to

the isolated piles, the network of cast-in-place deep piles is to some extent a ground reinforced by piles; the participation of the ground endows to the earth piles unit the ability to resist from the vertical and horizontal loads, to the shearing forces, etc.

NEUTER CEMENT
Ciment neutre
Hydraulic Binders
A product of which the hydraulicity index is higher than 0.50; it is the case of slag cements.

NEUTRAL AXIS
Axe neutre; Fibre neutre
Strength of Materials
1. The line of zero fiber stress in any given section of a beam subject to bending; it is the line formed by the intersection of the neutral surface and the section. **See Figure 5**
2. Syn. with NEUTRAL FIBER

NEUTRAL EQUILIBRIUM
Equilibre indifférent
Civil Engineering Structure
A body is said to be in neutral equilibrium if on being slightly displaced it remains in its new position; e.g., a ball placed on a horizontal surface or a cone supported on its side on a horizontal surface.

NEUTRAL FIBER
Fibre neutre
Strength of Materials
In a beam, the slice of fibers that receives no strain because passing by the center of gravity of the section. Syn. with NEUTRAL AXIS

NEUTRON MOISTURE METER
Humidimètre à neutrons
Equipment for Measure and Control
An instrument that detects the particularly wet zones in tunnels based on the slowing-down phenomena of neutrons by hydrogen atoms.

NEUTRON PROBE
Sonde à neutrons
Assaying Equipment
Equipment used for geophysical prospecting of soil or to perform some checks; it allows to determine the soil porosity and to detect undesirable seepages in a barrage, a cofferdam, a dike.

NEW AUSTRIAN TUNNELING METHOD (NATM)
Nouvelle méthode autrichienne
Earthwork
A way of boring tunnels in which the country rock takes part in supporting itself, thanks to the application of a shotcrete (with or without bolting, reinforcement mat, light or reticulated centerings) on the wall of the excavation, as it is being created. **See Figure 6**

NEW RED SANDSTONES
Nouveaux grès rouge
Geology
Fluvio deltaic rocks of the Permian located at the base of the Trias. They can be found in France in the Vosgean Mountain (variegated sandstones).

NEWEL
Noyau
Various
The central part of an element, a material, a work.

***NGF* REFERENCE POINT**
Repère NGF
Topography
Each altimetric reference mark which forms a network covering the whole French territory. **See Figure 7**

NIANGON (tree)
Niangon
Building Materials
A tree of the rain forests giving a brown rosy or brown red wood of a density from 0.60 to 0.80.

NICHE
Niche
Construction
Syn. with REFUGE HOLE

NICK
Entaille
Nomenclature of Materials
Syn. with DADO; NOTCH; SLOT

NICKEL
Nickel
Metallurgy
A silvery white, hard, malleable, ductile, somewhat ferromagnetic element. Used for making stainless steel and other corrosion-resistant metals.

NICKEL PLATING
Nickelage
Metallurgy
Any forming process of a metal coating in nickel on a surface.
According to the process of nickel plating or his use, the following terminology is used:
- **electrolytic nickel plating** *(le nickelage électrolythique),* an electrolytic nickel deposition directly on the parent metal or on a copper or other metal underlayer, in the interest of decoration and protection from the corrosion. Electrolytic nickel plating allows to obtain deposits of varying aspects or natures according to the procedure used. One uses for these various deposits the terminology of dull nickel, semi-shiny nickel, brilliant nickel, multilayer nickel;
- **thick nickel plating** *(le nickelage épais),* a direct electrolytic deposition on a parent metal, without interposition of any other deposit, of a nickel coat which thickness can go from some hundredths of millimeters to several millimeters, with a mechanical aim or for protection from corrosion;
- **chemical nickel plating** *(le nickelage chimique),* a chemical nickel deposition by catalytic reduction of a nickel salt;
- **hot-blasting nickeling** *(le nickelage par projection à chaud),* the recovery of parent metal by blasting of molten nickel with a squirt gun.

Syn. with NICKELING

NICKELING
Nickelage
Metallurgy
Syn. with NICKEL PLATING

NICKEL-PLATE
Nickeler
Metallurgy
To carry out nickel plating.

NIDGED ASHLAR
Pierre piquée
Building Materials
An ashlar of thin layer of which beds and joints are tooled with a wealth of care; facings are nidged, then bush hammered, and finally framed by a fine margin.

NIDGED FACE
Parement piqué
Masonry
A face of ashlar or quarry stone having a tooled surface, carried out with a needle punch with the gradine, kind of chisel with teeth, or with diamond point chisel.

NIG
Piquer
Masonry
To work the stone with a pick that the cut marks are left. Syn. with TO NIDGE

NIGGERHEAD
Tête-de-chat
Building Materials
A small round quarry stone.

NIPPLE
Mamelon; Raccord
Nomenclature of Materials; Construction
1. A metal piece with double male threading used to join end to end by screwing two drilling rods, two tubes, etc.
2. Syn. with JOINT; JUNCTION; UNION

NITAL
Nital
Metallurgy
An acidic reagent used in micrography to attack ferrous metals.

NITRARDING
Nitruration
Metallurgy
Syn. with NITRIDING; NITROGEN HARDENING

NITRIL RUBBER
Caoutchouc nitrile
Materials
A strong synthesis material withstanding to hydrocarbons.

NITROCARBURIZING
Nitrocarburation
Metallurgy
A thermochemical processing to which a ferrous product is subjected in order to obtain a superficial enrichment in nitrogen and carbon, elements that form a coat of combination. Syn. with FERRITIC NITROCARBURIZING

NITROCELLULOSE
Nitrocellulose
Painting
A product resulting from the modification of celluloses by nitric acid, modification that has for effect of replacing some alcoholic functions of cellulose by ester-nitric functions.

NITRIDING
Nitruration
Metallurgy
A surface processing for steels that consists in creating a hardened coat by incorporation of nitrogen, coming from the dissociation of an ammonia gas current passing on the part (beforehand thermically treated), in an electric furnace kept at a temperature about 525°C. The penetration can reach 0.8 mm. Syn. with NITRARDING; NITROGEN HARDENING

NITROGEN HARDENING
Nitruration
Metallurgy
Syn. with NITRARDING; NITRIDING

NODE
Noeud
Construction
Syn. with PANEL POINT; CENTER (OF STRUCTURAL WORK)

NODULE
Rognon
Building Materials
Syn. with FLINT NODULE; KIDNEY STONE

NO-FINES CONCRETE
Béton caverneux; Béton sans éléments fins ou sans fines
Building Materials
A material (also called concrete without fines) mainly composed of large aggregates located in a single zone of the grading range.

NO-FINES CONCRETE WITH EXPANDED SLAG
Béton caverneux de laitier expansé *ou* de pouzzolane avec ou sans éléments fins
Building Materials
A material with alveolar structure of which the main aggregate is slag or pozzolan.

NO-FINES CONCRETE WITH HEAVY AGGREGATE
Béton caverneux à granulats lourds sans éléments fins
Building Materials
A material with alveolar structure of which the apparent density in a dry state is included between 1.6 and 1.9. The percentage of spaces must be at least equal to 25%.

NOMINAL DIAMETER
Diamètre nominal
Building Materials
Concerning a bar of reinforcement, diameter of a cylinder of revolution of the same metal, and even lineic mass.

NOMINAL DIMENSION
Dimension nominale
Metrology
The dimension by reference to which the limit dimensions are defined. Syn. with NOMINAL SIZE

NOMINAL ELECTRODE EFFICIENCY
Rendement nominal
Welding
Concerning a coated electrode, ratio of the mass of metal deposited under standardized conditions, to the mass of the consumed web, estimated for a given electrode, from its nominal diameter.

NOMINAL PERIMETER OF A STEEL REINFORCEMENT BAR
Périmètre nominal d'une barre d'armature
Nomenclature of Materials
The circumference of the circle having for diameter the nominal diameter of the reinforcement bar.

NOMINAL SECTION
Section nominale
Building Materials
Speaking about a reinforcement bar, the area of the circle having for diameter the nominal diameter.

NOMINAL SIZE
Dimension nominale
Metrology
Syn. with NOMINAL DIMENSION

NOMINAL THICKNESS OF A WALL
Epaisseur nominale d'un mur
Construction
The distance measured of a wall between its front face and its rear face. This distance is rounded off for quantitative surveys to the nearest centimeter.

NOMOGRAPHY
Abaque
Drawing
Syn. with CHART; DIAGRAM; GRAPH

NONADHESION SURFACE
Surface de non-adhérence
Geology and Materials
A boundary layer of which perpendicular tensile strength is null; example, crack, breaking.

NONAQUEOUS DEVELOPER
Produit révélateur liquide non aqueux
Welding
An absorbent powder in suspension in a nonaqueous liquid, used to underline surface discontinuities that may affect a weld.

NONBEARING ELEMENT
Elément non porteur
Construction
The part of a construction or construction barely solicited by vertical loads but that can be solicited by horizontal forces. Example: a retaining wall is a nonbearing element.

NONCOMPLIANCE
Non-conformité
Building Materials - Civil Engineering Structure
Syn. with NONCONFORMANCE; NONCONFORMITY

NONCONFORMITY
Non-conformité
Building Materials - Civil Engineering Structure
Dissatisfaction with specified requirements of a product, a work. Syn. with NONCOMPLIANCE; NONCONFORMANCE

NONDESTRUCTIVE EXAMINATION
Contrôle non destructif
Test of Materials
Methods of examination, usually for soundness, which do not involve destroying or damaging the material or part being tested. It includes radiological examination, magnetic inspection, etc. Syn. with NONDESTRUCTIVE INSPECTION.

NONDESTRUCTIVE INSPECTION
Contrôle non destructif
Test of Materials
Syn. with NONDESTRUCTIVE EXAMINATION

NON DESTRUCTIVE TEST
Essai non destructif
Test of Materials
A test that consists in examining or analyzing a material to divulge there, without harming to its integrity, every particularity of its structure that can have an influence on its operational behavior. Among the nondestructive trials one can quote:
- ball impact test on concrete;
- test by resonant waves;
- test by radioactive isotopes.

NONELASTICITY
Anélasticité
Strength of Materials
The behavior of a body which does not have perfect elasticity; this behavior is characterized by the fact that the body does not take again, after stress, the form and dimensions which it had beforehand. Syn. with ANELASTICITY

NONFLOWING AREA
Aréisme
Hydrology
Syn. with AREISM; AREA WITHOUT WATERWAYS

NONHYDRAULIC LIME
Chaux aérienne
Building Materials
Syn. with AIR-HARDENING LIME; HIGH-CALCIUM LIME

NONMAGNETIC DRILL-COLLAR
Masse-tige amagnétique
Equipment and Tools
A drill-collar made of nonferrous material unaffected by magnetism that allows the use of instruments based on the measurement of magnetism, to control the drill string's orientation in guided drilling operations.

NONPENETRATIVE STRUCTURAL ELEMENT
Elément structural non-pénétratif
Geology
The discontinuity that separates distinct domains as, for example, breaks, unconformity, joints, breakages, etc., for structural plane elements, and surface intersections for linear structural elements.

***NORDSON* GAUGE**
Jauge *Nordson*
Equipment for Measure and Control
A sort of comb used to measure the thickness of fresh paint films. **See Figure 8**

NORM
Norme
Building Materials
Rules fixing the conditions of the carrying out of an operation, execution of an object, or the development of a product of which one wants to unify the use or to ensure interchangeability. Syn. with STANDARD

NORMAL CONSUMPTION OF STRIPPINGS (product)
Consommation normale d'un démoulant
Construction of R.C. and P.C.
Also called *normal batching,* the quantity of product necessary to cover 100 m^2 of form lining. This consumption is normally indicated by the product's manufacturer; nevertheless conditions of application can make consumption appreciably vary (climatic conditions, nature of the sheeting of the formwork, qualification of the worker, etc.).

NORMALIZING
Traitement de normalisation
Metallurgy
Heat treatment being designed to refine the steel's crystal structure and eliminate internal stress; it includes an austenitization followed by a calm air-cooling.

***NORTH'S* GAUGE**
Jauge de *North*
Equipment for Measure and Control
An instrument for measuring the grinding fineness of pigments going into paint composition.

NOSE
Nez
Construction
The end of a bracket, cantilever, corbel, step or overhang. Syn. with NOSING

NOSING
Avant-bec
Handling and Temporary Work
The trussed frame of which the front part of a work is provided, in order to facilitate accosting on pilings, piers, or abutment of a deck during its launching (or its putting into position by rotation) and so as to minimize the number of roll elements. Syn. with JIB

NOTCH
Embrèver; Coche; Gruger
Construction; Work; Metal Construction
1. To fashion a bevel shoulder.
2. A small nick on a timber piece mostly used as landmark.
3. To perform a notching.

NOTCH
Entaille
Nomenclature of Materials; Metallography
1. A recess, cut, of various forms, removed on the angle of a piece and opening on two opposite faces.
We can distinguish:

- **halved dado** *(l'entaille à mi-bois, à mi-fer),* which constitutes the joint (assembly) of pieces symmetrically nicked in half-thickness; **See Figure 9**
- **dovetailed jag** *(l'entaille a queue d'aronde),* which shows a morphology resembling the tail of the swallow;
- the **double slot** *(l'entaille double),* extra notch adjacent to a first nicks forming generally a step. **See Figure 9a.**

Syn. with DADO; NICK; SLOT

2. A notch carried out in a test bar that allows to locate a premeditated breakage (the test of grain size by breakage, impact test).

NOTCH EFFECT
Effet d'entaille
Defects (Welding); Metallography

1. A phenomenon affecting notably steel welded connections and which results in a localized weakening of the assembled pieces making them sensitive to the fatigue. Notch effects are the result in most cases of the following: variations of section, bites, porosity, hairline cracks, quality of the weld metal, etc.

2. A concentrated effect of stresses on connecting notch extremities (change in gauge of mechanical pieces) or natural notches (fissures).

3. The ratio between the impact resistance determined on a normal test specimen and the impact resistance determined on the same test specimen after it has been nicked.

NOTCH WELD
Soudure à entaille
Welding

An assembly intended for joining together, from distance to distance and two by two, flats or sheet metals posed one over the other.

NOTCHING
Grugeage; Brettelure
Metal Construction; Masonry

1. A punctual cutting of a rolled section's gauge or of the edge of a sheet metal. **See Figure 10**

2. Syn. with CHASING; TOOTHING

NOURISH
Nourrir
Painting

To spread a paint coat (or other similar material) on a support or another coat in order to fill with it perfectly pores, microbubbles, etc. Syn. with PREPARE

NOZZLE
Ajutage; Buse; Jet
Equipment and Tools

1. A device placed at the opening of a piping that allows to regulate the opening and reach of the jet. Syn. with CONNECTION; FLOW NOZZLE; JET

2. A small hollow and cylindrical tip of determined length, which adapts by screwing at the basis of the funnel-shaped part of a flowmeter. The nozzle regularizes the flow and can be of various diameters according to the viscosity of the grout to be tested (ø 8, 9, 10, and 11 mm for Marsh flow meter).

Syn. with Syn. with CONNECTION; FLOW NOZZLE; JET

3. The removable tip of a blowtorch through which the flame burns out.

4. The removable or nonremovable tip of a paint sprayer, a sandblasting lance or tools for mechanical application in general.

5. An opening made in a bore bit by which the drilling fluid escapes and which aim is to cool the tool and to lubricate it so as to facilitate its penetration.

NUCLEODENSIMETER
Nucléo-densimètre
Equipment for Measure and Control

An instrument for measuring the density of a coating in place.

NUMMULITE
Nummulite
Building Materials

A small fossilized sea animal with a chalky shell rolled up in spiral along an axis shorter than the diameter of the shell and with radial partitions. It can be found in abundance in some limestones or sands from the tertiary period.

NUMMULITIC LIMESTONE
Pierre à liards
Geology

A rock of the lower Lutetian with *nummulites laevigatus* represented by a coarse limestone than one finds in the Parisian basin.

NUT
Ecrou
Equipment and Tools
A metal piece with a threaded hole designed so that it can be screwed on to a bolt.

NUT RETAINER
Frein d'écrou
Equipment and Tools
A device preventing the unscrewing of a nut in the aftermath of vibrations or repeated shocks and that can be constituted by a split nut, fan washer, Grower washer, Belleville washer, pin, etc. Syn. with LOCKNUT; LOCK WASHER

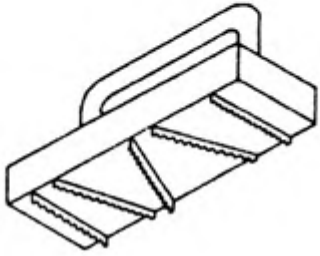
NUT RUNNER
Boulonneuse
Equipment and Tools
An electric or pneumatic device used to tighten or to loosen nuts of various bolts. The nut runner can be fitted with a system that controls the tightening. Syn. with PERCUSSION BOLTING MACHINE

NUT STOPPER
Bossage
Nomenclature of Materials
Generally cylindrical protrusion, whose face is dressed up to be of use as bearing to a nut or a disk. Syn. with RAISED EMBOSSMENT

Figures of the letter

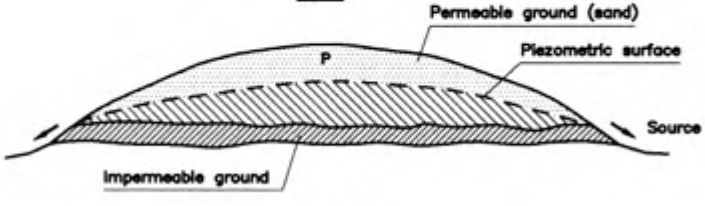


Fig. 1



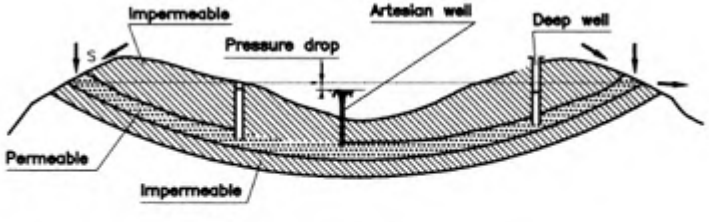
NAIL FLOAT

Fig. 2



Groundwater

Fig.2a

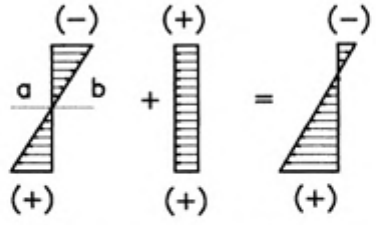


S = Upper outcrop of the permeable
I = Bottom outcrop of the permeable

Artesian aquifer

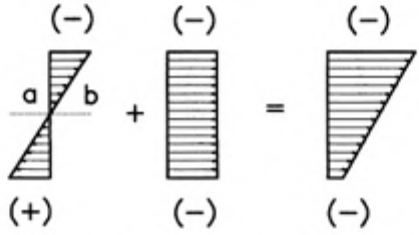
NAPPE

Fig. 3



Pure bending + uniform tension = combined bending

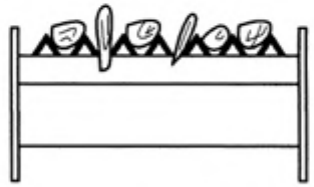
Fig. 3a



Pure bending + uniform compression = combined bending

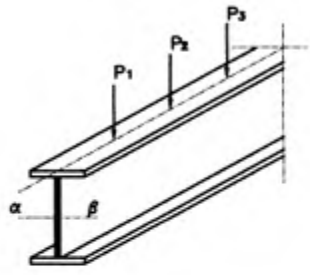
NAVIER'S TRAPEZIUM

Fig. 4



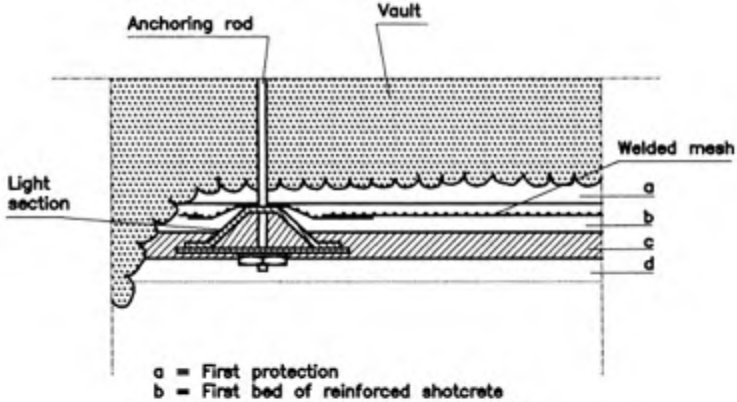
NEEDLE ELIMINATION GRIZZLY

Fig. 5



NEUTRAL AXIS

Fig. 6



a = First protection
b = First bed of reinforced shotcrete
c = Second bed of reinforced shotcrete
d – Third possible bed

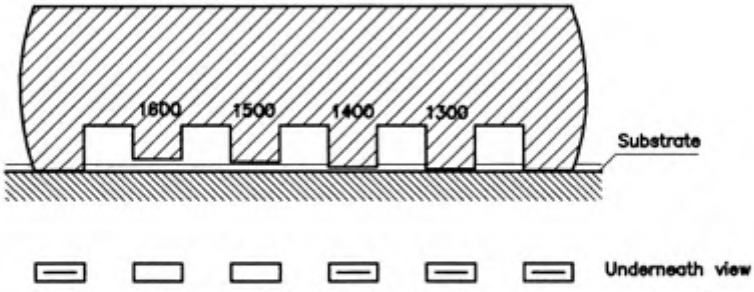
NEW AUSTRIAN TUNNELING METHOD

Fig. 7



N.G.F. REFERENCE POINT

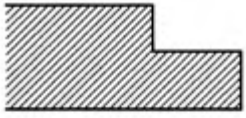
Fig. 8



Thickness of paint of the example = 1500 micrometer

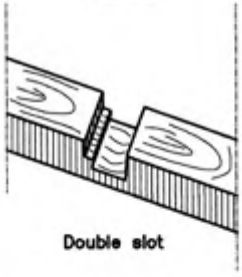
NORDSON GAUGE

Fig. 9



Halved dado

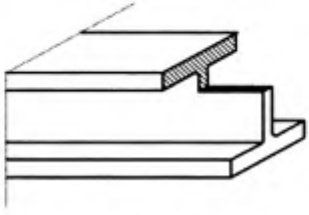
Fig. 9a



Double slot

NOTCH

Fig.10



NOTCHING



***O/D* AGGREGATE**
Granulat *O/D*
Building Materials
A grain that satisfies following conditions:
- screenings on the mesh sieve D is included between 1 and 15%;
- screenings on the mesh sieve 1.56 *D* are null.

OAK
Chêne
Building Materials
A tree providing a clear yellow or dark brown hard wood whose density ranges from 0.6 to 0.8. Most used species are the pedunculated oak and the chestnut oak.
This wood is notably used to carry out frames, temporary bearings, or for different wedgings.

OBLATENESS
Aplatissement
Defects (Construction)
Geometrical damage of vaulted works that result in a deformation toward the inside of the cross section and which manifests itself by an increase of the curvature radius of the vault in its top part.

OBLIQUE JOINT
Assemblage à oulice; Joint d'onglet
Carpentry ; Masonry
1. The assembly of a vertical timber piece (stud) in a slanted part (diagonal brace).
2. A joint of stone obliquely dressed, in diagonal.

OBLIQUE STONE
Moellon en coupe
Masonry
A stone bonded on edge in the vaults.

OBLIQUE WELD
Soudure oblique
Welding
A welded joint whose bead is oblique to the direction of the strain.

OBLONG
Oblong
Construction
Of a part of construction or plan whose length is parallel to the axis of the unit that includes this part.

OBLONG HOLE
Boutonnière
Construction
A port carried out in a part of a small thickness, longer than large, with rounded extremities, obtained by countersinking or boring a series of

holes (outline) and finished with a file. Syn. with ELONGATED HOLE.

OBSIDIAN
Obsidienne
Geology
An acid vitreous rock of magmatic origin.

OBTURATOR
Obturateur
Equipment and Tools
Syn. with BLOWOUT PREVENTER; CLOSING DEVICE; SHUTTER; STOPPER

OCHRE
Ocre
Painting
An yellow or red natural clay more or less rich in ferric oxides. This clay is used raw or calcined as pigment of some paints.

OCRATED CONCRETE
Béton ocraté
Building Materials
A material chemically processed with silicon tetrafluoride.

OCRATING
Ocratation
Construction of R.C. and P.C.
Concrete treatment from corrosion by application of silicon tetrafluoride that produces, at the touch of the free lime, a silica gel sealing canaliculi of the concrete. This treatment that is done on the hardened concrete also increases its impermeability, its compressive strength and wear resistance.

ODOMETER
Oedomètre
Assaying Equipment
An equipment that allows to carry out compressibility tests in a laboratory on cylindrical test specimens of soil placed inside that will not lose its shape cylindrical enclosure, and whose internal wall is at the direct touch of the test specimen.
In the odometer, the cylindrical rigid enclosure that surrounds the test specimen forbids any radial expansion of the soil, so that the deformations which occur when one exerts pressure on the piston solely are vertical (or axial).
Trials which one can carry out with the oedometer are very varied: the load can grow continuously or to be applied by landings of various duration, one can apply a single load or several successive loads, impose an initial deformation and follow the stress relaxation or on the contrary to make subjecting to the soil a deformation to consistent speed, etc. Comparators (or a collector of displacement) allow to follow the settlement evolution of the sample
We can distinguish four primary types of odometers: with weight, pneumatic loading, hydraulic loading or pressure loading. Syn. with CONSOLIDATION PRESS; CONSOLIDOMETER. **See Figures 1 to 1c**

ODOMETRIC HEATING TEST
Essai accéléré par chauffage
Geotechnics
An odometric trial having for single aim to work out the compressibility curve of a soil. The principle consists in placing a test-specimen (unsaturated) in an odometric cell, itself placed inside an odometric tub. One applies to the sample successive loads with a piston. The loading is carried out on seven stages of 8 h each at a temperature 68°C (with growing loads to each stage). Then one carries out at the unloading on two stages of 4 h. At each stage one records the evolution of settlements. At the end of the operation one carries out to the weigh of the test specimen after steam curing.

ODOMETRIC TEST TO RADIAL DRAINAGE
Essai oedométrique à drainage radial
Geotechnics
A trial that consists in determining the coefficient of radial consolidation and that combines the vertical compressibility of the soil and its horizontal permeability. It must be carried out on a soil test specimen cut vertically in a core sample taken with the stationary piston core drill, inside of an odometer into which the pore water cannot flow only in the horizontal direction.

ODOMETRICAL TEST
Essai oedométrique
Geotechnics
A test that is designed to envisage the importance and duration of soils settlements under a given load.
The study of settlements, by the means of the laboratory, is carried out with an odometer. The sample is locked up inside a cylinder fixed at a base provided with a porous stone. The odometric test is therefore a process of measurement of vertical deformations with null side distortion. The sample is saturated by immersion because the settlement of an unsaturated sample is immediate and the measurement of compressibility does not have great interest. It goes before a cycle of increasing pressures up to stabilization (with measurement of settlements to the hundredth of millimeter), then decreasing. The test also allows to measure the coefficient of vertical permeability for a given compactness. Results of odometric tests allow to calculate settlements of a compressible soil and to interpret them according to the time under a given pressure.

ODOMETRY
Oedométrie
Geotechnics
A field of soil mechanics intended for studying phenomena of soil compressibility. Odometry is a very important field because it allows to study the behavior of a soil subjected to given loads (foundation of works, of roadway, etc.).

OFFCUT
Recoupe
Masonry
A fragment cut down during the squaring of a quarry stone or an ashlar.

OFFCUT (wood); SCRAP (of metal); SHOOT (of stone)
Chute
Nomenclature of Materials
The waste of a matter (stone, wood, etc.) after the cut of a piece, a quarry stone, etc. Syn. with RUBBLE

OFF-FORM CONCRETE
Béton brut de décoffrage
Building Materials
Syn. with DIRECT-FINISH CONCRETE ; UNSURFACED EXPOSED CONCRETE;

OFFSET
Excentrement; Excentrement d'un pieu
Topography; Foundation
1. The distance separating a turning point where we can make tachymetric measurements from a point of the terrain to which one relates them later.
2. The distance between the theoretical axis of setting up and the real axis of the pile.

OFFSET
Ressaut; Dévoiement; En retraite
Construction
1. Any part of wall forming a level difference with another that is contiguous to it. Syn. with STEP
2. Syn. with CANTING
3. Syn. with INTAKE; SCARCEMENT

OFFSET LEVELING COURSE
Couronnement
Construction
The last course projecting of a retaining wall, a tympan, etc. **See Figure 2**

OFFSET SUB
Raccord de déviation
Equipment and Tools
Syn. with DEFLECTING SUBSTITUTE

OGEE
Cimaise; Doucine
Architecture; Construction
1. An ogee molding of an entablature or of the top part of a cornice. Syn. with CYMATUM
2. Syn. with MOULDING PLANE; TALON

OGEE MOULDING
Talon
Architecture
A S–shaped compound molding with ends tending toward the vertical. The straight ogee is convex at the top, concave at the down, unlike upside-down heel. **See Figure 3**

***OHIO* COFFERDAM**
Batardeau type Ohio
Temporary Construction
Syn. with OHIO TYPE (WATER) COFFERDAM; OHIO RIVER DAM

***OHIO* RIVER COFFERDAM**
Batardeau type Ohio
Temporary Construction
Syn. with OHIO COFFERDAM; OHIO TYPE (WATER) COFFERDAM

***OHIO* TYPE (WATER) COFFERDAM**
Batardeau type *Ohio*
Temporary Construction
A type of cofferdam which owes its name of its use in the United States on the Ohio River. Its construction consists in a first time in prefabricating a number of wooden frameworks firmly braced. These frameworks are then installed on the bed of the river to be intercepted forming a continuous row; a vertical sheeting is fixed on both sides of these frameworks, and then a space between the two sheetings is filled up carefully with compacted waterproof earth. A riprap or ground shoulder can be laid out upstream and downstream side against the cofferdam in order to confer a greater stability to it and to minimize risks of blow.
This type of barrage is proscribed in the case of watercourse run along by a violent stream as when there are serious risks of a fast flood. Syn. with OHIO COFFERDAM; OHIO RIVER COFFERDAM

OIL
Huile
Painting
A fatty product of a certain viscosity that can be of vegetable, animal, mineral, or synthesis origin and that is used to manufacture paints. An oil can have very diverse chemical structure.
There are several types of oils:
- **crude oil** *(l'huile brute),* product having undergone none processing after extraction;
- **cooked oil** *(l'huile cuite),* refined product, thermically processed at a relatively low temperature (from 150 to 160° C) in the presence or not of driers;
- **abrasin oil *or* tung tree oil** *(l'huile d'abrasine),* siccative product that is extracted from seeds of trees of alunites kind;
- **isomerized oil** *(l'huile isomérisée),* in which the unsaturated systems with acid radicals underwent rehandling and/or of place;
- **refined oil** *(l'huile raffinée),* product having undergone a whole of operations which upgrades its qualities, without modification of its chemical structure;
- **resin oil** *(l'huile de résine),* obtained by pyrolysis, with or without catalyst, of the rosins or pitches of rosin;
- **drying oil *or* wetting oil** *(l'huile siccative),* whose formula contains double ethylenic connections, able to give source by oxidation to a dry film when it is applied in thin coat and exposed to the air;
- **blown oil** *(l'huile soufflée),* refined product, thickened by oxidation and that is processed by blowing of air, oxygen or hot ozone, in presence or not of catalysts;
- **sulfoned oil** (*l'huile sulfonée),* refined product, cooked, or blown, processed by sulfuric acid or other sulfonent agents in some conditions of temperature and that is neutralized afterward by a base;
- **sulfuretted oil** *(l'huile sulfurée),* refined product, cooked or blown, processed by sulfur in some conditions of temperature;
- **fatty oil** *(l'huile grasse),* crude linseed oil, cooked or standed oil, dissolved in the spirits of turpentine or white spirit. This product dries slowly and forms a thin and flexible film;
- **linseed oil** *(l'huile de lin),* extracted from linseed by various processes (pressure or extraction with solvent), that dries at the touch of the air and ensures the solidity and resistance of the color thanks to its crystallization. Linseed oil is used for grinding colors, preparing compound, cooked oils, stand oils, and liquid driers;
- **stand oil** *(l'huile standolie ou standolisée),* which is refined and partially polymerized by hot treatment to a relatively high temperature (from 280 to 310°C). This processing is mostly carried out into a closed container and, in this case, in an inert gas atmosphere, in conditions of given duration and regularity;
- **China's wooden oil** *(l'huile de bois de Chine),* obtained by the extraction of the oil from some seeds of plants and small shrubs cultivated in China, Japan, and Burma, and that is used to manufacture stand oils, some fatty lacquers. This oil increases the resistance of paints and hard hues, but provokes a breakable film after aging;

- **castor oil** (*l'huile de ricin),* of vegetable origin, obtained by cold pressure and used mixed with linseed oil for alkyd resins manufacture;
- **fish oil** (*l'huile de poisson*), of animal origin (herring, sardine) and which going into the manufacture of alkyd resins;
- **soya oil** (*l'huile de soja*), extracted from soya beans, whose drying is less fast than linseed oil and that going into the preparation of alkyd resins;
- **styrened oil** (*l'huile styrénée*), artificial resin resulting from the processing of a siccative oil by styrene;
- **processed oil** (*l'huile traitée*), that is a fatty oil, of which structure was modified by physical and/or physicochemical and/or chemical processings.

OIL COATING
Enduction d'huile
Construction of R.C. and P.C.
Painting with oil on the surface of formworks so as to ensure a some tightness, a better off-form striking, and that opposes at the same time at a too rapid excessive drying of the concrete on its facings.

OIL CUSHION
Amortisseur
Equipment and Tools
Syn. with HYDRAULIC CUSHION; HYDRAULIC SHOCK ABSORBER

OIL CYLINDER
Vérin
Equipment and Tools
Syn. with HYDRAULIC CYLINDER; PNEUMATIC JACK

OIL DOSE
Prise d'huile
Painting
The number of cubic centimeters of linseed oil necessary to wet 100 g of pigment (or of filler). This oil dose is sometimes expressed in a number of cubic centimeters of oil used for 100 g of obtained ground paste.

OIL MORTAR
Mortier à l'huile
Building Materials
An ordinary mortar into which is added during the mixing linseed oil in a proportion from 5% to 15% of the weight of cement. The set of this type of mortar is much slower. It was used formerly for waterproofing walls at the touch of the water (tanking) as rendering form.

OIL OF TURPENTINE
Essence de térébenthine
Painting
A product obtained by distillation of the resin of pine (terebinth) which plays in painting a role more important than linseed oil, with which it is blended some various proportions. Syn. with TURPENTINE

OIL PASSIVATION
Ciférisation
Metallurgy
Syn. with CIFERIZATION

OILING
Huilage
Construction of R.C. and P.C.
The coating with form oil of form linings (for example, wall forms).

OIL-SOLVENT PRESERVATIVES
Produits de préservation solubles dans l'huile
Building Materials
Preservatives of woods formed by solutions of one or several toxic chemical products (chlorinated phenols, zinc, or copper naphthenates) in a solvent of oils, mostly volatile or in a naphtha solvent.

OILY PRESERVATIVES PRODUCTS
Produits de préservation huileux
Building Materials
Wood preservatives of oily consistency, that are slightly volatile and relatively insoluble in water.

OKOUME
Okoumé
Building Materials
Syn. with AFRICAN MAHOGANY; GABOON; GABOON MAHOGANY

OLIGOMER
Adduct; Oligomère
Polymers
A compound obtained by polycondensation of monomeric molecules in a number lower about 30. Syn. with ADDUCT

OMEGA
Oméga
Metallurgy
A cold shaped, resembling a capital omega and used as a plate stiffener or in the manufacture of sleepers.

ON ONE FLOOR
De plain-pied
Construction
Of traffic surfaces of a construction located at the same altimetric level. By extension: of traffic surfaces of a construction located altimetrically at the level of the undisturbed ground.

ON THE RETURN
En retour
Construction
Of an element of construction forming a plane, an angle with another element.

ON THE WORK
Sur le tas
Work
The site of a work to be undertaking work or materials placed on a scaffolding.

ONE TENTH OF A POISE
Poiseuille
Metrology
A dynamic unit of viscosity which is worth 10 poises.

ONE or TWO-DRUM WINCH
Treuil à un ou deux tambours
Equipment and Tools
A device equipped with one or two drums, according to whether one uses only one cable or two, one rising, the other descending.

OOLITE
Oolithe
Geology
A small spherical concretion of the size of hard roe (0.5 to 2 mm), formed by concentric beds deposited around a nucleus (mineral or biological remains).

OOLITIC
Oolithique
Geology
Of a structure containing oolites; example, :oolitic limestone.

OPACIFYING POWER
Pouvoir couvrant par opacité; Pouvoir opacifiant
Painting
Syn. with HIDING POWER

OPACITY METER
Opacimètre
Equipment for Measure and Control
An instrument that allows to measure the covering capacity of a paint film. Syn. with HIDING POWER METER

OPALESCENCE
Opalescence
Defects (Painting)
Syn. with MILKINESS

OPAQUE
Opaque
Painting
Of a perfectly dry film of paint endowed with hiding power.

OPEN
Fontis; Cloche
Geology; Defects (Civil Engineering Structure)
1. A term of quarry worker indicating the caving domes that develops at the roof of the subterranean quarries in the Parisian region.
2. Syn. with CAVITY; DOME; POTHOLE

OPEN BEAD
Nervure ouverte
Metal Construction
The rolled edge of a sheet metal that forms a partially closed circular buckle.

OPEN FACE
Parement vu
Construction
Surface of a masonry work which remains visible after the completion of the job.

OPEN GRAIN SIZE
Granularité ouverte
Building Materials
The specification for an aggregate including a big proportion of spaces between its grains.

OPEN INVESTIGATION
Sondage à ciel ouvert
Geotechnics
A survey of a large section, worth visiting, which is carried out such as well, of trench or exploring drift. Its depth is limited to 10 m. This type of investigation allows to examine *de visu* the nature of the soil and to take samples directly there.

OPEN JOINT
Joint ouvert
Masonry
A space contained between two stones or two bricks of which the opening is kept by skids.

OPEN METALWORK
Grillage
Building Materials
A metal lattice used to establish enclosures. Syn. with GRATING

OPEN MORTICE
Gargouille
Construction
Syn. with COMBED JOINT

OPEN PIT
A ciel ouvert
Pit
Of any surface deposit (open pit).

OPEN SLUICE
A gueule-bée
Earthwork
Is said when a digging is carried out under water (to excavate with open sluice).

OPEN *or* CLOSED SQUARE
Equerre ouverte *ou* fermée
Metal Construction
A corer iron or folded flat iron used to achieve a skew assembly. **See Figure 4**

OPEN-CELL PROCESS
Procédé à cellules vides
Building Materials
Syn. with EMPTY-CELL PROCESS

OPEN GUTTER (ACCROSS ROAD)
Cassis
Sanitary Engineering and Drainage
A widened V-shaped gutter located at the intersection of the slope and the incline of a road and that cuts transversely the roadway. The bump is intended for ensuring the continuity of the water flow of longitudinal gutters and/or for collecting streaming waters of slopes and inclines of the roadway and for evacuating them toward an outlet Syn. with BUMP

OPENING
Elégissement
Construction
1. A vaulted recess located above of a bridge or a viaduct pier and at the fork formed by the extrados of arches (between tympanums) to decrease the thrust of the vault of the work and to restrain the pressure on the plan of springings, on the masonries, on the piers and on the ground of foundation. **See Figures 5 and 5a**
There are several types of openings:

- **transverse gallery** (*l'élégissement transversal),* of which the generatrix of the intrados is parallel to that (or the) arche(s) of the bridge or the viaduct (their sidewalls being transverse walls connecting the two tympanums when it concerns important height openings); it can be apparent or hidden; **See Figure 5c**
- **longitudinal gallery** (*l'élégissement longitudinal)* of which the generatrix of the intrados is perpendicular to that (or the) arch(es) of the bridge or viaduct (they are always a minimum of two so as to avoid a too high thrust on tympanums); it is always hidden; **See Figure 5b**
- the **cross-vaulting gallery** (*l'élégissement en voûte d'arête*) which is a combination of the transverse gallery and the longitudinal gallery (their support is formed by common sidewall parts forming pillar). Syn. with GALLERY.

2. Vault(s) fitted out in a pier of bridge or viaduct of which the objective is identical with the definition above. Syn. with GALLERY. **See Figure 5d**
3. Syn. with BRIDGE SPAN; CLEAR SPAN; OVERALL WATERWAY; SPAN WIDTH.

OPENING SHAFT
Puits
Construction
A cylindrical or elliptic built opening, vertically accommodated inside an abutment.

OPERATING LOAD
Charge d'exploitation
Strength of Materials
The maximal stress applied to an operational structural element, resulting from all the different actions (simultaneous or not), coming from the exploitation of the work. Syn. with SERVICE LOAD

OPERATING MODE
Mode de fonctionnement
Civil Engineering Structure
The principal role for which a structural part is designed. However, the part can be subjected in a secondary way to other stresses types of which the taking into consideration, in complementary checking, does not modify dimensions required by the principal stress. The operating mode allows to classify the parts into various categories according to whether they are subjected: to the direct tension, direct compression, direct bending, compound bending (the accumulation of a direct bending and a direct tension or compression), to the direct or compound twist (the accumulation of a direct twist and a direct bending) or to the forces contained in the plan of the medium folia and applied on the contour or inside.

OPERATOR
Opérateur
Welding
A worker specialized in the supervision of a welding operation by means of a mechanical or automatic equipment. Syn. with WELDING OPERATOR

OPERATOR QUALIFICATION
Qualification d'un soudeur ou d'un opérateur
Welding
The ability recognized to a welder or an operator to carry out a type of given jointing under determined conditions. Syn. with WELDER QUALIFICATION

OPHIOLITES
Ophiolites
Geology
A heap of ultrabasic and basic rocks laid out in bench.

OPPOSITE CONTOUR
Contre-profil
Materials - etc.
A profile of an identical symmetry to another. Syn. with OPPOSITE OUTLINE

OPPOSITE DIRECTION
Contre-fil
Hydrology
Syn. with COUNTERFLOW

OPPOSITE OUTLINE
Contre-profil
Materials - etc.
Syn. with OPPOSITE CONTOUR

OPTICAL SQUARE
Equerre d'arpenteur; Equerre optique
Topography
1. Syn. with CROSS STAFF
2. A surveyor's square with prisms and mirrors used to carry out plottings. Syn. with PRISM SQUARE

OPUS INCERTUM
Opus incertum
Masonry
Syn. with. RANDOM RUBBLE WORK

ORANGE LEAD
Mine orange
Painting
An orange-colored pigment having a composition practically similar to red lead, obtained by calcination of white lead.

ORANGE PEEL
Peau d'orange
Defects
1. A defect that can be observed on a paint film and that shows a fleecy aspect roughly identical to an orange skin. This defect can affect the reflection qualities of the paint.
2. An appearance defect characterized by a rugged surface that appears on some sheet metals after stamping. Syn. with ORANGE SKIN APPEARANCE

ORANGE SKIN APPEARANCE
Peau d'orange
Defects (Metallurgy)
Syn. with ORANGE PEEL

ORDINARY FACING
Parement ordinaire
Construction of R.C. and P.C.
The more or less rough face of a concrete work, direct-finish concrete, of which appearence is the object only requirements of regularity and obtained with more or less close wooden or plywood formworks

ORDINARY MORTAR
Mortier ordinaire
Building Materials
A product of which cement batching ranges from 250 to 400 kg cement per cubic meter of sand and used in all masonries, dwarf walls, beds, etc.

ORDINARY PIER
Chaîne ordinaire
Construction
A pilaster of ashlars, built-in in a construction and belonging only to a lonely face of the construction, without forming return. The ordinary pier is intended for consolidating and reinforcing a wall (example: abutment showing an important width). **See figure 34 of the letter C.**

ORDINARY REINFORCEMENT
Armature ordinaire
Construction of R.C. and P.C.
Concerning a prestressed concrete work, set of different reinforcements than those of prestressing. They are reinforcements identical to those used for reinforced concrete work.

ORGANIC COATING SHEETS
Tôles à revêtements organiques
Metallurgy
A metal product of which the naked or plated basic surface is coated in continuous installations by organic matter or a mixture of organic matter and metal powder.

ORGANIC ROCK
Roche organique
Geology
A material produced by the activity of some alive beings, as the corals for instance.

ORIENT(ATE) (Building)
Aspecter
Topography
To be directed in a given direction, speaking about of a structure.

OROGENESIS
Orogenèse
Geology
The formation of mountains, since the deposit of marine and detrital sediments until the surging which will are brought to light the elements of the relief.

OROHYDROGRAPHICAL MAP
Carte oro-hydrographique
Hydrology
A document describing in a region waters and figurations of the relief.

ORTHOGNEISS
Orthogneiss
Geology
A metamorphic rock resulting from the granite lamination.

ORTHOGRAPHY
Orthographic
Drawing
The representation of a construction according to the geometrical ratio of all its parts without regard to the reductions of the perspective.

ORTHOPHOTO
Orthophotoplan
Drawing
A plan that appears as a photograph on a scale but free of deformations due to the relief.

ORTHOPHOTOGRAPHY
Orthophotographie
Topography
A technique that allows to obtain a document having the delicacy and richness of a photograph as the quality of the plan.

ORTHOSTATE
Orthostate
Construction
A course that forms the base of a bonded wall. Blocks of orthostate laid on the slice constitute a course higher and more massive than upper courses formed by perpends, stretchers, and headers. Walls are formed by blocks of regular size and bond, jointed without mortar. The

course of orthostate is dressed of edge in one or several rows (each block is laid on the smallest face of its length, the great surface being visible). Sometimes, the orthostate is built with a stone stronger than the rest of the wall. Syn. with CYCLOPEAN BASEMENT; HEAVY BASEMENT

ORTHOTROPY
Orthotropie
Strength of Materials
A particular case of the anisotropy or heterotropy of a plate, a thin slab or a beam, in which there are two privileged directions, perpendicular between them, corresponding one to a maximum, the other to a minimum of the studied physical property.

OSCILLATORY METER
Trépidomètre
Equipment for Measure and Control
An instrument that records oscillatory movements of some constructions (bridges and barrages in particular).

OUT OF CENTER
Cintre
Construction
The curve described by the inside surface of an arch, a vault. Syn. with CENTERING

OUT OF EQUILIBRIUM PROCESSING
Traitement hors d'équilibre
Metallurgy
A thermal operation which changes the structure of metals; we can distinguish inter alia the quenching, tempering, and structural hardening.

OUT OF LINE
Désaxement
Defects
The relative bad positioning of the parts of a bearing apparatus leading parasitic frictions and/or lockings. Syn. with UNALIGNED

OUT OF PLUMB
Faux-aplomb; Dévers
Construction; Civil Engineering Structure
1. The state of a piece or a part of construction in elevation, whose low and high extremities are aligned following an axis that parts more or less from the vertical axis.
2. Syn. with INCLINATION; SLOPE

OUT OF TRUE
Gauche; Gauchi
Defectss (Building Materials)
Syn. with BUCKLED; WARPED

OUTCROP
Affleurement
Geology
The part of a geological stratum emerging on the surface of the ground. Syn. with BLOSSOM

OUTER END
Queue de marche
Construction
Syn. with TAIL OF STAIR

OUTFALL CHANNEL
Canal de décharge
Sanitary Engineering and Drainage
An artificial work of earth or covered or canal with a strong slope carrying water poured by works of outfall, emptying, draining of water, evacuation of sediments, etc., toward the outlet. Syn. with OUTLET CHANNEL

OUTFLOW
Ecoulement
Hydrology
Syn. with FLOW; RUNOFF

OUTLAND
Franc-bord
Civil Engineering
Syn. with FORELAND

OUTLET
Avaloir; Ebeylière; Exutoire
Construction
1. An opening of which are equipped some bridge decks and from which is directed storm waters for their draining. Syn. with (RAINWATER) GULL(E)Y
2. An cave open in the side of sidewalk rims and located in their bottom point to receive surface waters of gutters. Syn. with GULLY INLET
3. An opening put in the dike of a pond or in the slope of a canal to ensure the flow of excess water.
4. A drilling carried out or opening made in a vault or a slab, intended for the draining of waters and that is generally tubed and endowed

with an inlet filter. Syn. with WASTEWATER OUTFALL

OUTLET
Canonnière; Barbacane; Emissaire d'évacuation
Sanitary Engineering and Drainage
1. A narrow opening performed in a retaining wall to allow water flow.
2. Syn. with DRAINAGE CHANNEL

OUTLET CHANNEL
Canal de décharge
Sanitary Engineering and Drainage
Syn. with OUTFALL CHANNEL

OUTLINE
Gabarit; Galbe
Construction; Metallurgy
1. Dimensions defining the transverse bulk of a beam, a post, etc.
2. The curved profile of a sheet metal mostly of small amplitude. Syn. with SWEEP

OUTRIGGER
Bascule
Metal Construction
A frame piece or bridge beam of which one or both extremities extend beyond the bearing(s) that support it.

OUTSIDE MEASUREMENT
Mesure hors oeuvre
Metrology
The dimension taken between two works, two walls, including their thickness.

OUTSTANDING FACE
Table saillante
Construction
A rectangular surface, slightly overlapping on the facing of a wall, a work. **See Figure 6.**

OUTWARD PRESSURE
Poussée au vide
Construction of R.C. and P.C.
Syn. with SIDE THRUST

OUTWASH
Alluvion
Geomorphology
Syn. with ALLUVIAL DEPOSITS; ALLUVIUM; FLUVIAL SEDIMENT

OUTWORK
Hors oeuvre *ou* Hors d'oeuvre
Construction
Syn. with BUILT OUT; PROJECTING

OVAL FLAW
Tache ovale
Metallography
The progressive ovoid break (of fatigue) in the parts of a metal structure subjected to cyclic strains mainly in compression.

OVALIZATION
Ovalisation
Defects
1. A defect affecting a cylindrical work characterized by a deformation reducing the diameter in a certain direction.
2. Concerning arched masonry works, damage characterized by a deformation showing two perpendicular axes of symmetry. This defect is due to a distortion of the country rock or to a movement of slope, or also to a high side thrust.

OVALIZATION RESISTANCE TEST
Essai de résistance à l'ovalisation
Test of Materials
A test carried out on reinforced concrete pipes with a median steel tube in order to examine their resistance to the deformation under some loads applied vertically or laterally and which can be thorough up to breaking:
- *pipes of R.C.*; the test is done by crushing of the pipe and checking of its breaking load. The test is carried out by means of an automatic press with recorder of strains on an entire pipe (excluded possible flange) laid horizontally or on a pipe element of length lower than the standard length;
- *pipes with a median steel tube;* the test is done by checking of the service load of the pipe. The test is carried out with the same device of test and in the same experimental conditions as for pipes of R.C. The load is increased by landings up to the test load determined in advance. This one is calculated to produce in the key a moment in service justified by the design note. The criterion of the test is the important crack (0.25 mm at least of width and 30 cm at least long).

OVEN-DRIED
Anhydre
Materials
Refers to a body that does not contain water. Refers to a wood that was dried until its weight remains constant inside a ventilated steamer, at a temperature higher than of the water boiling point, mostly at 103 ± 2°C. Syn. with ANHYDROUS

OVEN-DRY CEMENT
Ciment anhydre
Hydraulic Binders
An intimate mixing carried out before or after grinding of one or several constituents (slag, pozzolan), with possibly, and in small quantities, one or several additions (salts, sulfates, etc.).

OVERALL SETTLEMENT
Tassement global
Foundation
A subsidence that affects all foundations of a work and of a value roughly identical in each point.

OVERALL WELD METAL RECOVERY
Rendement global
Welding
Concerning a coated electrode, ratio of the metal mass deposited in standardized conditions to the total mass of a given electrode subjected to the test.

OVERBORING
Refuite
Construction
Syn. with OVERDRILLING

OVERBREAK
Hors profil
Construction
The volume of the gap included between the theoretical profile and real profile of a work when the ground deviates from the theoretical profile toward the outside of the work. Syn. with BACKBREAK. **See Figure 7**

OVERBRIDGE
Passage supérieur
Civil Engineering Structure
A work that allows to cross a channel of communication. In the French Railway (SNCF), this type of work calls the name of *road bridge* or *canal bridge* according to whether the upper way is a road (or motorway) or a canal. Syn. with OVERHEAD CROSSING; OVERPASS

OVERBUILD
Surédifier
Building
To build above an already existing construction.

OVERBURDEN
Morts-terrains; Découverte; Recouvrement
Building Materials; Earthwork
1. Syn. with CAPPING
2. Syn. with STRIPPING

OVERCHARGE
Charge
Masonry
A matter brought to thick or complet a structural element.

OVERCONSOLIDATED SOIL
Sol surconsolidé
Geology
A ground having undergone through the ages a pressure higher than the weight of earths currently supported; this is the case of earths having undergone the weight of glaciers for instance.

OVERCUTTING
Surcreusement
Geohydromorphology
Syn. with OVERDEEPENING

OVERDEEPENING
Surcreusement
Geohydromorphology
The removal of materials from the bed of a river during floods. The extent of the overdeepening is variable, the essential factor being the speed of water. Natural (example, contracting of the useful section) or artificial obstacles (piers of bridges, abutments) cause an increase of the current velocity, therefore appreciably increase the effects of the overdeepening. (The overdeepening can cause serious damage to the foundations of a work, being able to go up to the ruin of this last.) Syn. with OVERCUTTING

OVERDRILL
Surforer
Work
A method which consists in drilling around a stand of drill pipe jammed inside a drilling to release and recover it.

OVERDRILLING
Refuite
Construction
Extra dimensions given to a sealing hole in order to facilitate the setting of the part to be sealed.
Syn. with OVERBORING

OVERFLOW
Trop-plein
Construction
An outlet that allows to drain waters out of a pondage, a tank, when those exceed a some level.

OVERFLOW SHOUT
Déversoir
Hydraulic Works
Syn. with SPILLWAY; WATER WEIR

OVERFLOWING
Débordement
Defects (Welding)
An excess of weld metal that displays at the surface of the parent metal, outside the weld bead. This excess of metal has no intimate bond with the parent metal.

OVERHANG
Débord
Metal Construction
The part exceeding the theoretical rectangle constituted by external faces of a box girder to hollowed or solid webs, whose flanges are soldered in the internal angle; the width of this part. **See Figure 8**

OVERHANG
Porte-à-faux; Saillie; Surplomb
Construction
1. The corbelled part of a work.
2. The projecting part of a plinth or a cap with regard to the main plane of the facing. Syn. with PROJECTION. **See Figure 9**
3. The part of a construction which stands out with regard to its base, either voluntarily by the fact of a required arrangement with this purpose, or accidentally in consequence of a insufficiency in the stability of the construction.

OVERHANGING
En surplomb; En porte-à-faux
Construction
1. Describes an architectural element whose main plane situates forwards the main plane of another architectural element placed below it.
2. Of a part of construction established overhanging; which is out its plumb. Syn. with BACKBALANCED; PROJECTING

OVERHANGING ASSEMBLY
Montage par encorbellement
Handling
A putting in place process of bridge decks that consists in connecting two bearings by building consoles carried out by jointing of successive elements.

OVERHANGING CONSTRUCTION
Construction en encorbellement
Work
A construction process that allows to build a work symmetrically overhanging from the piers, by successive phases, called *segments* from 3 to 4 m lenght. Stability is ensured by the successive tensioning of steel prestressing cables, anchored at the end of each phase. Each group of two segments can be achieved on the spot with formworks picking up on the previously realized structure or manufactured on the bank and applied against the precedent with intervention of an epoxydic resin-based or concrete-based glue joint. Syn. with CORBELED CONSTRUCTION

OVERHANGING FOR COUNTERWEIGHT
Culasse
Construction
The part of some movable bridges extending backwards the flight and being designed to the fixing of the counterbalance. The expression *overhanging for counterweight* is used when this part is short, the *end balance* expression in the opposite case. **See Figure 10**

OVERHANGING WALL
Mur en surplomb
Construction
A work of which the higher part is projecting with regard to the base.

OVERHAUL
Transport; Rhabillage
Handling; Masonry
1. Concerning earthwork, the overhaul (or evacuation) designates the horizontal or vertical displacement of excavated materials with spades, vehicles or skips.
2. Syn. with REPAIRING

OVERHEAD CABLEWAY
Blondin
Handling
Syn. with BLONDIN; CABLEWAY; ELEVATED CABLEWAY CRANE; FUNICULAR CRANE

OVERHEAD CARRIER
Transporteur aérien *ou* Transporteur à câbles
Equipment and Tools
A materials-handling device comprising one or two cables passing by pylons. At these cables are suspended carriers which ensure the forwarding of materials from a place to another (for example: from a quarry to the site of treatment). This process is notably used to clear obstacles such as roads, railway tracks, etc. Syn. with CABLEWAY

OVERHEAD CROSSING
Passage supérieur
Civil Engineering Structure
Syn. with OVERBRIDGE; OVERPASS

OVERHEAD LOADER
Rétro-chargeur
Equipment and Tools
Syn. with BACK LOADER

OVERLAP
Pince
Metal Construction; Welding
1. In a riveted or bolted joint, part of a sheet metal which covers another. **See Figure 11**
2. In a lap welded joint, lap length of sheet metals. **See Figure 12**

OVERLAP DEFICIENCY
Insuffisance de pince
Defects (Metal Construction)
In riveted or bolted metal works, defect characterized by a bad arrangement of rivets or bolts. The distance between the edge and the line of rivets or bolts is too important, causing, in some zones, an insufficient tightening of jointed parts.

OVERLAP OF A BRIDGE EXPANSION JOINT
Chevauchement d'un joint de chaussée
Defects (Civil Engineering)
Damage characterized by an abnormal superposition of elements of a bridge expansion joint and that can be longitudinal or transverse; this last case being observed the most often on the curved works or having an importantly skew. Causes can be:
- the choice of a maladjusted joint not allowing the movements imposed by the work;
- the bad adjustment of a well-adapted joint.

OVERLAY
Couvrir
Painting
To paint so that the subjacent layer is entirely covered.

OVERLOAD
Surcharge
Strength of Materials
Syn. with ADDITIONAL LOAD; EXCESS LOAD

OVERPAINTING
Surpeint
Construction Term
Of a repainted surface of which one has preserved the earlier paint coats.

OVERPASS
Toboggan; Passage supérieur
Civil Engineering
1. The part of a roadway, thanks to the presence of a civil engineering structure, allows the crossing of a crossroad.
2. Syn. with OVERBRIDGE; OVERHEAD CROSSING

OVERPLUS
Balêvre
Defects (Construction of R.C. and P.C.)
Syn. with FIN

OVERRIPE WOOD
Cani
Defects (Building Materials)
A wood beginning to rot.

OVERSHOT
Cloche de repêchage
Equipment and Tools
A tool used to fish out drill rods remained accidentally jammed inside a drilling hole. This tool comprises jaws that allow the prehension of drill collars or rods remained inside the drilling. Syn. with DRILL EXTRACTOR; HORN SOCKET

OVERSITE CONCRETE
Béton de propreté ou de forme
Building Materials
Syn. with MATRESS; SLOPE CONCRETE

OVERSIZE
Surdimensionner
Strength of Materials
To give to a structure or to one of its elements higher dimensions than those defined by calculation.

OVERSIZE AGGREGATE
Refus d'un tamis
Building Materials
Syn. with RESIDUE; SCREENING

OVERTHICKNESS
Surcharge
Masonry
The extra thickness of a rendering. Syn. with BULGES

OVERTHRUST
Chevauchement
Geology
Geological beds banked on another beds more recent in the form of recumbent and stretched fold. An overthrust results from the exaggeration:
- of a inverted fault,
- of a faulted fold or a set of faulted folds.

Relative displacements are of the order of some tens of meters.

OVERTURN
Pousser, tirer au vide
Defects (Construction)
Syn. with BASCULE

OVERTURNING
Basculement; Déversement
Defects (Civil Engineering Structure)
1. A deformation of the structure of a work characterized by the rotation of a bearing around a horizontal axis capable of causing fracturation, disorganization, and possibly the collapse of the work. The overturning can be stabilized or evolutive.
2. The general movement of an element of structure around an horizontal axis; overturning can be stabilized or evolutionary. The overturning is a defect fairly ordinary of the supporting elements of engineering works of masonry, being often accompanied of detachments, uncouplings and fissures. Syn. with CREEP

OVERVIBRATION
Survibration
Building Materials
Vibration of the concrete of a period of time higher than the time recommended according to the workability of the concrete. (This excess of vibrating can bring a segregation of the concrete.)

OVOID REINFORCED CONCRETE
Ovoïde en béton armé
Civil Engineering Structure
An egg-shaped prefabricated work mainly intended for the urban purification (sewers). Syn. with EGG-SHAPED REINFORCED CONCRETE

OWNER
Maître d'ouvrage
Civil Engineering Structure
Person or organization on behalf who work or structure are carried out. Syn. with CLIENT

OXIDATION
Oxydation
Defects (Metallurgy)
An electrochemical deterioration process of metals, in particular of steel, due to the presence of impurities inside the metal and to that of the water and oxygen in the air. Oxidation is favored in acidic environment (smoke) and mostly blocked in a basic environment (concrete). It has the effect to change the metal into the state of

oxide or mixture of oxides, constituting the corrosion. Syn. with OXIDIZING

OXIDE RUNOUT
Coulure d'oxyde
Defects (Metal construction)
The reddish or visible trace on a facing resulting from the presence of oxide in streaming waters.

OXIDE SCALE INCLUSION
Cendrure
Metallurgy
An impurity included in the former irons during the operation of casting and crushed during forging; it appears in the form of metal oxide plate inserted inside the iron.

OXIDIZABLE
Oxydable
Metallurgy
Syn. with LIABLE TO RUST

OXIDIZING
Oxydation
Defects (Metallurgy)
Syn. with OXIDATION

OXYACETYLENE CUTTING
Découpage oxyacétylénique
Metal Construction
The cutting, burning of steel parts with a blowtorch in which localized combustion is brought about by the combination of acetylene and oxygen.

OXYCHLORIDE OF ZINC CONGLOMERATE
Aggloméré à l'oxychlorure de zinc
Masonry
A product used to repair ashlars and which are made up of zinc oxide mixed with a zinc chloride solution, which gives zinc oxychloride likely to acquire a greater hardness; mixed with pulverized stone to give it the color and grain of stone.

OXYCUTTING
Oxycoupage
Metal Construction
A cutting process of metals by localized and continuous combustion due to the action of an oxygen jet acting on a point beforehand white-heated. Syn. with OXYGEN CUTTING

OXYGEN CUTTING BLOW PIPE
Chalumeau oxycoupeur
Equipment and Tools
Device for cutting metals. The burning of the metal is obtained by continuous and localized combustion due to the action of a jet of oxygen acting on a point beforehand white-heated.

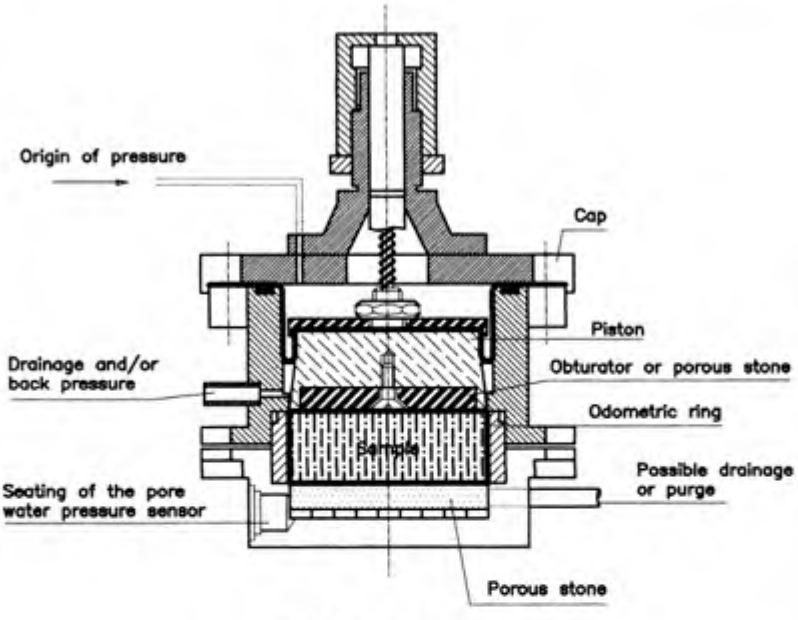
OXYTHERMIC LANCE
Lance à oxygène
Equipment and Tools
A device used for the cutting and thermal drilling of concretes.

OYSTER SHELL LIME
Lumachelle
Geology
Syn. with FIRE MARBLE

Figures of the letter

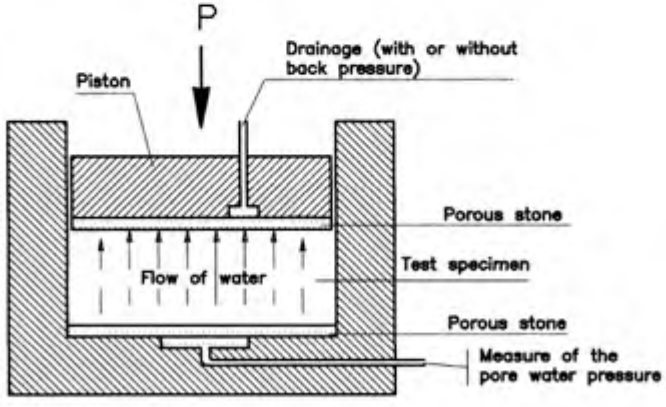


Fig. 1



Back pressure odometer

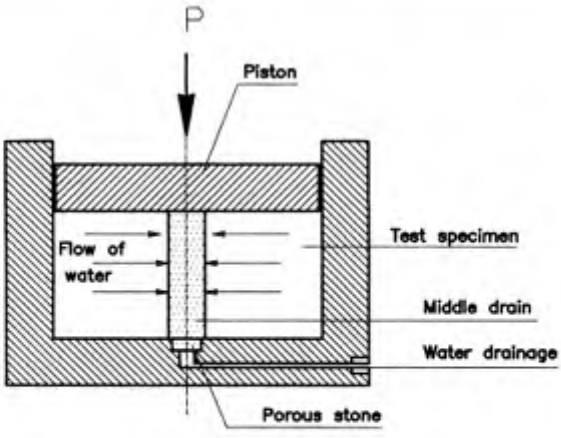
Fig.1a



Odometer for the test to controlled gradient

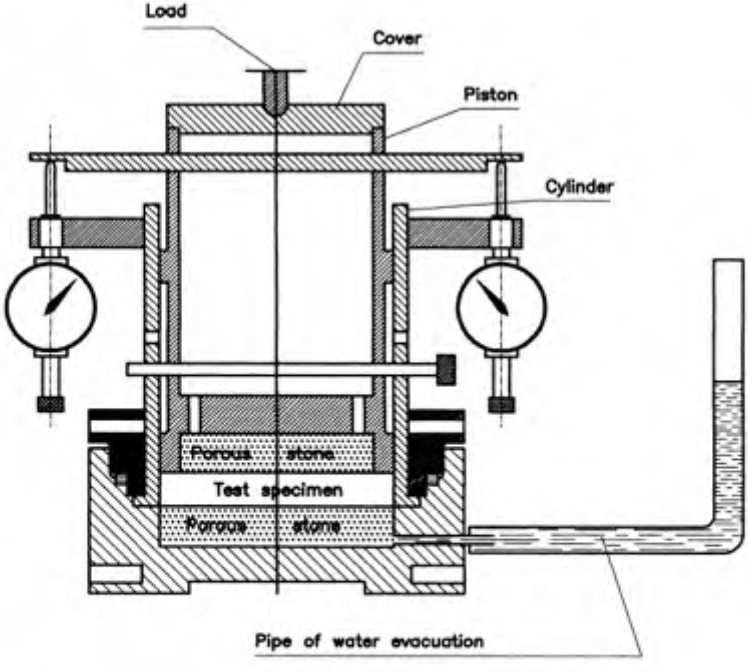
ODOMETER

Fig.1b



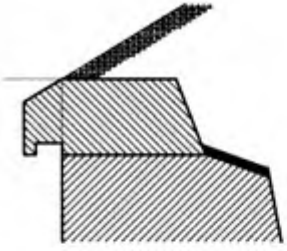
Odometer for radial drainage test

Fig.1c



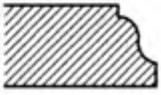
ODOMETER

Fig. 2



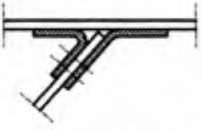
OFFSET LEVELLING COURSE

Fig. 3



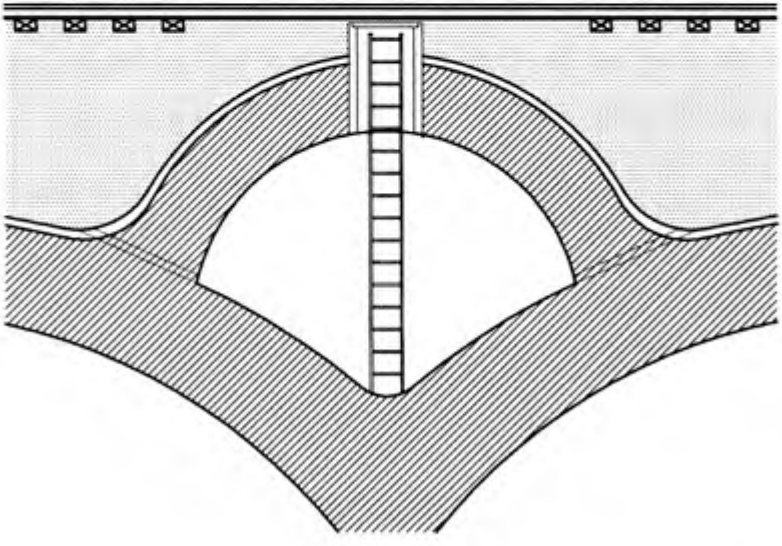
OGEE MOLDING

Fig. 4



OPEN or CLOSED SQUARE

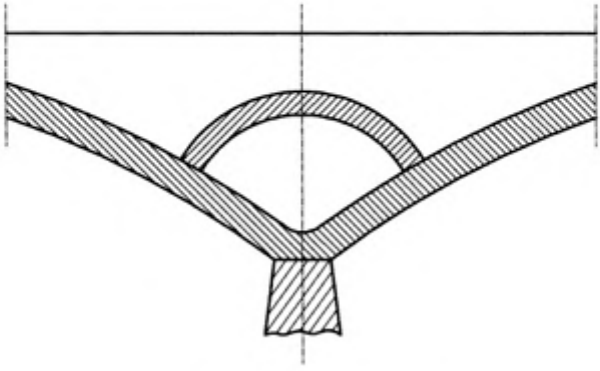
Fig. 5



Opening of blind tympan

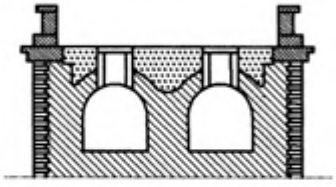
OPENING

Fig.5a



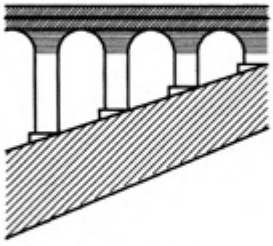
Opening of open tympan

Fig.5b



Longitudinal gallery

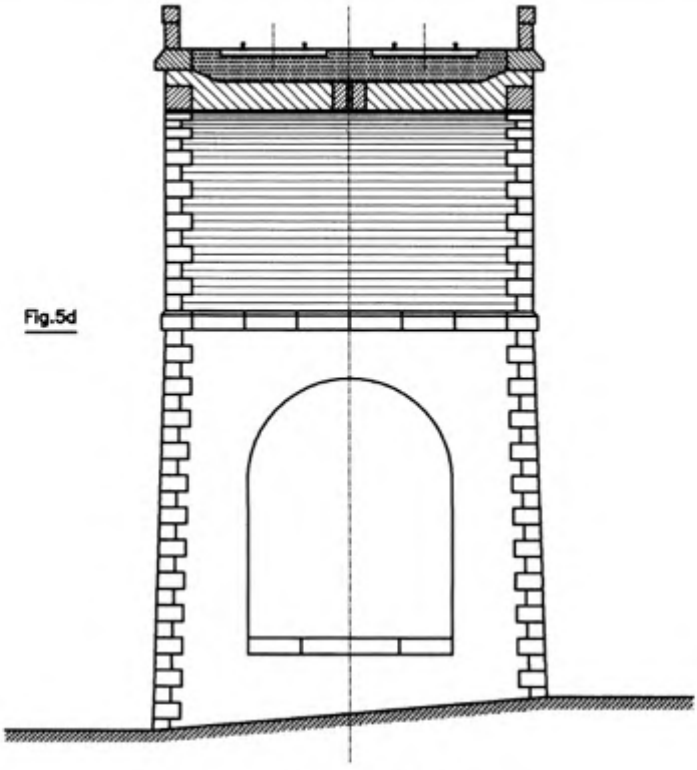
Fig.5c



Transverse gallery

OPENING

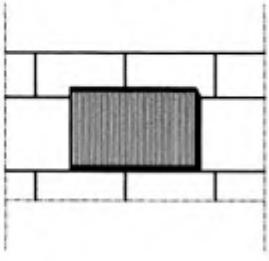
Fig.5d



Opening of pier

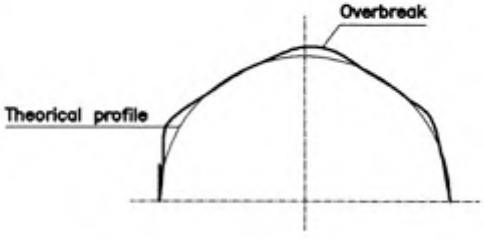
OPENING

Fig. 6



OUTSTANDING FACE

Fig. 7



OVERBREAK

Fig. 8

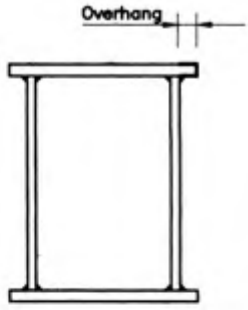
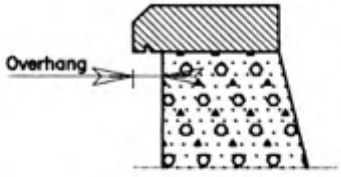
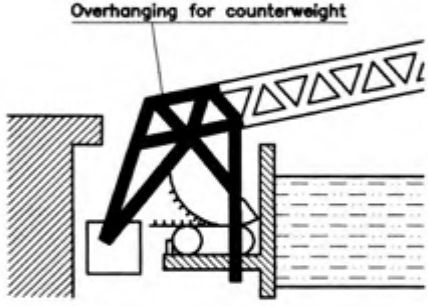


Fig. 9



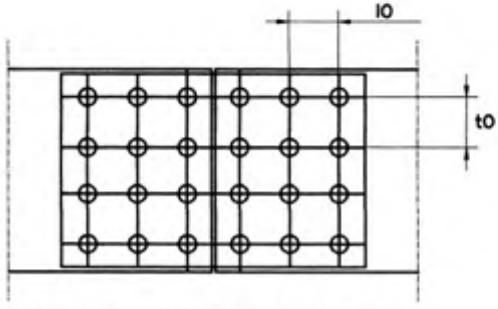
OVERHANG

Fig.10



OVERHANGING FOR COUNTERWEIGHT
(of movable bridge)

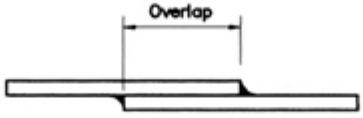
Fig.11



Longitudinal and transverse overlaps of a riveted double web cover plate

OVERLAP

Fig.12



Overlap of a welded assembly lap joint

OVERLAP



P
Metrology
Symbol of the Poise.

Pa
Pa
Metrology
Symbol of the Pascal.

PACHOMETER
Pachomètre
Equipment for Measure and Control
A hand-held device intended for the non destructive control of reinforced concrete structures.
Its principle is to operate a steel bar placed in a magnetic field. When the device is moved on the surface of concrete, the magnetic field it creates is modified when it comes near a reinforcement of the setting bar and the dial needle on the device consequently moves. The maximum displacement occurs when one stands at the plumb of the bar and the closer the bar is to the surface the more important the displacement is. In short, this device enables:

- to determine the position of the reinforcements in the reinforced concrete works;
- to measure the thickness of concrete which covers these reinforcements;
- to know (approximately) the section of these reinforcements.

Various types of pachometers can be found on the market among which: the JAMES pachometer, the CEBTP LOCAR L pachometer, the PROTOVALE CM 5 pachometer and finally a special type called *Lizard* whose characteristic is to move on vertical walls. The *lizard* consists of a ballasted fixed part, set at the base of the wall, carrying an electric winch; of a moving part carrying the detector or detectors which moves while rolling along the wall thanks to a draw cable. This carriage is guided by two other taut cables passing through grooves. The moving part carries the detector; signals gave off by the latter are recorded under graphic form by means of a printer whose run of paper is servo-controlled by the displacement of the carriage. Syn. with COVER METER; ELECTROMAGNETIC COVER METER

PACK(ING)
Coussin
Equipment and Tools
A sand mattress inserted between a driving helmet and the head of a pile intended for absorbing shocks due to the impact of the rammer.

PACK BUTTER
Bât-beurre
Equipment and Tools
A jumper bar or similar hand-driven tool used to drill holes in the ground or in any masonry and which is handled in the same way as the utensil formerly used to beat the butter. Syn. with BUTTERMILK

PACK DOWN
Tasser
Civil Engineering Structure
To compress a matter, a material.

PACKER
Packer
Equipment and Tools
Syn. with PACKING

PACKING
Etanchement; Fourrure; Calfeutrement; Calfeutrage; Amoise
Tightness; Construction; Carpentry
1. The sealing of an untimely inflow of water. Syn. with SEALING
2. The set of devices and products used on or inside the structure of a work to make it watertight. Syn. with SEALING
3. Syn. with BUSHING; FISHPLATE; LINING
4. Syn. with BLOCKING UP; JOINT FILLER; SEALING; STOPPING UP
5. A timber piece placed between two double members. Syn. with BINDING PIECE

PACKING
Martyr; Coussin; Rocaillage; Tassement des terres; Embâcle
Equipment and Tools; Masonry; Earthwork; Hydrology
1. A lagging of thinly compressible material placed on the top part of a driving helmet for sheet piles. The martyr can be of hard wood or synthetic resin. Its role is triple: to reduce the noise level of the operation of driving, to avoid the deterioration of the helmet, to reduce the elasticity of the mechanical percussion by avoiding communicating to the rammers an upward energy immediately after percussion. Syn. with MARTYR
2. Syn. with PACK
3. In repair of masonry, a job which consists in grafting a small initial material element, or filling up the space with cement mortar. This job is carried out when the visible face of the various stones constituting the facing has undergone deep attacks.
4. A natural phenomenon of compacting of the grounds. After their extraction, grounds expand; placed on deposit or in backfill, they tend, under various influences (compression, penetration of water), to recover their primitive volume.
5. Syn. with BLOCKAGE

PACKING BOARD
Rablette
Temporary Construction
Syn. with CLOSER (OF FORMWORK)

PACKING MATERIAL (WATERPROOF)
Garniture d'étanchéité
Tightness
Syn. with SEALING STRIP

PAD
Cale à joint
Masonry
Syn. with FIXING FILLET; FIXING SLIP; PALLET; SLIP

PAGE
Détente
Temporary Construction
A wooden wedge sunk to force, used for the tightening of props. Syn. with LOWERING WEDGE; STRIKING WEDGE

PAINT
Peinture; Peinturer; Ripoliner
Painting
A plastic and fluid substance, containing pigments, charges and a binder, and which, applied in thin coats on a support, forms on the later a solid, adherent and durable coating.

The primary aim of a paint is to protect from the destruction caused by atmospheric agents, perishable materials or those open to attack. In a second time, paint has a decorative role.
In terms of their constitutive matters, we can distinguish:
- paints whose solvent dries by phenomenon of drying power,
- paints drying only by evaporation of solvent,
- paints with several components and hardening chemically,
- paints in emulsion with driers,
- paints in aqueous dispersion.

We can distinguish:
- **acrylic paints** *(les Peintures acryliques),* emulsions obtained by dispersion of colour pigments ground with water, in a latex (thermoplastic resin) coming from the polymerisation of methyl methacrylate;
- **bituminous paints** *(les Peintures bitumineuses),* products containing bitumen in a volatile solvent, used particularly in sealing. These paints are applied on concrete so as to form a chemical screen before the installation of the water proof complex; they are also applied on metal, in particular on the deckings or under the longitudinal sleeper of railway bridges;
- **dispersion type paints** *(les Peintures dispersion),* which contain pigments in dispersion in a varnish dispersion;
- **emulsion paints *or* plastic emulsions** *(les Peintures émulsion),* whose binder is made up of tiny droplets of binder in dispersion in the water;
- **oil-base paints *or* oil paints** *(les Peintures à l 'huile),* made up of one or several ground pigments and fillers, the whole mixed in a binder constituted by a fatty oil;
- **oil-alkyd paints** *(les Peintures oléoglycérophtalliques),* whose binder is a fat alkyd resin having a phtalic anhydride content about 20%;
- **polyurethane paints** *(les Peintures polyuréthanes),* rust preventive products generally presented in two components, which harden cold and have very good performances: hardness and flexibility, abrasion resistance, good adhesion, high resistance to the worst corrosive conditions;
- **mordant wash *or* wash primers *or* pre-processing primers** *(les Peintures primaires réactives),* which are applied in direct contact with a substrate and intended basically for ensuring the adhesion of the later layers of paint; in the usual case of a metal substrate, mordant washes generally have anti-corrosive properties . As an example, the formulation of one of these paints which is presented in the form of two separated products is as follows: first a suspension of tetrahydroxychromate of zinc in an alcoholic solution and then, an alcoholic solution of orthophosphoric acid, mixed at the moment of use. The application is done in thin coat with squirt gun;
- **vinylic resin paints** *(lex Peintures à base de résine vynilique),* synthesis products containing a copolymer of vinyl and acetate chloride of vinyl. The film obtained by these paints resists well bad weather, water, acids and diluted bases;
- **epoxy paints** *(les Peintures à base de résine époxydique),* obtained by a mixture of epoxydic resin with other synthetic resins or a hardener agent, which combine cold or hot to form a flexible film, waterproof and resistant to the majority of the usual chemical agents. These paints come in two forms following the temperature at which the combination ensuring hardening and insolubility is carried out:
  - *epoxydicoven-baked paints,* presented in only one wrapping and which harden at a temperature ranging from 150 to 200°C,
  - *epoxydic paints with two constituents* which harden cold;
- **silicon resin paints** *(les Peintures à base de résine de silicone),* generally made up of a silicone resin associated with alkyd resin or another organic resin. These paints are highly heat resistant, have good waterproof qualities and offer good resistance to agents of natural ageing According to their composition, they can dry cold or hot.

2. To apply a paint on a substrate in the purpose of protection or decoration.
3. To cover a surface with glossy paint.

PAINT DURABILITY
Durabilité d'un film de peinture
Painting
Syn. with DURABILITY (or LIFE SPAN) OF A PAINT FILM

PAINT SYSTEM
Système de peinture
Painting
The set of preparations whose components are perfectly compatible. One of these preparations is used for the rustproof primer coat, the others for the intermediate coat and top coats. Each family of paint has his system and field of application, according to the nature of the atmosphere and climate where the metal work to protect is situated.

PAINT SPRAYER
Pistoleur
Painting
A painter specialized in the application of paint with gun.

PAINT WITH A METALLIC FINISH
Peinture métallisée
Painting
Syn. with METALLIC PAINT

PAINTER'S CRADLE
Sellette
Equipment and Tools
Syn. with CRADLE; DECORATOR'S CRADLE

PAINTER'S KETTLE
Camion
Equipment and Tools
A paint container used by the painters.

PAINTER'S SWING
Escarpolette
Equipment and Tools
A painter's scaffolding constituted by a seat which can be displaced vertically by the user himself, either with hooks fixed along a knotted climbing rope, or with a small special winch.

PAINTING
Peinturage
Painting
The application of paint on a surface by any means (paint brush, squirt gun, roll, etc); the result of this action.

PALEONTOLOGY
Paléontologie
Geology
The science of the study of living beings which formerly populated the globe, only known for their fossils which are sometimes found in sedimentary rocks. Palaeontology is divided into palaeozoology (the study of fossil animals) and palaeobotany (the study of fossil vegetables).

PALAEOZOIC
Paléozoïque; Ere primaire
Geology
Syn. with PRIMARY

PALING
Palis; Palissade
Foundation; Construction
1. An enclosure formed of piles.
2. A set of piles more or less butt-jointed forming an enclosure or a fence. Syn. with STAKE
3. A fence made up of more or less butt-jointed mini-piles, battens or boards. Syn. with FENCE; PALISADE

PALISADE
Palissage
Construction
Syn. with FENCE; PALING

PALLET
Palette; Cale à joint
Masonry
1. A small board applied on the facing of a brick wall in construction and which is intended for sealing the external face of the vertical joints when the pouring of the mortar of these joints is carried out. The pallet applies on the opposed facing in comparison with the site occupied by the worker.
2. Syn. with FIXING FILLET; FIXING SLIP; PAD; SLIP

PALSIF™SYSTEM
Palsif
Foundation
A diaphragm wall having the form of a widened U-shaped sheet piles curtain, often anchored in the country rock. **See Figure 1**

PANEL
Panneau; Maille; Maille d'un treillis
Construction; Nomenclature of Materials
1. A large board or sheet of lumber, plywood, steel, or other material.
2. An elementary plane part, generally rectangular, of a frame. Syn. with BOARD
3. The elementary division in a set of elements laid out with a consistent spacing; for example:
- panel in a set of connectors in dowels form in a mixed slab;
- a triangle limited by a horizontal bar of boom and two successive diagonal bars of triangulation in a lattice girder. **See Figure 2**

4. Set of diagonals on a lattice girder. Syn. with FIELD

PANEL POINT
Noeud
Construction
The point of intersection of two or several bars of a triangulated structure, a bar setting, etc. Syn. with CENTER (OF STRUCTURAL WORK; NODE. **See Figures 3 and 3a**

PANELING DRAWING
Plan de panneautage
Drawing
A drawing on which are indicated all panels composing a diaphragm wall with their order of performance, dimensions of level of concrete, indication of the type of reinforcing cages and their position, etc.

PANTOGRAPH
Pantographe
Equipment and Tools
An instrument fitted with several reducing or amplifying branches according to their adjustment, which enables to reproduce a drawing at a different scale.

PANTOMETER
Pantomètre
Equipment and Tools
A land surveying instrument (goniometer) constituted of two independent cylinders set on the same vertical axle. The mobile top cylinder carries two vanes and forms alidade; the lower cylinder which is fixed, carries a graduation in grades.

PARABOLIC CABLE
Câble porteur ou parabolique
Construction
Syn. with CARRYING or BEARING CABLE; SUSPENSION CABLE

PARALLEL BEDS
Couches en concordance de stratification
Geology
Two sedimentary beds whose stratification layers are parallel.

PARALLEL ROAD
Rocade
Public Works
Syn. with BYPASS; LATERAL ROAD

PARAPET
Parapet; Berge
Construction; Earthwork
1. A small masonry wall crowning head walls and/or return walls of engineering structures, in particular those in masonry. This low wall is made up from bottom to top of the pedestal or plinth, shaft, coping. It is a guard rail of masonry. Syn. with BREAST WALL; RAILING. **See Figure 4**
2. The raised edge of a trenching made up of a ground flange extracted from the digging.

PARCEL
Parcelle
Right
A stretch of ground presenting a character of homogeneity as to its origin, property or exploitation and limited by a closed contour.

PARE
Démaigrir
Building Materials
To thin down a material.

PARENT METAL
Métal de base
Welding
A constitution material of the elements to be assembled by welding.

PARGETER
Plâtrier
Work
A worker working in a quarry where gypsum is extracted.

PARING
Démaigrissement; Délardement
Masonry; Building Materials
1. The bed of a stone obliquely dressed.
2. Syn. with BACKING

PARING CHISEL
Ebauchoir; Riflard
Equipment and Tools
1. A sort of chisel used by the carpenter for works not amenable to sawing.
2. A stonecutter's tool that is rather a toothed chisel.

PARING OF STONE
Démaigrissement d'une pierre
Masonry
The oblique cutting of the tailing (of a stone).
See Figure 5

PARING STONE
Pierre démaigrie
Masonry
A quarry stone tooled by progressive reduction of its transverse dimensions (width and thickness) so that the considering facing presents a surface more important than the opposite facing which is not seen .

PARKERIZING
Parkérisation
Metallurgy
A protective process of steel from corrosion by deep phosphatizing. The process consists in diving into a boiling solution of iron and manganese phosphate metal parts to process, on which is then formed an insoluble complex phosphate film.

PARMAIN
Parmain
Building Materials
Fine-grained soft limestone of Oise.

PARPEND
Morceau massif
Building Materials
A cut chunk which constitutes the totality or at least the major part of the nominal thickness of a wall.

PARPEND CHAIN BOND
Jambe parpaigne
Construction
A dressing of ashlars forming facing.

PARRIES
Parades
Civil Engineering Structure
Devices or installations intended for protecting communication routes from landslides, falling rocks, etc. There are several types of parries:
- **active parries** *(les parades actives),* processes aiming to the stabilization of stones or rocks and suppression of the causes of falls; they are of two types:
  - *natural coating* (plant scattering, faggots, establishment of bushes). This process is generally used to fight the erosion of excavation or embankment slopes. The afforestation is a long-term process that decreases the phenomenon of erosion and that contributes to the fixing of the ground,
  - *artificial coating* (shotcrete, supporting, buttress, strut and anchorages);
- **passive parries** *(les parades passives),* processes aiming to the control of fall and maintenance of a right of way without obstacles; they are of five types:
  - screens on the level of the right of way . This type of work constitutes a frequently adopted parade and is intended for constituting an obstacle on the path of stones or blocks in direct fall or fall and roll. They are fenced screens, precast concrete blocks, concrete separators, merlons of earth, extra widths at the foot of slopes,
  - obstacles on slopes, constituted by walls barrages and scree chambers, metal fillet

screens (deformable screens implanted in the slope and which can intercept and stop blocks by dissipation of their kinetic energy),
- the control of falling stones on the slope, which is generally carried out using a latticed cover. This cover ensures a double role: stabilization and mantle of safety,
- works of transit, constituted by snow-sheds,
- the controlled working, which consists in purging the rocky mass.

PART OF FOUNDATION RAFT
Buton
Construction
Syn. with BEAM STAY

PARTIAL DOUBLE PREPARATION
Préparation en X partiel
Welding
A X-preparation with flat part or heel higher than 3 mm. Syn. with PARTIAL-X PREPARATION

PARTIAL DOUBLE-J PREPARATION
Préparation en double J partiel
Welding
A double-J preparation with flat part or heel higher than 3 mm.

PARTIAL DOUBLE-U PREPARATION
Préparation en double U partiel
Welding
A double-Upreparation with flat part or heel lower than 3 mm.

PARTIAL GAVETING
Rocaillage partiel
Masonry
The insertion of small stones into the mortar of too wide pointings of any masonry made of quarry or grit stones. **See Figure 6**

PARTIAL LAP JOINT
Enchevauchure
Construction
The assembly of two pieces, one covering partially the other.

PARTIAL PULLING DOWN
Abattement
Masonry
The partial demolition of a stone course to reduce it at the desired sizes (example, chamfering of an angle).

PARTIAL SINGLE-BEVEL PREPARATION
Préparation en demi V partiel
Welding
A single bevel preparation with flat part or heel higher than 3 mm.

PARTIAL VITRIFICATION
Grésage
Construction of R.C. and P.C.
Syn. with GRINDING

PARTIAL-J PREPARATION
Préparation en J partiel
Welding
A J-preparation with flat part or heel higher than 3 mm.

PARTIAL-K PREPARATION
Préparation en K partiel
Welding
A K-preparation with flat part or heel higher than 3 mm.

PARTIAL-U PREPARATION
Préparation en U partiel
Welding
An U-preparation with flat part or heel higher than 3 mm.

PARTIAL-X PREPARATION
Préparation en X partiel
Welding
Syn. with PARTIAL DOUBLE PREPARATION

PARTICIPATING COUNTERARCHED REVETMENT
Contre-voûte collaborate *ou* participante
Construction
A strengthening structure of a vault made up of shot or poured reinforced concrete. The counter-vault is made interdependent of the existing work by a needling connecting the two structures. Therefore both structures function jointly and support all stresses to which the work is subjected.

PARTICLE
Particule
Mineralogy
An element composing a sedimentary rock.

PARTICLE SHAPE
Forme d'un grain
Building Materials
Syn. with GRAIN SHAPE

PARTICLE SIZE
Calibre
Building Materials
Syn. with GRAIN SIZE

PARTICLEBOARD
Panneau de particules
Building Materials
Syn. with CHIPBOARD; FLAKEBOARD

PARTICLE-SIZE ANALYSIS
Analyse granuloméirique
Test of Materials (Buildings Materials) and Geotechnics
Syn. with GRADING PARTICLE-SIZE DISTRIBUTION; GRAIN SIZE ANALYSIS; SIEVE ANALYSIS;

PARTICLE-SIZE DISTRIBUTION
Sédimentométrie; Granulométrie
Geotechnics; Test of Materials
1. The science of the measurement of the soil or aggregate particles that consists in studying the dimensional distribution in weight of the particles of size smaller than 60 or 80 μm.
The particle size distribution is founded on the Stokes's law which gives the speed v of a spherical particle of diameter d in free fall within a viscous liquid: $v = K (d)^2$.
This law, applied to an initial suspension of grains within a test tube filled with water, allows to calculate the diameter d of the largest particles which pass at one moment given t at a given level of the test tube.
2. Syn. with GRADING; GRANULOMETRY

PARTICLE-SIZE DISTRIBUTION CURVE
Courbe de distribution granulométrique
Geotechnics and Building Materials
The characteristic curve of a porous medium that represents the percentage in weight of the grains of a diameter smaller than a given diameter.

PARTICLE SIZE DISTRIBUTION TEST
Essai de sédimentomérie
Geotechnics
A test which supplements the grain-size analysis by sifting of the soils and which applies to the elements of a diameter smaller than 0.1 mm. Grains of different diameters form sediment, in a liquid medium at rest, at different speeds. The relation between diameter of the grains and speed of sedimentation test is given by Stokes's law. Since this relation was established for spherical grains, by applying it to the elements of a ground only equivalent diameters will be obtained.

PARTICLE-SIZE RANGE
Classe des granulats
Building Materials
The determination by sifting of a material sample enabling a hierarchical classification of aggregates. The operation is carried out with a set of round-holed sieves or square-stitched sifters. Aggregates belong to a class, designated by *d/D,* when, after being filtered through a first sieve whose holes are of diameter *D* (in mm), they are retained by the sieve whose holes have a diameter *d,* which follows immediately in the standardized series.

PARTING TOOL
Marteau grain d'orge
Equipment and Tools
Syn. with DIAMOND-POINT CHISEL; VICE TOOL

PARTITION
Diaphragme
Metal Construction
Syn. with DIAPHRAGM; MEMBRANE

PARTITION FOR ENROCKMENT
Crèche
Foundation
A timbered compartment enclosing the enrockments placed around foundations in an aquatic site. Partitions are made up of piles or sheet piles connected between them by

longitudinal double members and fastened to the foundation with transverse pieces. Syn. with STARLING

PASCAL
Pascal
Metrology
The SI unit of pressure (symbol: Pa) equivalent to the uniform pressure which, acting on a plane surface of 1 m^2, perpendicularly exerts to this surface a total force of 1 N (newton); measuring unit of stress equivalent to the stress which, acting on a plane surface of 1 m^2, exerts on this surface a total force of 1 N.

PASS
Passe
Earthwork
Concerning an operation of compacting, operation consisting in moving the compacting plant back and forth on the surface to be compacted.

PASSAGE
Passage
Civil Engineering Structure and Construction
A natural or fitted space allowing the traffic of people, animals, various means of transport, to go from one point to another without great difficulties. Syn. with CROSSING

PASSING
Passage
Civil Engineering
In an operation of compacting, application of the load in a given point.

PASSING AQUEDUCT
Aqueduc de franchissement
Civil Engineering Structure
1. A work of crossing which allows to a canal to pass over a natural or artificial waterway and where the bottom of the canal is above the level of the high water of the waterway.
2. A work which allows to a canal or a conduct to cross depressions or natural basins.

PASSING COEFFICIENT
Coefficient de transmission
Construction of R.C. and P.C.
The *P1/P2* ratio of pressures measured on jacks placed at the extremities of a cable, one being passive *(P1),* the other active *(P2).* This coefficient concerns the tensioning of tendons.

PASSIVATE
Passiver
Metallurgy
To make a steel passive against corrosion.

PASSIVATION
Passivation
Metallurgy
An operation which consists in making a metal product able to resist oxide formation by various tratment (thermal or thermochemical treatments, paints, application of resin, etc.).

PASSIVE
Passif
Metallurgy
Of a metal being passive; i.e., inert chemically speaking.

PASSIVE EARTH PRESSURE
Butée
Geotechnics
Passive earth state; this means exerting no dynamic stress (unlike the thrust).
The principle of passive earth pressure can be described as follows: let's consider a semi-infinitive pulverulent medium in which is introduced an imaginary rigid slim screen. If external forces tending to drive back the ground, are applied to the screen and that these forces are gradually increased, they will be balanced by the reaction of the mass on the screen until the time when the internal balance will be broken. This will cause the breaking of the mass along a certain surface and the creation of a wedge of earth whose lower edge is situated at the bottom of the screen. During the process, the ground that remains in its place exerts on the slip surface (delimiting the wedge of earth) some friction forces pointed to the base of the screen and which tend to stand against its moving. Just before the breaking, the wedge of earth is in balance under the action of its own weight, the force applied to the screen and the reaction of the ground in place along the slip

surface. This state is called higher limit balance. The reaction exerted by the earth on the screen is called passive earth pressure.

PASSIVE REINFORCEMENTS
Armatures passives
Construction of R.C. and P.C.
Concerning the prestressed concrete, steels different from those of prestressing. they can be plain bars or high bond reinforcements.

PASSIVITY
Passivité
Metallurgy
The property of a metal to resist naturally or after protection the attacks due to corrosion. The formation of a protective film on the surface of metal is enough in most cases to protect it: paints, resin, anodic protection, electrodeposition, etc, are means of passivation.

PASTE
Pâte
Materials
1. A product whose state of viscosity ranges between the liquid limit and that of solidification.
2. The set of mixed and humidified raw materials, ready for the shaping of the product.

PASTE PIGMENT
Pigment en pâte
Painting
A product made up of a powder of pigments obtained by grinding and mixed with some liquids.

PASTY MASTIC
Mastic pâteux
Materials
A homogeneous product having such a consistency that it can be applied at room temperature and is liable to undergo a deformation, elongation or compression, and recover its initial shape. They are putties with polysulphides, polyurethane-based putties, one-part silicone putties. Syn. with JOINT SEALANT

PASTY PRODUCTS
Produits pâteux
Materials
A range of tightness materials which are applied without preheating; they are made up of bituminous or similar products added with a fluidifier and inert fibers.

PATCH
Picot; Pièce rapportée
Equipment and Tools; Construction
1. A tungsten carbide tip added on a shock or cut tool (patches on the serrated roller of the tunneling machine, bore bits, etc.). Syn. with TIP
2. Syn. with INSERT

PATCHES
Manques
Defects (Painting)
A type of initial imperfections characterized by an insufficient thickness of the film which can go as far as the solution of continuity of one or several coats, by irregularly distributed areas.

PATCHING
Calfeutrage; Rebouchage
Construction of R.C. and P.C.; Painting
1. An operation which consists in stopping with an appropriate product small cavities (bubbles, craters, etc.) which appear on the surface of concrete after form striking.
2. Syn. with FILLING; STOPPING

PATHOGENESIS
Pathogenèse
Civil Engineering Structure
The search of causes of disorders affecting a structure and/or the elements constituting it.

PATHOLOGY
Pathologie
Civil Engineering Structure
The study of the damage, degradations of a structure, product, etc., in order to provide the adequate remedy.

PATINATABLE
Patinable
Metallurgy
Of any steel that covers spontaneously of a protective layer against atmospheric corrosion.

PATINABLE STEEL
Acier patinable
Metallurgy
Syn. with WEATHERING STEEL

PATTERN CRACKING
Craquelage
Defects (Masonry)
A system of cracks looking like hairline cracking, but which are deeper and affect a rendering, concrete facing, screed.

PAVEMENT
Dallage; Pavage
Construction: Masonry and Civil Engineering
1. A floor finish made up by a cement screed or prefabricated slabs of various shapes.
2. A paving made with slabs.
Syn. with PAVING
3. Syn. with COBBLESTONES; PAVING; PITCHING

PAVEMENT
Corps d'une chaussée ; Chaussée
Civil Engineering
1. Syn. with ROAD FOUNDATION
2. Syn. with CARPET; ROAD METALLING; ROADWAY COVERING
3. Syn. with CARRIAGEWAY; ROADWAY

PAVEMENT JOINT
Joint de chaussée
Civil Engineering
A device allowing traffic continuity at the right of a deck cut, when the cut lips move one in relation with the other, as is generally the case with the cut between the deck end and the abutment gravel guard wall, or between two successive independent spans, at the right of a movable bearing; this cut opens and shuts because of the deformations of the deck essentially due to thermal variations.
There are several types of pavement joints:
- **doweled pavement joint** *(le joint de chaussée à peigne mixte acier néoprène (F.T.)),* of the heavy type with two flat elements, one is attached to the deck, the other to the abutment or adjacent deck. The first element comprises a lower base L-shaped sheet metal on which is stuck, during its vulcanization a piece of elastomer moulded into a female comb shape. The second presents a thick upper sheet metal, forming bridge, covered with a non-skid aggregate, cut out into a male comb shape whose teeth lean and engage in the previous part; a supple elastomer plate is stuck between this first sheet metal and a basic sheet metal similar to the first element's
- **W-pavement joint, of the heavy type** *(le joint de chaussée W, du type lourd),* made up of two metal elements (aluminium alloy), provided with triangular teeth and attached to the two parts of work by means of prestressed rods. Between the metal elements is inserted an elastomer profile that prevents foreign bodies from penetrating;
- **heavy model pavement joint** *(le joint de chaussée type lourd),* reserved for works carrying ways of intense traffic and high comfort with a traffic T > 3000 vehicles/day;
- **semiheavy model pavement joint** *(le joint de chaussée type semi-lourd),* reserved to the works supporting relatively important traffic ranging between 1000 and 2000 vehicles/day;
- **light model pavement joint** *(le joint de chaussée type léger),* reserved for works supporting restricted traffic T < 1000 vehicles/day.

Syn. with EXPANSION JOINT (ROADWAY)

PAVEMENT LIGHT
Pavé de verre
Buildings Materials
Syn. with GLASS BLOCK

PAVER
Paveur
Civil Engineering
A worker specialized in the cut, the disposal and pose of paving stones.

PAVER BOARD
Mirette
Equipment and Tools
A screed board used by the paver.

PAVING
Pavage; Pavement
Masonry and Civil Engineering
1. The traffic or ornament area achieved with paving stones or artificial blocks bonded or not together and generally resting on a sand form. Syn. with COBBLESTONES; PAVEMENT; PITCHING
2. A ground surface covered with paving stones, slabs. Syn. with CLADDING

PAVING BLOCK CLOSE TOGETHER
Contre-jumelle
Construction
Cobbles joining two by two.

PAVING BRICK
Brique de pavage
Building Materials
An extremely strong material whose porosity should not be higher 4%.

PAVING GUTTER
Gondole
Sanitary Engineering and Drainage
A gutter, channel of water draining (rainwater mostly) built with paving stones.

PAVING REPAIR
Repiquage
Civil Engineering
The raising or replacement of roadway cobbles, broken or hidden below the level of others.

PAVING SETT
Pavé d'échantillon
Building Materials
A product tooled to standardized dimensions (14 to 20 cm on side).

PAVING STONE
Pavé
Buildings Materials
Syn. with COBBLE; COBBLESTONE; SET

PAVING WEIR
Déversoir
Civil Engineering
A rank of large cobbles laid onto a road shoulder.

PAVING (STONE) WITH RAM
Hiement
Work
The laying of cobbles with a rammer. Syn. with RAMMING

PAY DOWN
Affaler
Handling
Syn. with HAUL DOWN

PBAC (Polystyrene-bead-aggregate concrete)
Béton de billes de polystyrène
Building Materials
A cement-based material in which the main aggregate is made up of polystyrene balls which give the material a weak density.

PEA GRAVEL
Mignonnette
Building Materials
Syn. with PEBBLE DASH

PEAT
Tourbe
Geology
A soil made up of remains of decomposed vegetation and which was formed in situ. The peats are classified according to their degree of decomposition.

PEBBLE
Caillou; Galet
Geology; Building Materials
1. A siliceous or limestone rock element classified granulometrically grading between 35 and 65 mm. Pebbles are mostly found mixed to sands of plains and to river sands; they can be of angular shapes and some are round. Syn. with COBBLE; SHINGLE
2. A crushed siliceous material which provides excellent aggregates for the preparation of concrete. Syn. with COBBLE; SHINGLE
3. A round aggregate over 80 mm diameter which is used in coarse concrete, mainly filling.

PEBBLE BED
Jalle
Geology
The natural bed of agglomerated stones that lies under the topsoil.

PEBBLE DASH
Cailloutage; Mignonnette
Masonry; Building Materials
1. Any masonry facing made of pebbles embedded in a matrix of mortar.
2. A round gravel of precise grading. Syn. with PEA GRAVEL

PEDESTAL
Dé; Socle
Construction
1. Any concrete or stone element of parallelepipedic or truncated pyramid shape, placed under a pole, a column, etc., to be of use as bearing. **See Figure 7**
2. All stones forming the base of a coin stone and which rest on the foundations.

PEDESTRIAN FOOTBRIDGE
Passerelle
Civil Engineering Structure
Syn. with GANGWAY.

PEDESTRIAN-CONTROLLED DUMPER
Brouette automotrice; Motobrouette; Brouette motorisée
Equipment and Tools
Syn. with BUGGY; MOTORIZED BARROW; POWER BARROW; SELF-PROPELLING WHEELBARROW

PEDICLE
Pédicule
Construction
A pillar of small section and height.

PEDOGENESIS
Pédogenèse
Pedology
The birth and mutation of soils.

PEDOGENETIC
Pédogénétique
Pedology
Of what is in connection with the genesis and progressive evolution of soils. Soils evolve, either in a natural way (removal, hydrological modifications, atmospheric conditions, vegetation), or due to man intervention. (culture, constructions, etc.).

PEDOLOGIST
Pédologue
Pedology
A specialist in the study of soils.

PEDOLOGY
Pédologie
Pedology
The science of the formation and evolution of soils.

PEDON
Pédon
Pedology
The smallest volume of soil than one can call *soil.*

PEELING
Pelage; Décollement; Desquamation
Defects; Geomorphology
1. The alteration of a paint film characterized by its localized or general detachment from its substrate.
2. The detachment of a peelable paint film from its substrate.
3. An alteration characterized by total loss of adhesion that leads to the separation by ranges of one or several coats of a film, and even of the complete film.
4. Syn. with DESQUAMATION; SCALING
5. Superficial scaling of rocks by detachment of matters of millimetric or centimetric thickness due to thermoclasty or hydroclasty. Syn. with SCALING

PEELING OFF
Ecaillage
Defects (Painting)
An alteration characterized by detachments of the top layer in its totality, in the form of distributed scales of variable dimensions. The peeling off is consecutive to a deep crazing in conjunction with a detachment of the layer which, moreover, becomes friable. (A defect of adhesion and a disappearance of protection are notably causes of peeling off.) Syn. with FLAKING OFF

PEG
Cheville; Cheviller
Materials
1. An element of fastening which is sunk into a hole drilled beforehand where it remains chocked mechanically or by friction.
Studs often work to the expansion (simple or double), the latter being obtained by screwing (sometimes with locking of a socket) or by striking. There also exists studs called *chemical* in which the fixing of a dowel screw is carried out by mixing and hardening in-situ reactive components of a synthetic resin. We can distinguish:
- **self-expansion pin** *(la cheville à auto-expansion),* which is composed of a dowel screw at one extremity, and at the other, of a truncated part. Between the thread and the truncated cone, the socket of expansion is fitted with splits and once the stud is placed inside the drilling, the nut is tightened. The operation of tightening provokes the ascent of the cone and the expansion of the socket that comes to jam against the walls of the hole;
- **self-drill stud** *(la cheville auto-foreuse),* which is tightened on the punch of a percussion drill. The operation is carried out as with a drill because the stud drills its own hole which is therefore at its exact diameter. The stud is then expanded by a cone;
- **peg *or* dowel** *(la cheville en bois),* cubical or cylindrical in shape, used for the assembly of frame pieces. (This process is practically no longer used, carpenters preferring the bolts.)

Syn. with BOLT; PIN; STUD
2. To fasten studs. Syn. with PIN; PLUG

PEG
Simbleau
Equipment and Tools
A provisional steel, lead or wooden part, placed inside a hole to draw a centre and/or axes from which one can operate either a complementary drawing, or checking. By extension: thin tube keeping to constant distance from a centre an apparatus of flame cutting.

PEGGING
Chevillage
Materials
Syn. with FASTENING

PEGGING (OUT)
Piquetage
Foundation
A system of materialization on the soil with stakes which allows to locate the position of piles without resorting to any surveying instrument.

PEGGING OUT
Jalonnement; Implantation
Topography
The spotting on the ground of a survey, with markers. Syn. with LAYOUT

PEGMATITE
Pegmatite
Geology
A coarse-grained igneous rock with interlocking crystals, usually found as irregular dikes, lenses, or veins, especially at the margins of batholiths; their composition is generally that of granite.

PELITE
Pélite
Geology
A sedimentary rock of detrital origin. Pelites are represented by sandstones whose elements are very fine and look like hardened clay.

PELLING
Exfoliation
Geomorphology
Syn. with EXFOLIATION

PENCIL BARS
Chevelu
Construction of R.C. and P.C.
Syn. with HAIRY; STARTER BARS

PENDULAR
Pendulaire
Strength of Materials
A design assumption defining the state of compressed bars or posts when they are articulated or pseudo-articulated at both ends, which means that the connections are carried out in a flexible way enough for:
- not to be opposed to the buckling,
- not to transmit the angular deformations to the adjacent elements.

PENDULAR HARDNESS TEST
Essai de dureté pendulaire
Painting
A test of paint quality by determining the time, expressed in seconds, required for two steel balls of similar diameter suspended from the pendulum and resting on the film to stop oscillating.

PENDULUM
Pendule
Equipment for Measure and Control
Any equipment being designed to check the stability of a foundation, in particular of the piles in river, and which consists of a plumb line fitted witgh a heavy mass immersed into an oil shock absorber bath. The wire is protected from the wind by a tube. Ports achieved in this tube enable measurements on graduated rules embedded in the structure.

PENETRANT APPLICATION TIME
Temps d'imprégnation
Test of Materials (Welding)
The space of time during which a penetrating fluid is applied on a welded part to check, in a continuous or discontinuous way, with adapted equipment, or possibly by immersion of the part into a bath.

PENETRANT FLOW TEST
Essai de ressuage; Essai de remontée
Test of Materials (Welding, Metallography)
A nondestructive process of detection of cracks, defects of welding or porosities on the surface of a metallic material.
The principle is as follows: after brushing and degreasing, the surface to be examined is whitewashed with a fitting reagent (colored liquid very dampener that permeates in the cracks) then it is wiped and sprinkled with talc. At the plumb of cracks a bleeding occurs which shows by a different color from the one noted on the healthy parts. This process only allows the detection of cracks emerging on the surface. Syn. with CRACK DETECTION. **See Figure 8**

PENETRATING AGENT
Pénétrant
Test of Materials
A liquid of low superficial tension, containing one or several tracers, able to penetrate by capillarity or gravity in more or less fine discontinuities of the part subjected to the examination.

PENETRATION RECORD
Carnet de battage
Foundation
A document on which are recorded the driving results of each pile. It comprises among other things: the pile number and its date of driving, length, incidents, refusal, etc. Syn. with DRIVING RECORD

PENETRATION TEST
Essai de pénétration
Test of Materials
The determination of the hardness of a bitumen by the length of penetration, in a given time, of a loaded needle.

PENETRATION TIME
Temps de pénétration
Test of Materials (Welding)
The space of time during which, with or without penetrating fluid supply, we wait for the fluid to penetrate by infiltration, capillarity, pressurized, etc, between the lips of cracks or other possible defects.

PENETRATIVE STRUCTURAL ELEMENTS
Eléments structuraux pénétratifs
Geology
Structural elements of homogeneous domains such as stratification, foliation, schistosity, intersection of stratification with schistosity. These discontinuities which is repeated at such small distances, drawn to scale observations, can be considered as being present in whichever point of matter.

PENETROGAMMADENSIMETER
Pénétrogamma-densimètre
Assaying Equipment
A device used to measure the static penetration resistance of point and the density of the ground.
The resistance of penetration is measured by means of a dynamometer with gauges which supports a nonoverhanging point. Density is obtained from the counting of the photons diffused by the material subjected to a

radiation coming from a radioactive source. The driving of the probe is carried out with a hydraulic frame. The information given by the probe is transcribed on a two way plot recorder, whose run of paper is servo-controlled by the sinking of the probe.

PENETROMETER
Pénétromètre; Pénétramètre
Assaying Equipment

1. A device allowing determining the breaking strength of the ground by continuous penetration of a conical point attached at the end of a drill string. The penetrometer is used particularly for the study of relatively fine grounds (clay, sludge, peat, sand). We mainly differentiates several types of penetrometers:
- static penetrometer,
- dynamic penetrometer,
- static-dynamic penetrometer that combines the advantages of the two earlier by eliminating their respective disadvantages.

To be more precise we distinguish:

- **dynamic penetrometer** *(le pénétromètre dynamique),* whose principle consists in making penetrate into the ground by driving, a train of smooth tubes fitted with a point or a core drill at its extremity (the case of the Standard Penetration Test). The operation is carried out using a rammer falling from a given height. Results of the tests are represented by plots giving, according to the depth reached by the lower end:
  - either the number of blows *N* corresponding to a given driving (10,20,25 or 30 cm),
  - either the resistance of point to the driving deduced from the Dutch's formula with a determined coefficient or a driving formula using the characteristics of the apparatus: it is the conventional dynamic strength *Rd.*

Among the dynamic types of penetrometers we can distinguish:
- *dynamic penetrometer standard A (le pénétromètre dynamique type A*), which is made up of a driving device, a hollow drill string fitted with an overhanging point, the equipment of injection and a measuring system. The rammer has an adaptable mass of 32, 64, 96, and 128 kg and a drop height of 0.75 m and falls at a pace from 15 to 30 blows/min. The number of blows necessary to drive the point by 10 cm is noted.

The test ends when one of the following conditions is fulfilled:
- the depth determined beforehand is reached,
- the driving after 30 blows is lower or equal to 10 cm with the mass of 128 kg,
- the rebound of the rammer is higher than 5 cm;

- *dynamic penetrometer standard B (le pénétromètre dynamique type B)* which is made up of a driving device, a drill string fitted with an overhanging point, a system of detection of friction strains and a measuring system. The rammer has a mass of 64 kg and a drop height of 0.75 m. The rammer falls at a pace from 15 to 30 blows/min. The parasitic friction strains of the ground on the rods is detected using a torque wrench.

The test ends when one of the following conditions is fulfilled:
- the depth determined beforehand is reached,
- the driving after 100 blows is lower or equal to 20 cm,
- the rebound of the rammer is higher than 5 cm,
- the measurement of the torque taken with the torque wrench exceeds 200 Nm.;

- *dynamic penetrometer with telescopic mobile point (le pénétromètre dynamique à pointe mobile télescopique (standard Fondasol)).* The driving is carried out with a self-propelled Delmag rammer of 100 kg. The test consists in counting the number of blows *N* necessary to carry out a penetration of 10 cm, by driving on the end of the external tube (shaft). Moreover, every 50 cm, only the point is sunk, and we obtain the number of blows *Np* necessary to sink it by 10 cm. This operation is carried out only if *Np* is < 10,
- *dynamic penetrometers with point interdependent of the shaft (les pénétromètres dynamiques à pointe solidaire du fût)* and which are:
  - "SERMES" type whose principle of measurement is as follows. The number of blows of a rammer necessary to drive in a cone of 10 cm is noted. Measurements are taken every 10 cm and dynamic strength is deduced by the Dutch's formula, with a safety coefficient of 1,
  - "BEVAC" type whose principle of measurement is as follows. The number of

blows necessary to drive a cone of 20 cm is noted. Measurements are taken every 20 cm and dynamic strength is deduced by the Dutch's formula with a safety coefficient of 1,

- *Standard Penetration Test (S.P.T.),* used for a summary test of penetration and whose principle consists in counting the number of blows necessary for a rammer of 63.5 kg to drive a core drill into the ground by 30 cm. Equipment and the procedure are standardized,
- *LPC dynamic penetrometer (le pénétromètre dynamique LPC*), a standardized apparatus assembled on a towable trailer. The driving of the point is carried out by a hydraulic group which ensures the pace of touch as well as the handling of rods. The advantage of this apparatus is that it is equipped with an electronic seizure block comprising the recording and predata processing of the parameters of trial boring;
- **static penetrometer** *(le pénétromètre statique),* of which operating principle consists in driving into the ground with a jack, at a slow and constant speed, a small-scale model pile whose diameter, according to the type of the apparatus, ranges from 30 to 100 mm. The resistance to the driving is measured in a direct and continuous way, according to the depth, from the surface of the undisturbed soil. We directly measures the resistance of point, total strain of sinking (point and shaft of protection of the rods), and with certain apparatuses, the unit lateral friction on a socket of small height located nearby the point and the lateral friction on all the height of the shaft. All the results achieved are represented on a plot of penetration. These apparatuses are classified in two categories:
  - *penetrometers with permanent cones (les pénétromètres à cônes fixes);* they are those for which the cone of point does not have a movement in relation with the shaft. These penetrometers make it possible to measure in a continuous and simultaneous way the point force and lateral friction. The transmission of the point force is either mechanical (rod sliding inside a metal tube), or is ensured by a connection without friction (electrical or hydraulical),
  - *penetrometers with mobile cones (les pénétromètres à cones mobiles);* They are those for which the point force is measured while the cone is progressing, whereas the shaft, which receives the lateral friction force, is immobilized during this measurement. These penetrometers allow to measure in a discontinuous and separate way the point force and lateral friction. The transmission is always mechanical.

  Among the static penetrometers most usually used, we find:
  - *standard penetrometer "GOUDA" with mobile or permanent cone,*
  - *standard penetrometer "ANDINA" with fixed cone,* which can work as dynamic penetrometer,
  - *standard penetrometer "PAREZ" with fixed cone and hydraulic transmission,* **see Figure 9**
  - *standard penetrometer "MEURISSE"* which can also work as dynamic penetrometer,
  - *standard penetrometer "CEBTP"* assembled on trailer which can also work as dynamic penetrometer;
- **static-dynamic penetrometer** *(le pénétromètre statique-dynamique ou stato-dynamique),* a soil testing device combining both dynamics and statics and whose operating principle is as follows. For the dynamic driving a metal tube whose diameter varies according to the models (generally up to 60 mm diameter) is used. This tube is driven with a rammer. Inside the tube slides an interdependent drill string, at the base, of a conical point. Either the number of blows for a driving by 10 cm, or the driving after 10 blows is then recorded. With these results, applying the driving formula, the breaking srength of the ground is obtained. With fixed depths, a special head enables the driving of the central rod alone and then of the point, either in a dynamic way, or in a static way. Results of these measurements allow to obtain the breaking strength of the ground at chosen depths, under the point force alone. The advantage of the apparatus lies in the fact that it can be used as static form or as dynamic form, or by the combination of both, one after the other.

2. A metal telltale of stepped thickness, placed on a metal part to X-ray that enables to assess from the negative the sensitivity, definition and contrast of the picture.

PENETROMETER WITH SIX NEEDLES
Pénétromètre à 6 aiguilles
Assaying Equipment
A laboratory equipment that measures the time taken by a cement paste to get to a given consistency. This apparatus is programmed to detect to the choice, the initial set, the final set or any other stage of consistency. When one of the six test specimens reaches required consistency, the apparatus notes time passed to reach that point and emits a resonant and optical signal.

PENETROMETER WITH AUTOMATIC CONTINUOUS RECORDING
Pénétromètre à enregistrement continu automatique
Assaying Equipment
Any equipment used in laboratory to measure the consistency of cements and which automatically records in continuous the hardening of a test specimen. Thus is obtained as a graph the increase in consistency according to the time (consistogram). The apparatus stops automatically at the final set.

PENEVANE
Pénévane
Assaying Equipment
A soil testing equipment which appears as a light penetrometer for driving, but whose point is constituted by blades of a vane. The penevane is driven over 15 cm depth for which the number of necessary blows (identical to the S.P.T.) is noted. Then a rotary test is performed. A residual and maximum shear strength is then deduced. The apparatus is standardized according to soil characteristics known by tests on samples.

PERCHED BOULDER
Bloc perché
Geomorphology
A stone mass overhanging after the erosion has carried away loose matters around.

PERCOLATE
Percoler
Geology and Masonry
To seep through a porous material (liquid)

PERCOLATING WATER
Eau d'infiltration
Hydrology
Syn. with SEEPAGE WATER

PERCOLATION
Percolation; Filtration
Masonry; Geology; Sanitary Engineering and Drainage
1. The movement of water through masonry saturated by water.
2. Syn. with UNDERGROUND SEEPAGE
3. Syn. with FILTRATION

PERCUSSION
Percussion
Equipment and Tools
In a drill rotary machine, mechanical device transmitting to the rotating tool a succession of shocks in order to make it work easier. (penetration into concrete, rock, etc.)

PERCUSSION BOLTING MACHINE
Boulonneuse
Equipment and Tools
Syn. with NUT RUNNER

PERCUSSION DRILL
Forage à la percussion; Perforatrice
Work ; Equipment and Tools
1. A boring into the ground which is carried out in association with or in totality by the driving process.
2. Syn. with HAMMER DRILL; ROCK DRILL; ROTARY DRILL

PERCUSSION ROTARY DRILLING
Forage rotary à percussion
Work
A type of rotary drilling in which the rotary tool is driven by a rapid percussion movement to increase its efficiency.

PERCUSSIVE TOOL
Outil de choc
Equipment and Tools
A tool on which we strike with a sledge hammer, a hammer, etc., to perform a job; it is the case of the graver, heading chisel, point tool, etc.

PERFECT WOOD
Bois parfait
Building Materials
In a log, matter between the heart and the sapwood. Syn. with HEARTWOOD

PERFORATED BRICK
Brique perforée
Building Materials
A brick with perforations generally perpendicular to the laying plane and whose gap surface is lower than solid parts.

PERFORATED SHEET
Tôle perforée
Building Materials
A plane product containing holes of various shapes. Assembled on a light universal beams grillwork. Perforated sheets sometimes replace gratings.

PERFORATION
Evidement; Perforation; Foration
Construction; Work
1. A cavity dug or accommodated in a part of work.
2. Boring of various holes (for injection, needling, blastholes, etc.) into any masonry or rock with a rock drill. Syn. with DRILLING

PERICLASE
Périclase
Hydraulic Binders
Syn. with MAGNESIA

PERIDOTITES
Péridotites
Geology
A family of coarse-grained eruptive rocks mainly comprising rocks formed of black elements and deprived of white elements. They are the most basic rocks we know (they contain less than 43% of silica).

PERIMETER
Périmètre
Foundation
The length p of the perimeter of the section of a pile shaft,

PERIMETRICAL JOINT
Joint périmétral
Construction of R.C. and P.C.
A solution of continuity introduced by some Italian engineers in arch dams between the foundation block, called *pulvino,* and the mass of the actual dam. The perimetrical joint comprises a tightness joint that prevents water from flowing between the pulvino and barrage, thus avoiding leaks and upward pressures. The joint also allows to cancel tensile strength which frequently exists at the base of the arch dams, at the extrados. It is also intended for heading off possible crackings.

PERIOD
Epoque
Stratigraphy
The unit contained between the formation and system. The period (or series) is subdivided into formations, and several periods form a system.

PERLITE *or* PEARLITE
Perlite
Building Materials; Metallurgy
1. An expanded silicate (volcanic lava chemically processed) which appears as whitish microballs used as light aggregate in the manufacture of some concrete or mortars.
2. An aggregate constituted by eutectoid coming from the normal splitting into ferrite and cementite of austenite slowly cooled below the zone of steel critical temperatures. It contains about 0.9% of carbon. Perlite is a microscopic constituent of steel, chemically heterogeneous.

PERLITE CONCRETE
Béton de perlite
Building Materials
A light material whose aggregate is perlite.

PERMANENT PIPE PILE
Tube perdu
Foundation
A work tube which will not be recovered and which is used for the creation of some cast piles. (In some circumstances, it can be necessary to interpose between the concrete and the ground a protective casing, set after

drilling; the permanent pipe pile fulfils this purpose.)

PERMANENT SAG
Flèche permanente
Defects (Construction)
A vertical deformation of all or part of a reinforced or prestressed concrete work exceeding the design note estimations. (This defect designates the deformations appearing after hardening of concrete.)

PERMANENT WHITE
Blanc fixe
Materials
A compound (sulfate of barium) of great whiteness which is used as standard of comparison for examination of dyes.

PERMANENT WORKS
Ouvrage définitif
Civil Engineering Structure
Syn. with DEFINITIVE WORK

PERMEABILITY
Perméabilité
Geology and Building Materials
1. Property of some bodies to be come through a given interval of time by a more or less great volume of liquid (or gas) circulating under the effect of a difference of pressure. Permeability is less related to the absolute volume of the voids (porosity) uniformly distributed than to the presence, in the mass, of relatively broad channels. Syn. with PERVIOUSNESS
2. The more or less great facility with which water can seep through a ground or a rock.

PERMEABILITY MEASUREMENT
Mesure de perméabilité
Geotechnics
The determination (approximate) of the permeability degree of grounds (Lefranc test), stratified grounds very permeable (rotary-meter test), rocks (Lugeon test).

PERMEABILITY OF A FILM
Perméabilité d'un feuil
Painting
The ability of a dry paint film to let itself be come through by some substances in their liquid or gaseous state, under particular conditions which can be subjected to conventionaltests.

PERMEABILITY TEST
Essai de perméabilité
Geotechnics
A test intended for informing about soils or rocks permeability and which is carried out by water injection or pumping. This test allows to detect possible faults or important spaces in a ground.

PERMEABILITY TEST UNDER CONSTANT LOAD
Essai de perméabilité à charge constante
Test of Materials (Civil Engineering)
A test intended for testing the degree of permeability of porous, permeable and draining pavements. **See Figure 10**

PERMEABILITY TO WATERSTEAM OF A CEMENT MORTAR RENDERING
Perméabilité à la vapeur d'eau d'un enduit au mortier de ciment
Masonry
The quantity of steam which, in 1 hour by m^2 of surface and for a difference of pressure of 1 mm Hg, passes through a material of 1 m thick. Permeability to water steam characterizes the ability of a rendering to make possible water steam migration and conditions the speed of drying of the subjacent masonry.

PERMEABLE
Perméable; Arénacé
Building Materials and Geology
1. Of a material, rock or soil having a texture that permits passage of liquids or gases under the pressure ordinarily found in earth materials.
2. Syn. with ARENACEOUS

PERMEAMETER
Pérméamètre
Equipment for Measure and Control
An instrument for measuring permeability of a soil sample; there are of two types: the falling head permeameter, used for clays, and the permeameter under constant load used for

very permeable grounds such as sand. **See Figures 11 and 11a**

PERMISSIBLE STRESS
Contrainte admissible
Strength of Materials
Syn. with ALLOWABLE STRESS

PEROXYDE
Péroxide
Polymers
The generic name of oxides containing more oxygen than normal oxides and which are used as catalyst in the use of polyester resins.

PERPEND
Parpaing; Pierre parpaigne; Aggloméré
Masonry and Buildings Materials
1. Syn. with BONDSTONE; PARPEND STONE; THROUGH STONE
2. Syn. with ARTIFICIAL STONE; BLOCKWORK; BUILDING BLOCK; CONGLOMERATE BLOCKWORK

PERPEND JOINT
Joint montant
Masonry
A vertical joint between two elements in any masonry. Syn. with HEAD JOINT

PERPENDICULARITY
Aplomb
Building
Syn. with PLUMB

PERPETUAL RIVER
Rivière pérenne
Hydrology
A waterway, spring, etc., which flows without never being dry.

PERSISTENT ACTIONS
Efforts persistants
Strength of Materials
External actions on foundations that, unlike evanescent actions, will persist until damage appears.

PERSON IN CHARGE OF TEMPORARY WORKS
Chargé des ouvrages provisoires
Temporary Construction
In a building site, a person being in charge to study and to implement all temporary works that will be used on a site (temporary bearings, temporary bridges, etc.).

PERSON IN CHARGE OF THE PRESTRESSED WORKING
Chargé de la mise en oeuvre de la précontrainte
Construction of R.C. and P.C.
In a building site, person in charge which studies and directs the implementation of the prestressing (the positioning of cables, site of vents, injection, etc.).

PERSON IN CHARGE OF THE SCAFFOLDING
Chargé d'échafaudage
Temporary Construction
In a building site, a person being in charge to unite all necessary informations for the study and the achievement of scaffoldings.

PERSON IN CHARGE OF THE STAYING
Chargé d'étaiement
Temporary Construction
In a building site, a person being in charge to unites all necessary informations for the study of the propping-up and special equipments, and carries out to their implementation.

PERSPECTIVE
Perspective
Drawing
A drawing representing the whole or a part of a work, established according to the rules of the axonometric or conical perspectives. These perspectives can be shaded or tinted.
We can distinguish:
- **axonometric perspective** *(la perspective axonométrique),* the orthogonal projection of an object on an oblique plan of projection defined by the angles which form between them projections of the three convergent tri-rectangular edges from this plan. Projection is known as isometric, trimetric or dimetric, according to whether the angles all are equal, all different, or that two only of them are equal. None edge is projected in true magnitude;

- **slanting perspective** *(la perspective cavalière),* the oblique projection of a work, part of work, and whose face is parallel with the table. The aim is to give of a work, an object, etc., a complementary representation enabling better appreciating, prima facie, of the general aspect of this work or object.

P.E.R.T. (Program Evaluation and Review Technic)
P.E.R.T.
Contract
An establishment process of a planning by network allowing the analysis of projects, an adjusted precision of the progress of works, an identification of the continuation of critical operations conditioning the total time limit. The P.E.R.T. defines the performance calendar of the tasks, allows to minimize a too long time limit and solves the problem of the blueprint testing and periodic update of the planning. The base of the system is the network, which is the chart of the project.

PERVIBRATE
Pervibrer
Construction of R.C. and P.C.
To vibrate fresh concrete with penetrating apparatuses into its mass.

PERVIBRATION
Pervibration
Construction of R. C. and P. C.
Syn. with INTERNAL VIBRATION

PERVIBRATOR
Pervibrateur; Vibrateur interne
Equipment and Tools
Syn. with IMMERSION VIBRATOR; INTERNAL VIBRATOR; POKER VIBRATOR

PERVIOUSNESS
Perméabilité
Geology and Building Materials
Syn. with PERMEABILITY

PETRIFICATION
Pétrification
Foundation
An artificial cementing process known under the name of *Joosten process,* which consists in injecting into the ground soda silicate and then calcium chloride. The mixing inside the ground of these two products results in their rigidification, thus improving the compressive strength of the treated ground.

PETROGENESIS
Pétrogenèse
Geology
A branch of geology that deals with the origin of rocks.

PETROGENY
Pétrogénie
Petrography
A field of petrography dealing with the interpretation of rocks, that is the search for rules and laws accounting for their characters, distribution, and their conditions of genesis and evolution.

PETROGRAPHER
Pétrographe
Petrography
A geologist specializing in the study of rocks.

PETROGRAPHIC
Pétrographique
Petrography
Pertaining to the study of rocks.

PETROGRAPHIC CLASSIFICATION
Classification pétrographique
Petrography
The classification of rocks according to their composition and architecture, characters linked to their geological conditions of formation. Actually the distinction between eruptive, metamorphic and sedimentary rocks was made because of genesis factors.

PETROGRAPHIC STUDY
Etude pétrographique
Building Materials
Thorough aggregates examination that allows among others:
- to define the nature of basic rocks and their respective percentages;
- to analyse their petrographic characteristics (nature, source and grading).

The petrographic study concerns essentially the analysis of the aggregates making up concrete.

PETROGRAPHIC TYPE
Type pétrographique
Petrography
The classification of rocks according to objective and easily observable distinctive characters.

PETROGRAPHY
Pétrographie
Petrography
A field of geology which object is the study of rocks. This science comprises two complementary aspects:
- their description, that is the analysis of their characters of all kinds, observable in the field or in laboratory;
- their interpretation (see PETROGENY).

PETROLOGIST
Pétrologiste
Geology
A specialist in petrology.

PETROLOGY
Pétrologie
Geology
The science of rocks which tries to explain the phenomena which led to the formation and evolution of rocks including their origins, present conditions, alterations, and decay; more specially, the interpretative part of this science (the descriptive part corresponding to petrography).

***PFUND* CRYPTOMETER**
Cryptomètre de *Pfund*
Equipment for Measure and Control
Equipment for Measure and Control
An instrument for measuring the covering power of a paint. It is made up of an opaque glass plate, white or black, supporting a transverse notch and on which can slip a transparent glass blade fitted, at one of its extremities with a distance piece, so much so that the gap existing between the two blades forms a corner which can be filled with paint. The upper plate is made to slip so that the edge of the notch of the bottom plate is no longer seen. A graduation allows to read the thickness of the paint coat in this place. Knowing the density of the paint, it is easy to calculate the surface that can cover 1kg.

pH
pH
Metrology
An index which determines the acidity or basicity of a water and which is expressed by the hydrogen power contained in this water. A pH equal to7, indicates water neither acid, nor basic. It is lower than 7 for an acidic solution and higher than 7 for a basic solution.
Generally, concrete has a pH ranging between 9 and 11 (high basicity): this quality leads to the passivation of reinforcements which will not thus rust inside concrete (it is acidity which is responsible for oxidation).

pH METER
pH-mètre
Equipment for Measure and Control
An instrument allowing the electrometric measurement of the pH of water for example.

PHANEROZOIC TIMES
Temps phanérozoïques
Geology
Fossiliferous times that includes the Primary, Secondary, tertiary and Quaternary Eras. It represented by rocks in which the evidence of life is abundant, that is to says Cambrian end later time.

PHANTOM
Fantôme
Defects (Building Materials)
A defect of aspect of renderings characterised by the appearance of ghostly drawings that, especially, underline the joints of rendered masonries of quarry stones, bricks or hollow blocks. This phenomenon is caused by a differential of water absorption between the stone, brick, or hollow block and the joint.

PHASE
Phase
Materials
Elements which make up a suspension or emulsion. *Dispersed phase* or *internal phase designates* the matter in emulsion or

suspension, and *external phase* the medium of dispersion.

PHENOL
Phénol
Materials
The set of hydroxylated molecules variously substituted, derived from benzene (simple phenols) and its higher equivalents (creosols) and from polycondensed nuclei molecules (naphthols and sulfonic naphthols). Used chiefly in making resins, plastics and dyes.

PHENOLIC RESIN
Résine phénolique
Polymers
A thermosetting product manufactured from phenol which makes up some Reactive Primary Paints (R.P.P.).

PHICOMETER
Phicomètre
Equipment for Measure and Control
An instrument for measuring angle of internal friction (φ) and cohesion *(CO)* of a soil. These two parameters characterize the shear strength of the soil. **See Figure 12**

PHLOEM
Liber; Livret
Nomenclature of Materials
The internal part of wood bark.

PHORESIS PRODUCT
Produit dit de phorèse
Building Materials
An infiltration product applied on a material (or injected) intended for sealing its capillaries and which is used to drain walls.

PHOSPHATE COATING
Phosphatation
Metallurgy
Syn. with PHOSPHATE PROCESSING; PHOSPHATIZING

PHOSPHATE PROCESSING
Phosphatation
Metallurgy
Syn. with PHOSPHATING; PHOSPHATIZING; PHOSPHATE COATING

PHOSPHATIZING
Phosphatation
Metallurgy
A protective operation for steels that consists in putting the surface of metal in contact with a solution containing diacid orthophosphates of iron, manganese or zinc (crystalline phosphatizing) or alkaline orthophosphates (amorphous phosphatizing). In the first case, iron is attacked by the phosphoric acid, which leads to the transformation of orthophosphates into insoluble phosphates; in the second case, iron phosphate itself is precipitated. This process is mainly used to protect steels from atmospheric corrosion; moreover, it favors the bond of paints. Phosphatizing can be done in a workshop by the process of soaking or on site by cold sprinkling using a squirt gun with phosphatizing preparations.
We can distinguish:
- **bonderization** *(la phosphatation légère)*: Syn. with BONDERIZING;
- **parkerizing** *(la phosphatation profonde):* Syn. with PHOSPHATE COATING; PHOSPHATE PROCESSING

PHOSPHORITE
Phosphorite
Geology
A phosphatic sedimentary rock constituting by accumulation residual deposits filling the spaces of a former karst formed during the Tertiary from the expense of the phosphatic Jurassic limestones of the Causses.

PHOTOCELL MICROREEL
Micromoulinet de forage à cellule photoélectrique
Equipment for Measure and Control
Equipment for measuring the upward speed of water into a drilling following its displacement from a first groundwater table to another, under a phenomenon of artesian effect or under a phenomenon of seepage. The upward speed is proportional to the rotation speed of a propeller. This propeller, located in a carcass comprising a recording device, is moved inside a drilling at various levels and gives the levels the values of the various speeds of water. The differences in permeability of the soil layers is thus defined.

PHOTOCLINOMETER
Photoclinomètre
Equipment for Measure and Control
An instrument for checking the orientation of a borehole and which, placed on the bottom of a hole, allows the photography of a pendulum and compass to directly provide the incline and azimuth. This apparatus also enables the orientation of the deviator tools on the bottom of the hole during directional drillings to be directed in the good direction.

PHOTOELASTIC COATING
Revêtement photoélastique
Metallurgy
A plastic product film which comes in the form of a varnish or prefabricated plates stuck on a metal part which is then studied in photoelasticimetry.

PHOTO-ELASTICIMETER
Photo-élasticimètre
Equipment for Measure and Control
An instrument used for the analysis of photoelasticity measurement.

PHOTOELASTICIMETRY
Photo-élasticimétrie
Strength of Materials
An optical practice which allows to analyse the distribution and value of the stresses or deformations undergone by a solid subjected to the given actions. The principle is as follows: a model of the part is made of a transparent resin likely to become birefringent when strains are applied to it. The model subjected to the strains similar to those of the part is came through by a polarizing light which is analysed by a polarizer. Fringes appear that characterizes deformations. The stresses are deduced by calculation.

PHOTOELASTICITY
Photo-élasticité
Strength of Materials
A property of certain transparent substances (glass or plastic) that allows the presence of strain to be detected by examination in polarized light. If models of complicated engineering structures are made of such a substance, the stress distribution in the structure may be resolved.

PHOTOGRAMMETRY
Photogrammétrie
Topography
The art and science of obtaining reliable measurements from photographic images. Methods utilize horizontal, vertical, and oblique views, with or without the aid of the stereoscopic principle and with or without computer-based image processing and analysis.
This technique allows to map topographic maps, checks of structures, cubic yardage of earthworks, etc. We can distinguish:

- **analogical photogrammetry** *(la photogrammétrie analogique),* which uses a mechanical or optical analogy to solve the problems of reconstitution of perspective beams and intersection of equivalent rays. (The exploitation is generally graphic, but it can be numerical using recorders of coordinates.) Analogical photogrammetry is opposed to analytic photogrammetry;
- **analytic photogrammetry** *(la photogrammétrie analytique),* a process of exploitation in which the problems of reconstitution of perspective beams and intersection of homologous rays are entirely treated by calculation from measurements of coordinates on the negatives.

Syn. with AIRPLANE MAPPING; PHOTOGRAPHIC SURVEYING

PHOTOGRAPHIC SURVEYING
Photogrammétrie
Topography
Syn. with AIRPLANE MAPPING; PHOTOGRAMMETRY

PHOTOPROFILE
Photoprofil
Civil Engineering Structure
An optical and photographic practice of filming at a known scale a transverse section of a tunnel. The purpose of this method is to detect a possible deformation of the cross section. See PHOTOPROFILE WAGON.

PHOTOPROFILE WAGON
Wagon photoprofil
Equipment and Tools
A railway machine intended for the geometrical plotting of structures, in particular of tunnels.
Geometry is plotted by photography of the mark of a laser beam turning on the facing of the checked work. The source of light is a ionized argon laser whose beam is reflected perpendicular to the axis of the way by a mirror revolving at a speed of 50 turns per second. The shots are ensured by three cameras fitted with weak distortion great angle objectives. Each camera is identified thanks to a billboard located on the wagon and various information: decametric point, date, etc. appear on each photography. Three luminous reference marks whose positions are fixed in relation to the train are used as referential to give the scale factor of the image. Plotting is carried out to the stream, at night, at a speed of 4 km/h. The engine is equipped to carry out two modes of plotting:
- mode known as *photoprofile,* realized by one of the three cameras which is intended to this mode of plotting of particular individual photoprofiles. Shootings are controlled by board operators, either on decametric reference marks, or on reference marks prospectively established on the vault of the concerned tunnel (1 negative about every 3 meters);
- mode known as *photocastan* which is carried out by two other cameras and the purpose is to identify the minimum outlet of the studied work. These two cameras function with 4 second exposures with a slight recovery. In this case, as soon as the sequence is launched, the cycle progresses without operator action.

PHREATIC
Phréatique
Geohydrology
Of the shallowest underground water tables related to wells.

PHTANITE
Phtanite
Geology
A siliceous sedimentary rock of organic origin, often rich in radiolarias.

PHYLLITE
Phyllite
Geology
A metamorphic rock more or less polished; it is a fine-grained schist with aericite.

PHYSICOCHEMICAL ADHESION
Adhérence physico-chimique
Welding
The connection due to the forces of molecular attraction between substrate and coatings.

PIANO STRING
Corde à piano
Materials
Syn. with MUSIC STRING; PIANO WIRE

PIANO WIRE
Corde à piano
Materials
Syn. with MUSIC STRING; PIANO STRING

PICEA
Epicéa
Building Materials
A tree of the conifers family giving a yellowish white resinous wood and whose density ranges from 0.40 to 0.55. Sawings from this wood provide boards, rafters, balks, etc. Syn. with SPRUCE

PICK
Pioche: Pic
Equipment and Tools
1. A navvy's steel digging tool made up of a handle passing by an eye to the purpose This eye is prolonged on both sides by a thinly crooked peen, one having a pointed end and the other a sharp end. Syn. with MATTOCK; PICKAXE
2. Syn. with WEDGE CUT

PICK HAMMER
Picot; Marteau piqueur
Equipment and Tools
1. A builder's tool used to clear pointings of masonry.
2. A percussion hand-driven apparatus fitted with a point-shaped tool operated by a tool-

holder rod which works on compressed air, hydraulically, or electrical power. This apparatus is mostly used to carry out demolition works or earthwork of low importance. Syn. with CONCRETE or ROCK BREAKER; MOTOR DRILL AND BREAKER

PICKAXE
Bigot; Pic; Tournée; Pioche
Equipment and Tools
1. A pick with sharp points at each ends.
2. Navvies' steel digging tool made up of two long slightly crooked peens, one of which at least one is pointed. This tool is equipped with a handle passing through an eye set in the center of the two peens.
3. A pickaxe fitted with a short handle particularly used in the works carried out in the restricted or underpinning.
4. Syn. with MATTOCK; PICK

PICKED MILLSTONE
Meulière piquée
Building Materials
A millstone showing a dressed facing and straight edges, the joint is cut so that it is perpendicular to the bed.

PICKET FENCE
Hague; Palissade
Construction
Syn. with BOARDING

PICKING
Piquage
Masonry
A special cut given to some hard stones (sandstone, grit stone). Syn. with STUGGING

PICKLE
Mordre; Dérocher
Work; Earthwork
1. Syn. with BITE
2. To clear the bed of a waterway of the rocks obstructing it. Syn. with DIP

PICKLING
Décapage chimique; Décapage
Metallurgy; Painting
1. The process of chemically removing oxides and scales from metal pieces by immersion in an acid bath to obtain a clean surface prior to galvanizing or painting.
2. Syn. with CLEANING; STRIPPING.

PICKLING A RIVERBED
Dérochement
Earthwork
A subaquatic excavation that consists in removing rocks of the bed of a waterway or pass in order to increase depth.

PICRAL
Picral
Metallography
A developer used in metallography that allows to study the microstructure of steels; it is an etching reagent consisting of a 2% to 5% solution of picric acid in ethyl alcohol.

PIECE CREEPING
Cheminement de pièce
Defects (Construction)
Syn. with PIECE TRUDGING

PIECE TRUDGING
Cheminement de pièce
Defects (Construction)
The relative displacement compared with the original position between two pieces in contact and not jointed (example: trudging of a bridge-support apparatus). Syn. with PIECE CREEPING

PIER
Appontement; Demi-pilier; Eperon; Contrefort; Jambe
Construction
1. A wooden or reinforced concrete platform of small width advancing relatively far in sea or in a waterway and being used as wharf, quay, etc. This platform is constructed above waters on vertical and tilted piles. Syn. with LANDING STAGE; QUAY
2. A semicircle-shaped pillar leant against to a wall.
3. A construction overhanging on the lateral faces of abutments-piers. (This buttress is an integral part of the pier because it is erected at the same time that this last.) Syn. with COUNTERFORT
4. A stone pier of ashlars built-in a masonry abutment in order to give it more resistance.

PIER
Pile; Pilier; Piédroit
Construction
1. The intermediate bearing of a bridge with several arches or bridge with deck which is made of a shaft (simple or multiple) and a foundation (simple or multiple). The pier is designed for supporting heavy concentrated loads from arches or a bridge superstructure. The shaft can be made of concrete, reinforced concrete, prestressed concrete, masonry, and sometimes of metal. A pier cap or transverse head beam, mostly of reinforced concrete, prevails over the top part of the shaft; it is on it that the decks rest through the channel of the bridge-support apparatus's.
Standard piers comprise sometimes, in addition of the foundation, a base of a rectangular section and in the event of establishment in a waterway, this base is generally prolonged by an upstream cutwater and downstream cutwater of different shapes (in half-circle, ogival, triangle, etc.). These piers are generally built of masonry, reinforced concrete or not, often covered with ashlars. We can distinguish:
- **piers in river** *(les piles en rivière),* constructions usually of massive structure to be able resist to the shocks of floating bodies. The shape of these piles is studied to allow a good water runoff;
- **high piers** *(les piles hautes),* intermediate supports, of light structure, of tall viaducts clearing the valleys in mountainous sites or cities.

Syn. with PILE; SUPPORT. **See Figure 13 and 13a**
2. A circular, square, rectangular or polygonal masonry construction for supporting structural members, loads and overloads. When a pillar is isolated and bears a concentrated load, it takes the name of *post.* Syn. with PILLAR; POST
3. Syn. with JAMB

PIER (ON PILES)
Estacade
Construction
An open-work jetty, formed by a piling of wooden, metal or reinforced concrete piles established in a port or a waterway to channel a stream or to protect hydraulic constructions. Syn. with BARRICADE OF PILES; PILING

PIER BUTTRESS
Culée d'arc-boutant
Construction
Syn. with FLYING-BUTTRESS ABUTMENT

PIER CAP
Chapiteau; Coussinet; Chevêtre; Sommier
Construction
1. The crowning termination of a column or a pilaster. Syn. with CAP; CAPITAL
2. Syn. with BEARING PAD; COUSSINET
3. Syn. with TRANVERSE HEAD BEAM
4. Syn. with BRIDGE PIER CAP

PIER HEAD
Musoir
Construction
Syn. with ROUND HEAD

PIER WITH COLUMNS AND PIER CAPS
Pile à colonnes et chevêtres
Construction
An element made up of two or several shafts joined on the head by a pier cap. This constructive arrangement is carried out with the intention of lightening. Foundations can be shared or individual (following the distance separating the shafts). **See figures 14 and 14a**

PIERCING
Percement
Work
The creation of an opening, the boring of a hole, a punching. Syn. with DRILLING; PUNCHING

PIEZOCONE
Piézocône
Assaying Equipment
A static penetrometer allowing continuous measurement of the pore pressure generated by pushing a conical probe into saturated soils, whilst measuring the limit point resistance and the lateral friction on the sleeve. The two parameters are recorded on a portable computer.

PIEZOGRAPH
Piézographe
Equipment for Measure and Control
An instrument that allows to measure and record during the execution of a drilling the following hydrometrical parameters: instantaneous flow, height and temperature of water, conductivity.

PIEZOMETER
Piezometer
Equipment for Measure and Control
A device for measuring the pore water pressure in a precise point of a saturated soil and, in particular, for determining the level of surface of a free sheet of water or the piezometric surface of a captive water table, as to follow a pumping test or again a sinking of groundwater.
The piezometer is mostly constituted by a PVC tube into which even perforations were accommodated allowing the introduction of the water into the soil under some conditions while avoiding clogging. In some circumstances, a plug is established between the piezometric tube and the in situ soil to avoid the communication of the various levels of ground water tables. Measurements of the water level are regularly recorded by piezometric sensors.
There are several types of piezometers:
- **open piezometer** *(le piézomètre ouvert),* constituted by a simple strainer tube on a certain height and placed inside a drilling; **See Figure 15**
- **LCPC piezometer** *(le piézomètre à contre pression de gaz),* equipment of the L.P.C. showing a very weak response time and which does not require purging;
- **electric *or* acoustic piezometer** *(le piézomètre à système électrique ou acoustique),* aimed at measuring the height of water inside a drilling and whose the principle of measurement is the following: penetrating into the piezometer through a filter of porous matter, water comes in contact with a thin membrane that is bent (out of shape) throught the agency of the pressure. These deformations are measured by electrical or acoustic methods.

Syn. with PIEZOMETER TUBE

PIEZOMETER TUBE
Piézomètre
Equipment for Measure and Control
Syn. with PIEZOMETER

PIEZOMETRIC HEAD
Hauteur piézométrique
Hydrology
The height to which rises a fluid because of its pressure.

PIEZOMETRIC LEVEL
Niveau piézométrique
Hydrology
1. The real or fictitious surface of a water sheet (Artesian aquifer).
2. The location of all points of an underground water table to the atmospheric pressure.
Syn. with WATER LEVEL

PIEZOMETRIC SURFACE
Surface piézométrique; Niveau hydrostatique
Hydrology
Syn. with PIEZOMETRIC LEVEL

***PIGEAUD* NOMOGRAPHS**
Abaques de *Pigeaud*
Drawing
Graphs for quickly calculating bending moments developed into a rectangular reinforced slab rested on its four sides throught the agency of uniform loads acting over all the surface of the slab.

PIGMENT
Pigment
Painting
Fine powder, insoluble in the usual mediums of suspension, used because of its coloring power or its high opacifying power; it is the solid constituent of paints. It mostly has a inhibitive role of the corrosion due to its chemical activity or its morphology and must be able to form a consistent and plastic paste with the linseed oil. According to its nature we can distinguish:
- **batched pigments** *(les pigments chargés),* into which one or several filler matters is mixed as, for example, barium sulfate-laden oxide of zinc or calcium carbonate-laden lithopone;

- **mixed pigments *or* compound pigments** *(les pigments composés),* to which auxiliary substances are associated, of which some filler matters, solely for technical reasons (precipitate carbonate of barium, colloidal alumina silicate, silica, intervene respectively to improve the dispersion of pigment, increase the physical stability of paint, the ability to the sanding of film);
- **metallic pigments** *(les pigments métalliques),* always obtained almost by mechanical process (pulverization of alloy such as special bronze and of metal such as aluminum, zinc, copper, lead), exceptionally by chemical process (precipitation), and used as decoration paint or protective paint (struggle from the corrosion);
- **earth pigments** *(les pigments minéraux),* constituted by an oxide or metal salt (of lead, coppers, cadmium, mercury, etc.) or by various blacks;
- **organic pigments** *(les pigments organiques)* (azoic, phthalocyanins, anthraquinonic, quinacridones, tetrachloro-iso-indolinone, etc.);
- **organometallic pigments** *(les pigments organométalliques),* made up by a complex metal (example, phthalocyanin of copper) or by a salified metal by an organic acid (example, cyanamid of lead).

Syn. with COLORING

PIGMENTATION
Pigmentation
Painting
All pigments that contains a paint.

PIKE
Pique
Construction
The pointed bar of a railings.

PILASTER
Pilastre
Construction
A pillar or quadrangular vertical support (rectangular or square) inserted into a wall and forming a small projecting on the main plane of this one. **See Figure 16**

PILASTER STRIP
Dosseret; Bande lombarde
Construction
1. Syn. with BUTTRESS OF A PIER
2. Syn. with SMALL PILASTER

PILE
Pieu; Pilot; Gerber; Pile
Foundation; Equipment and Tools; Construction
1. A cylindrical or prismatic manufactured element (precast, worked out in a factory, etc.) or foundation pit of a small section, more or less important length and various nature (wood, concrete or metal). The pile is used as deep foundation for various types of works; it can act into two ways: either it defers on the deep stratums of the ground the loads which the shallow stratums could not bear, it is then a pile known as *abutted on,* or it acts by lateral friction on the country rock and it is a *floating pile* (or *friction pile*).

The implementation of a pile into the ground is obtained:

- *by driving, vibropiling or jetting (precast piles of all descriptions);*
- *by casting into the ground (concrete pile, sand pile, etc.);*
- *by screwing (concrete or metal piles).*

It is mostly considered that a pile is an element of which the diameter is lower or equal than 80 cm; beyond it takes the name of (foundation) pit.

A pile withstands by the point effect in contact with a layer of hard ground or by the action of friction forces which develop on its side contact surface with the ground, or by these two effects at once. A pile can go before axial strains of compression (supports) or tension (wrenching) and in some circumstances, go before the flexion or shear strains (frame of curtains).

Three great families of piles exist: cast-in-situ piles, prefabricated piles, special piles. **See Figure 17**

2. A wooden pile provided with a metal pile shoe usually driven into the ground by driving. (A group of piles forms a pilotis.)
3. To store elements the ones onto the others.
4. Syn. with PIER; SUPPORT

PILE CAGE REINFORCEMENT
Armature d'un pieu
Foundation
Set of reinforcements forming the bar setting of a pile and which includes:
- *cage,* composed of steels taken into account in the assessment of the strength of the pile;
- *hangers,* steels for heading off the fall of the cage at the drilling bottom;
- *basket,* device for avoiding the increase of the cage during concreting and/or the extraction of the casing or the tubing;
- *centring pieces,* pieces usually of concrete intended for keeping laterally the cage.

PILE CAISSON
Palpieu
Foundation
A small box formed by the assembly of 2, 3 or 4 sheeting piles. **See Figure 18.**

PILE CAP
Longrine; Racinal; Patin
Foundation
1. In the wooden piles foundations, each timber piece composing the grating that connects between them the heads of trimmed piles and that is laid out along the two main axes of the bearing. Pile caps are jointed between them by a halved joint. Syn. with FOUNDATION OF GRILL; GRIL
2. A sleeper fastened horizontally on the heads of piles with the aim of distributing the loads and building a platform.

PILE CLUSTER
Duc-d'albe
Construction
Syn. with DOLPHIN

PILE CONTROL TEST
Essai de contrôle des pieux
Foundation
A test that consists in testing the homogeneity of the pile shaft and its ability to bear loads.
We can distinguish:
- **shaft tests:** tests intended for ensuring qualities of the continuity of the pile shafts of the work as well the good contact ground /pile. They can comprise following the case:
  - *sonic tests by transparency,*
  - *microseismic tests by transparency,*
  - *mechanical impedance tests,*
  - *mechanical core drillings*;
- **bearing capacity tests** which consist of static loading tests of the finish piles of the work. They are designed for verifying that the nominal piles load reflects that decided from the geotechnical study. They do not allow in general terms, contrarily to the preliminary tests, to revise the dimensionning of piles of the work. Just as that the preliminary tests, control tests of bearing capacity consist in feeling the piles by applying them stresses similarly nature that these that will be transmitted by the work: vertical loading, wrench, horizontal stresses. These piles can be equipped of strain gauges placed within drillings carried out inside the pile shaft.

PILE DRIVER
Batteur; Sonnette
Equipment and Tools
1. A machine used to drive sheet piles or piles. Syn. with PILE ENGINE
2. A machine for driving down piles or sheet piles; usually consisting of a high frame with appliances for raising and dropping a pile hammer or for supporting and guiding a steam, diesel or air hammer..
The main element of the pile driving is driving leaders (guide made up of two parallel rails) whose the aim is double: to guide elements to be sunk and to guide the rammer. Pile drivers can be fixed or setting on a mobile machine with caterpillar tread or tires. Among the main types of pile drivers we can distinguish:
- **common ram *or* pile driver** *(la sonnette à tiraudes),* hand-held operated and endowed with as many strands that there are people for operating them,
- **trigger pile driver** *(la sonnette à déclic),* similar as that with strands, but endowed with only one rope to raise the rammer and supplied of a trigger device operated by an independent rope,
- **steam, *or* pneumatic *or* diesel pile driver** *(la sonnette à vapeur, à air comprimé ou diesel).* Syn. with MONKEY; PILE FRAME; RAM PILE DRIVER. **See Figure 19**

3. A small trial boring apparatus, made of a winch that lifts up, by intermediary of a cable, the drilling tool periodically released by a

sounder or an automatic device (trigger pile driving) to perforate the soil.
4. An operator of a pile driver.

PILE DRIVING
Palification
Foundation
The sinking of piles into the ground. Syn. with SETTING

PILE ENGINE
Batteur
Equipment and Tools
Syn. with PILE DRIVER

PILE *or* SHEET-PILE DRIVING
Battage; Fonçage par battage de pieux, de palplanches, etc.
Foundation and Earthwork
A sinking process into the ground of piles or sheet piles that consists in subjecting them to a number of blows applied on their head until they reach the wanted depth (or the refusal). This operation is carried out with a striking mass called *rammer*. Syn. with DRIVING OF PILES (or SHEET PILES)

PILE EXTENSION
Faux-pieu
Foundation
1. An element of pile brought back to a too short pile.
2. An element fastened temporarily at the head of a pile which allows to continue the sinking below the level of the work platform.

PILE (DRIVING) FORMULAE
Formules de battage
Foundation
Syn. with DRIVING FORMULAE; PILING FORMULAE

PILE HAMMER
Mouton
Equipment and Tools
Syn. with DROP HAMMER; PILING HAMMER; RAMMER; WEIGHT MONKEY

PILE HELMET
Casque de battage
Equipment and Tools
Syn. with CRASH HELMET; DOLLY; DRIVING CAP; DRIVING HELMET; HEAD

PILE HOOP
Cerce
Construction
Syn. with DRIVING BAND; PILE RING

PILE JACKING
Vérinage
Handling
An operation of underpinning with piles sunk into the ground through the channel of jacks interposed between the head of the pile and the underside of the foundation.

PILE NOMINAL SECTION
Section nominale d'un pieu
Foundation
Area of the pile taken into account in the calculations.

PILE OBTURATOR
Obturateur de pieu
Equipment and Tools
A device fixed at the base of the plunger tubes during the carrying out of the cast-in-situ piles and which can be constituted by articulated valves or cap-stoppers. The aim of this device is to avoid the penetration of foreign bodies inside the tube during its descending into the drilling (mud, sand, water, etc.). Syn. with PILE THROTTLE. **See Figure 20**

PILE RING
Cerce
Construction
Syn. with DRIVING BAND; PILE HOOP

PILE SHAFT
Fût d'un pieu
Foundation
The body of a pile, from the head to the toe.

PILE SLEEVE
Gaine; Chemise
Foundation
Syn. with LINING

PILE TEST
Essai de pieu
Foundation
A static loading test of deep foundation that consists in testing this foundation by applying to it static loads at least equal to those of the future work as the form of:
- static test of wrenching (case of anchorages);
- static test of sinking (case of piles).

The aim of this test is to check or to clarifiy conclusions of the geotechnical study, in particular the bearing capacity of an isolated pile. As a general rule, and by definition of the goal of the static test, the pile to be tried is selected among those of which the setting process does not involves the direct measurement of the supporting load. It is thus for example drilled piles for which there is none refusal measurement.
The principle of the test: test consists in applying loads on the head of the pile following a given programme and measuring corresponding sinkings of the pile head. Measurements are carried out using an optical level, by four comparators and two flexigraphs. The analysis of the results allows, prima facie, to obtain the characteristics hereinafter:
- breaking load;
- total sinking for each load;
- permanent sinking after loading (residual);
- conceivably, the real allowable load.

PILE TESTING SYSTEM USING THE IMPULSION METHOD
Méthode impulsionnelle pour l'auscultation des pieux
Test of Materials
A test for (as the practice of the vibrations it is a development) determining the integrity of a pile, its length and the presence of characteristic defects (cracks, bulbs, constriction, quality of anchorage) without particular equipment of the pile, apart of a slight preparation of the head.
The principle consists in putting in vibration the head of a pile by means of an impulse brought about by a hammer. Vibratory velocity is measured by a geophone or an accelerometer. Signals of force and speed are digitized and stored, which allows, by Fourier' transformation, to pass from the temporal field into the frequential field and to calculate the impedance or admittance. The main field of application is the sounding of the concrete piles, but also that of the foundation pits, concrete supporting-wall units, piles and steel caissons. **See Figure 21**

PILE THROTTLE
Obturateur de pieux
Equipment and Tools
Syn. with PILE OBTURATOR

PILE TRESTLE
Palée
Temporary Construction
A set of posts, winds-bracing, beams, etc., constituting a provisional bearing and which is used in construction or repair of works.
A pile trestle can be carried out of various ways; we can distinguish in particular:
- **steel frame bents** *(les palées en charpente métallique),* constituted by tubular scaffolding elements;
- **English bents** *(les palées anglaises),* see ENGLISH BENT;
- **timber works** *(les palées en bois),* whose the most rudimentary structure consists of a stacking of balks or sleepers. This type of piling is used for very reduced height. The most usual structure of a timber work includes piles or posts driven into the ground joined between them by horizontal tying and braced by cross braces. Posts are jointly joined, on the head, by a pile cap on which rest temporary bearings ones and possibly the launching roller bracket; **See Figure 22**
- **concrete bents** *(les palées en béton)* constituted by four primary parts:
  - equipment,
  - piling head,
  - shaft or actual piling,
  - foundation.

Syn. with TEMPORARY PILE FRAME

PILE UP
Emmètrer
Handling and Metrology
To pile materials of a way to be able calculating their volume.

(SHEET-) PILE VIBRATORY DRIVER
Vibrofonceur
Equipment and Tools
A device used to drive tubes for piles, sheet piles and precast piles or to pull up sheet piles.
This machine uses the principle of the one-way vibration in a vertical plan; it is made up of one or several engines driving off-centre imbalances, of a jigging system (on springs) and of a fixing helmet allowing, by tightening using hydraulic actuating cylinders, to support the vibrating (sheet) pile driver and the part to be sunk. During the sinking or pulling up, the vibration destroys the lateral friction and that allows to provide at the toe important forces. A set of vibropiling is made up of:
- *one or two vibrating (sheet) pile driver in tandem,*
- *a helmet with claws or hydraulic actuating cylinders,*
- *a set on the ground including an enclosure, a set of cables connecting the vibrating (sheet) pile driver to a box push-button, and a power generator,*
- *a tracked jib crane.*

Syn. with VIBRATING (SHEET) PILE DRIVER

PILE WORK
Palée
Construction.
A close array of piles or sheet piles, embedded into the soil, intended for supporting grounds or masonry. Syn. with SHEET PILING

PILE-CAGE SPACER
Cale à béton
Construction of R.C. and P.C.
Syn. with SPACER; BAR CHAIR

PILE-DRIVING HAMMER
Marteau
Equipment and Tools
Syn. with HAMMER; SHEET-PILE DRIVING HAMMER

PILE-DRIVING RESISTANCE
Refus
Foundation
Syn. with REFUSAL

PILES BUNCH
Bouquet de pieux
Foundation
Set of piles of which heads are united by distance pieces.

PILES LAYOUT
Implantation de pieux
Foundation
The situation of piles in the space. A fixed, solid and well-protected benchmark system, allows to locate effortlessly on the building site the exact position of piles by optical sight and measurement of lengths.

PILES *or* SHEET-PILE ENCLOSING
Encrèchement
Foundation
Syn. with ENCLOSING

PILING
Englue; Gerbage; Pilotage; Pilotis; Estacade
Defects(Painting); Equipment and Tools; Foundation; Construction
1. A too thick wet paint film. This defect entails during the drying defects such as ripples, alligatoring, etc.
2. The vertical storage of drill rods,gathered in stick, in the drilling derrick.
3. Set of piles forming the foundations of a construction.
4. Set of piles gathered in head by pile caps or sandwiched between double members beams.
5. Syn. with PILE.
Syn. with PILOTIS
6. Syn. with BARRICADE OF PILES; PIER (ON PILES)

PILING (UP)
Emmètrage
Metrology
Syn. with STACKING

PILING FORMULAE
Formules de battage
Foundation
Syn. with DRIVING FORMULAE; PILE (DRIVING) FORMULAE

PILING HAMMER
Mouton
Equipment and Tools
Syn. with DROP HAMMER; PILE HAMMER; RAMMER

PILLAR
Hague. Pilier à bras; Chandelle; Colonne; Pilier
Pit; Temporary Construction; Construction
1. Syn. with ARM PILLAR
2. Syn. with DEAD SHORE.; POST; PROP, SHORE; STAY; UPRIGHT
3. Syn. with COLUMN; SUPPORT
4. Syn. with PIER; POST

PILLAR WITH TWIN COLUMN
Pile à fûts jumeaux
Construction
Intermediate bearing showing two identical shafts usually braced between them. This type of pier is used for work with lateral beams; each head of shaft receiving a bridge-support apparatus. **See Figure 23**

PILOT DRILL *or* PILOT HOLE
Trou pilote
Metal Construction
A small drill used to start a hole in order to ensure a larger drill running true to center. **See Figure 24**

PILOT HOLE
Trou pilote
Work
A small hole drilled ahead of a full-sized, or larger, borehole Syn. with PREBORING

PILOT TEST CONCRETE
Béton témoin ou de convenance
Building Materials
Concrete that allows to verify the convenience of the proportions of the study test concrete in the conditions and with means that will be used on the site. To this end one makes standardized cylinder tests that will be crushed at 7 and 28 days after conservation at 20°C in a damp environment.

PILOT TUNNEL
Galerie pilote
Earthwork
A small tunnel or shaft excavated in the center, and in advance of the main drivage, to gain information about the ground and create a free face, thus simplifying the blasting operations.

PILOTIS
Pilotis
Foundation
Syn. with PILING

PIN
Goujon; Goupille; Goujonner; Cheville
Equipment and Tools; Work; Materials
1. The axle of rotation of a pulley.
2. A piece of cylindrical, conical or derived shape, intended for passing through one or several pieces to ensure the keeping of their position. Syn. with BOLT; GUDGEON
3. Syn. with DOWEL; GUDGEON (STONES); JOGGLE
4. Syn. with BOLT; PEG; STUD

PIN JOINT
Rivure
Metal Construction
Syn. with RIVETING.

PINCERS
Tricoise; Triquoise
Equipment and Tools
Pincers used to hold or pull nails or studs.

PINCH BAR
Palfer; Pied-de-biche
Equipment and Tools
1. A kind of lever used by quarry workers to lift or detach stones from a bench.
2. Syn. with CLAW BAR; NAIL DRIVER; WRECKING BAR

PINCHING
Croquage
Metallurgy
In sheet-metal working, light lifting of the edges of a sheet metal sheet (with the mallet or machine) carried out before the rolling operation of this one so as to obtain a flawless cylinder.

PINE
Pin
Building Materials
A tree of the coniferous trees family. It has a density that ranges from 0.40 to 0.85 according to the species and of which wood is used to make boards of formwork, balks, rafters, etc.

PINE KNOT
Oeil-de-perdrix
Defects (Building Materials)
A dark-colored point located in the middle of the knot of a wood and which is the indication of a rather advanced rot.

PINHOLES
Piqûres
Defects (Painting)
Varieties of initial defects characterized by the appearance on the surface of a paint film, of multiple porosities resembling to pinholes.

PINNACLE
Pinacle
Construction Term
A crowning termination of a buttress or a vertical bearing point such as the pier buttress. Pinnacle has a quadrangular or polygonal section and it is ended by a cone or a pyramid. It does not have only one decorative role, it is especially used as a load in order to prevent the creep of the head of the buttress or abutment under the weight and the thrust of the masonry.

PINNING UP
Comblement d'affouillement
Foundation; Construction
1. The backfilling by tamping or ramming with dry concrete bags, of the space (underwashing) existing between the foundations of a work and the bed of a waterway and that is due to the erosive action of waters.
2. Syn. with FILLING OF DECK

PIONEER
Pionnier; Bulldozer
Equipment and Tools
Syn. with BULLDOZER

PIPE
Canalisation; Buser
Civil Engineering
1. Conduct intended for water, gas or electricity supply and for the draining of rainwater or liquid wastes. Syn. with CANALISATION; CONDUIT; DUCT; PIPELINE; PIPING
2. Syn. with BARREL

PIPE
Tuyau
Civil Engineering Structure; Building Materials
1. Circular hydraulic work which can, however, if of a large diameter, be used as a pedestrian, cattle, game, or road crossing. Pipes are classified according to their nature, diameter, and class strength. The interior diameter is always expressed in millimeters (nominal diameter).
2. Hollow cylindrical element, especially used to drain and to clean up (drainage or supply water). Pipes are made of various matters (cast iron, asbestos cement, concrete, PVC, etc.). Among the most used materials for work, we can distinguish :

- **asbestos cement pipe** *(le tuyau en amiante-ciment)* manufactured in the presence of water with a homogeneous and intimate mixing of cement and fibers of asbestos, which is particularly nonreactive to aggressive agents and with an easy implantation (the manufacture of this kind of pipe has been abandoned for medical reasons);
- **reinforced concrete pipe** *(le tuyau en béton armé)* is mechanically manufactured like the concrete pipe, but including continuous reinforcements according to the generatrixes, as well as driving bands or single turns (up to 3.50 m diameter);
- **concrete pipe** *(le tuyau en béton ordinaire)* is mechanically manufactured by a process which guarantees a high compactness of the concrete. It is used in cleansing and little buried drainage;
- **centrifugally cast pipe** ***or*** **spun pipe** *(le tuyau centrifugé)* is manufactured by casting process in horizontal cylinders which turn at a high speed: the mortar is poured into cylinders and a centrifugal force distributes it

on the periphery thanks to a strong compression;

- **pipe with median steel tube with double coating of reinforced concrete.** *(le tuyau à tube médian en acier avec double revêtement en béton armé),* which is made up of:
  - a median sheet steel tube finished with parts of joint,
  - an interior revetment of reinforced concrete, which is generally centrifuged,
  - an exterior revetment of vibrated reinforced concrete.

The median tube ensures the tightness of the pipe, and the concrete on revetments (interior and exterior) protects the metal tube against any corrosion attack.
Syn. with TUBE

PIPE AQUEDUCT
Pont-conduite
Civil Engineering Structure
Aqueduct into which the water of a canal is carried, to cross a waterway, a dip, or a basin.
Syn. with PIPE FLUME

PIPE CATCH
Arrache-tube
Equipment and Tools
Syn. with BULLDOG SPEAR; DRAWER PIPE

PIPE CLAMP
Collier de serrage
Materials
Syn. with CLAMPING RING; PIPE CLIP

PIPE CLIP
Collier de serrage
Materials
Syn. with CLAMPING RING; PIPE CLAMP

PIPE CULVERT
Buse
Civil Engineering Structure
Small hydraulic or road structure made of concrete (reinforced or not), baked clay, metal or plastic pipe with a circular, elliptic or ovoid form. Syn. with BARREL; CHANNEL TUBE; DUCT; SLEEVING. **See Figures 25 and 25a**

PIPE DUCT
Gaine technique
Construction
Accessible device made in a work and where different pipes for various fluids are gathered.
Syn. with SERVICE DUCT

PIPE FLUME
Pont-conduite
Civil Engineering Structure
Syn. with PIPE AQUEDUCT

PIPE JACKING
Fonçage
Earthwork
Syn. with DRIVING; PUSHING; SHAFT SINKING

PIPE FREEZING
Tube congélateur
Foundation
Syn. with FREEZING TUBES

PIPE PILE
Tube
Foundation
Very thick steel part used to implement driven cast-in-place piles.

PIPE SLEEVE
Fourreau
Construction
Syn. with EXPANSION SLEEVE; SLEEVE

PIPE CATCH
Arrache-tube
Equipment and Tools
Syn. with BULLDOG SPEAR; DRAWER PIPE

PIPE CUTTER
Coupe-tube
Equipment and Tools
A type of vice with a cutting wheel and rollers used to cut pipes which is turned around the pipe by gradually tightening a screw which brings the wheel closer to rollers. Syn. with CASING KNIFE; INSIDE CUTTER

PIPE RACK
Râtelier à tubes
Construction
Row of vertical stanchions kept in separated position by rails and which have wind braces at fixed points. In this way, the rack supports usually horizontal pipings, in vertical layers, which are therefore superposed and relatively next to each other.
By extension, set of successive simple or multistory portal structures, supporting horizontal piping layers [pipe rack (over and obstacle)].

PIPELINE
Canalisation
Civil Engineering
Syn. with CANALISATION; CONDUIT; DUCT ; PIPE; PIPING;

PIPING
Busage; Renard; Canalisation
Sanitary Engineering and Drainage; Foundation; Civil Engineering
1. Implementation of ducts.
2. Syn. with BLOW; BOIL
3. Syn. with CANALIZATION; CONDUIT; DUCT; PIPE; PIPELINE

PIPING BRIDGE
Bâche
Civil Engineering Structure
Small metal bridge which bears water, gas, or electrical pipe, above a roadway, a railway or a waterway.

PIPING CONDITION
Condition de renard
Foundation
Syn. with BLOW'S CONDITION

PIPING REDUCER
Réducteur de tubage
Equipment and Tools
Adapter which allows to connect two tubings of different diameter.

PISCIFORM PILE
Pile pisciforme
Construction
Intermediate support built in a river, with a round-shaped upstream cutwater and a very pointshaped downstream cutwater. This constructive arrangement facilitates the water runoff, especially when the stream is very violent.

PISOLITE
Pisolite
Geology
A sedimentary rock, usually a limestone, made up chiefly of pisoliths cemented together; a coarse-grained oolite.

PISOLITH
Pisolithe
Geology
One of the small, round, or ellipsoidal accretionary bodies in a sedimentary rock, resembling a pea in size and shape, and constituting one of the grains that make up a pisolite. It is often formed of calcium carbonate, and some are thought to have been produced by a biochemical algal-encrustation process. A pisolith is larger and less regular in form than an oolith, although it has the same concentric and radial internal structure. The term is sometimes used to refer to the rock made up of pisoliths.

PISOLITHIC
Pisolithique
Geology
Of a structure which contains pisoliths; pisolithic limestone.

PISTON EFFECT
Pistonnage; Pistonnement
Foundation; Civil Engineering Structure
1. Aspiration phenomenon carried out in a borehole in the ground, during the increase of the drill pipe stand.
2. Air compression and repression effect due to the passage of convoys in roadway or railway tunnels.

PIT
Carrière; Fouille; Fosse
Building Materials; Construction
1. A quarry or excavation worked by the open-cut or underground method to obtain material of value.
We can distinguish:

- **manhole of quarry** *(la carrière à bouche),* underground exploitation whose deposit outcrops following the hillside and to which we access through a gallery;
- **open (cast) quarry *or* open pit** *(la carrière à ciel ouvert)* in which the deposit appears in a cliff, following a hillside or again in a flat ground;
- **well quarry *or* raise** *(la carrière à puits),* underground exploitation whose deposit is located at a great depth and to which we access by a well;
- **inclined plane quarry** *(la carrière à rampe)* also called *incline quarry,* and whose deposit does not surface but stands in a depth so that we can access there by a simple ramp;
- **underground benching** *(la carrière souterraine)* in which the deposit appears as a surfacing bench or deeply buried bench;
- **serviced pit *or* quarry for roadmaking aggregates** *(la carrière de viabilité),* exploitation from where we extract and prepare development materials.

Syn. with QUARRY

2. Place from where we extract pit materials (sands, gravels), usually underwater by dredging. Syn. with DREDGING

3. Excavation carried out in the ground to receive liquid or solid products in deposit. Syn. with TANK

PIT BOARDING
Plionnage
Temporary Construction
Sheeting of a small pit.

PIT GRAVEL
Ballast
Building Materials
Small stone stemming from the crushing of granite and which is more than 3 cm. Syn. with BALLAST

PIT PLANT
Jour de mine
Pit
All the surface pit installations.

PIT PROP
Etai
Temporary Construction

1. Temporary wooden or metal part used to support or to keep a part of work in unstable balance, the walls of a trench, a vault, etc. Following its position or its role, the prop is called:
- prop or dead shore;
- shore;
- staying bed;
- raking shore.

2. Lengthened part which provisionally supports a chunk of work or formwork and which essentially functions in compression.

Syn. with FRAME; PROP; SHORE; STANCHION; STRUT. **See figures 26 and 26a**

PITCH
Brai; Enrocher; Brayer; Paver
Materials; Foundation and HydraulicWorks; Tightness; Work

1. Waste of partial evaporation or fractional distillation of oil, tar or other organic matters. Dark brown or black, viscous or solid, fusible and binding substance that is used to cover roof. Syn. with COAL TAR PITCH

2. Syn. with BED

3. To hot-apply pitch

4. To cover a surface with paving stones or slabs.

PITCH
Rampant; Empierrer; Pendage
Construction; Civil Engineering; Stratigraphy

1. Capping of a wing wall which has the same incline as the embankment that it limits. Also called *straight rampant.* Syn. with RAMPANT (OF WING WALL).

2. Syn. with METAL

3. Syn. with DIP; 1NCLINAISON

PITCH OF RIVETS
Pas de rivure
Metal Construction
Gap taken from one axis to another and which separates two consecutive rivets set on a same line. Syn. with BACK GAUGE. **See Figure 27**

PITCH OF STRANDING
Pas de toronnage
Nomenclature of Materials
Pitch of the helix whereby a thread or a cable is rolled up in a stranded cable.

PITCHE
Pitche
Equipment and Tools
Tool used by quarry workers to drive out or to break a stone following a given line.

PITCHED FOUNDATION
Hérisson
Foundation
Syn. with MATTRESS;.SOLING

PITCHER
Ognette
Equipment and Tools
Chisel with a very narrow cutting edge used by masons to carry out recesses. Syn. with CHISEL

PITCHING
Enrochement; Perré; Pavage; Blocage
Hydraulic Work; Construction; Masonry and Civil Engineering
1. A coating of protection applied to materials (stone or concrete blocks) that are or embedded on earthen slopes of irrigation and drainage canals, banks of river, etc. to protect them from the erosive action of the water. Syn. with BEDDING; ENROCKMENT; RIP-RAP; ROCKFILL
2. Inclined covering made of dry or roughcast stones, used in masonry to keep the shape of a slope which is exposed to the gulleyings or the banks of a waterway. To be effective, it always needs a water draining system. Syn. with RIPRAP; STONE FACING
3. Syn. with COBBLESTONES; PAVEMENT; PAVING
4. Set of cobblestones provisionally layed beside others.

PITCHING CHISEL
Chasse
Equipment and Tools
Hand tool used by quarry workers and made of a kind of rectangular burin with a convex surface; sometimes fitted. The pitching chisel replaces the axhammer. Syn. with PITCHING TOOL

PITCHING TOOL
Chasse
Equipment and Tools
Syn. with PITCHING CHISEL

PITCHPINE
Pitchpin
Building Materials
Pine coming from North America which gives a sticky wood, not very elastic, very dense and which often shows ring shakes. This wood was formerly used to make piles and sheet piles.

PITTING
Piquage; Piqûre; Ecaillage
Painting; Defects
1. Hand-driven operation which consists in detaching oxides (rust, smithsonite) before the painting and which is done with hand-driven or pneumatic tools.
2. Wood alteration with small holes due to the attack of insects (Capricorn beetles, teredos, etc.).
We can distinguish the pitting in the strict meaning of the word that is the damage done by fresh wood insects and including black and white pittings. The attack cannot spread anymore on dry wood: pittings are said to be not active or died. By external appearance analogy, the term white pittings *designates, on dry wood, holes of wormhole insects. These pittings may be the symptom of an attack in progress, that is why they can be called active pittings.*
3. Syn. with SURFACE PIT
4. Syn. with SCALING

PITWOOD
Bois de mine
Temporary Construction
1. Syn. with MINE TIMBER
2. Various kinds of timber used at a mine, mainly as supports.

PLACE
Arrêter
Masonry
To put a quarry stone on its final location.

PLACE BACK TO BACK
Adosser
Construction
1. To apply a construction against another of greater size.
2. To implant a frame member next to another most important, to which it is or not linked (example: two assembled structural members back to back are called *leaning).*

PLACE A FRAME
Coffrer
Temporary Construction
To carry out a formwork. Syn. with FORM

PLACING
Mise en fiche
Foundation
Positioning of a precast foundation pile at the place where it must be sunk or driven. Syn. with SEATING

PLACING BY LIFTING
Mise en place par levage
Handling
Operation which consists in building a work (or in bringing it) below its final position and setting it up by lifting.

PLACING BY OVERBALANCING
Mise en place par basculement
Handling
Construction technique for steel decks, whose process is as follows: each span of the work is built above the corresponding abutment and is brought to its final place by swinging with cables connected to a tower of operation.

PLACING BY PUSHING
Mise en place par poussage
Handling
Practice which allows to put works in position, like frame or R.C tube, through an embankment with special head element. This process consists in sinking works horizontally into the ground, with jacks leaning on a reaction block. The captive ground is extracted according to the progress.

PLACING OF CONCRETE
Bétonnage
Construction of RC and P. C..
Syn. with CONCRETE POURING; CONCRETING

PLACE-LAY
Asseoir
Masonry
To level a masonry carried out in foundation. Syn. with ESTABLISH

PLAGIOCLASE
Plagioclase
Mineralogy
Any of a group of feldspars containing a mixture of sodium and calcium feldspars, distinguished by their extinction angles; crystal; triclinic; Mohs hardness, 6.

PLAIN CONCRETE
Béton ordinaire
Building Materials
Any unreinforced concrete in which the proportions of constituents are accurately measured but whose compressive and tensile strength are not controlled. **See Figure 28**

PLAN
Plan; Levé
Drawing; Topography
1. Syn. with DRAWING
2. Syn. With SURVEY

PLAN OF QUALITY ASSURANCE
Plan d'assurance qualité (P.A.Q)
Contract
Document which describes specific arrangements, as regards quality assurance, taken by an organization, to agree with requirements related to a product or particular service. This document specifies the general organization of the building site, the assignment of the jobs, personnel and material means, materials and supplies, procedures, conditions of check achievement.

PLAN OF SHEET PILE DRIVING
Plan de fonçage des palplanches
Drawing
Document constituted of all the drawings which characterize precisely and completely the characteristics of the sheet piles work to build (orientation, establishment, direction of water flow; in the case of work in watery site,

number and type of used sheet piles, length and level, ultimate set to give, etc.).

PLAN WITH DIMENSIONS
Plan coté
Drawing
Drawing of a part, a work, etc, with its dimensions. Syn. with DIMENSIONED DRAWING

PLANE
Plan
Various
Plain, flat, plane surface.

PLANE (OF VAULT)
Méplat
Defects (Civil Engineering Structure)
A typical damage of the arched works characterized by a deformation toward the inside of the cross section and bringing about by an increase in the curvature radius of the vault at the level of a haunch. This deformation also alters the geometry of the longitudinal section, it is often accompanied by scalings, stone spallings, pinchings of joints, and/or crackings of the facing.

PLANE FACE WALL
Mur à surface plane
Construction
Construction whose face can be straight, sloped or skew (an oblique wall can be set up sloped). The following describe some common walls:
- **plumb wall** *(le mur droit),* construction with vertical facing; the most usual case;
- **battered wall** *(le mur en talus),* construction whose visible facing has a batter, whereas the back face is vertical;
- **slant wall** *(le mur biais)* is limited by nonparallel vertical plans and its straight cross section pictures a rectangle. The plan pictures a trapeze. These walls can be set up battered;
- **sloping wall** *(le mur rampant),* particular case of battered wall whose slope is greater, especially in the direction of the length ; that is the case of wing walls.

PLANE TABLE
Planchette
Buildings Materials
Syn. with PLANK; SMALL BOARD

PLANIMETRIC POINT
Point planimétrique
Topography
Basic element of horizontal plane projection of topography or land situation. Its expression can be graphic or numerical. Points can be used :
- separately and representing the localization of a fixed element of the ground;
- connected to each other by a line which represents some topographic or land characteristics; in that case, the line must be defined and controlled by some points whose spacing takes the winding and the scale of the plan in consideration, according to trade practices.

PLANIMETRY
Planimétrie
Topography
Reproduction on a plan of all details or characteristic points of a terrain, reduced to a given scale. It is only limited to the measurement of straight lines and angles.

PLANISH
Planer
Metallurgy
To dress a sheet metal or section ; to make something plane.

PLANISHING
Planage
Metallurgy
Operation which consists in removing manually or mechanically deformations undergone by sheet metals and sections. Machines used for planishing, work in a continuous way (rollers) or by successive pressures (presses).

PLANK
Ais; Madrier; Planche; Planchette
Building Materials
1. Small board with a particular technical destination.
2. Syn. with BALK; BEAM; DEAL; THICK BOARD; (PIECE OF) TIMBER
3. Syn. with BOARD

4. Syn. with PLANE-TABLE; SMALL BOARD

PLANK OVER
Planchéier
Works
Syn. with BATTEN

PLANKING
Plancher; Planchéiage
Construction
1. Load-bearing work which is built horizontally. Syn. with FLOOR
2. Syn. with BOARDING; FLOORING

PLANNING
Planning
Contract
Graph established before the opening of a building site of construction or a work repair, which chronologically indicates the work phases with their predictive duration. This graph also indicates the contractual time limit of the work duration (Date of beginning and end of work).

PLANNING AND SCHEDULING
Planning
Contract
Table which indicates for each building site, the personnel working there, the absence forecasts (holidays, etc.), the supervision and foreseeable duration of each worker's contract on the building site. For the equipment, we make an identical planning, which takes revisions, time of use on the building site, etc., into account.

PLANT
Ficher; Implanter
Foundation; Topography
1. To sink a sheet pile, a post, etc, until the desired set. Syn. with DRIVE IN
2. To materialize the work layout on the ground with stakes, reference frames or other similar means. Syn. with ESTABLISH; IMPLANT

PLANT DRIVER
Conducteur d'engin
Work
Worker specializing in the driving of building site plants, so in handling that in earthmoving.

PLANT STRIP
Répare d'un fossé
Construction
Space left clear beyond a ditch to prevent ground crumbling in a next property. Syn. with SHOULDER

PLANT-MIXED CONCRETE
Béton prêt à l'emploi
Building Materials
Syn. with READY-MIX CONCRETE

PLASH
Batillement
Hydrology
Syn. with WAKE

PLASMA CUTTING
Coupage plasma
Metal Construction
A process of cutting metal in which the cutting and the evacuation of the metal are obtained by a jet of plasma.

PLASMA (CUTTING) TORCH
Chalumeau à plasma
Equipment and Tools
Device used for thermal cutting of concrete or steel and whose principle consists in the constriction of an electrical arc enveloped in a jet of gas. We obtain this constriction by putting the arc and the gas in the water-cooled nozzle orifice; the arc is fed in a direct current. The electrode which builds the cathode is a refractory material; the anode is either the nozzle or propulsion nozzle of the blowtorch, or the piece to work. The temperature at the exit of the nozzle ranges from 10,000 to 15,000°C.

PLASTER
Plâtre; Plâtrer
Hydraulic Binders; Work
1. Hydraulic product obtained by dehydration and more or less elaborate pulverization of

gypsum or hydrated lime sulfate. Syn. with GYPSUM
2. To coat with plaster.

PLASTER CONCRETE
Béton de gypse
Building Materials
Syn. with GYPSUM CONCRETE

PLASTER QUARRY
Plâtrière
Building Materials
Quarry where gypsum is extracted. Syn. with CHALK PIT; GYPSUM QUARRY

PLASTERER
Plâtrier
Work
Worker specializing in plaster work.

PLASTERING
Enduit
Masonry
Coating which we apply by successive thin layers on a vertical support of masonry or concrete, with a decorative and/or protection aim, or to standardize a surface needed to support another coating (paint for example). Syn. with RENDERING. **See Figure 29**

PLASTERING WORKMAN
Cimentier
Masonry
Worker who makes the mortar covering on walls and usually builds works where the cement (or the lime) is one of the main constituents.

PLASTERSTONE
Gypse
Geology
Syn. with GYPSUM

PLASTIC
Matière plastique; Plastique
Polymers; Building Materials
1. Macromolecular material which has a certain plasticity, that is to say apt to get bent (out of shape) in a permanent way at a given temperature.
2. Of a substance which gets out of shape under the effect of an external force and which keeps the acquired shape without rupture.

PLASTIC BEHAVIOR
Comportement plastique
Building Materials
Elastic reaction of concrete just before it breaks. Although the concrete shows some characters with the plastic reaction, it is recommended not to use the term *plasticity* for the concrete reaction before it breaks. Indeed, because of the influence of microcracking and consolidation on elasticity values, the hypotheses of the classic theory of plasticity are not satisfied. (We will keep an expression such as *plastic reaction,* until we understand this reaction better to give it a more precise name.) Syn. with INELASTIC BEHAVIOR

PLASTIC COATING AGENT
Agent de plastification
Polymers
Admixture of epoxydic resins used to increase the resistance to the fracture of hardened systems and decrease their brittleness; we also distinguish plasticizers or external plasticizers (usually esters) which can be considered as liquid fillers, from internal plasticizers which take part in the reticulation.

PLASTIC CONCRETE
Béton plastique
Building Materials
Any concrete whose slump measured with a slump cone lies between 5 and 9 cm with a tolerance of ± 2 cm. Syn. with BUTTERY CONCRETE

PLASTIC DESIGN
Calcul plastique
Strength of Materials
Pressures and deformations calculation pratice for elements of a reinforced or prestressed concrete construction, which rests on the premise that the achieved balance state stands inside the plastic field. Syn. with CALCULATION BY PLASTIC THEORY

PLASTIC EQUILIBRIUM
Equilibre plastique; Equilibre Rankine
Geotechnics
State of a mass whose each point is at the breaking point. Syn. with RANKINE EQUILIBRIUM

PLASTIC FILM
Film
Building Materials
Syn. with FILM; MEMBRANE

PLASTIC MALLEABLE CONSISTENCY
Consistance plastique
Building Materials
Plasticity condition of a mortar determined by the fact that if it is taken and tighten in the hand, it puts easily in sphere, while letting the water slightly ooze, and that the same sphere, put on a plane surface, keeps its shape without becoming flatter or cracking.

PLASTIC MASTIC
Mastic plastique
Materials
Product which only partially takes its initial form after deformation, elongation, or compression.

PLASTIC REINFORCED BY GLASS FIBERS
Plastique renforcé par des fibres de verre (PRV)
Building Materials
Composite material made up of glass fibers coated within a polyester or epoxy mold.

PLASTIC SOIL
Sol plastique
Geology
Ground which is likely to have plasticity in the presence of water.

PLASTIC STRATA
Terrain plastique
Geology
A ground of clayey nature. (In the case of tunneling, the ground pressure leads it to creep slowly, without breaking. It penetrates into the gallery by solutions of continuity of the support and sometimes by blowing the ground. The plastic flow is not accompanied by a perceptible increase in the moisture content in the ground slice which surrounds the work.)

PLASTICIMETER
Plasticimètre
Assaying Equipment
Equipment for measuring the plasticity of the fresh concrete. Major types are the:

- ***Perrier* concrete plasticimeter** (*le plasticimètre à béton Perrier),* a hand-held instrument whose functioning is identical to that of a vane. It is made up of a removable head with three fins connected by an axis to a case containing the mechanism of measurement. On this case is fixed a handle. The principle of this equipment is based on the measuring of the shearing strain in rotation applied to the concrete. To perform a measurement the fins of the equipment are plunged into the material to be studied, until the mark located on the axis is reached; the equipment is slighly shaken to reconstitute the surface of material, then the handle is slowly turned in the direction of the needles of a watch. When the torque applied reaches the characteristic value of plasticity, fins start to turn. It is then enough to directly read the indicated by a mobile pointer;
- ***EDF* plasticimeter** (*le plasticimètre EDF*), is constituted of a vertical cylinder with a diameter 107 mm and height 120 mm, communicating with the lower part by a horizontal chute closed by a trap door. The equipment is fixed on a vibrating table giving an one-way vibration. One fills the cylinder with mortar which one placing into three layers, vibrating them slightly; one levels and one lays out on the mortar a lid provided of a graduated rod. To perform the test, the trap door being open, one engages the vibrator for one duration for 30 seconds and one measures the height of mortar which is flowed in the equipment; **See Figure 30**
- **rapid plasticimeter** (*le plasticimètre rapide*): Syn. With the *PERRIER* CONCRETE PLASTICIMETER.

PLASTICITY
Plasticité
Strength of Materials; Metallurgy
1. The property of a material to be able of bending (out of shape) (within a certain limit) under a stress and to find its initial state when this stress disappears.
2. The property of a solid in the field of the permanent deformations.
3. A theory of experimental origin whose object is to explain and to envisage the behavior of a solid in this state of deformation. (This theory constitutes the prolongation of those of the elasticity and strength of materials when the structure is solicited beyond the elastic field.)
4. The property of a metal that allows it to undergo permanent deformation without appreciable volume change, elastic rebound, or rupture.Syn. with PLASTICIZER

PLASTICITY LIMIT
Seuil de plasticité
Strength of Materials
The value of the stress or unit stresses from which permanent deformations appear.

PLASTICITY MEASUREMENT
Mesure consistométrique
Test of Materials
The determination of the plasticity, the liquidity of various products (oil, concrete, paint, etc.) with proper instruments according to the material to be studied. Syn. with CONSISTOMETRIC MEASUREMENT

PLASTICITY NUMBER
Indice de plasticité
Geotechnics
A difference numerically expressed between the plasticity limit and the liquid limit. The index of plasticity, noted I_p gives a measurement of the extent of the zone for which the material is plastic and is liable to great deformations. Syn. with INDEX OF PLASTICITY

PLASTICIZE
Plastifier
Materials
To mix into a product a plasticizer to endow inherent properties to it, in particular, plasticity.

PLASTICIZER
Plastifiant; Flux; Fluidifiant
Hydraulic Binders; Painting; Polymers; Materials
1. An admixture mixed in limited quantity in the concretes or mortars and which has the capacity to make the concrete more fluid without, however, harming its qualities of strength. Its addition brings about deflocculation of the binder (the total separation of the grains) and decreases intergranular frictions.
The plasticizer enables a mixing water reduction to obtain a mortar or more compact concrete with higher mechanical performances, with a reduction of the shrinkage. Plasticizers are mostly lignosulfonates, anionic soaps or nonionic synthetic detergents. We can distinguish:
- **water-retaining** (*les plastifiants rétenteur d'eau*), admixtures having as the primary characteristic the ability to retain the water, thus ensuring better hydration of cement. Thereby they ensure a good cohesion of the concrete, its plasticity and decrease the phenomenon of bleeding;
- **water-reducing** *(les plastifiants réducteurs d'eau),* admixtures enabling, for a comparable workability, to reduce the quantity of mixing water of at least 6.5%;
- **high-water-reducing** *(les plastiants hauts réducteurs d'eau),* products which, mixed in the concrete enable, with the same workability, increasing strengths by a strong reduction of water proportioning of at least 12%.

2. An admixture that upgrades the flexibility of paint films when the resin used is too brittle.
3. An admixture intended for increasing the elongation to the breaking of hardened organic binders and to decrease their brittleness. External plasticizers are distinguished (mostly of esters), which can be regarded as liquid charges because they are not integrated by chemical connection in the macromolecule, and, in the case of the two-parts reacting by polycondensation, internal plasticizers that takes part to the reaction.
4. Syn. with FLUIDIFIER

PLASTICS
Matière plastique
Polymers
Syn. with PLASTIC

PLASTIMETER
Plastimètre
Assaying Equipment
Apparatus for measuring the plasticity of concrete.
We can distinguish:
- **concrete tube plastimeter** (*le plastimétre à tube pour béton),* which basically comprises a tube from 113 to 121 mm diameter and 752 mm tall and which is laid out in the axis of a basin of 253 mm diameter and 200 mm tall. The test comes true as for a real concreting. The central tube posed on the bottom is entirely filled with concrete; then it is raised with a single movement to a certain height *h.* The plasticity is characterized by the subsidence *A* of the concrete inside the tube, measured between the top of the raised tube and surface of the concrete. To facilitate the reading, one uses a disk provided with a measuring rod posed on the surface of the concrete;
- **cement grout tube plastimeter** (*le plastimètre à tube pour pâte de ciment),* of the same principle as that with concrete, that consists basically of a tube from 50 to 53 mm diameter, of 310 mm tall, centered on a basin of 108 mm interior diameter and 115 mm tall. So that the central tube can be filled with cement grout, the lower tightness is ensured displaying a rubber sheet at the bottom of the basin. In order to prevent that the moment of the uprising of the tube (5 mm), the grout from running out too quickly, one lays out with the bottom of the tube 700 balls of glass of 6 mm diameter kept by a sieve of 5 mm mesh. All these balls occupy a height from 60 to 70 mm. After the filling of the tube with the cement grout, a few moments of waiting are necessary to enable the climb of the bubbles of air placed between the balls. The test that consists in raising of 5 mm the internal tube brings about the flow of the grout through the balls. One is thus in the presence of a capillary viscosimeter.

PLASTISOL
Plastisol
Painting
Finishing lacquer vinyl copolymer based in dispersion in a volatile medium; they mostly are plasticizers used as thick coatings on metal.

PLASTOMER
Plastomère
Polymers
Macromolecular material endowed with a certain deformation, but which never finds its initial state and preserves so a certain value of permanent deformation (counterpart of *elastomer)*

PLAT BAND
Plate-bande
Architecture
Large and flat molding slightly projecting on the main plane of a wall.

PLATE
Feuillet; Panne; Métalliser
Building Materials; Carpentry; Metallurgy
1. Each thin layer that separates a whole in comparison with its sticking, sedimentation plan, etc.
2. An elementary part of a piling, (example: an elastomer plate).
Syn. with THIN SHEET
3. Wooden or metal part resting on the principal rafters, perpendicular to these and supporting rafters. Syn. with PURLIN. **See Figure 31**
4. Syn. with METALLIZE

PLATE
Plaque; Plaquer
Strength of Materials; Building Materials; Metallurgy
1. A solid bordered by two parallel plans and a cylindrical surface whose generatrixes are perpendicular to the two plans (The distance between the two parallel plans is the thickness *t* of the plate.) Syn. with SHEET
2. A plane part of which the thickness is small with regard to the other dimensions. Syn. with VENEER
3. A flat product intermediary between the universal mill plate and the sheet metal.

4. To carry out a veneering.

PLATE
Semelle; Platine
Metal Construction; Construction
1. A mostly square steel plate assembled by corner irons on the butts (head and foot) of the stanchions.
2. A sheet or cast iron plate interposed between the masonry and an I-girder bressumer.
3. A metal plate forming support or ensuring the distribution of a concentrated strain (example: the sole plate under a stanchion).

(FLANGE) PLATE
Plate-bande
Metal Construction
The incorrect name sometimes given to the flanges that compose the top and bottom booms of metal beams. **See Figure 32**

PLATE CONNECTOR
Plate-bande; Plaque d'assemblage
Construction; Metal Construction
1. A metal plate joining two pieces.
2. Syn. with FISH PLATE

PLATE FOUNDATION
Platée
Foundation
A foundation built under all the surface of a construction (term only little used in civil engineering structure). Syn. with GROUND SLAB

PLATED SHEET
Tôle plaquée
Metallurgy
A product obtained by corolling about 1100°C of a composite sketching, constituted by two stainless sheet steels separated by a refractory coating and surrounded by two thicker structural steel sheets.

PLATFORM
Tablier
Construction
Syn. with BRIDGE DECK; BRIDGE PLATFORM; DECK

PLATELAYER'S ADZE
Herminette
Equipment and Tools
Axe with crooked iron of which cutting edge is in a perpendicular plan to the handle and that is used by carpenters or timber men to trim, to nick, to carry out joints.

PLATFORM
Plate-forme; Patin; Sole
Civil Engineering; Construction
1. Strip of land occupied by a channel of communication including shoulders, sidewalks and side paths (track).
2. Syn. with SILL

PLATFORM (ON PILES)
Estacade
Construction
Syn. with STOCKADE

PLATFORM HOIST
Monte-matériaux
Equipment and Tools
A power-driven hoist made up of a provisional frame set up along a work under construction and allowing going up on a platform, by means of a winch or a hoist, materials necessary to the construction.

PLATFORM SUBWAY
Passage souterrain
Civil Engineering Structure
Syn. with SUBWAY; UNDERGROUND PASSAGE; UNDERPASS

PLATING
Placage; Metallization
Metallurgy
1. After a special surface processing, coating process by hot corolling of a metal sheet to be applied and of the basic metal. Plated steel sheet metals are thus obtained. Plating can be carried out on one or the two faces of the steel sheet metal. The stainless steel, nickel, copper are routinely applied according to this technique.
Metals used in plating are:
- **copper** (*le placage au cuivre),* the coating is carried out by application of a copper or cuprous alloy sheet metal on a basic steel sheet metal, the reciprocal adhesion of the

faces on the contact being obtained by a hot corolling, after special processing of surfaces preparation;

- **nickel** (*le placage au nickel),* which consists in covering the parent metal with a sheet of nickel, adhesion being obtained by rolling of the unit, after special processing of surfaces preparation;
- **aluminum** (*le placage d'aluminium),* which consists in covering the parent metal with an aluminum sheet, adhesion being obtained by rolling of the unit after special processing of surfaces preparation.

2. Syn. with METAL SPRAYING; METALLIZATION

PLATING PRODUCT
Produit revêtu
Metallurgy
A hot- or cold-rolled material covered over all its surface, either of a nonprecious metal (tin, zinc, etc.) obtained by soaking into a molten metal bath or by electrolysis, or nonmetal solid matter with the exception of vitrified enamels.

PLAY
Refuite; Jeu
Construction; Metal Construction
1. Syn. with CLEARENCE
2. Syn. with LOOSENESS

PLAY OF A CRACK
Rejeu d'une fissure
Defects
The relative movement of the two lips of a crack, resulting from throw, disflushing, and opening, compared with the surface of the covering of the work.

PLEISTOCENE PERIOD
Période pléistocène; Ere quaternaire
Geology
Syn. with QUATERNARY ERA

PLIABILITY
Flexibilité
Strength of Materials
Syn. with FLEXIBILITY

PLIERS
Pince
Equipment and Tools
The part of a lifting appliance constituted by two hinged arms on axis, forming scissors with cranked branches. The tension of the rope (or the cable) on the arms makes that this one grips tightly the object to be lifted.

PLINTH
Plinthe; Socle
Construction
1. Coursed ashlars that crowns head walls and return walls of the masonry bridges, and supports parapets or railings. The plinth, also called *cap, cornice,* etc., is more or less profiled to facilitate the water runoff in outside facings. It is equipped with dripstone or throats. For equilibrium reasons, the plinth can be anchored or supported by corbels. **See Figure 33**
2. The low part of some constructions serving as bearing, resting on the foundation or the ground. Its has an area bigger than it supports.

PLOT
Abaque;Schéma
Drawing
1. A graph with direct reading that facilitates numerical calculations. Syn. with CHART; GRAPH; NOMOGRAPHY
2. A drawing, on scale or not, very simplified, showing the essential elements of a work, part of work, etc.

PLOT PLAN
Plan parcellaire
Topography
A drawing showing all plots (of land), channels of communication and constructions.

PLOW
Défoncer
Earthwork
Syn. with RIP

PLUG
Scellement; Sceller; Tamponner
Work
1. The final connection with mortar or resin of the posts of a guard rail, of a rails, of a metal

anchoring into a masonry, the ground or a concrete structure.
2. An operation that consists in drilling a hole or in carrying out a reservation by setting up a metallic element, mostly constituted by a rod subjected to tensile strengths. The fastening of the rod to the drilling or in the reservation is carried out using a filling material.
If one applies to the bedded rod a force F, *the filling material is solicited by a shearing force. All around the rod are formed cone pawls which take a slope of 45° to the rod and by an effect of rotation are subjected to a compressive force being reflected in the walls of the drilling.*
The resistance of sealing depends of:
- *the section of the rod, its length and surface quality;*
- *the compressive strength of the filling material, under the influence of the rotation of the cone pawls;*
- *the compressive strength of the walls of the drilling;*
- *the adhesion of filling material on the walls of the rod and drilling or the grout pocket.*

Syn. with BED; FASTEN; FIX IN
3. To execute a cavity or a hole in a wall intended for receiving a stud or a sealing.

PLUGGED HOLE
Trou tamponné
Work
An opening (in a wall) furnished with a wooden plug.

PLUGGING
Colmatage
Work
The sealing of a crack, a water inrush, etc.

PLUGGING CHISEL
Tamponnoir
Equipment and Tools
A shock tool, which is a kind of punch sharpened in the tip, being designed to bore by means of percussion holes into a wall. Syn. with PLUGGING DRILL

PLUGGING DRILL
Tamponnoir
Equipment and Tools
Syn. with PLUGGING CHISEL

PLUGGING GROUT
Coulis colmatant
Materials
A preparation injected as filler whose two main components are mixed at the last moment so that they set very rapidly. It is used when the walls of a cavity have outlets that must be plugged before being filled with grout.

PLUGGING UP
Colmatage
Metallurgy
A complementary processing that follows the aluminum anodization. After electrolysis the coat of alumina is porous. This porosity is plugged by a boiling water processing that turns partially the alumina into hydrated alumina, hence an increase of volume that clogs pores. The plugging up can also be made by immersion into a boiling solution of sodium bichromate.

PLUMB
Aplomb; Plomber; Plomb
Construction; Equipment for Measure and Control
1. Direction which is perpendicular to the plan of horizon.
2. A construction, element, etc., perfectly vertical. (A wall is plumb, when it is vertical and in equilibrium. This position is checked either with sight instruments, or with a plumb line).
Syn. with PERPENDICULARITY; APLOMB
3. To check the verticality of a wall, a post, etc., with a plumb line.
4. Ballast of the plumb line. Syn. with BOB; PLUMMET

PLUMB ARROW
Fiche plombée
Topography
Pointed iron rod of small diameter ended by a buckle used by surveyors to materialize on the ground ranges of chainages. This arrow is ballasted above the point by a small massing lead, which allows, during the chaining of a sloped ground, to drop it at each chainage (weighting ensures the verticality of the fall).

PLUMB BOB
Fil à plomb
Equipment for Measure and Control
Syn. with PLUMB LINE; PLUMMET

PLUMB DEFECT
Défaut de verticalité
Defects (Civil Engineering Structure)
A geometrical anomaly that can be observed in a work and that appears as an abnormal inclination in a vertical plan of a structural element; the plumb defect often has several causes and that can be of origin, stabilized or evolutionary.

PLUMB DEFECT OF SUSPENDERS
Défaut de verticalité des suspentes
Defects (Civil Engineering Structure)
Concerning the suspension bridges, longitudinal incline of one or several suspenders to the vertical.
There are:
- **generalized incline** (*l'inclinaison généralisée)* in the even direction of all suspenders of an even form, that results in a relative displacement between the carrying cable and consecutive deck either to a untimely locking of the deck or to a slipping of cable saddle on a pylon;
- **aleatory inclinations** (*l'inclinaison aléatoire)* of some suspenders, that is the sign in general terms of the slipping of the corresponding fastener pieces.

PLUMB LEVEL
Niveau de maçon
Equipment for measure and Control
Triangular equipment on the top of which hangs a plumbline allowing the horizontality or declivity of a wall, a beam, etc., to be checked. The basis of the triangle is marked in its axis by a notch; the position of the line indicates then according to its position, the horizontality or declivity of the checked element. Syn. with MASON'S LEVEL; VERTICAL LEVEL

PLUMB LINE
Ligne à plomb; Fil à plomb
Work; Equipment for measure and Control
1. The direction marked by the plumb bob.
2. A device used to produce a vertical line between a survey instrument and the reference point over (or sometimes under, in underground work) which it is set. Special plumb lines are used in a vertical shaft to transfer a fixed or an azimuth angle from the surface to underground workings with the purpose of orientation.
3. Syn. with PLUMB BOB; PLUMMET

PLUMB WALL
Mur droit
Construction
Syn. with STRAIGHT WALL.

PLUMBAGO
Graphite
Metallurgy
Syn. with GRAPHITE

PLUMBING
Mise en ligne
Masonry
Arrangement of the quarry stones and ashlars so that their facings are plumb one on the other.

PLUMB-LINE SHAFT
Puits du fil à plomb
Construction
A shaft reserved at the proximity of the maximum section of the body of a barrage to make observations there on the movements of the barrage to the base (the measurement of verticality in particular).

PLUMMET
Fil à plomb; Plomb
Equipment for Measure and Control
1. Syn. with PLUMB BOB; PLUMB LINE
2. Syn. with BOB; PLUMB

PLUNGER TUBE
Tube plongeur
Equipment and Tools
A device used to concrete diaphragm walls or in watery site. It is constituted by a pipe made up of of concreting tube elements, overcome by a funnel-shaped hopper or connected directly with a pump. Syn. with TREMIE TUBE

PLUTONIC ROCK
Roche plutonique
Geology
Igneous rock which was formed in depth and only appears by the play of the deformations of Earth's crust and the erosion; distinguished from eruptive rock formed at the surface. Syn. with IGNEOUS ROCK

PLY
Pli
Nomenclature of Materials
1. Each wooden folia going into the composition of the plywood. Plies are laid out to crossed grains, in a symmetrical way in comparison with the core which is the central ply.
2. A manufactured tight film or sheet of a geomembrane, of a homogeneous chemical composition, constituting the basic element for the manufacture in factory of a mono- or multiply geomembrane.

PLYWOOD
Contreplaqué
Building Materials
A product made up of wooden thin sheets designated under the name *plies,* obtained by unrolling or cutting, and pasted between they of the such sort that plies in contact never have their grains parallel.
Among the main types of the most used plywoods, we can distinguish:
- **bakelized** (*le contreplaqué bakélisé*), of which visible faces are treated with the bakelite giving to the material an excellent resistance to bad weather;
- **laminboard** (*le contreplaqué lamellé*), of which the core is constituted of slates pasted between them and perpendicularly laid to the plan of the panel;
- **blockboard** (*le contreplaqué latté*), of which the core is formed by square or rectangular wooden boards on both side of which are arranged plies of veneering;
- **multiply** (*le contreplaqué multiplis*), which is a product made up of several plies;
- **sandwich** (*le contreplaqué sandwich*), whose core is of light matter and little strength.

PNEUMATIC
Pneumatique
Equipment and Tools
Of all equipments, tools or machines functioning with compressed air.

PNEUMATIC BUSH HAMMER
Bouchardeuse pneumatique manuelle
Equipment and Tools
A hand-held equipment that is a jackhammer in which the point tool is replaced by a granulating hammer. Syn. with HAND-DRIVEN BUSH HAMMER. **See Figure 34**

PNEUMATIC DRILLING
Forage à l'air
Work
Syn. with AIR-FLUSH DRILLING

PNEUMATIC GRANULATING HAMMER
Marteau bouchardeur
Equipment and Tools
Pneumatic tool used to bushhammer finish concrete; we can distinguish:
- **interdependent piston hammer *or* firmly piston hammer** (*le marteau à piston solidaire*), in which a piston is driven by a reciprocating motion of a low rate. This tool is mainly used to bush-hammer finish irregular surfaces;
- **free-piston hammer** (*le marteau à piston libre*), in which the piston is not interdependent of the tool and that strikes to high rate the tail of the granulating hammer.

PNEUMATIC HAMMER
Marteau pneumatique; Pistolet; Brise-béton
Equipment and Tools
1. A percussion device of which the tool is actuated by compressed air. Syn. with DRILL HAMMER
2. A light hand-held pneumatic hammer carrying tools as variously as burin, point tool, rivet set, etc.
3. Syn. with CONCRETE BREAKER; HYDRAULIC HAMMER

PNEUMATIC JACK
Vérin
Equipment and Tools
Syn. with HYDRAULIC CYLINDER; OIL CYLINDER

PNEUMATIC MORTAR
Mortier projeté; Gunite
Building Materials
A product made up of cement, water and aggregates having a dimension lower than 3.15 mm. The mortar is implemented by repression into a pipe and is thrown onto a wall by a compressed air blast. Syn. with GUN-APPLIED MORTAR; SHOTCRETE

PNEUMATIC PILE-DRIVING PLANT
Sonnette à vapeur *ou* à air comprimé
Equipment and Tools
Syn. with STEAM PILE DRIVING PLANT

PNEUMATIC RAM
Pilette pneumatique
Equipment and Tools
A tool used to tamp concrete. It is actuated with compressed air and constituted by a piston that displaces topdown and come to blow on the ram.

PNEUMATIC RIVETER
Marteau riveur; Riveuse à percussion
Equipment and Tools
Syn. with PNEUMATIC RIVETING HAMMER

PNEUMATIC RIVETING HAMMER
Marteau riveur; Riveuse à percussion
Equipment and Tools
A riveting apparatus powered by compressed air, mainly made up of a piston driven by a reciprocating motion. Herewith apparatus, the effort of percussion is steadier than in the hand-driven practice. Syn. with PNEUMATIC RIVETER

PNEUMATIC SPRAY PAINTING
Peinture au pistolet
Painting
Process that consists in pulverizing and spraying a paint onto a surface with pneumatic squirt guns that use the compressed air or hot pulverization.

PNEUMATIC TIRED ROLLER
Rouleau à pneus
Equipment and Tools
Syn. with MULTIWHEEL ROLLER

PNEUMATICALLY PLACED CONCRETE
Béton projeté
Building Materials
Syn. with AIR-PLACED CONCRETE; SHOTCRETE; SPRAYED CONCRETE

PNEUSOL
Pneusol
Civil Engineering
A process of soils consolidation that associates the use of all or part of old tires (roll bands or flanks), linearly linked or in layers likely to bear important tension strains, with that of the grounds of all nature. Applications are numerous: supporting works, foundation rafts, protection of banks, etc.

POCKET
Auget; Poche
Masonry; Various
1. Syn. with CHANNEL
2. A concentration of liquid or other matter inside a cavity.

POCKET MICROSCOPE
Métroscope
Equipment for Measure and Control
A pocket microscope that allows the observation and measurement of objects, cracks, etc.

POCKET ROT
Pourriture alvéolaire
Defects (Building Materials)
A deterioration of the wood characterized by the complete destruction of the woody matter following disjoined small islands, seeming small cells, more or less distributed inside the mass of wood and carpeted by a coating of spawn.

POINT
Ficher; Jointoyer; Rejointoyer; Liaisonner
Masonry; Work
1. To stuff mortar into joints of a masonry using a pointer in order to bond courses between they correctly.

2. To fill (or garnish) for the first time pointings of a masonry, with mortar of suitable consistency. Syn. with TO GROUT
3. Syn. with REPOINT
4. Syn. with BOND; GROUT; JOINT; LINK

POINT LOAD
Charge concentrée ou ponctuelle
Strength of Materials
Syn. with CONCENTRATED LOAD.

POINT-LOAD STRENGTH TEST
Essai brésilien; Essai par fendage
Test of Materials (Construction of R. C. and P.C.)
Syn. with BRAZILIAN TEST; SPLITTING TEST

POINT TOOL
Pointerolle
Equipment and Tools
Syn. with MINER PINCHING TOOL; MOIL POINT

POINTED BLOCK OF STONE
Bec-de-flûte
Nomenclature of Materials
A quarry stone of which one end is dressed following a very lengthened shape.

POINTED SURFACE
Surface *ou* Taille pointée
Masonry
See CUTTING.

POINTER
Fiche à dents; Jointoyeur
Equipment and Tools; Masonry
1. A tool formed by a wooden handle prolonged by a serrated flat iron on both edges. This tool is used by builders to caulk or pack the mortar in the joints of a masonry. **See Figure 35**
2. A builder specialized in the carrying out of pointings.

POINTING
Jointoiement; Fichage de joints; Gobetis; Couche d'accrochage
Masonry
1. The filling of the joints of a masonry bond with mortar and that is carried out by repression and smoothing of the mortar with a spatula after the initial setting of this mortar. One also calls *pointing* the operation that follows the raking out of the joint (about on 3 cm depth) and the stopping with a fresh mortar which is tightened with force and that is then smoothed. Syn. with JOINTING; TOOLING
2. The pinning up of the masonry joints with mortar.
3. Syn. with DASH-BOND COAT; ROUGHCASTING

POINTING MATERIAL
Matériau de Jointoiement
Materials
Product intended for filling a joint with the intention to ensure bonding or sealing.

POINTING TROWEL
Spatule
Equipment and Tools
Syn. with SPATULA

POINT-LOAD STRENGTH TEST
Essai brésilien
Test of Materials (Construction of R. C. and P.C.)
Syn. with BRAZILIAN TEST; SPLITTING TEST

POISE
Poise
Metrology
The dynamic viscosity unit equal to 1 dyne-s/cm^2.

***POISSON* EFFECT**
Effet *Poisson*
Strength of Materials
The deformation of matter resulting from tension or compression in two orthogonal directions from the main direction.

***POISSON'S* RATIO**
Coefficient de *Poisson*
Strength of Materials
The constant ratio between linear variations of transverse and longitudinal deformations of a solid subjected to the tensile stresses or to the compression under the elastic limit.

This coefficient is used in the calculations of civil engineering structure of reinforced concrete to take account of elastic or viscoelastic deformations of materials. In general terms, it is considered in the calculations for a value equal to 0.20.

POKER VIBRATOR
Pervibrateur; Vibrateur interne; Aiguille vibrante
Equipment and Tools
1. An apparatus used for the internal vibration of the concrete. This apparatus is subjected to high-frequency vibrations; it mostly takes a torpedo or needle shape. This apparatus is usually connected to a flexible pipe which provides it the compressed air necessary for its functioning. The role of the internal vibrators is to increase the compactness of the concrete and its strength by the tightening of the various constituents and suppression of the spaces.
There are several types of poker vibrators:
- **needle poker vibrator** (diameter from 30 to 40 mm) (*le pervibrateur à aiguille*), intended for the internal vibration of the concrete and whose principle is as follows: an outlying weight turns to high speed inside a steel tube; this rotation to the high rate causes the vibrating of the tube. This apparatus functions with the compressed air, using a thermal or electric engine;
- **floating internal vibrator** (*le pervibrateur flottant*), used to vibrate big masses of concrete and that consists of a metal container inside whose is laid out a pneumatic vibrator. This box is drowned into the mass of concrete and because of the vibrations, goes up oneself on the surface by floating in the concrete mass poured around it; **See Figure 36**
- **internal vibrators assembled in series** (*les pervibrateurs montés en série*), devices of vibration equipped with multiple needles or torpedoes which are generally tractor-mounted. This unit is only used on very important building sites (barrages, etc.) because of the important quantities of concrete to be implemented quickly;
- **torpedo poker vibrator** (*le pervibrateur torpille*), strictly similar to the needle internal vibrator, with a tube of more important diameter (between 60 and 70 mm).

Syn. with IMMERSION VIBRATOR; INTERNAL VIBRATOR; PERVIBRATOR
2. Syn. with VIBRATING NEEDLE

POLARIZATION CURVE (Accelerated corrosion test of R.C. reinforcements)
Courbe de polarisation (Essai de corrosion accélérée des aciers pour B.A.)
Metallurgy
A curve adapted to the study of concrete admixtures by *Baumel* and that is founded on an electrochemical process allowing to detect the danger of corrosion of a metal in contact with an electrolyte, with the help of curve intensity/tension.
The reading of these curves allows to be made count if the reinforcement present in the concrete is active or passive, namely if the protecting oxide layer, that covers normally the metal, exists or is destroyed (locally or in totality). It allows also to evaluate the importance of the danger of corrosion according to values of the polarization current in terms of the corresponding tension.
Polarization graphs are plotted with the following equipment:
- *a potentiostat allowing to make vary linearly the potential of the steel electrode coated in the concrete, compared with a reference electrode;*
- *an electronic millivoltmeter monitoring variations of the potential difference between these electrodes*;
- *a recorder milliamperemeter.*

POLARIZED ELECTRICAL DRAINAGE
Drainage électrique polarisé
Metallurgy
A protection of steel from electrolytic corrosion due to stray currents. To the SNCF (French national railway company) it consists in establishing an one-way connection between the metallic structure to be protected and the rail in the vicinity of a substation. This connection is most often permanent, with intervention of a diode that prevents the passage of power from metallic structures to the rail.

POLARIZING *or* PETROGRAPHIC MICROSCOPE
Microscope polarisant ou pétrographique
Equipment for Measure and Control
Instrument used to examine and to search optical properties in the minerals and sections of transparent rocks, of a thickness in the region of 0.02 mm.

POLE
Hampe; Poteau; Ecoperche
Equipment and Tools: Construction; Temporary Construction
1. The handle of a paint brush.
2. Syn. with POST; STAKE; STANCHION; STUD
3. Syn. with STANDARD

(RANGE) POLE
Jalon
Topography
Syn. with MARKER; SIGHTING MARK; (SURVEYOR'S) STAFF

POLE BRUSH
Guipon
Equipment and Tools
A painter's brush fixed at the end of a long pole and having a certain incline that allows to paint in places hardly accessible.

POLE PLATE
Panne sablière
Carpentry
Syn. with WALL PLATE

POLING BOARD
Planche verticale de blindage
Earthwork
1. A forepoling board, driven horizontally ahead to support the roof when tunneling through running ground.
2. In trenching, either of a pair of side boards wedged apart.

POLING PLATE
Poling plate
Building Materials
A sheet pile of bent sheet steel and fitting together edges which is used to timber roofs of tunnel vault. These sheet piles constitute an alternative of the system *Iron grown bars* and are used instead of the independent needles used in this method.

POLISH
Riper
Masonry
Syn. with DRAG; SCRAPE

POLISHED PEBBLE
Caillou roulé
Geology and Building Materials
Syn. with ROLL(ED) PEBBLE; SHINGLE

POLISHER
Polisseuse
Equipment and Tools
A machine used to polish ashlars.

POLISHING
Polissage; Ripage
Masonry
1. Surface finishing operation of a stone to give it a polished aspect.
2. Renovation carried out with a chip. Syn. with DRAGGING; SCRAPING

POLKA (HAMMER)
Polka
Equipment and Tools
Syn. with COGHAMMER

POLL
Tête
Equipment and Tools
The part of the body of a hammer on the opposite side to the peen.

POLLARD
Ecimer
Masonry and Work
To demolish or destroy the top part of a construction or to cut back a tree nearly to the trunk. Syn. with TOP

POLLARDING
Ehoupage
Building Materials
Syn. with TOPPING

POLLUTED WATER
Eau polluée
Hydrology
A water impaired by bacteriological or chemical agents that have modified some original qualities, and thus inappropriate for some uses.

POLYADDITION
Polyaddition
Polymers
Polycondensation without elimination of volatile compound.

POLYAMIDE
Polyamide
Polymers
A thermoplastic resin in which the structural motive repeated in the chain is of the amide type (example: nylon, rilsan).

POLYCHLOROPRENE
Polychloroprène
Building Materials
A synthetic rubber used in particular in the manufacture of elastomer bearings. It is marketed under the name of *Neoprene.*

POLYCHROMATIC LECONGING
Mordorage
Defects (Painting)
A variety of bronzing characterized by polychrome deterioration. Syn. with BRONZE FINISH

POLYCONDENSATE
Polycondensat
Polymers
According to the authors, term used within the meaning of oligomer or of macromolecule obtained by polycondensation. (term to be avoided).

POLYCONDENSATION
Polycondensation
Polymers
A chemical reaction leading to the creation of a polymer and occurring between the reactive functions of the monomers or oligomers present, with or without the elimination of volatile products. In the latter case, one routinely speaks of *polyaddition.*

POLYEPOXIDE
Polyépoxyde
Polymers
A thermosetting resin (example: Araldite).

POLYESTER
Polyester
Polymers
A synthetic product, member of the thermosetting resins category, obtained by a chemical process; it is a resin of actual polymerization or polycondensation.
The polyester arises from the esterification of an acid by any alcohol. If the molecule of one or the other carries at least three monovalent chemical functions, the reaction leads to three-dimensional polyesters. An important subclass of these products is constituted by the unsaturated polyesters used in the paint manufacturing industry, then in the manufacture of plastics. Unsaturated polyesters arise from the reaction:
- *of an acid (or a mixture of acids: maleic, phtalic, etc.);*
- *of a polyalcohol, the propyleneglycol;*
- *of a cross-linking agent: styrolene, methyl methacrylate.*

POLYESTER RESIN
Résine polyester
Polymers
A synthetic product of the thermosetting resins category, obtained by a chemical process; it is a resin of polymerization or polycondensation. As for epoxies, the *polyester* term identifies at once the basic resin, which is itself an oligomer comprising double connections dissolved in a fluid reactive thinner, generally called a *monomer.* The monomer also possesses a double connection (styrene, methyl methacrylate), and the hardened resin obtained after introduction into this mixture of a catalyst (peroxide) that brings about the opening double connections in the resin and reactive binder, and leads to the formation of solid polyester. An accelerating agent is highly very often used which, while making active and controlling the decomposition of the catalyst, enables to regulate the duration of polymerization. Polyesters therefore often appear as a system with three components

(base, catalyst, and accelerating agent), and are characterized by high mechanical strength.

POLYETHYLENE
Polyéthylène
Polymers
A polymer obtained by the polymerization of ethylene under high pressure (2000 to 3000 atm) and at 200°C in the presence of organic peroxides as activators or under low pressure (1 to 10 atm) in the presence of complex catalysts made of titanium and alkyaluminum chloride, or again by catalysts at the root of the metallic oxide supported. Syn. with POLYTHENE

POLYGONAL
Polygonale; Cheminement
Topography
Syn. with TRAVERSING

POLYGONAL TRACING
Tracé polygonal
Construction of P.C.
The route in a broken line that shows any additional steel prestressing cable which follows closest the curve of the bending moments of the work that it strengthens. This process is used for the repair or strengthening of prestressed concrete works. After setting, the cable remains apparent. **See Figure 37**

POLYGONATION
Polygonation
Topography
A basic linear skeleton map whose summits are represented and which is established before the planimetric details survey. Operations comprise: the choice of the summits, their pegging out, their location, the measurement of the angles and lengths, the calculation of the coordinates. We can distinguish three categories of polygonation:
- **polygonation of precision** *(la polygonation de précision),*
- **normal polygonation** *(la polygonation normale),*
- **tachymetric polygonation** (*la polygonation tacheométrique*).

The choice of the category depends on the scale and quality of the plans to which this work must be used as base.

POLYISOBUTYLENE
Polyisobutylène
Polymers
A thermoplastic polymer of rubbery nature when it lies under conditions of temperatures ranging between - 40° and + 100°C. Its mechanical properties are comparable with those of natural rubber.

POLYMER
Polymère; Matériau macromoléculaire
Polymers
1. A substance made up of macromolecules whose structure is basically characterized by the repetition of one or several types of monomer motives (simple molecules of the same species, said *monomers,* weld gradually giving the macromolecule known as a *polymer*). In civil engineering, one uses as binders some organic polymers gifted with interesting mechanical properties: the good cohesion of the binder itself, good adhesion and most of all good moistening vis-à-vis the mineral surfaces, often accompanied by great flexibility of implementation. Thus, the thermosetting ones are used as a mixture of monomers or oligomers of low viscosity, fluid, and that hardens in place (this is called cross-linking) creating the awaited rigid structure.
If one classifies polymers according to their thermomechanical properties, we can distinguish between the thermoplastics and the thermosetting ones:
- **thermoplastic *or* unidimensional polymers** (*les polymères thermoplastiques ou unidimensionnels*) are products that soften through the agency of heat but in a reversible way. These are products whose macromolecules are obtained in general terms by the addition of small molecules called *monomers* i.e.:
  - just as they are, and their implementation requires their heating to lower their viscosity,
  - diluted in a solvent,
  - or again as aqueous emulsions.

These polymers can thus mostly be dissolved in a solvent or be melted without causing permanent chemical modifications. Currently, the few thermoplastics used as products for repair of concrete are mainly acrylic resins, acrylamides, styrene-acrylic resins, polyvinyl

acetate and its copolymers, and styrenes butadienes;

- **thermosetting *or* three-dimensional polymers** (*les polymères thermodurcissables ou tridimensionnels*) are products that are stiffened through the agency of heat in an irreversible manner. They are made up of a three-dimensional stitch system making them rigid enough and little deformable. This three-dimensional network consists of monomer motives linked by covalent connections, the whole forming a single giant macromolecule. Thermosetting polymers mostly appears as two components to mix at the moment of use. A chemical reaction occurs and the polymer obtained after hardening can be neither molten nor dissolved in a solvent without undergoing basic chemical modification (degradation). In this family, one basically meets epoxies, polyurethanes, phenoplasts, and unsaturated polyesters. As regards epoxies and polyurethanes, polymerization occurs after the establishment of contact between two components which react one on the other to create the macromolecular system. For polyesters, the mechanism of polymerization is completely different; it occurs after the addition of a catalyst whose proportioning has a less critical influence on the properties of the final polymer achieved.

2. Syn. with HIGH POLYMER; MACROMOLECULAR MATERIAL

POLYMER CARTRIDGE
Cartouche de résine
Materials
A device used for various sealings, constituted by a glass tube, of a proper diameter to the drilling, containing the base (resin) and inside which is found another glass tube that contains it the hardener catalyst. The carrying out of a sealing with a resin cartridge takes of the following manner. One shown into the drilling the cartridge, then the bar to seal that break thus the two envelopes of glass and the mixing of the two constituents takes place. The polymerization of the resin carries out the sealing. Syn. with CAPSULE ANCHOR; RESIN ANCHOR

POLYMER CONCRETE
Béton polymère
Building Materials
A material in which the cement is totally or partially replaced by a synthetic resin; we can distinguish:

- **concretes impregnated by polymer** (*les bétons imprégnés par polymére (PIC)*), preproportioned materials in which a part of the cement is replaced by a synthetic resin,
- **polymer concretes** (*les bétons de polymère ou bétons de résine (PC)*), industrially preproportioned materials whose binder is a resin. Syn. with RESIN CONCRETE,
- **polymer concretes with cement** (*les bétons de polymère avec ciment (PCC)*): industrially preproportioned materials, composed of concentrated resins and special charges. These products lead to three different chemical reactions; hydration of the cement, combined reaction cement/resin, finally polymerization of the organic components.

POLYMER IDENTIFICATION TEST
Essai d'identification d'un polymère
Test of Materials (Polymers)
A test intended for checking the formulation of a polymer delivered on a building site in order to ensure that it corresponds perfectly to the tests which were carried out in laboratory and which determined its choice according to its destination.
In order to be able to know the conformity of the product delivered on the building site. The criteria of efficiency have been studied for some and an identification form has been filled in for each product. It includes:

- *chemical analysis of the different components with the infrared spectrograph;*
- *determination of the viscosity, density, Shore hardness A and D;*
- *traction resistance on dumbbells with measurement of the elongation and deformation of the product at 20 and 5°C. The results obtained, constitute a sort of identity card of the product to be implemented.*

POLYMER-ASPHALT (WATERTIGHTNESS) COPING
Chape en bitume-polymère
Tightness
An unreinforced waterproof blanket made of a blend of bitumen and polymer that is protected by one or two prefabricated countercopings.

POLYMERIZABLE
Polymérisable
Polymers
A substance that can polymerize.

POLYMERIZATION
Polymérisation
Polymers
A chemical reaction into which molecules of monomer are combined to form a polymer.
There are two different mechanisms for this reaction: polycondensation and actual polymerisation, also called *chain polymerization.* The reaction of polymerization can be split into four phases:
- ripening period (beginning of reaction between the components);
- pot life (period during which the product must be implemented);
- pregelling (beginning of hardening);
- gelling (the final period of hardening).

Among the forms of polymerization are radicular polymerization, in mass, in solution, in suspension, in emulsion, of Ziegler-Natta, ionic, stereospecific.

POLYMERIZATION IN EMULSION
Polymérisation en émulsion
Polymers
Polymerization in suspension during which we use emulsifying agents to disperse and to stabilize the monomer in very small droplets, leading to the forming of latex.

POLYMERIZE
Polymériser
Polymers
1. Polymerization of a monomer.
2. To chemically combine small molecules into larger molecules; to undergo polymerization.

POLYMERIZED CONCRETE
Béton polymérisé
Building Materials
A material impregnated on a certain depth with polymerizable resins.

POLYMERIZING AGENT
Durcisseur
Polymers
A product added at the time of use to some resins and that are necessary for them to be polymerized. Syn. with ACCELERATOR

POLYMERS TO HIGH MOLECULAR WEIGHT
Polymères à haut poids moléculaire
Polymers
A great category that includes all polymers made up of threadlike macromolecular chains relatively long (at high degree of polymerization). One can find elastomers, thermoplastics, and elastothermoplastics.

POLYMINERAL ROCK
Roche polyminérale
Geology
A mineral stone which has different components.

POLYPORUS VAPORARIUS
Polyporus vaporarius
Defects (Building Materials)
A variety of fungus that attacks the in situ timber.

POLYPROPYLENE
Polypropylène *ou* Polypropène
Polymers
The generic name of the polymers of propene. The polypropylene is the result of the polymerization of propylene in the presence of trichloride of titanium and alkyaluminum, which carry out this operation so- that carbon atoms of polymer appear in space in a regular and nonstatic way.

POLYPROPYLENE FIBER CONCRETE
Béton de fibres de polypropylène
Building Materials
Any ordinary concrete in which the addition of polypropylene fibers leads to a different stress distribution of shrinkage (hydraulic and

thermal) and limits thereby the development of hairline cracks. The performance of these concretes is increased leading to an increase of the strength to impacts and to the abrasion, diminution of the permeability, improvement of the strength to the breaking, etc. They can be used for preparing shotcrete. Syn. with CARICRETE

POLYPROPYLENE-BITUMEN
Polypropylène-bitume
Polymers
A polypropylene and bitumen mixture (20% to 30%) that gives a rubbery product used as sealing.

POLYSILOXANE
Polysiloxane
Polymers
A silicone derived from the silicon, whose molecule comprises connections silicon-oxygen and which is used in masonry for consolidation of stones.

POLYSTYRENE FOAM
Polystyrène expansé
Building Materials
A cellular product (variety of polymer of styrene), of a great lightness and that retails effortlessly. In civil engineering structure, this product is especially used for the adjustment of reservations of sealing during concreting of a structure or again as dry joint. Syn. with EXPANDED POLYSTYRENE

POLYSULFIDE
Polysulfure
Building Materials
A synthesis elastomer of the thermoplastics family that has properties of interesting rubbery elasticity. It has an excellent resilient from the organic solvents, ozone, sunlight, oxygen, oils, and gasoline.

POLYTHENE
Polyéthylène
Polymers
Syn. with POLYETHYLENE

POLYURETHANE
Polyuréthane
Polymers
An additive of polyfunctional isocyanates on the compounds with active hydrogen also polyfunctional, polyols usually. Polyurethanes are polymers into which reactives are introduced an urethane connection that is repeated along the chain. However, one uses this term to cover polymers and other products of reaction of a compound to mobile hydrogen with R(NCO)*n* polyisocyanates, where $n \geq 2$. Generally speaking, the implementation of a polyurethane system requires the reaction of a constituent called *hydroxylated bases* on a constituent called *isocyanate hardener.* Apart from the systems with two components, (hydroxylated base + polyisocyanate), the great reactivity of isocyanates with water in particular enables to use products with an only one-part. These products comprise groups NCO which react with moisture to form the polymer with a simultaneous release of CO_2. Polyurethanes are used in the industry of paints, glues, adhesives, cellular products, etc.

POLYVINYL
Polyvinyle
Building Materials
The commercial designation of the polyvinylic polymers.

POLYVINYL CHLORIDE
Polychlorure de vinyle
Building Materials
The generic name of the polymers of vinyl chloride more known under the name *PVC.* This is a plastic matter achieved by polymerization of the monochlorethylene, itself prepared to start from the hydrochloric acid and of acetylene, under pressure and at a low temperature.

POND
Plan d'eau
Hydrology
The water level of a river in a given point.

PONDAGE
Retenue
Construction
Water which is retained by a barrage, a lock. Syn. with STORAGE

PONTOON BRIDGE
Pont d'équipage
Civil Engineering Structure
A bridge built with a specific military material.

PONTOON CRANE
Ponton-grue
Equipment and Tools
A pontoon on which is installed a crane, which is sometimes self-propelled, and that allows the carriage by waterway and installation of decks.

POOR RESTART
Mauvaise reprise
Defects (Welding)
The local irregularity of surface located at the place of a welding resumption.

POPLAR
Peuplier
Building Materials
A tree of the temperate regions to soft, white, and light wood. Its density ranges from 0.40 to 0.50, it was formerly used for the making of (foundation) piles.

POPOUT
Cratère
Defects (Construction of R.C. and P.C.)
A small superficial funnel that can affect a concrete facing. This defect is due to the expansion of an aggregate or foreign matter that brings about breaking of the concrete.

POPOUTS
Pustule
Construction of R.C. and P.C.
A bursting located in small cone-shaped also called *crater* or *popouts,* that results from the phenomenon alkali reaction affecting large superficial aggregates of the concrete.

PORE
Pore
Materials and Geology
A small gap (< 0.1 mm) affecting some types of soils, rocks, or various materials.

PORE WATER
Eau interstitielle
Geohydrology
Syn. with INTERSTITIAL WATER

PORE-WATER PRESSURE
Pression hydrostatique
Strength of Materials
Syn. with HYDROSTATIC PRESSURE

PORIA VAPORARIA
Poria vaporaria
Defects (Building Materials)
A fungus known as *of surface* belonging to the discoloration fungus family.

POROMETRY
Porométrie
Materials and Geology
The distribution of the volume of the pores contained in a material in terms of the dimension of the pores.

POROSIMETER
Porosimètre
Assaying Equipment
A laboratory apparatus for determining the porosity of a body. Syn. with POROSITY METER

POROSIMETRY
Porosimétrie
Building Materials
A science whose goal is to analyze the shape, dimension, and distribution of the pores contained in a material.

POROSITY
Porosité
Building Materials and Geology; Defects; Geotechnics
1. The property of some bodies to show a structure spangled with voids of microscopic sizes called *intercommunicating pores* (or not) and which can be filled with gas or liquids.
2. The state of what contains pores.

3. The structural state of a metal containing tiny cavities.

4. The physical property of a soil determined by the part of a unit apparent volume not occupied by the solid phase. Porosity is calculated from measurements of apparent density *da* (weight of dry ground per unit of apparent volume) and of density or real specific weight *dr.* of the solid phase. Total porosity *P* is expressed as a percentage, from these data, by the relation: $P = (1 - \frac{da}{dr}) \times 100$

This porosity is likely to range from 25% for compact sandy-muddy ground, to values higher than 60% for materials with fine fragmentary structure or for the surface of wet and heavily inflated clayey soils.

To the knowledge of the volume of porous space must be added an evaluation of its configuration: the size of pores mainly, but also their shape, orientation, degree of connection, tortuosity, etc. A whole range of techniques must be used: porosimetry with mercury, permeametry, morphometry on a thin plate, establishment of a pFcurve (moisture content according to suction), etc. From another viewpoint, the true porosity of the ground mostly results from the superposition of various levels of arrangement of the ground constituents:

- on the scale of the elementary assembly, the relative arrangement of the particles individualized in the course of the grain size analysis contrives a first porosity system called textural, because of its origin, ;
- in the case of the fragmentary structures, structural elements are delimited by a more or less complex network of cracks that constitutes, with capillary vessels and cavities of the biological or pedological origin, a second system of porosity known as *structural.*

POROSITY IN A WELD DUE TO CARBON MONOXIDE
Rochage
Welding
A spongy formation at the root of a weld, due, for example, to a protection defect.

POROSITY MEASUREMENT
Mesure de la porosité
Geotechnics
A test that consists in measuring the percentage of the voids in comparison with the total volume of a rock or a sediment. Porosity is measured directly with a porosimeter or indirectly on the log of radioactivity in the geohydrologic drillings. The distribution of the dimension of the pores in a given rock can be measured by mercury under increasing pressure and by plotting the diagram: of mercury versus pressure (Purcell method). Porosity varies with the arrangement of the particles. In the case of all similar spheres, it ranges from 47.6% (compact cubic arrangement) to 25.9% (rhombohedral arrangement). In fact a porosity of 25% is rarely reached in sand; in silteous clays it sometimes reaches 50%. Syn. with POROSITY TEST

POROSITY METER
Porosimètre
Assaying Equipment
Syn. with POROSIMETER

POROSITY TEST
Essai de porosité; Mesure de porosité
Building Materials and Geology; Geotechnics
1. A test that consists in determining the importance of the spaces of a material as well as its ability for absorption.
2. Syn. with POROSITY MEASUREMENT

POROUS
Poreux
Materials and Geology
Containing voids, pores, cells, interstices, and other openings, which may or may not interconnect.

POROUS CONCRETE
Béton poreux; Béton gaz
Building Materials
1. A material whose skeleton is essentially made of porous materials such as pumice, granulated slag, etc.
2. Syn. with AERATED CONCRETE ; AEROCRETE; GAS CONCRETE

POROUS ENVIRONMENT
Milieu poreux
Geology
A solid containing pores, namely empty spaces connected or not. The flow of a fluid through a such environment is possible only if the pores are connected. A porous environment is characterized by its grain size distribution curve representing the percentage in weight of the grains of a smaller diameter than a given one. In some circumstances one can also have to consider other features such as the distribution of the diameter of the pores or the tortuous line. Syn. with POROUS SURROUNDING

POROUS GROUND
Sol poreux
Geology
Any assemblage of rock material that, as a result of fracturing, faulting, mode of deposition, etc., contains a high percentage of voids, pores, and other openings.

POROUS STONE
Pierre poreuse
Building Materials
A very absorbent rock because of its spongy texture.

POROUS SURROUNDING
Milieu poreux
Geology
Syn. with POROUS ENVIRONMENT

PORPHYRY
Porphyre
Geology
An igneous rock formed by more or less regular crystals, coated in an entirely compact amorphous paste or with grains indistinguishable to the naked eye. It happens that the paste exists alone.
We can distinguish quartziferous, feldspathic, amphibolic, pyroxenic, syenitic, dioritic, protogenic porphyry. Porphyries are very hard, blue or greenish. In fact generally speaking rocks of the primary era provide good building materials and are used to construct coin stones and wall bases.

PORPHYRY CONCRETE
Béton de mignonnette de porphyre
Building Materials
A material whose aggregate is porphyry.

PORT
Lumière
Construction; Welding
1. Oblong hole intended for receiving the head of a screw and allowing an adjustment in position or some play. Syn. with BORE
2. A hole accomodated in a sheet metal to leave the passage to a weld bead. Syn. with HOLE

PORTABLE CONVEYOR
Sauterelle
Equipment and Tools
A movable endless and tilting belt conveyor on rubber-tired wheels which is used to load or unload materials.

PORTABLE DRILL
Foreuse mobile
Equipment and Tools
Any size drill outfit that is wheel-, skid-, or track-mounted so that it can be moved readily as a unit.

PORTABLE NIBBLING MACHINE
Grignoteuse portative
Equipment and Tools
A small electric machine used to cut out plane, wavy, or ribbed thin sheet metals.

PORTABLE SAMPLER FOR FINE SOILS
Carottier portatif pour sols fins
Equipment and Tools
A device allows to take undisturbed samples by successive cutoffs of cores 60 mm diameter and 35 mm tall down to a depth of 50 cm. Combined with a microwave oven, it allows to draw the curve of dry density distribution in less than 1 h.

PORTAL
Entrée
Construction
The surface entrance to a drift, tunnel, adit, or entry.

PORTAL CRANE
Grue-portique
Equipment and Tools
Syn. with GANTRY CRANE

PORTAL FRAME
Portique
Civil Engineering Structure
A structure made up of uprights and one or several cross members (or trimmers) mostly restrained on the uprights.

PORTAL FRAME (*or* STRUCTURE) BRIDGE
Portique
Civil Engineering Structure
A bridge that functions like arches made up of appreciably rectilinear elements. The portal frame bridge can be open or formed by a closed frame; in the latter case, the lower slab forms a tie that balances the thrust.
There are several types of portal frames:
- **simple portal structure** (*le portique simple),* a system of construction formed by two (frame stanchions) vertical or tilted uprights, connected on the top part by a straight or broken cross beam whose each fastener with the uprights is carried out so that it constitutes a flawless restraint. This rigidity of fastener leads to a mutual dependence of the cross beam and frame stanchions to the stresses that concern each element of the portal structure (statically indeterminate system). Frame stanchions can be articulated or restrained at the foot. When the portal frame bridge is articulated at the feet and key, it is called a *portal frame bridge with three articulations;* it is then an isostatic system; **See Figures 38 to 38b**
- **multispan portal frame** (*le portique à travées multiples*), a system including two or several spans of portal frames, therefore several frame stanchions, and which obeys the same mechanical laws as the simple portal structure; **See Figure 38c**
- **multistory portal structure** (*le portique à étages*), a system formed by a portal frame comprising several storys or levels, always subjected at the same laws of dependence; **See Figure 38d**
- the **multistory and span portal structure** (*le portique à travées multiples et à étages*), which results from the combination of the multistory portal structure and multistory portal frames. In the case of the multistory and span portal structure, spans always are straight. It is said that construction is *in frame* and uprights take again the name of *stanchions.* **See Figure 38e**

PORTAL FRAME OF REINFORCED CONCRETE
Portique
Civil Engineering Structure
A reinforced concrete frame deferring laterally loads and overloads which it receives.

PORTLAND
Portland
Building Materials
The British peninsula where from are extracted ashlars and clayey limestones and which gave its name to a variety of hydraulic lime.

PORTLAND CEMENT
Ciment Portland
Hydraulic Binders
A hydraulic binder that owes its name to the fact that first cements manufactured in England showed after their set a color identical to that Portland's ashlars.
This cement makes set and hardens underwater; the primary commodity is a mixture of limestone (about 80%) and clay (about 20%). This mixture, bake at a temperature in the region of 1450°C (cinder), is then finely ground and blended with a low percentage of gypsum intended for regularizing its set. The four main constituents of the anhydrous cement are:
- bi- and tricalcium silicates,
- tricalcium aluminate,
- tetracalcium aluminoferrite.

These anhydrous phases form to the contact with the water a colloidal solution. As this solution saturates, there is precipitation of hydrate crystals reflecting the original anhydrous mineral. The latters have a smaller dimension and are all imbricated. In a mortar or concrete, this colloidal solution has a tendency to fulfil spaces and to coat closely grains by creating, after its crystallization, any

cement. In the hydrated cement, main components are:
- hydrated calcium silicate or C.S.H.,
- hydrated lime or portlandite $Ca(OH)_2$.

There are several types of Portland cements:
- **portland artificial cement** [*le ciment Portland artificiel (C.P.A.)*], which contains at least 97% cinder, the rest being filler. The main constituent is the anhydrous tricalcium silicate that, with the water, form the hydrated monocalcium silicate liberating two lime molecules with a high release of heat;
- **CHR portland artificial cement** [*le ciment Portland artificiel HRC (Haute Résistance Chimique aux Sulfates)*], which is a pure P.A.C. containing a lower quantity of SO_3 (< 2.3%);
- **HSC portland artificial cement** [*le ciment Portland artificiel HTS (Haute Teneur en Silice)*], which is a P.A.C. more or less made up of bi- and tricalcium silicates and a low percentage of other constituents. It contains in small quantity sulfate of lime that regularizes the set, and alkalis in negligible quantity;
- **composite cement** (*le ciment Portland composé* (*C.P.J.*)), see COMPOUND CEMENT. **See Figures 39 and 39a**

PORTLAND CINDER CEMENT
C.L.K.-CEM (Ciment de laitier au clinker)
Hydraulic Binders
See CEMENT

PORTLANDITE
Portlandite
Hydraulic Binders
A calcium hydroxide ($Ca(OH)_2$) that constitutes the soluble phase of portland cements. The portlandite represents approximately 20% of the composition of hardened cements.

POSITION
Présenter
Work
To bring an element to the site that is reserved to it so as to be able to estimate whether it has the dimensions and shapes required to its destination.

POSITIONING BY ANGLE MEASUREMENT
Positionnement par mesure d'angle
Topography
A method of hydrographic survey of the aquatic beds by the use of a boat consisting in the measurement of angles formed by couples of seamarks (characteristic points of known coordinates) and the eye of the hydrographer. The point of the boat is then determined as the intersection of two (or several) able arcs. The hydrographic dial is used for that purpose.

POSITIONING BY MEASUREMENTS
Positionnement par mesures d'azimuts
Topography
A method of hydrographic survey of the aquatic beds which is made possible thanks to the traditional topography equipment. Some surveys (supervision of the pile feet of bridges for example) require very important and accurate details of a few centimeters in X and in Y. Fixed turning points, on which the equipment of topography enabling measurement of azimuths is installed, are placed for that purpose. The accuracy of the measures of angles obtained can reach the second of arc. The point results then from the intersection of two or several straight lines from the known azimuth, passing by the points where theodolites, also supposed to be known, have been put in station.

POST
Poteau; Pilier; Chandelle
Construction; Temporary Construction
1. A slender vertical element with a weak transverse section compared to the height. It is a carrying element whose section can be cylindrical, square, or rectangular and which can be made up of wood, metal, reinforced concrete, etc. The post conveys to the foundations all the external strains applied to the structure that it supports:
- vertical strains coming from permanent loads and overloads of exploitation;
- horizontal strains coming from the wind, strains of braking, etc.;
- bending moments resulting from horizontal strains and even vertical loads applied to the consoles or statically indeterminate systems

(frames, arches). Syn. with POLE; STAKE; STANCHION; STUD
2. Syn. with PIER; PILLAR
3. Syn. with DEAD SHORE; PILLAR; PROP, SHORE; STAY; UPRIGHT.

POST BRACKET
Potence
Carpentry
Syn. with BRACKET

POSTCUTTING
Découpage soigné; Postdécoupage
Earthwork
Syn. POSTSPLITTING

POSTHEATING
Postchauffage
Welding
A heating of metal parts that has just been jointed by welding in order to avoid, in particular, the development of abnormal stresses inside the weld bead or to its immediate surroundings.

POSTSPLITTING
Postdécoupage
Earthwork
An attack process of the beginning of a working face during the work of tunneling by the use of explosive.
The technique is very close to the presplit blasting but the line of the holes limiting the excavation is fired after the firing of the shooting of mass either in the course of the same sequence or during a separated sequence.

POSTSTRESSING
Post-tension
Construction of B.P.
Syn. with POSTTENSIONING

POSTTENSIONING
Post-tension; Précontrainte par post-tension *ou* à câbles isolés (ou fils)
Construction of P.C.
1. A tensioning process in which tendons (bars, wires, or strands), settled inside reserved cable ducts in the concrete, are tensioned by jacks resting on the hardened concrete and anchored at their ends. After the locking of these reinforcements in the anchorages, cable ducts are filled, mostly by grouting (with cement grout). Syn. with POSTSTRESSING
2. A process in which wires or cables are put into flexible and strip iron cable ducts and are laid out into the formwork according to a defined position by the note of calculation, then the pouring of the concrete is carried out. After hardening of concrete, cables are tensioned through the channel of jacks taking bear at the ends of the element to be prestressed. As soon as the desired tension is obtained, cable ducts are injected by the use of a grout, mostly of cement. Jacks are withdrawn after hardening of the grout. **See Figure 40**

POT
Pot
Equipment and Tools
A metallic container into which the epoxy resin (base and hardener) to be injected is poured. This pot functions with compressed air. A pipe from the (screw-) cap brings together the tube of injection embedded in the masonry to be processed. The pressure is risen in the pot (which is checked thanks to a pressure gauge fixed on the lid), which brings about the sending of the resin into the pipe. **See Figure 41**

POT CLAY
Glaise
Geology
Syn. with CLAY; LOAM; TILE CLAY

POT FOR CEMENT GROUT INJECTION
Pot pour injection de coulis de ciment
Equipment and Tools
A vat into which the mixing of the grout to be injected is performed and which is also used as an injector. This apparatus works with the compressed air and its use is as follows: materials constitutive of the grout as well as the necessary water are introduced by the use of a hopper; the pressure is put and the compressed air mixes materials with water by brewing them vigorously. Once the mixing is done, the sluice of exit of the grout is opened

and the pressure gauge is adjusted to the desired grouting pressure.

POT LIFE
Durée Pratique d'Utilisation (D.P.U.); Vie en pot
Polymers
1. The period during which a product must be used to be effective; one the four phases of the chemical reaction of the polymerization. Syn. with WORKING LIFE. **See Figures 42 and 42a**
2. The lifetime of the epoxydic resin mixed in its pot of injection; namely, time during which the chemical remains operational.

POT OF INJECTION
Pot d'injection
Equipment and Tools
A steel cylinder constituting one of the organs of an injection press and in which the material to be injected is brought up to a temperature higher than the temperature of softening; walls of the pot are heated by electricity.

POTASSIUM CHLORIDE
Sylvine; Chlorure de potassium
Geology
A saline sedimentary rock which is often associated with rock salt.

POTASSIUM-ARGON PRACTICE
Méthode du potassium-argon
Petrography
A technique of analysis that enables to specify the dating of a rock containing potassium; the practice is based on the progressive breakdown of an isotope of potassium into argon. The age of the rock is determined by the proportion of argon which has succeeded the potassium.

POTENTIAL
Potentiel
Explosives
The maximum work, reported at the unit of mass, that the explosion of explosive material can provide.

POTENTIAL MEASUREMENT
Mesure de potentiel
Test of Materials (Reinforced Concrete)
Test for detecting the corrosion of concrete reinforcements. The principle consists in measuring the electrical potential difference between the network of reinforcements and a reference electrode placed on the concrete in points beforehand located so as to position the equipotential lines.
The test consists in creating an electrical junction with the network of reinforcements, an electrolytic junction between the reference electrode and concrete, in performing the measurement and collecting it.

POTENTIAL MINERALOGICAL COMPOSITION
Composition minéralogique virtuelle
Geotechnics
The quantitative mineralogical composition of a sample to which the qualitative composition was postulated a priori. The potential mineralogical composition results from a lightened analysis.

POTENTIOSTAT
Potentiostat
Equipment and Tools
An equipment allowing the keeping, by means of a reference electrode, of a consistent potential of attack, by means of a reference electrode . The equipment is connected to an electrolytic cell comprising the metal subjected to a micrographic attack or to a test of corrosion.

POTHOLE
Evorsion; Marmite de géants; Cloche
Geohydrology ; Defects
1. A form of erosion due to the action of swirling running waters loaded with gravel and sand which dig circular or semicircular cavities called *pothole* in the rocky bed of waterways.
2. Syn. with CAVITY; DOME; OPEN

POTSTONE
Pierre ollaire
Building Materials
A talcose rock. Syn. with SOAPSTONE

POUF
Pouffe
Defects (Building Materials)
The friable layer of a stone that disintegrates under the influence of moisture. (A stone comprising pouffes is known as *dropped off.*)

POUNCITE CONCRETE
Béton à la poncite
Building Materials
Any concrete to which a pouncite plasticizer has been added. (Pouncite is a volcanic origin material.)

POUNDING
Pilonnage
Civil Engineering
Syn. with RAMMING

POUR
Couler du béton
Construction of R.C. and P.C.
To pour in place fresh concrete.

POURING
Coulage (du béton)
Construction of R.C. and P.C.
An operation of placing fresh concrete in formworks, molds, or to full excavation. Syn. with CASTING

POURING TIME
Temps de coulée
Building Materials
A space of time which passes between the beginning of the batching of any mortar or concrete and the moment when the material loses its liquid consistency to become viscous.

POWDER
Poudre
Building Materials and Geology
In grading, soil or aggregate particle whose sizes are included between 1 and 20 μ

POWDER LANCE
Lance à poudre
Equipment and Tools
A device used for the thermal boring and the cutting of concrete walls.

POWDER (CUTTING) TORCH
Chalumeau à poudre
Equipment and Tools
A device intended for the thermal cutting of the concrete which is made by melting the material. The required heat for molten is produced by the combustion of a mixing of metal powder in an oxyacetylene flame, the acetylene being the combustible gas. This device is mounted on a power-driven wagon.

POWDERED CARBON
Cément
Metallurgy
Syn. with CARBURIZING MATERIAL; CEMENT

POWDERPOST BEETLE
Lyctus
Defects (Building Materials)
Syn. with LYCTUS BEETLE

***POWELL* PROCESS**
Procédé *Powell*
Building Materials
A wood impregnation process by diffusion during which the wood is dipped into a boiling sugar solution containing, besides, salts of arsenic or various other chemical substances.

(COURSE) POWER
Puissance
Hydrology
The carriage and erodability power of a waterway.

(EXPLOSIVE) POWER
Puissance
Explosives
The unit power of a bursting charge.

POWER BARROW
Motobrouette; Brouette motorisée
Equipment and Tools
A small multi-purpose machine, very much used, that constitutes a means of haulage on the small building sites or an extra equipment on the great building sites. It is acted actually of a wheelbarrow propelled by a thermal engine and driven by a walking worker, directing the machine with a handlebar. It is

equipped with a haulage skip (tilting) at the front of a capacity neighboring the 300 litres. Syn. with BUGGY; MOTORIZED BARROW; PEDESTRIAN-CONTROLLED DUMPER; SELF-PROPELLING WHEELBARROW

POWER BRUSHING
Brossage
Painting
Syn. with BRUSHING

POWER FLOAT
Hélicoptère
Equipment and Tools
Syn. with HELICOPTER; MACHINE TROWEL; ROTARY FLOAT

POWER RAMMER
Dameuse
Equipment and Tools
A mechanized device used to carries out a tamping. Syn. with CONSOLIDATING RAMMER; STOMPER

POWER-DRIVEN PUMP
Motopompe
Equipment and Tools
Machine for pumping water in-rushes and functioning with a thermal or a power engine. Syn. with MOTOR PUMP

POWER SAW
Scie
Equipment and Tools
A fixed or hand-held machine used for cutting materials. This device is equipped with ribbon, with blade or toothed disk and propelled by a circular or alternative motion.

POWER SHOVEL
Pellemécanique
Equipment and Tools
An earthmoving plant made up of a self-propelled chassis on caterpillar tread or pneumatic tires carrying the cabin and which can turn, in comparison with the chassis, around a vertical axis. A tilted boom from the cabine carries at its end return pulleys of cables; these cables allow the operation of a hold-bucket arm articulated in the middle of the boom. Drawn by cables, pushed by the arm against the massif, the bucket fills, then, after rotation of the cabin, empties in the haulage machine by the release of an opening bottom. The power shovel can work in knoll digging work, excavate digging work, dragline, grader, simple crane, or clamshell grab.

POWER STONE SAW
Sciotteuse
Equipment and Tools
A machine with disk, used by the stonecutter to perform various cuttings necessary for stone shaping.

POWER WRENCH
Clef à choc
Equipment and Tools
Syn. with IMPACT SPANNER; IMPACT WRENCH

POWER-ACTIVATED TOOL
Pistolet de scellement
Equipment and Tools
Syn. with CARTRIDGE TOOL; FIXING GUN; STUD GUN

POWER-PROPELLED SURFACE VIBRATING AND FINISHING MACHINE
Vibreuse-finisseuse
Equipment and Tools
Device for vibtating small thickness of concrete and to dress it (slabs, concrete roadways, etc.).

POZZOLAN CONCRETE
Béton de pouzzolane
Building Materials
A light material whose main aggregate consists of pozzolan.

POZZOLANA
Pouzzolane
Building Materials; Geology
1. A term, originally used to indicate a volcanic tuff quarried near Naples (Pozzuoli) and used today for all materials having the following characteristics at a casual temperature:
- ability to react with the calcium hydroxide in the presence of water;

ability to form products of hydration having binding properties.
Under this term are gathered natural and artificial products of the various chemical and mineralogical compositions, structures and origins.
2. An eruptive natural siliceous rock with alveolar structure which has natural pozzolanic properties.
Syn. with PUZZOLANE

POZZOLANIC
Pouzzolanique
Building materials
Of the natural or artificial materials, which to the fine powder state, are able at the casual temperature and in the presence of water, to combine with lime to give quickly enough stable hydrated compounds, similar to those formed by hydraulic cements constituents in the course of their hydration.

POZZOLANIC ACTION
Action pouzzolanique
Hydraulic Binders
The power of the pozzolanas to fix the lime of the cement.

POZZOLANIC CEMENT
Ciment pouzzolanique
Hydraulic Binders
A product that contains between 30% and 40% pozzolana, the rest being the cinder.

POZZOLANIC MATERIAL
Matière pouzzolanique
Hydraulic Binders
A material forming with free lime at the casual temperatures stable and insoluble compounds; these compounds resist to the usual agents of disintegration.

POZZOLANIC PROPERTY
Effet pouzzolanique; Propriété pouzzolanique
Hydraulic Binders; Building Materials
1. The ability of a product to combine with the lime freed by the hydration of the cement by transferring hydrated calcium silicates (pozzolanic reaction). The blending of fly ashes, microsilicas, etc., during the manufacture of concrete produce an acceleration of the speed of hardening and an increase of its final strength; it is the *pozzolanic property*. Syn. with POZZOLANIC REACTION
2. The ability of a product to compose by mixing with lime at the casual temperature compounds having hydraulic properties.

POZZOLANIC REACTION
Effet pouzzolanique
Hydraulic Binders
Syn. with POZZOLANIC PROPERTY

POZZOLANICITY
Pouzzolanicité
Building Materials
Pozzolanic properties possessed by some materials.

PRACTICE OF RESTS
Méthode des restes
Test of Materials (Concrete)
In mineralogical analysis on hardened concretes, interpretation of the positive or negative balances nonattributable to the analytical tolerances which can exist following the calculation of the virtual mineralogical composition in lightened analysis.

PRACTICE THE STONE
Pratiquer la pierre
Building Materials
To take the most advantage of a stone.

PREARCH
Prévoûte
Construction
Syn. with PREVAULT. **See Figure 43**

PREBORING
Avant-puits
Earthwork
Syn. with DERRICK CELLAR

PRECAMBER
Contreflèche
Construction
The curvature given to a beam in the invert direction of the bending (out of shape) that makes it undergo the totality or a part of the

load that it bears. Syn. with UPWARD DEFLECTION

PRECAST
Préfabriquer
Building Materials
To manufacture in factory or onto an area especially fitted close of the building site, of the elements intended for being assembled to form a structure or a part of the structure.

PRECAST CLAY CONCRETE
Béton d'argile préfabriqué
Building Materials
A material resulting from a mixing of laminated clay in the crusher or washing muds of quarry, with cement, water and admixtures (products of addition and mineral or organic origin catalysis). The product is then extruded through a path (it can be cast or injected) to exit in brick form.

PRECAST CONCRETE
Béton manufacturé; Béton préfabriqué
Building Materials
1. A precast concrete element such as building block, blockwork, etc., that results from the set and the hardening without heating of a mixing of an hydraulic binder and inert materials.
2. Any concrete prepared in workshop or in factory, by opposition to the concretes prepared on the spot and marketed as it is.
3. Elements of construction manufactured in itinerant or permanent factory, or on the spot, before their working.

PRECAST CONCRETE BLOCK
Bloc de béton manufacturé; Aggloméré
Building Materials
Syn. with BLOCKWORK. **See Figure 44**

PRECAST CONCRETE SEGMENT
Voussoir
Construction
Syn. with SEGMENT (PRECAST UNIT)

PRECASTING
Préfabrication
Building Materials
The execution, out of the building site or on a site especially envisaged to the building site, of structural elements that are then setting up and are assembled according to a preestablished plan.
There are several types of precastings:
- **light** (*la préfabrication légère*),which involves elements of little importance but carried out in great number such as fence, gutters, etc.;
- **heavy** *(la préfabrication lourde),* which involves elements of a certain importance and which is characterized, at the stage of the design, by the fragmentation of the construction planned in manufactured elements built out, whose assembly will allow to reconstitute the work. One thus prefabricates frames, underpasses, etc.;
- **partial** *(la préfabrication partielle),* in which only part of the large carcass is carried out in workshop. Construction is carried out in association with others more traditional techniques;
- **true** *(la préfabrication totale),* in which all elements of the carcass work are carried out in workshop and are assembled on the final site in order to reconstitute the work.

Syn. with UNIT CONSTRUCTION

PRECASTING
Préfabrication
Buildings Materials
Syn. with UNIT CONSTRUCTION

PRECASTING AREA
Banc de préfabrication
Construction of R.C. and P.C.
Syn. with CASTING BED; PREFABRICATION FORM; PRESTRESSING BED

PRECASTING CELL
Cellule de préfabrication
Construction of R.C. and P.C.
A site area where are manufactured segments of a prestressed concrete work built by successive cantilevers. Segments are manufactured in one or several molds (shuttering cells) to a permanent position.

PRECASTING TABLE
Table de préfabrication
Equipment and Tools
A mold (mainly of metal) used for the horizontal manufacture of concrete elements.

PRECIPITATED CHALK
Blanc d'Espagne
Materials
A friable chalk with which are made whitewashes.

PRECIPITATED TITANIUM
Blanc de titane
Materials
Pigment for manufacturing some paints. Syn. with TITANIUM DIOXIDE

PRECOLLOID
Précolloïde
Building Materials
In grading, element of sizes lower than 0.1 µm.

PRECONSOLIDATION PRESSURE
Pression de préconsolidation
Geotechnics
The greatest effective pressure to which the ground was subjected during its history; it corresponds to the break of slopes of the odometric curve. (Following an odometric test, curves of compressibility are plotted and, from one of these curves, the preconsolidation pressure of a sample is determined, parameter allowing to calculate the settlement of a foundation.)

PRECOUPLED TIMBERS
Bois ployés
Carpentry
Woods which are jointed above full-scale working drawing it and ready to be transported.

PRECRUSHING
Préconcassage
Building Materials
A preliminary reduction of the largest rocks blocks to more admissible dimensions for crushers.

PRECUT
Prétailler
Building Materials
To cut roughly (operation that precedes the final cutting of stones).

PRECUTTING
Prétaillage
Building Materials
Cutting in quarry of stone blocks perfectly squared and ready for use. This shaping is done with the machine, on standard templates.

PREFABRICATED
Préfabriqué
Building Materials
Of a factory-made element and assembled on the building site.

PREFABRICATED DRAIN
Drain préfabriqué
Sanitary Engineering and Drainage
An industrially factory-made material. **See Figure 44a**

PREFABRICATED FOUNDATION PILE
Pieu préfabriqué
Foundation
An element industrially manufactured or stemming from natural materials and which is set up by driving, vibration, jetting, loading, rotation, or by combination of these various processes.
This type of pile can show a square, polygonal or circular section. The section is sometimes hollowed over all or part of the length and its base mostly comprises a metal drive shoe. Going into the category of the precast foundation piles: wooden piles, reinforced concrete piles, prestressed concrete piles and steel piles:
• **prefabricated foundation concrete pile** (*le pieu en béton préfabriqué*), mass produced in factory or on a precasting area on the building site and from which we can distinguish:
○ *pile with widened base* or *enlarged-bases pile* or *belled pile* (*le pieu à base élargie*), which is set up by pile driving and whose base has mostly a section twice of the standard section; its length is twice and half the greatest transverse dimension of the base, **see Figure 45**
∩ *driven foundation piles* (*les pieux battus*), mostly monolithic, with square, hexagonal, or circular section. Piles of great length are sometimes made of prestressed concrete and have an annular section. The head is strongly hooped and the lower end can be provided

with a drive shoe, a cutting shoe, or to be simply cut squarely. In some circumstances, it can be widened as bulb (pulverulent ground), **see Figure 45a**

- *screwed concrete (foundation) piles* (*les pieux en béton vissés*), putting into the ground by rotation. The pile comprises a shaft ended by a screw of R.C. constituted by any steel or cast iron drive shoe bearing an auger in charge to favor penetration. A central channel can be accommodated inside the pile for cement or water injection. For its implementation one uses a screwing machine carried by a headframe. This type of pile is used in the incompressible grounds, when vibrations due to the driving are unadmissible or when the pile must work to the wrenching (anchorage of foundation for example),
- *prestressed tubular (foundation) piles* (*les pieux tubulaires précontraints*), made up of hollow concrete elements slightly reinforced, assembled by prestressing before pile driving. Elements mostly have 1.50 to 3 m long, from 0.70 to 0.90 m interior diameter and their thickness is next to 0.15 m. Longitudinal passages from 2 to 4 cm diameter are accommodated to allow the introduction of steel prestressing cables. The connection between elements is ensured by an adhesive (epoxy or similar),
- *covered driven (foundation) piles* (*les pieux battus enrobés*), made up of a metal web which can be:
  - a steel tube that can range from 150 to 500 mm outside diameter,
  - an H-section,
  - a caisson made of sections or sheet piles with two, three, or four elements.

  The toe of the pile comprises an overhanging pile shoe that ensures a coating of the metal of the pile shaft of 4 cm at least. The section of the finished pile is equal to the section of the pile shoe. Progressively driving, a mortar is sent by one or several tubes opening in the vicinity of the pile shoe, in order to constitute the coating filling the annular space left by the overhang of this one,
- *jacked concrete (foundation) pile* or *sunk concrete pile* (*le pieu en béton foncé*), made up of cylindrical reinforced concrete elements precast or cast to the furtherance, from 0.50 to 2.50 m long and 30 to 60 cm diameter. Elements of R.C. are driven into the ground with a jack which leans under a massif of reaction,
- *centrifuged reinforced concrete (foundation) pile* (*le pieu en béton armé centrifugé*), of annular section, which can be carried out in only one piece or as the *Trindel* foundation pile by element 2 m long and deepened into the ground by driving. In the case of the *Trindel* foundation pile, the assembly of elements is carried out by welding of metal flanges with which is provided the pile at its end; that allows to obtain a continuity of the shaft resistant to the bending stresses. The reinforcement of a centrifuged concrete foundation pile is made up of longitudinal reinforcing rods, surrounded by an internal spiral and double external spiral of steel wire,
- *fragmented (foundation) pile* (*le pieu fragmenté*), composed of reinforced concrete rings whose stacking on a conical base forms the external wall of the pile. The inside is then filled with concrete. The assembly of the elements is carried out by a sheet metal hoop or small steel tubes placed into the central recess. Driving is executed using a hydraulic actuating cylinder,
- *Mega Foundation pile* (*le pieu Méga*), carried out by precast elements of reinforced concrete and assembled progressively of the driving,
- *MV foundation pile* (*le pieu MV*), that consists of a steel shaft, mostly of a hollow section, equipped at its base with a special steel pile shoe and provided with a cutting edge. The pile shoe has a section higher than that of the tube; it thus creates a space in the ground during driving. At the same time as the pile is sunk, it is carried out on the head a pressurized injection of mortar which goes up at the bottom from upward by the pile shoe in the space created by this one. Progressively of the driving the pressure of injection is increased, the grout kept on the level of the ground penetrating more or less in the country rock according to the compactness of this one,
- *octagonal confined concrete (foundation) pile* (*le pieu octogonal en béton fretté*), strapped reinforced concrete element of a great resistance, in particular to the bending, and endowed at its base by an opening

allowing the water injection. It is used when there are difficulties of driving, for example in the sandy grounds where they can penetrate easily thanks to the water injection,

- *prestressed (concrete) foundation pile* (*le pieu précontraint*), whose use is indicated when it must penetrate at great depths, when it will go before important bending moments at the time of the presentation pile or to transverse strains in bad ground. The principle of manufacture of the pile is as follows: cables are placed inside thin sheet metal sleeves, the reinforcement being supplemented by a suitable hooping. One carries out to the concreting of the pile and when this one has a sufficient strength, cables are tensioning by leaning on the concrete. A colloidal mortar is then injected into spaces existing between sleeves and cables,
- *jacking (foundation) pile* (*le pieu en béton mis en place par vérin*) which is reserved theoretically for underpinnings. It consists of hollow reinforced concrete elements, sunk with jack under the construction the ones above the others and connected to each other by filling of a central cavity. The pile must apply under pressure with a distribution beam carried out under the existing foundation. The maintenance of the contact with the distribution beam is obtained by keying-up with expansive cement or by pouring a last concrete massif between the beam and the pile, this one being kept with the required pressure by the action of jacks which loads are controlled; **See Figure 45b**

- **wooden (foundation) pile *or* spile** (le pieu en bois), constituted by a log of oak, beech, elm, fir tree, pine, and driven or sunk into the ground. These species are preserved well if they constantly remain in water or wet grounds. Before the implementation, one coats piles with tar or other fungicide products or insect reppellents. The point can simply be squared (compressible grounds), be carved as truncated cone (solid grounds) or be provided of a steel or cast iron pile shoe (very strong grounds). To avoid the crushing of the pile head during driving, a hoop are placed there or better, a driving helmet;
- **hearing pile *or* steel (foundation) pile** (*le pieu métallique*), made up of a simple section or assembly of metal sheet piles or rolling sections. The steel pile can take on a circular or polygonal form and it is setting up into the ground by drivin or by pile driving. We can distinguish:

- *cased metal (foundation) pile* (*le pieu métallique chemisé*), made up of a thin steel casing sunk or driven into the ground and filled with concrete (it is a cast-in-situ pile with built-in permanent tubing). This pile is formed by weld of a flat and thin pile shoe at the lower end of the casing; this unit is sunk into the ground with a special rammer until refusal,
- *circular metal (foundation) pile* (*le pieu métallique circulaire*), made up of sheet metal elements of 0.20 to 1 m diameter, 10 mm thick and 8 to 12 m long. These elements are assembled by welding and driven into the ground (the base is sometimes equipped with a device disaggregating the ground, thus facilitating the driving). The pile is sometimes equipped at its base with fins in order to endow a good tear strength to it,
- *metal (foundation) pile with polygonal section* (*le pieu métallique à section polygonale*), from which we can distinguish two processes:
  - pile constituted by elements of sheeting pile assembled with soldered angle sections and mostly sunk into the ground by driving accompany sometimes of jetting,
  - pile constituted by a H rolling section, which can be lengthen by welding or riveted fishplating and can reach some depth in the range of 60 m (this type of pile be always driven in order to preserve the core of the compressed ground between these flanges),
- *tubular screwed metal (foundation) pile* (*le pieu métallique vissé de forme tubulaire*), supplied at its base by a steel pile shoe which take the shape of a screw. The shape of threads of the pile shoe is adapted to the nature of the ground and screwing is ensured by a fitting mechanical device; this type of pile is used when one seeks a particular resistance to the wrenching or when the ground makes driving difficult (example: sand).

PREFABRICATION FORM
Banc de préfabrication
Construction of R.C. and P.C.
Installation of a prefabrication area on the bare ground that reproduces perfectly the shape of the intrados of a prestressed concrete work, and that consists of segments with conjugated joints. Segments are concreted the ones against the others successively by displacement of the internal and external formwork. Concreting is carried out concurently and symmetrically in comparison with the segment on pile. Syn. with CASTING BED; PRECASTING AREA; PRESTRESSING BED

PREFOUNDED SOLDIER
Poteau préfondé
Foundation
An alternative of the prefabricated wall that consists in carrying out into the ground a boring of circular, square or rectangular section, in the presence of a drilling mud or a self-hardening grout. A post, either metal or of reinforced or prestressed concrete, is then partially introduced into the boring. The part out of the ground of the post is vertically kept by means of wedging until the grout did set. A prefabricated post is thus obtained which is sealed in the ground by execution of prefabricated walls. **See Figure 46**

PREGELATION
Prégélification
Polymers
The beginning of hardening of a resin.

PREHEATING
Dégourdissage; Préchauffage
Metallurgy; Welding
1. The progressive preheating of a metal part needed undergoing a heat treatment to avoid formation of internal stresses.
2. A preliminary heating of parts to be welded, in order to minimize deformations due to contraction and quenching effects.

PRELACQUERED PRODUCTS
Produits prélaqués
Metallurgy
Thin sheet metals coated with a paint carried out in factory. The operation is carried out in continuous on bobbins possibly cut out afterward. Various coatings exist which lend themselves all to the operations of cold metal forming.

PRELACQUERED STEEL SHEET METAL
Tôle d'acier pré-laquée
Metallurgy
A naked cold-rolled steel sheet metal, galvanized or zinc-plated round the clock, which, after the suitable surface preparation, is coated continuously of one or several paint coats. Thicknesses of prelacquered steel sheets range from 0.2 to 1.5 mm; the maximal width is 1500 mm. Syn. with PRECOATED STEEL SHEET; SHEET STEEL PRELACQUERED

PRELIMINARY CLEANING
Nettoyage préalable
Welding
The cleaning of welded elements to be examined, so that they are removed of all foreign matters being able to be opposed to the penetration of the revealing fluid into surface discontinuities or to distort the examination.

PRELIMINARY ESTIMATE OF QUANTITIES
Avant-métré
Contract
Syn. with FOREMEASURMENT

PRELIMINARY PROJECT
Avant-projet
Contract
Syn. with PRELIMINARY SCHEME

PRELIMINARY SCHEME
Avant-projet
Contract
The design study of a project (graphic, technical and legal) which allows to break the back of the final design. It is divided into summary preliminary design, fixing primary characteristics of works to be built, and in detailed preliminary design, which comprises a more precise and complete technical study of works as well as a more rigorous

assessment. Syn. with PRELIMINARY PROJECT

PRELIMINARY TEST
Essai préliminaire
Test of Materials
A test carried out on a number of (foundation) piles that is realized at the time of the design of the foundation system of a work and which is intended for checking and specifying the conclusions of the geotechnical study relative to the dimensioning and behavior of piles. This test consists of test of preliminary static loading on some test piles to which some similar strains are applied as that which will transmitted by the future work (test of sinking, wrenching, and horizontal loading).

PRELOADING
Préchargement
Civil Engineering
A consolidation process of fine soils which can be associated with processes allowing to accelerate the consolidation (vertical drains, drainage trench, etc.). Preloading consists in applying on the ground a strength equal to the final load, with possibly an overload.

PREMIXED COATED MATERIAL
Matériau enrobé
Materials
A product into which a binder is mixed, usually bituminous, with intent to obtain a solid product.

PREMOISTENING DISTANCE
Distance de prémouillage
Work
In shotcrete work, distance that separates the point of introduction of the water into the pipe from the cement gun.

PREPACK CONCRETE
Béton prépack ou prépakt
Building Materials
Any concrete that is carried out by injecting in the skeleton of aggregates, of a fluidized mortar by addition of a wetting agent.

PREPARATION
Mise en état de recette; Appareillage
Work; Masonry
1. Preliminary work made on a surface to receive a material of contribution (paint, rendering, etc.) and allowing to obtain a physical state of the substrate able to receive the implementation of the techniques and/or repairing products. The preparation can consist of: sanding, washing, scabbing, bush hammer finish, smoothing down, sandpapering, etc. Syn. with BACKGROUND PREPARATION
2. Syn. with BONDING

PREPARE
Nourrir; Appareiller
Painting; Masonry
1. Syn. with NOURISH
2. Syn. with BOND

PREPARE SAMPLE
Echantillonner
Building Materials
To take materials or to show small quantities of a whole with intent to subject them to trials or to an approval.

***PREPASIF*™**
Prépasif
Foundation
A foundation precast wall.

PREPOLYMER
Prépolymère
Polymers
A reactive oligomer.

PRESENT THE PILE
Barder
Foundation
To present a pile at its final location with a view to its driving or piling.

PRESENTATION
Affichage
Construction
The putting in touch of the parts to be assembled in the position which they will have occupy definitively.

PRESENTATION PILE
Bardage
Foundation
A handling operation that consists in bringing a precast pile at the foot of the pile driver, to raise it and to place it in the wanted position (vertical or inclined) for pile driving or sinking.

PRESETTING
Préprise
Building Materials
Concerning the concrete thermomaturing cycle, the first period that follows concrete pouring, is the waiting period that precedes the rising temperature of heating, usually 2 to 4 h.

PRESLAB
Prédalle
Construction
A precast small slab of reinforced concrete, used as a sacrificial formwork and provided of connection reinforcements with the concrete of the top slab to participate to the strength of the whole. Syn. with SHUTTERING FLOOR SLAB; SLAB FORM

PRESPLIT BLASTING
Prédécoupage
Earthwork
Syn. with PRESPLITTING

PRESPLITTING
Prédécoupage
Earthwork
A method consisting in cutting out the contour of an excavation before the working, with a view to obtain a precise and even facing or to damage the least possible the ledge rock. With the explosive, one carries out the preliminary and simultaneous shooting of parallel drill holes, little charged and brought closer, so that the radial cracks produced by the explosion develop from each drilling following all the contour to be achieved. Sometimes, one creates before the working a channel by mechanical shearing; it is the mechanical presplitting, that minimizes the transmission of the vibrations generated by blasting with explosive. Syn. with PRESPLIT BLASTING

PRESSED PLATE
Tôle emboutie
Metal Construction
Syn. with BUCKLED SHEETING

PRESSING
Emboutissage
Metal Construction
Syn. with (DROP -) STAMPING; SWAGING

PRESSIOMETRY
Pressiométrie
Geotechnics
Science of the measurement of the grounds deformation modulus which is carried out with pressure measuring probes (or pressure gauges).

PRESSURE
Poussée; Pression
Civil Engineering Structure; Strength of Materials
1. A horizontal force which is exerted onto a wall, a vault, etc., under the influence of external or internal pressures.
2. A horizontal strain exerted onto its bearings by a beam of which working drawing line is curved or broken (broken arch, broken crosspiece).
3. A horizontal strain applied onto its bearing by each sidewall of a portal frame. This strain, transmitted to the foundations, mobilizes the passive earth pressure.
Syn. with THRUST
3. The force exerted across a real or imaginary surface divided by the area of that surface; the force per unit area exerted on a surface by the medium in contact with it. The pressure can be unidirectional or multidirectional.

PRESSURE BULB
Bulbe de pression égale
Foundation
Syn. with BULB OF EQUAL PRESSURE

PRESSURE CONTROL DEVICE
Régulateur de pression; Manostat
Equipment and Tools
Syn. with PRESSURE REGULATOR

PRESSURE CURVE
Courbe des pressions
Strength of Materials
A line formed by the meeting of points of each joint of a vault. This line being used for determining the stability of this vault.

PRESSURE DROP
Perte de charge
Hydraulics - Pneumatics
The decrease of the pressure of a fluid circulating in a piping, due at various phenomena such as friction of the fluid on the walls of the conduct, friction of the molecules of the fluid between them, etc.

PRESSURE GAUGE
Manomètre; Manographe; Pressiomètre
Equipment for Measure and Control; Assaying Equipment
1. Instrument for measuring the force per unit area exerted by a confined fluid or gas.
Syn. with MANOMETER
2. Syn. with MANOGRAPH
3. Syn. with PRESSURE METER. PRESSIOMETER APPARATUS

PRESSURE GRADIENT
Gradient piézométrique
Hydrology
The ratio of the difference of piezometric level to a distance covered by water.

PRESSURE LIMIT
Pression limite
Geotechnics
The ultimate compression that characterizes the ground's resistance to breaking.

PRESSURE METER
Pressiomètre
Assaying Equipment
Equipment for soil surveys, constituted by a probe introduced into a borehole on a given level and exerting rigourously uniform pressures on the walls of the drilling. This test allows to obtain a variation curve of the volumetric deformations of a soil as compared with the applied stress, and to define an in situ stress-strain relation of the soil in the hypothesis of a plane deformation. Three parameters are thus determined: a deformation modulus of the soil, a creep pressure and a limit pressure.
There are several types of pressure meters among which are the:

- ***Ménard* pressure meter** (*le pressiomètre Ménard*), simple equipment allowing to measure in situ mechanical characteristics of the ground. It is a test of direct loading in situ whose process consists in introducing into a drilling, at the wished depth, a cylindrical tricellular measuring probe dilatable radially. This probe dilated by application of a growing hydraulic pressure, exerts a cylindrical and uniform stress field on the ground and measures the field of deformations corresponding according to the pressures and time. One records thus, thanks to a controller pressure-volume, a plot pressure-deformation from which are calculated elements allowing to define the soil mechanical behavior under the load of the foundations. These elements are:
  - the modulus of deformation (E) that characterizes the ground compressibility (evaluation of settlements),
  - the limit pressure (pl) that characterizes the ground's resistance to breaking (checking of stability);
- ***Dilatosol*™ apparatus** (*le Dilatosol*), apparatus allowing to carry out a direct loading test in situ inside a drilling. The principle consists in introducing into a drilling, at a wished depth, a cylindrical measuring probe dilatable radially by carbon dioxide injection under controlled pressure. This probe of great length exerts a cylindrical and uniform stress field on the ground; the field of deformation is measured by the recording of the length of the perimeter of the median section of the deformed cylinder. This deformation is directly recorded by a potentiometer on tape. The advantage of this apparatus is to obtain an automatic recording of measurements thus minimizing the risk of error of an operator; **See Figure 47**
- **computer-pressure meter assisted** (*le pressiomètre assisté par calculateur*), an electronic version of the mainline pressure meter. It is able to implement any type of normal tricellular probe of the G type, ensuring regulations of pressure necessary to

the test schedule and the deflating of the probe.
Syn. with PRESSURE GAUGE; PRESSIOMETER APPARATUS

PRESSURE *or* PERCUSSION CORE DRILLING
Carottage par percussion *ou* par pression
Geotechnics
Core drilling into loose soils with tubes sunk by driving or with jacks. A core drill placed inside the tube, pulled up periodically, allows the sampling of the ground met during the boring.

PRESSURE POT
Pot à pression
Equipment and Tools
A container hermetically closed and which can be pressurized. The pressure drives out the product of injection by an adapted exit. There are various models of pressure pots:
- with a high exit,
- with a low exit,
- with an independent tank,
- with a compressible envelope.

PRESSURE PROCESS
Procédé sous pression
Building Materials
Wood impregnation process by which the penetration of a preservative is obtained by pressurizing inside an autoclave container.

PRESSURE REDUCER
Réducteur de pression
Equipment and Tools
A device installed at the exit of a pipe and allowing to obtain a pressure lower than that at the entrance.

PRESSURE REGULATOR
Manostat
Equipment and Tools
1. An equipment that stops, or conversely allows, the circulation of a fluid following a certain defined pressure limit.
2. A device whose aim is to keep a constant pressure to a fluid inside an enclosure.

PRESSURE RIDGE
Bourrelet
Geomorphology
Syn. with BORDER

PRESSURE SWITCH
Pressostat; Manostat
Equipment and Tools
Syn. with PRESSURE REGULATOR

PRESSURE TIGHTNESS TEST
Essai d'étanchéité sous pression
Tightness
A test intended for testing flexible tightness copings.
On a porous cement disk of 10 cm diameter, the coping to be tested is pasted with a hot-laid mixture. This whole is had on a support pedestal and fixed with resin, the sample of coping occupying the top face of the test specimen. This pedestal constitutes the base of an enclosure filled with water. With jack, one applies a pressure with maintenance by landing. One notes the moment where appears the first leak. One increases the pressure of 1 bar/h: 1 bar during1 h, 2 bars during 1 h, etc., up to 5 bars where this landing is kept during 24 h.

PRESSURE WELDING
Soudage par pression
Welding
An assembly process thanks to which a weld is obtained, without deposited products, by application of a sufficient pressure to obtain a plastic deformation of the faces to be welded. A localized heating enables or facilitates the process.
We can distinguish several families of processes by pressure welding:
- **welding gas by pressure** (*le soudage au gaz par pression*), a technique where parts to be assembled are heated on the level of the interface using a combustible oxygas flame. The weld is obtained by application of a force, without addition of deposited product;
- **pressure arc welding** (*le soudage à l'arc par pression*), a process in which parts are heated by an electrical arc gushing between them and the weld carried out by application of a strain. We can distinguish:

- *pressure arc welding with guiding by a magnetic field* (*le soudage à l'arc par pression avec guidage par champ magnétique*), a process in which an arc guided by a magnetic field moves along the joint, heating the end of the parts to be assembled. These ones are then put in contact by application of a pressure,
- *percussive arc welding* (*le soudage à l'arc avec percussion*), a process in which ends of the parts to be assembled are heated by a shortlived arc and the weld carried out by a strain application;

- **resistance welding** (*le soudage par résistance*), a technique where the weld is carried out using for heating the Joule effect produced by a current coming through the assembly. We can distinguish:
  - *spot welding* (*le soudage par résistance par points*), a process also called *stitch welding,* in which weld is carried out on the place of the part located between electrodes, the surface of the weld point being loosely the same one as that of the points of electrodes. A continuous effort is exerted by electrodes during welding operation,
  - *resistance seam welding* (*le soudage à la molette*), a process in which one applies a continuous force and where the current passes in a continuous or intermittent way in order to obtain the weld, parts being placed between two wheels. The strain and current are transmitted by wheels that are driven by a continuous rotational movement during the carrying out of the weld,
  - *projection welding* (*le soudage par bossages*), a process in which the strain and current are localized thanks to the use of one or several bumpings carried out in one or two parts to be welded. During welding, it occurs a collapse of bumpings. The current and strain are mostly transmitted by trays, settings, sizes, or jaws,
  - *flash welding or resistance flash welding* (*le soudage par étincelage*), a process in which parts to be assembled are gradually brought one toward the other while the current, confined in very localized contact points, brings about a repeated flashing and a molten metal expulsion. When the temperature of welding is reached, the application of a force completes the welding and produces a smudge. Flashing can be preceded by a preheating. The current and force are transmitted by jaws,
  - *resistance butt welding* (*le soudage en bout par résistance pure*), a process in which parts to be assembled are joined under pressure before the beginning of the heating. The pressure is continued and parts to be welded are gone through by a power until the temperature of welding is reached and which a bead is formed. The current and effort are transmitted by jaws,
  - *HF resistance welding* (*le soudage par résistance à haute fréquence*), a process in which a high- frequency AC (current), mostly higher than 10 kHz, comes through the parts to be assembled through the channel of contacts or of an inductor, in order to provide heat necessary for welding. The current is concentrated along adjacent surfaces to obtain locally the temperature of welding before applying the force,
  - *welding by induction* (*le soudage par induction*), a welding process, with or without application of a pressure, in which weld is obtained by the heat produced by the resistance of the part to the induced current. The heat source used is the Joule effect produced by Foucault current induced in an alternative magnetic field in which are placed the parts to be assembled;

- **welding by friction** (*le soudage par friction*), end assembly in which one of the parts to be welded, tighten against the other, or the two parts, is put in rotation, so that friction generates heat at the interface. The weld is completed by a force of repression applied, either during rotation, or once that this one is stopped. One of the principal variants of the welding friction is the welding by inertia, or friction welding with flywheel of inertia, in which kinetic energy necessary to the carrying out of the welding is stored in a flywheel to which the punch is connected keeping the part of rotation. In this case, the force of repression starts at the beginning of the process and continuously decreases to the point that turnover had ceased;

- **explosive welding** (*le soudage par explosion*), used to carry out assemblies with recovery or veneerings, parts being plated one

against the other in consequence of the firing of an explosive charge;

- **welding by ultrasonic sounds** (*le soudage par ultrasons*), in which mechanical vibrations of low amplitude and frequency higher than the threshold of audibility, superimposed on a static force, enable the performance of a weld between two parts, at a temperature quite lower than the melting point of the parent metal. An extra heat source can be possibly used;
- **forge welding *or* fire welding *or* smith welding** (*le soudage à la forge*), a process which consists in heating parts prepared in a furnace whose combustible is the coal. The assembly is done by hammering or pressure.
- **diffusion welding** (*le soudage par diffusion*), a process in which parts to be assembled, kept in contact under a continuous pressure datum, are taking, on the level of the joint or in all the mass, at a temperature defined during a controlled time. These operative conditions lead to the local plastic deformations, an intimate contact of surfaces and a diffusion of the atoms through the interface, that allows to obtain the continuity of the matter. The operation takes place under vacuum, in a protective atmosphere or in a fluid and preferably without addition of a deposited product.

PRESSUREMETRIC CURVE
Courbe pressiométrique
Geotechnics
A graphic representation of the volume of injected fluid into the pressure meter according to the pressure: $V = f(p)$, where p designates the pressure really applied on the ground by the external wall of the probe after correction of the load of fluid and peculiar strength of the sheath and membrane and V is the volume of fluid injected into the probe and measured at the end of the landing of pressure p, after correction of apparatus expansions.

PRESSUREMETRIC DRILLING
Forage pressiométrique
Geotechnics
A process used to introduce a pressuremetric probe into the ground. Two techniques can be used:

- preliminary drilling,
- direct introduction of the probe.

The choice between different techniques and drilling tools is carried out according to the nature and state of met ground so as to disturb the less possible the soil close to the probe.

PRESSUREMETRIC SOUNDING
Sondage pressiométrique
Geotechnics
A job that consists in executing successively the two following operations:
a) - to carry out a pressure measuring drilling,
b) - to carry out pressure measuring tests.
Informations collected thanks to the drilling as well as mechanical characteristics obtained during the tests allows:

- to appreciate the succession of ground layers and possibly their nature,
- to define the ability of the grounds to receive some types of constructions and to direct the choice of the foundations,
- to dimension foundations,
- to evaluate displacements of the structures according to the stresses to which they are subjected. The expression *pressuremetric sounding* also designates the representation of the whole of pressure measuring tests carried out at various levels during the same drilling.

PRESSUREMETRIC TEST
Essai pressiométrique
Geotechnics
In situ test that allows to obtain a relation between strains transmitted to the soil and corresponding deformations. The pressure measuring test consists of a fast loading test of the ground by radial expansion of a cylindrical tricellular measuring probe (a measuring cell and two guard cells). Volume variations of the cell are measured according to the pressure applied on the fluid which fills it. The probe is putting into place either inside a pilot hole, or deepened directly.
In the course of the test three phases are successively met:

- the pseudoelastic phase of which the plot is characterized by a straight line,
- a plastic phase,
- a phase of great slippings.

The pressure gauge allows to obtain the following physical characteristics of the soil:

- *E,* modulus of compression says *pressure measuring modulus,*
- *Pf,* pressure known as *of the creep* which is practically the pressure corresponding to the end of the elastic phase from which begin plastic deformations,
- *Pl,* known as *limit pressure* which is the pressure corresponding to the phase of the deformations by great slippings.

When the test is intended for defining the allowable pressure under a foundation, it is enough to consider value *Pf and Pl.* Pressures taken into account are the total pressures applied on the soil.

PRESSURIZED WATER
Eau forcée
Hydrology
Syn. with FORCED WATER

PRESTRESS
Précontraindre
Building Materials
To subject a solid to actions artificially created with intent to produce in every point, under these actions and these of applied loads, a state of stress such that the material that constitutes the solid can indefinitely support it in complete security.

PRESTRESSED ACTIONS
Actions dues à la précontrainte
Construction of P.C. and P.C.
Actions which follow upon the tensioning of cables. They are variable along reinforcements and over time.

PRESTRESSED CONCRETE
Béton précontraint
Building Materials
A material to which compressive stress is artificially imposed so that it could afterward support tensile forces. This compression, carried out with the help of high-tensile-steel tight reinforcements, subjects the concrete to a combined bending, the prestressing strength being more or less out of the centre in the different stressed cross sections. Tensions are applied to reinforcements before or after hardening of the concrete (pretensioning or posttensioning). The objective is to bring to a piece normally bent a stress suitably applied so as to make all cracking risk disappear by eliminating all tensile forces in the concrete. Prestressed concrete is not a mixed material such as the reinforced concrete in which the concrete is the compression resistant and the steel is resistant to the tension. **See Figures 48 and 49**

PRESTRESSED TENDON
Tirant précontraint
Construction of P.C.
In the dissymmetrical construction by successive cantilevers of prestressed concrete works, shell or post articulated at its two ends and made one's way through by steel prestressing cable making interdependent the deck with the abutment (or the subgrade) to avoid the unsteading of the part under construction. **See Figure 50**

PRESTRESSING BED
Banc de préfabrication
Construction of R.C. and P.C.
Syn. with CASTING BED; PRECAST1NG AREA; PREFABR1CATION FORM

PRESTRESSING BY DIFFERENCE IN BEARING LEVEL
Précontrainte par dénivellation d'appui
Civil Engineering Structure
A prestressing process used to construct mixed (steel and concrete) permanent structures. Let us consider a deck with two spans. In service, the concrete located at the right of bearing-2 will be tended. If one concretes on beams stalled beforehand at a some height above bearing-2, and that one goes down on the level after hardening of the concrete, one creates compressive stresses which will be maximum on the bearing. The concrete is then prestressed. **See Figure 51**

PRESTRESSING CABLEWORK
Câblage
Construction of P.C.
The arrangement of the cables layout of a prestressed concrete structure.
We can distinguish two types:
- **sloping** (*le câblage incliné*) in which cables are arranged obliquely in the webs of segments; **See Figures 52 and 53**

- **horizontal** (*le câblage horizontal*) in which cables are arranged in the top chord of the work following an appreciably rectilinear layout in elevation and in plane herringbone.

PRESTRESSING ON EXTERNAL BEARINGS
Précontrainte sur appuis extérieurs
Civil Engineering Structure
A prestressing process based on the principle of the compression of a part between two bearings (it is obvious that bearings must be indeformable). This form of prestressing finds is applied to construct airfield tracks. Flat jacks are placed during the concreting in the transverse joints and inflated after hardening of the concrete.

PRESTRESSING WIRE
Câble pour précontrainte
Construction of P.C.
A high performance steel cable for prestressed concrete.
There are several types of prestressing wires
- **smooth wires** (*les fils lisses*) of a diameter lower than 10 mm, grouped together in cables by parallel masses;
- **ribbed wires** (*les fils nervurés*) grouped together as above;
- **monostrand cables** (*lex câbles monotorons*);
- **cables** (*les câbles*) made up of parallel strands;
- **twisted ropes** (*les câbles torsadés*), mostly of small diameter, formed by strands rolled in spiral around a metallic or a textile central core;
- **cables with parallel wires** (*les câbles à fils parallèles*) that form a set of parallel metallic wires mostly made interdependent locally by means of hoops. Syn. with STEEL PRESTRESSING CABLE; TENDON

PRETENSIONING
Précontrainte par prétension *ou* à fils adhérents
Construction of R.C. and P.C.
1. A process in which, reinforcements, high-tensile wires or strands, are positioned in the formwork, then tensioning by leaning on external devices. When the wished tension is reached, the pouring of the concrete is carried out. After hardening of the concrete, the tension of the cables, reinforcements, etc. are loosened; what has the effect to prestress the material. Prestressing is achieved by bond strains exerted on the concrete by reinforcements which tend to get shortened. (This process is especially used for small elements, often prefabricated: universal beams, slabs, etc.). **See Figure 54**
2. A tensioning operation of steel prestressing cables or wires in a concrete slab before its pouring.

PRETOOLED STONE
Pierre pré-taillée
Building Materials
A building material having undergone a coarse cut in quarry.

PREVAULT
Prévoûte
Construction
During the construction of a tunnel, thin shell made of concrete (poured, sprayed or precast) directly applied onto the country rock and intended for receiving the active vault. Syn. with PREARCH. **(See figure 43 PREARCH)**

PREWETTING
Prémouillage
Work
The introduction of the wetting water of the concrete ingredients slightly upstream from the cement gun (1 to 4 m) during the implementation of sprayed concrete or shotcrete by dry process called *prewetting.*

PRICE LIST
Bordereau de prix; Série de prix
Contract
1. An independent document of a price schedule. It enumerates and details the cost of every kind of work. Syn. with SCHEDULE OF PRICES; SCHEDULE OF RATES
2. A document allowing the assessment and payment of work. The price list gives prices and units of payment of the work paid at the quantitative survey, according to their measuring, weighing, or counting.

PRIMACORD
Cordeau détonant
Explosives
Syn. with CORDTEX; DETONATING FUSE

PRIMARY BLOCK
Bloc brut
Building Materials
A fragment of stone, of any shape, extracted from the bench or mass.

PRIMARY STEEL
Acier primaire
Metallurgy
An iron and steel product containing apart from carbon, only the following proportions of various elements:
- manganese ≤ 1%,
- silicon ≤ 1%,
- sulfur ≤ 0.1%,
- phosphorus ≤ 0.1%,
- nickel, chromium, copper, and so on, ≤ 0.2%.

PRIME COAT
Appret
Materials
Syn. with PRIMER

PRIMER
Appret; Boutefeu; Cartouche-amorce; Amore; amorce détonante; Primaire
Materials; Explosives
1. A coating applied on a support intended for receiving a finishing product (paint, tightness, and so on) in order to improve its surface state. Syn. with PRIME COAT
2. A blastoff device of an explosive.
3. A blasting cartridge equipped with a detonator.
4. Syn. with BLASTING CAP; DETONATOR; DETONATOR CHARGE; FUSE
5. The first coat of paint applied on a substrate (impregnation, rust preventive, and so on).

PRIMER PAINT
Peinture pour couches d'impression
Painting
An inherent product or paint diluted specially intended for impregnating in first application an absorbing support.

PRIMING
Amorçage
Works
Syn. with BEGINNING

PRIMING COAT
Imprégnation; Impression; Couche de fond; Fonds; Huilage
Civil Engineering; Painting
1. The spreading on a ground, in particular sandy, of a binder intended for giving it a superficial coherence and for increasing its impermeability by obturation of its capillaries.
2. An operation that consists in spreading on a roadway a binder (tar, cutback bitumen) which can penetrate deeply the top layer and facilitate the bonding of the surfacing.
3. The first paint coat applied on a material.
4. The prime coat applied directly on the substrate. Also called *background.* Syn. with BACKING COAT; FIRST COAT
5. A sealing coat applied on a porous material.

PRINCESS POST
Jambette
Carpentry
Syn. with SIDE POST

PRINCIPAL RAFTER
Arbalétrier
Temporary Construction; Metal Construction; Carpentry
1. The sloping top member of a centering truss which carries the purlins.
2. Each tilted upright of a metal pier. Principal rafters are joined on the head by a platform on which are fixed the supporting devices of the beams to be beared. In the standard parts, principal rafters are connected and braced between them by crosspieces and diagonals. **See Figure 55**
3. The tilted part of a wooden or metal truss assembled at the top of the king post and fixed by assembly at its bottom end on the tie-beam. Principal rafters bear purlins on which are applied rafters.
Syn. with MAIN RAFTER; RIDGEBEAM

PRINT
Empreinte
Defects (Building Materials)
The localized sinking of the external ply of a plywood panel.

PRISM SQUARE
Equerre optique
Topography
Syn. with OPTICAL SQUARE

PRISMATIC BEAM
Poutre prismatique
Strength of Materials
A volume generated by a plane section whose center of gravity is moving on a line:
- the plan of this section remaining perpendicular to this line,
- this section varying little in shape and surface.

One regards such a beam as made up of tiny elementary beams, of very small sections, juxtaposed as fibers in the wood.

PRISMATIC MEMBERS
Pièces prismatiques
Strength of Materials
Elements allowing to solve by elementary means problems of the strength of materials. They are pieces generated by a closed transverse section, variable or not, moving normally to a continuous line that is the trajectory of the centre of gravity of the section. This line is called *medium fiber* (or longitudinal axis) and sections are called *cross sections.* Any line parallel to this longitudinal axis is called *fiber.* Dimensions of the section must be small in comparison with the length of the part, and no variation of section must be sudden.

PRISMOIDAL FORMULA
Formule prismoïdale
Earthwork
A formula allowing to roughly obtain the volume of extracted earth from an excavation of length *L* knowing the surface areas of each end S_1 and S_2 as well as the surface area *Sm* of the middle of the length. The formula is as follows:

$$\text{Volume} = \frac{L}{6}(S_1 + S_2 + 4 \times Sm)$$

PROBE
Sonde; Sonder
Equipment for Measure and Control: Geotechnics
1. The name given to some transducers. Syn. with SENSOR
2. To execute a borehole. Syn. with SOUND

PROBE FOR IMPRESSION TAKING IN BOREHOLES
Sonde pour prise d'empreintes dans les trous de forage
Assaying Equipment
An instrument which allows to take moldings of fissures in rock to enable the study of their geometry, distribution, density, orientation, and inclination, so as to determine extraction facility and slope stability.

PROCESSING
Traitement
Metallurgy
An operation causing the intensification of the superficial protective layer of oxide of the basic metal, by action of oxygen incipient dissociated from an electrolyte under power, the basic metal being placed as anode.

***PROCTOR* COMPACTION TEST**
Essai *Proctor*
Geotechnics
Test for determining lower and higher limits of a ground settlement.
So that a ground can bear without to bent out of shape loads which it must receive, it is necessary that it a rate of sufficient settlement. This rate of settlement corresponds to some compactness known as optimum. It was observed that the optimum compactness of most of the ground was between two limits:
- *below the lower limit, the ground will continue to compress;*
- *above the higher limit, the ground, too compressed, will seek to get decompressed: it will inflate.*

Lower limit is nearby and slightly weaker than optimum compactness given by the normal Proctor test; the higher limit is stronger than the optimum compactness given by modified Proctor test.

The test consists in compacting into a standard mold, using a standard earth rammer and according to a focused process, a sample of the ground to be studied. The sample is initially dried with the steamer and it is then placed in the mold, by compacted layers. The mold, full, is leveled and weighed. When all elements of the ground pass to the sieve of 5 mm, the sample, dried and crushed to remove if necessary clayey nodules, weigh about than 2.7 kg. It is compacted in the Proctor mould. When the ground contains elements higher than 5 mm, the test is carried out in the C.B.R. mold on about than 5.5 kg of desiccated and crushed ground. Several cases can appear:

- *it does not have there elements > 20 mm: one uses material just as it is,*
- *there are elements > 20 mm: one passes 5.5 kg ground to the sieve of 20 mm. Elements which remain on the sieve are weighed and eliminated. They are then replaced by an equal weight of elements of a size ranging between 5 and 20 mm, taken on the fraction of dried and crushed ground.*

Samples being prepared, one proceeds to the operations of compacting at various moisture contents, using the suitable mold and applying practices of corresponding filling and compacting. The full mould is leveled and weighed. Knowing this weight, the tare of the container and its volume, as well as the degree of damping of the ground, it is easy to determine the dry density of the ground for the moisture content considered. The Proctor plot is thus defined.

PROCTOR DIAGRAM
Diagramme _Proctor_
Geotechnics
The representative curve of the moisture content of a ground. One defines thus several points of a representative curve that one traces by interpolating between experimental points. This curve presents a maximum whose abscissa is the optimal water content Proctor and ordinate is the maximum dry density Proctor. **See Figure 56**

PROCTOR PENETRATION NEEDLE
Aiguille de _Proctor_
Equipment for Measure and Control
A quick and convenient method for testing the resistance of a fine-grained soil to penetration at a standard rate of 1.27 cm/s. Needles from 6.5 to 0,3 cm^2 area are used, and a spring balance indicates the pressure required for the needle to penetrate the soil.

PROCTOR RAMMER
Dame _Proctor_
Assaying Equipment
A standardized ram used for ground compacting tests in laboratory.

PRODUCT
Ouvrage
Work
The job product by a worker.

PRODUCTION DESIGN
Projet d'exécution
Drawing
All drawings carried out from the pilot study with the aim of the carrying out of the work; it is generally used as basis for the placement in adjudication of work. Syn. with WORKING DESIGN

PROFILE
Calibre; Profil; Profiler; Chaise d'implantation
Earthwork; Construction; Topography
1. A profile used by the navvies to verify the bulge of a slope, a filling, etc.
2. All moldings decorating a work.
3. To mark, to trace profiles.
4. A wooden piece (fir tree mostly) sealed level on battens and which is intended for tightening chalk lines being designed to direct a construction or an earthwork job.

PROFILE OF EQUILIBRIUM
Profil d'équilibre
Geomorphology and Hydrology
The ideal longitudinal profile of a river whose flow is not impoverished toward the downstream side.

PROFILE REFERENCE
Témoin
Civil Engineering
In a ditch, small concreted zone from 0.30 to 0.50 m long that follows closely the cross section, that allows, during the clearing out, to preserve the original longitudinal profile. The principle consists in tightening a line between the lower levels of two consecutive concreted sections (profile reference), thus allowing the correct adjustment of the bottom of the ditch.

PROFILOMETER
Profilomètre
Equipment for Measure and Control
An apparatus allowing the survey of the cross section of tunnel vaults, etc. We notice the:
- **optic-electronic profilometer** (*le profilomètre opto-électronique*), apparatus for checking the profile of tunnels and which is equipped with a small laser generator of low power. Two mirrors, whose one is fixed and the other can move using a fine adjustable screw, project two spots on the obstacle to be noticed. A simple process of measurement by triangulation allows to calculate the distance from the apparatus to the obstacle when the superposition of the spots is ensured. It is then enough to make swivel the apparatus around an axis to notice several points of a perpendicular plan to this axis;
- **hydrostatic profilometer** (*le profilomètre hydrostatique*) is designed primarily for measuring settlements or profilings areas which are not normally accessible to normal survey techniques. The system consists of a pressure transmitter encased in a stainless steel probe, and a hose assembly contained in a cassette reel made from glass-fiber-reinforced plastic. The hose assembly has a nylon tube, filled with a de-aired/anti-freeze mix, a smaller nylon tube inside as vent and in the latter an electrical cable for connection to pressure transmitter and readout box.

In use, the probe is positioned at various stations where measurements are required, most commonly in buried sewage and water pipes. Readings are taken at these stations which correspond to the water pressure acting on a quartz membrane in the probe and caused by the difference in elevation between the probe and a reference level in the reel. The elevation of normally accessible locations on which the probe is stationed can be accurately determined by conventional survey techniques, and hence, the elevation of each station can be determined.

PROFOMETER
Profomètre
Equipment for Measure and Control
Syn. with REINFORCEMENT COVER METER; REINFORCEMENT DETECTOR

PROGRESS OF WORK
Avancement
Work
The length of which progresses in a given time a building site, a tunneling, a gallery heading, etc.

PROGRESSIVE
Autogrimpant
Equipment and Tools
Of a formwork which can be hoisted along the walls as and when the progress.

PROJECT
Forjeter; Se forjeter; Encorbeller; Cingler; Projet
Construction; Masonry; Contract
1. Syn. with BULGE FORWARD; JET OUT
2. To build a corbeled work or a corbeled part of work. Syn. with CORBEL (OUT)
3. To throw manually or mechanically a coarse rough rendering.
4. Syn. with DESIGN

PROJECT MANAGER
Maître d'oeuvre
Civil Engineering Structure
The physical or moral person who, for his technical competence, is in charge by the building owner of the design, management, and supervision of the building work. Syn. with MAIN CONTRACTOR

PROJECTING
Hors oeuvre *ou* Hors d'oeuvre; En porte-à-faux
Construction
1. Syn. with BUILT OUT; OUTWORK
2. Syn. with BACK-BALANCED; OVERHANGING

PROJECTING BAND
Bandeau
Construction
An overhanging of stones or bricks forming a thin horizontal string on the main plane of a wall intended for protecting it from streaming of rainwaters.

PROJECTING REINFORCEMENTS
Aciers en attente
Construction of R.C.and P.C.
Syn. with STARTER BARS

PROJECTING SPAN
Volée
Construction
The corbeled part of a metal bridge.

PROJECTING STONE
Naissance
Construction
Cantilevered toothing stone or cantilevered toother of a masonry work.

PROJECTION
Forjeture; Forjet; Porte-à-faux
Construction
1. Syn. with FORWARD BULGE
2. The part of a beam jutting out from the bearing as a console. **See Figure 57**

PROJECTION MEMBER
Membrure
Construction
The overhanging part of a structure.

PROJECTION OF FOOTING
Empattement
Construction
Projection in width of the footings with regard to the transverse section of the wall that they support. **See Figure 58**

(WATER) PROOF
Fluater
Masonry and Building of R.C. and P. C.
To proceed to the fluosilicate sealing.

PROP
Etançon; Appuyer; Chandelle; Accorer
Temporary Construction
1. An oblique prop arranger in order to support a slab or wall.
2. In the heading of gallery, prop of adjustable length, formed by two cylindrical metal parts that slide one in the other.
The prop lengthens by sliding of the stanchion into the shaf until to the contact with the roof and the wall. It is blocked in this position, and it is then able to slide spontaneously when the pressure of the grounds exceeds a certain level (pressure of sliding). In a friction prop, the locking is obtained by tightening of a wedge in a lock. The pressure of sliding is determined by the construction of the lock and wedge. In a hydraulic prop, the two cylinders constitute a hydraulic jack, that are connected by a piping to a hydraulic plant. The pressure of placing (during the implementation) is provided by the plant. The pressure of sliding can be steady by a system of dump valves. The hydraulic prop, by its highest placing pressure and its suppleness of sliding, constitutes the best bearing.
Syn. with RIB; SHORE; STAY; YIELDING PROP
3. To relieve, to support, by means of a stay or any support. Syn. with TO STAY
4. A vertical pole used as prop in a construction. Syn. with DEAD SHORE; PILLAR; POST; SHORE; STAY, UPRIGHT. **See Figure 59**
5. Syn. with SHORE

PROP
Etançonner; Poteler; Accore; Etai
Temporary Construction
1. To support with props.
2. To put the end of a supporting timber into a hole post.
3. Syn. with SHORE
4. Syn. with FRAME; PIT PROP; SHORE; STANCHION; STRUT

PROP
Servante; Support; Jambe de force; Appui
Equipment and Tools; Construction; Strength of Materials
1. A kind of trestle being designed to keep the end of long parts. It is often formed at the base of a tripod overcame of an upright that supports a fork. This fork is equipped with a roller on which rests a part of the piece to be supported. Syn. with BENCH VISE; SUPPORT. **See Figure 60**

2. An element of structure or structure builds with intent to be of use as bearing or endorsement for another mostly heavy structural element. Syn. with STAY; STRUT
3. Syn. with BRACE; CORNER BRACE ; STAY; STRUT
4. Syn. with BEARING; SHORE; SUPPORT

PROP UP
Arc-bouter
Civil Engineering Structure
Syn. with BUTTRESS; SUPPORT

PROPORTIONING
Dosage
Test of Materials (Mineralogy)
Syn. with GAUGING

PROPORTIONING HOLDER
Boîte de dosage
Equipment and Tools
A container to known capacity used by builders for gauging the different constituents going into the proportions of the mortar.

PROPORTIONS
Dosage d'un béton, d'un mortier; Composition des bétons
Building Materials
1. Syn. with MIXTURE RATIO; RICHNESS OF THE MIXTURE
2. Syn. with DESIGNATION; MIX DESIGN

PROPORTIONS AND PROFILE OF A MOLDING
Modénature
Architecture
Proportion, molding with entasis.

PROPPING
Etaiement; Etançonnement
Temporary Construction
1. Each temporary device of which the goal is to keep or to support a structure so long as the stability or self-stability are not reached.
The propping up can be constituted by wooden or metal supports, simple or composed (example: telescopic, hydraulic), variously spaced, leaning on the ground directly or transmitting loads by the agency of the work under construction for example. This device is notably used to fix and keep formworks, walls, etc., transmitting loads to the ground or to carry out catwalks. Syn. with FALSEWORK; SHORING; STRUTTING. **See Figure 61**
2. The propping up of a work with props. Syn. with SHORING (UP); STAYING; UNDERPINNING

PROPPING BEAM
Plat-bord
Building Materials
A balk used to constitute wedgings to carry out temporary works.

***PROT* SEDIMENTOMETER**
Sédimentomètre de *Prot*
Assaying Equipment
Equipment for measuring the sedimentation time of a sample. Fines mixed with an apolar liquid are deposited on the upper part of a sedimentation tube filled with liquid; according to the time, the height of the deposit which is formed on the lower part of the tube is measured. **See Figure 62**

PROTECTION
Protection
Metallurgy; Buiding Materials
Application onto a metal surface of a coating intended for protecting it from corrosion, wear, etc. The protective coating can be carried out by application of paint, metal spraying, electrodeposition, phosphatizing, etc.
Protection can be:
- **rustproof** (*la protection antirouille*), which consists of a protective coating obtained by application of a rust-proof paint coat or by a system of paint able to ensure the rustproof protection of a ferriferous alloy substrate, and comprising, consequently, at least a coat of rustproof primary paint;
- **cathodic** (*la protection cathodique*), which consists in carrying out a couple of corrosion such as the part that one wants to protect from the corrosion is always in cathode. It is in particular used to protect piles, reinforcements of the concrete and metal sheet piles exposed to salty water, briny, etc.

The two main processes are:

- *electrical protection* (*la protection électrique*), which consists in transforming the part to be protected in cathode by applying to it a negative tension from a source of direct current. Corrosion stops by inversion of the current.

For reinforcements of the reinforced concrete, two processes can be implemented, after having ensured the electrical junction with the system of reinforcements. They differ by the nature of the material being designed to distribute the electrical field:

- organic conductive coating which is generally applied on dry concrete after sanding and which is made up of conductive asphalt (from 8 to 10 mm thick), an acrylic-based paint + graphite of 400 µm thick. On this coating is then plated the network of anode constituted by a metal lattice. The lattice is then protected by a rendering;
- shotcrete. The process consists in tacking onto the concrete a metal lattice containing titanium and in covering it by a shotcrete layer,
- **galvanic** (*la protection galvanique*), which consists in lowering the electrolytic potential of a steel or a cast iron piece to be protected by putting it in connection with a metal more electronegative than it, such as cadmium, zinc, magnesium, to bring it in the zone of passivity. With the reverse of electrical protection, one does not have, in galvanic protection, need for external current source because one constitutes in sum a battery in which the part to be protected is cathode, the electrolyte being the ground;
- **electroplating** (*la protection par électrolyse*): see ELECTROLYSIS.

2. All measurements, design of the works, manufacture, implementation, application of chemicals, etc, taken to ensure the wood conservation in a given use.

PROTECTION FAN
Auvent
Construction
A protective system usually arranged in fan, formed by boards, fillets, etc., fixed to a scaffolding or directly on the walls of a work and intended for preventing the fall of workers or materials. Syn. with DEBRIS-COLLECTION FAN; FAN

PROTECTION SYSTEM
Système de protection
Metallurgy and Painting
All protective coatings of well defined nature and thickness that ensure the protection of a metal. (A system is designed according to the exposure to given ambient conditions.)

PROTECTION WORK
Ouvrage de protection
Civil Engineering Structure
In the classification of the civil engineering structures following their function, construction intended for protecting the channel of communication from the risks of obstruction by fall, etc. (retaining wall, snow-shed gallery, etc.).

PROTECTIVE BREAK
Investison
Earthwork
Syn. with BARRIER PILLAR; INVESTISON

PROTECTIVE COLLOID
Colloïde protecteur
Materials
An element mixed into a colloidal solution and whose power of stabilization stands in the way of the sedimentation of the solution.

PROTECTIVE SCREEN
Ecran de protection
Construction
A fenced construction, a wall of cast-in-place concrete or of precast blocks, etc., erected at the foot of a slope in order to protect a communication routes, a construction, etc., from possible landslides. Syn. with SAFETY SCREEN. **See figures 63 to 63c**

PROTOGINE
Protogine
Geology
Granite having undergone important transformations having endowed it a schistose appearance and having transformed the mica into fibrous masses (talc or matter having the appearance of talc).

PROUD
Désaffleurer
Work
To make uneven or to offset two contiguous surfaces. Syn. with DISFLUSH

PROUD *or* DISFLUSHING OF THE CRACK LIPS
Désaffleurement des lèvres de fissure
Defects (Masonry and Construction of R.C. and P.C.)
The component of the relative movement of a fissure, perpendicular to the surface of the facing. **See Figure 64**

PROUDING
Désafleurement d'assises
Defects (Masonry)
Syn. with COURSE DISFLUSHING; COURSE PROUD

PROVIDE A TRANSITION
Racheter
Work
1. To make up a difference of level by forming a slope or steps.
2. To gradually ensure the connection between two different plans.
3. In the cutting of stone, to join by connection two cuts of different type.

PRUSSIAN BLUE
Bleu de Prusse
Materials
A pigment constituted by a ferric ferrocyanide. This pigment is characterized by an excellent light resistance and besides possesses great coloring power.

PSAMMITE
Psammite
Geology
A sedimentary rock of detrital origin which is a sandstone containing spangles of mica and is developed to the expense of quartz. It is a cleavable rock, frequent in the primary formations.

PSYCHROMETER
Psychromètre
Equipment for Measure and Control
Instrument for measuring the relative humidity of air. Syn. with HYGROMETER

PSYCHROMETRY
Psychrométrie
Work - Painting
The determination of the relative humidity of the ambient air. Syn. with HYGROMETRY

PUBLIC WORKS
Travaux publics; Construction civile
Civil Engineering; Work
1. Building, maintenance or strengthening work, completed for the account of a public service in the context of the general interest, but also for a private person in the context of a public service mission.
2. Syn. with CIVILIAN BUILDING; CIVILIAN CONSTRUCTION

***PÜCHER'S* NOMOGRAPH**
Abaques de *Pücher*
Drawing
Graphs that allow the calculation of bending moments of rectangular reinforced concrete slabs whose ratio of sides takes the following values: 0; 0.8; 1; 1.2 and infinite. Slabs can be to free sides, articulated or restrained with combination of several of these modes of bearing for same slab.

PUCKERING
Plissement
Defects (Painting)
Folds formed on the surface area of a coat of paint before drying.

PUDDINGSTONE
Poudingue
Geology
Syn. with CONGLOMERATE

PUDDLE
Corroyer; Corroi
Civil Engineering; Temporary Construction and Hydraulic Works
1. To compact with suitable devices, to make it watertight, a work built of clay such as barrages or cofferdams.

2. A filling made of clay earth, concrete, rammed sand, etc. located between an enclosure of sheet piles and a bridge pier (or in front of an abutment) in aquatic site. Syn. with CLAY PUDDLE; PUG

PUDDLE CLAY
Argile à batardeau
Materials
Syn. with COFFERDAM CLAY

PUDDLED EARTH
Béton de terre
Building Materials
Syn. with RAMMED CONCRETE

PUDDLED IRON
Fer puddlé
Metallurgy
A metal obtained following an old practice of refining (puddling), and that was used at the end of the nineteenth century in the bridge constructions.
This product is obtained based on liquid (cast) iron in a furnace to puddle (that is to brew, stir). In this furnace, the liquid (cast) iron mixed with oxidizing additions is brewed energetically with pokers. It turns then into pasty iron by decarburization in the presence of atmospheric air, the temperature reached by this process not enabling the fusion of the iron. The load of furnaces to sole is about than 200 kg; the iron thus obtained is formed in loops of the order than 30 kg. These last are then carried to the shingler pestle that has as a role to expel cinders and to generate the compactness of the metal. This operation is to be made at a high temperature to enable most important elimination possible cinders. Loops are "soldered" between them by hot working with rise of temperature. The puddled iron is characterized by a metallographic structure of ferritic type (α solid iron solution) presented a variable density of parallel inclusions in the directions of the lamination. These inclusions constituted by oxide of iron, silicon and phosphorus, lead to discontinuities in the ferritic matrix and a lamellar aspect.

PUDDLED STEEL
Acier puddlé
Metallurgy
An iron and steel product obtained without passing by liquid state and hardened by quenching

PUG
Corroi
Temporary Construction and Hydraulic Works
Syn. with CLAY PUDDLE; PUDDLE

PULL OUT
Desceller
Masonry
To remove a quarry stone or brick of its site in a masonry.

PULLEY
Poulie
Equipment and Tools
A lifting device comprising a sheave crossed by an axle fixed on a clevis interdependent of two blocks located on both sides of the sheave.

PULLEY BLOCK
Poulie mouflée; Moufle
Equipment and Tools
1. An equipment which act jointly with one or several other pulleys assembled on the same clevis.
2. A lifting appliance made of two hooking devices that are interdependent of a clevis crossed by an axle carrying several pulley sheaves. Pulley blocks assembled by pair constitute with the hoisting cable a unit called *reeving.* Syn. with DIFFERENTIAL PULLEY BLOCK; (BLOCK AND) TACKLE
3. Syn. with HOIST; HOIST TACKLE

PULLING JACKS
Vérins de traction
Equipment and Tools
Devices generally used in battery for the launching of works (deck, slab, etc.). Pulling jacks are joined on head by flasks where a tensile chain is fixed. All these parts are assembled with drift bolts, which enable to eliminate a chain link after each stroke. These

jacks have a stroke from 1 to 3 m and take pick up on a fixed element. This device is mostly used for launchings on Teflon skate.

PULLING OUT TEST (ANCHORAGE TEST)
Essai d'arrachement (contrôle des ancrages)
Test of Materials (Building Materials)
A test that consists in exerting tensile loads on an anchorage in order to test its real abilities of pulling out strength. The traditional test for the major anchorages is the *hollow jack test.* The exerted stresses are read directly on the pressure gauge, possible displacements are read with the comparator. Tensions during tests are equal, prima facie, to 1.2 times the tension defined in the project.

PULSE RADAR
Radar à impulsions
Equipment for Measure and Control
Device for sounding tunnels whose principle consists in looking the presence of possible gaps (cavities, settlings, etc.) that could be located behind the coating or under the platform.
Pulse radar works as follows: an electromagnetic wave of variable frequency (100 to 1000 MHz) is emitted from a pulse generator. The reflections on the interfaces between benches, on the ground's cavities of the walls and other discontinuities are collected and recorded on a paper tape. Recordings, comparable with a section of seismic time, represent in X-coordinate the distances and ordinate the propagation time of the considered wave. The propagation time varies according to the speed of the electromagnetic waves that depends on the dielectric constants of the medium. A calibration, defined thanks to the reflection on a mirror of known depth, enables to know this speed, out of which can be connected the propagation time and the depth, and to further use this scale for other reflections. The penetration depth is very variable according to the materials, the attenuation of amplitude being directly related with the conductivity and dielectric constant of the ground as well as with the frequency of the wave sent. This emission-reception is done by means of an antenna which is either trailed on a carriage for the platform or applied to the facing for statements in the vault and sidewalls. Readings are made with the stream at a speed lower than 2 mph. This method is also operational to look for buried pipeworks, to outline the bottom of lakes or rivers and to sound airfield tracks.

PULVERIZED ROCK
Roche broyée
Geology
A chemically pure material which has the character of a crushing product; most of the fragments are as small as the grains of fine sand and there was no recementing; a pulverized rock below the water table presents properties of a wetted sand.

PULVIMIXER
Tritureuse; Pulvi-mixer
Equipment and Tools
A tractor-drawn housing plow used for breaking up and mixing ground, and made up of a horizontal axle provided with harrow teeth which, by turning, violently project clods of ground against the housing and break them.

PULVINO
Pulvino
Foundation
A foundation block used for some arch dams and that constitutes for the barrage an element of artificial ground of steady shape, distributing strains on the ground. The barrage rests on a continuous bearing surface called *perimetrical joint.*

PUMICE
Ponce
Geology
A porous vitreous volcanic rock, with a density sometimes lower than 1, clear gray, used as aggregate for making lightweight concrete.

PUMICE (STONE)
Pierre ponce
Building Materials
A porous rock of volcanic origin and of low density which, after cutting, can be used as

aggregate in the making of some concretes. Syn. with PUMICITE

PUMICE CONCRETE
Béton ponce; Béton de tuf
Building Materials
1. A light material whose main aggregate is artificial or natural pumice and is composed of large elements that bring lightness and fine elements that provide the strength.
2. A material whose skeleton is partly composed of pumice and pouncite.

PUMICING
Ponçage
Painting
Syn. with SANDING; SANDING DOWN; SANDPAPERING; RUBBING DOWN

PUMICITE
Pierre ponce
Buildings Materials
Syn. with PUMICE (STONE)

PUMP
Pompe
Equipment and Tools
1. A mechanical device for aspiration or repression of some fluids from one place to another, or for compressing or attenuating gases.
2. A device used in grouting or mechanical application to carry the grout or mortar (screw volumetric pump, pump to piston or compressed air).

PUMP DREDGER
Suceuse
Equipment and Tools
Syn. with SAND PUMP DREDGER. SUCTION DREDGER

PUMPABILITY
Pompabilité
Various; Foundation
1. Of a product susceptible to be pumped.
2. The property of certain drilling fluids characterizing their facility to be injected.

PUMP-DOWN SYSTEM
Groupe de mise sous vide
Welding
Concerning a sealing control with helium, set of vacuum pumps which allow to lower the pressure in the parts to be checked.

PUMPED CONCRETE
Béton pompé
Building Materials
Any concrete put in place with the help of a concrete pump. (A plasticizer is often incorporated to the concrete so as to facilitate its flow in pipings.)

PUMPING
Pompage; Epuisement
Defects (Civil Engineering Structure); Work; Sanitary Engineering and Drainage
1. The alternating movement of sag and uprising of the end of a transition slab under the influence of rolling loads.
This phenomenon is caused by the fatigue of the subgrade under the repetition effect of rolling loads. This alternate movement causes the creation of cavities at the angular end of the slab. These cavities fill up with water which dilutes the ground and causes at each passage muddy ejecta. Mostly this damage result in the time by a fracture of the end of slabs.
2. Syn. with BAILING WATER; DEWATERING

PUMPING BY INJECTION OF COMPRESSED AIR
Pompage par injection d'air comprimé
Foundation
A dewatering process with the help of a strained tube, by injection of compressed air into a drilling.

PUMPING OUT
Exhaure
Sanitary Engineering and Drainage
Syn. with DEWATERING

PUMPING STATION
Station de pompage
Equipment and Tools
Set of water repression devices.

PUMPING TEST
Essai de pompage
Test of Materials
Test for determining hydraulic characteristics of the soil. The test consists in lowering by pumping the piezometric surface of the groundwater table, measuring according to the time the pumped flow and variations of the level of this surface. Pumping is carried out in a well and the evolution in the time of the piezometric surface is followed by means of piezometers established around the well. The coefficient of permeability k obtained from the test of pumping is the coefficient of horizontal permeability of the ground. This coefficient is representative of the average hydraulic behavior of the volume of ground interested by the test. **See Figure 65**

PUMPING WELL
Avaleresse
Earthwork
Well driving into which strong water inrushes are pumped.

PUN
Damer; Pilonner
Earthwork
1. Syn. with BEAT; RAM; TAMP
2. Syn. with RAM

PUNCH
Poinçon; Chasse; Poinçonneuse; Perce; Poinçonner
Equipment and Tools; Work
1. A tool mounted on a machine known as a *punching machine,* allowing to obtain a hole carved in a blade of metal by shearing of material according to a circular, oblong, square, or rectangular contour, corresponding at the dimension of the punch. Syn. with AWL; BROACH. **See Figure 66**
2. A truncated-shaped tool used to knock out a rivet, a pin, etc., from a hole. Syn. with DRIFT
3. Hand tool or tool equipping a punching machine, used to punch metal.
4. Syn. with BORER; DRILL
5. To bore a hole, to cut a stone, with a punch. Syn. with BROACH

PUNCHEON
Potelet
Temporary Construction
Syn. with GROUND PROP

PUNCHING
Pointage; Poinçonnage; Percement
Metal Construction; Work
1. Marking with a center punch of the axis of a hole to be drilled which will be used at the same time as guide for drill.
2. The carrying out of holes with punch.
3. Syn. with BORING; DRILLING

PUNCHING MACHINE
Poinçonneuse
Equipment and Tools
A machine carrying out mechanically the drilling of holes in metal parts. Syn. with STAMPING MACHINE

***PUNDIT* DYNAMIC TESTER**
Ausculteur dynamique *Pundit*
Equipment for Measure and Control
A hand-held measuring device intended for the non destructive check with ultrasonic waves of homogeneous materials or having tendency to the homogeneity. The measurement in microseconds or decimicroseconds of the transit time of ultrasonic wave trains through material to be tested allows by comparison to determine characteristics or to follow the development of evolutionary phenomena of them and to control them. Readings of transit times are carried out on a numerical digital indicator with liquid crystals.
This instrument is used to sound concretes, ceramic products, bricks, grounds, rocks, piles, drillings, tunnels, woods, etc.

PUNNER
Dame
Equipment and Tools
Syn. with HAND RAMMER; RAM; RAMMER

PURCHASING
Adjudicataire
Contract
Syn. with SUCCESSFUL TENDERER

PURE WATER
Eau pure
Hydrology
A water containing neither dissolved gas nor dissolved solids

PURGE
Décalabrer
Masonry
To detach from the vault or sidewalls of a work the blocks of materials which is in danger to fall.

PURGING
Bûchement
Building Materials
The removal with the axhammer of a blistered part or a part standing out of a built work

PURIFIER
Epurateur
Equipment and Tools
A device used in welding in which gases are rid of all or part of the chemical impurities by reaction at the touch of suitable elements.

PURLIN
Ventrière; Panne
Construction; Carpentry
1. A large wooden or metal plank placed horizontally against a curtain of sheet piles to keep it from buckling.
2. Syn. with PLATE

PURLIN CLEAT
Chantignole; Echantignole
Carpentry
1. A wooden wedge fixed on the sole of a propping up, that allows to avoid the displacement of knee braces.
2. A small slanted wooden piece supporting a purlin or a cross girder of a frame and that is fixed on the principal rafter.
Syn. with CANT BOARD

PURLIN COURSE
Cours de pannes
Carpentry
The continuous string of purlins posed end to end. Syn. with ENDWISE PURLIN

PUSH
Foncer
Foundation and Earthwork
Syn. with DRIVE; SINK

PUSHCAR
Lorry
Equipment and Tools
A small railway vehicle equipped with a crosspiece resting on a four-wheel bogie truck which can be, either hand-pushed, or tractor drawn or pushed by a track motor car. This machine is used to transport equipment, materials or to launch decks.

PUSHED PIPE METHOD
Méthode des tubes poussés
Construction
A method that consists in carrying out roof slabs for an underground work or sections of tunnels, by means of parallel and butt-jointed cylindrical beams. These beams are obtained by deepening into the ground of asbestos-cement or steel tubes, reinforced and filled with concrete. The driving of these tubes transversely in comparison with the tunnel is carried out by means of jacks acting horizontally. The driving equipment can be installed in an open excavation, in a braced cut carried out from the surface or well from a side drift carried out in underpinning and skirting the work to be built. **See figure 67**

PUSHER
Pousseur
Equipment and Tools
A tractor in push position, located at the back of a scraper helping the tractor in traction position located upfront, during the stripping operation. Syn. with PUSHER TRACTOR; PUSHLOADER; SCRAPER-LOADER

PUSHER TRACTOR
Pousseur
Equipment and Tools
Syn. with PUSHER; PUSHLOADER; SCRAPER-LOADER

PUSHING
Fonçage; Poussage
Earthwork; Handling
1. An operation that consists in pushing directly a work into the ground without preliminary excavation; the extraction of the excavated materials being made as the work progresses. The driving can be made by pushing (with jacks) or by drawing (with cables). Syn. with DRIVING; PIPE JACKING; SHAFT SINKING. **See figures 68 and 68a**
2. An action that produces a horizontal transfer.

PUSHING FORWARD
Poussage
Handling
Syn. with LAUNCHING

PUSHLOADER
Pousseur
Equipment and Tools
Syn. with PUSHER; PUSHER TRACTOR; SCRAPERLOADER

PUSTULAR OXIDATION
Oxydation pustulaire
Defects (Metallurgy)
Superficial corrosion that brings formation of small cavities (pustules) disseminated on the surface of the metal.

PUTLOG
Boulin
Temporary Construction
A transverse scaffolding piece on which the floor lies. It is a round piece with a (8 to10 cm) 3-to 4 inch diameter which lies on tension rods to which it is roped. (One of extremities of the scaffold tie can also lie on a recess provided in the constructed wall.) Syn. with SCAFFOLD TIE

PUTLOG HOLE
Boulin
Masonry
A hole made in a wall intended for receiving a piece of scaffolding.

PUTTY
Mastic; Lut
Materials
1. A malleable compound product, ready for use, presented in paste to be applied with knife, scraper or finger, and used to seal off some parts of structures (example: interstices between metallic flanges of beams, joints). Putties containing red lead or silicone are very much used. Syn. with FILLER; STOPPING COMPOUND; STOPPING UP
2. Syn. with LUTE; LUTING

PUZZOLANE
Pouzzolane
Geology.and Buildings Materials
Syn. with POZZOLANA

P.V. CEMENT
P.V. ciment
Equipment for Measure and Control
Recording and control apparatus of the parameters of grouting, flow, volume, and pressure of the injected product.

PYCNOMETER
Pycnomètre
Equipment for Measure and Control
Bottle for determining densities of the solids or liquids (paint, soil, etc.). The pycnometer is basically a glass bottle surmounted by a very narrow pipe carrying a reference mark. It allows to weigh, by difference, the mass of the volume of water moved by a solid immersed in the bottle filled with water. The density of water being well known, one deduces from it the density of the liquid or the one of the solid which one took care to weigh separately. Because of expansion, the pycnometer must be used in a carefully checked temperature. Syn. with SPECIFIC GRAVITY BOTTLE

PYCNOMETRY
Pycnométrie
Metrology
The science of the measurement of densities.

PYLON
Pylône
Construction
A slender vertical element used as support for cables of bridges and which can take various shapes (mast, portal frame, etc.). Syn. with

LATTICE MAST; MAST; TOWER. **See Figure 69**

PYLON BREAKING
Fracture de pylône
Defects
Concerning cable bridges, breaking at the base of the pylon mostly caused by a locking of saddles and the disturbance of the suspension.

PYRITE
Pyrite
Geology
A mineral that corresponds to various iron and copper sulfides more or less oxydizable, of which the most frequent is iron pyrite FeS_2. This mineral, when it lies mixed with aggregates for concrete can have harmful aftermath. Indeed, pyrites, in the presence of moisture and atmospheric oxygen, are susceptible to oxidize passing into the sulfate state. It results two types from them of harmfulness:
- *expansion* which, when pyrite grains stand close of the facing, can be at the origin of bursting cones,
- *oxidation,* which often leads at the ferrous sulfates, can bring about on the facings of rust-colored trails prejudicial to the esthetic aspect of a work.

Syn. with FOOL'S GOLD

PYROANCHORAGE APPARATUS
Pyroancreur
Equipment end Kit
An apparatus intended for sinking into the ground of piles, sheet piles, etc., or to fasten superstructures on anchorages. The process consists in deepening an anchorage (pile, etc.) into the ground thanks to a kind of a gas gun. Anchorage is laid out in a movable breech block; a gas generator is inserted between the anchorage and bottom of the breech block. A gas explosion is brought about generating a pressure on the pile; this pressure forces the penetration of the pile into the ground without deviation. The pile is stopped when the whole of the kinetic energy is absorbed.

PYROCLASTIC ROCK
Roche pyroclastique
Geology
A material resulting from the volcanic eruptions such as ashes, gravels, which can agglomerate or consolidated by cement or again to remain to the soft remains state.

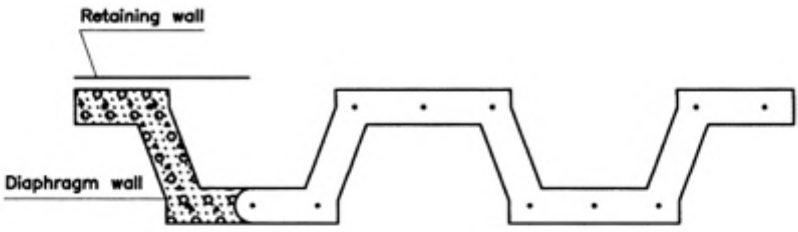
PYROGENOUS
Pyrogène
Geology
Of a rock of which origin is due to fusion

PYROMECHANICS
Pyromécanique
Metallurgy
All metalworking work in which intervene concepts of pyrotechnics such as welding, riveting, thermal cutting, etc.

Figures of the letter

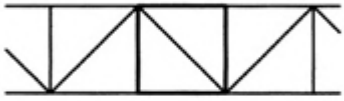


Fig. 1



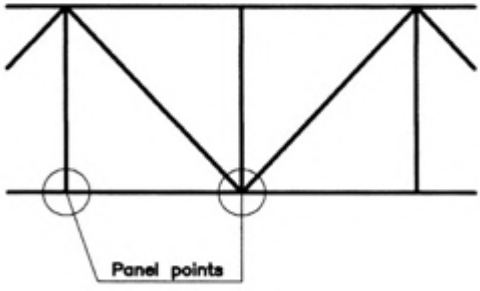
PALSIF SYSTEM

Fig. 2



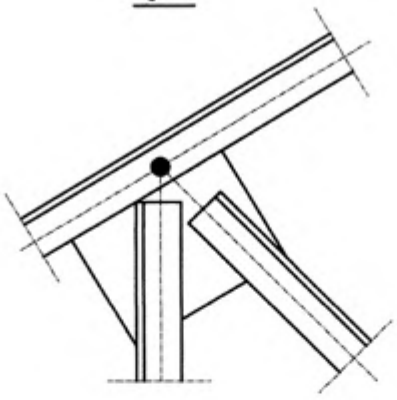
PANEL

Fig. 3



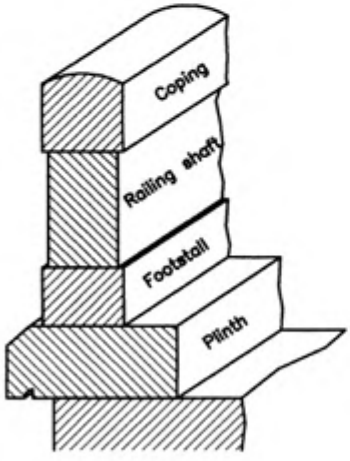
PANEL POINT

Fig. 3a



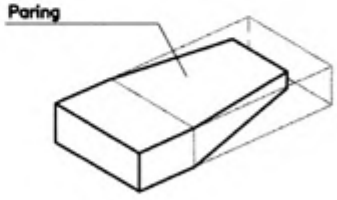
PANEL POINT

Fig. 4



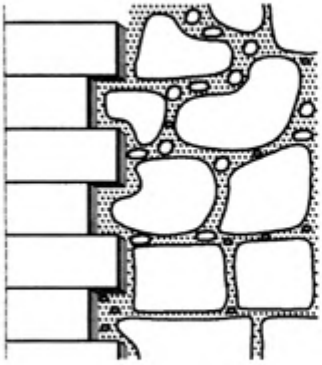
PARAPET

Fig. 5



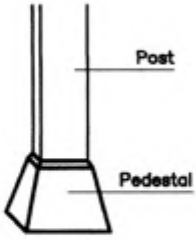
PARING OF STONE

Fig. 6



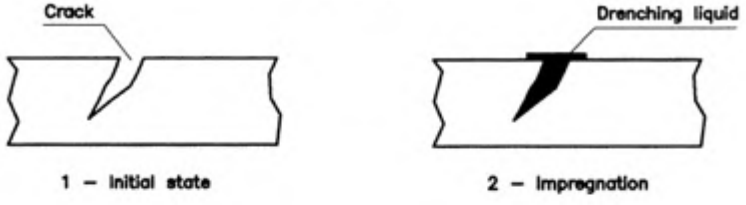
PARTIAL GAVETING

Fig. 7



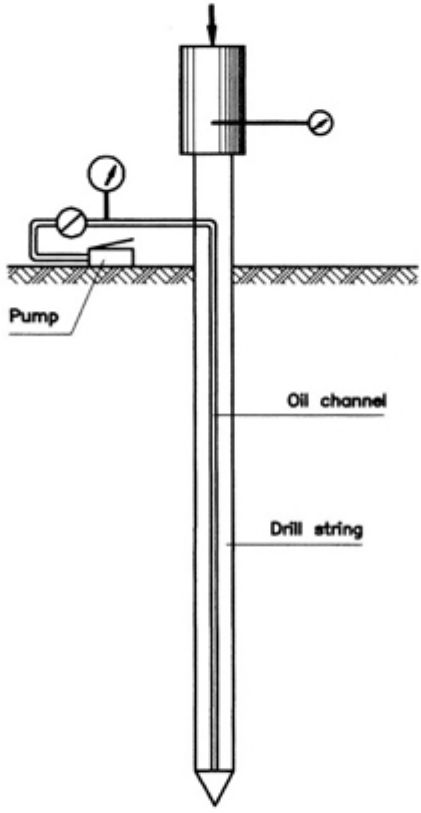
PEDESTAL

Fig. 8



PENETRANT FLOW TEST

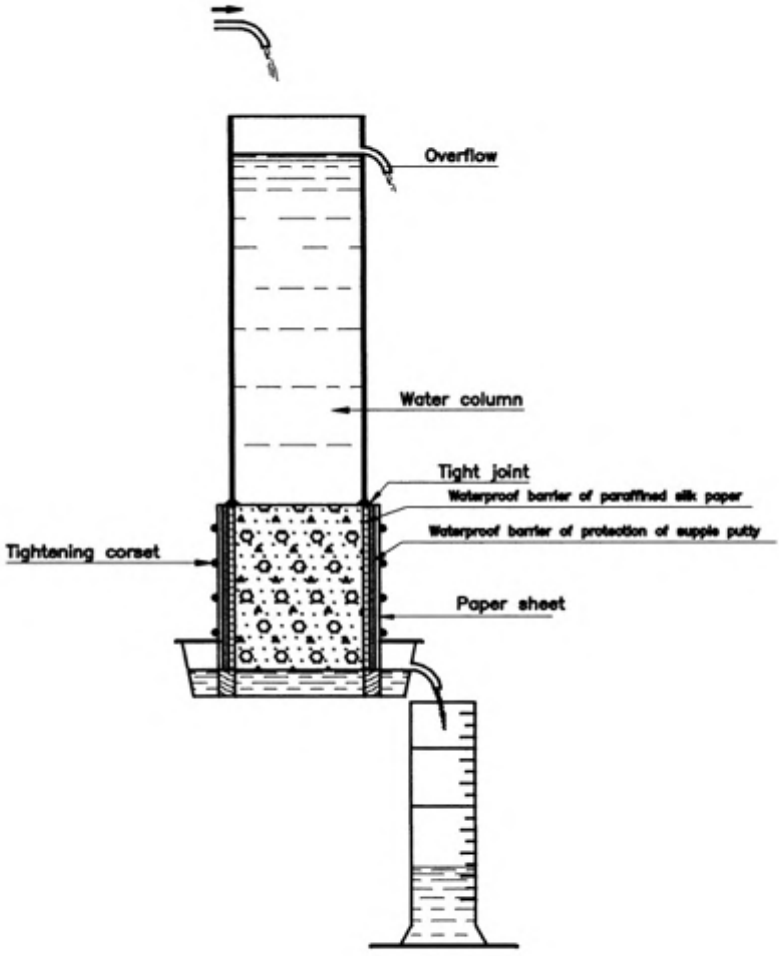
Fig. 9



Parez penetrometer

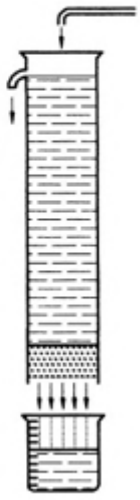
PENETROMETER

Fig.10



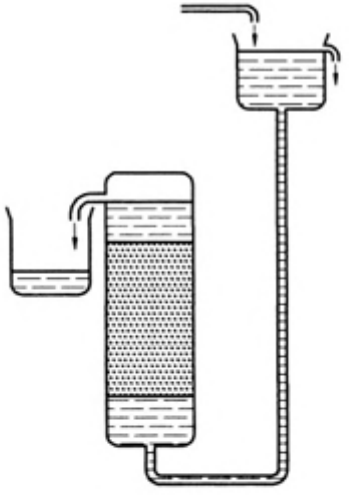
PERMEABILITY TEST UNDER CONSTANT LOAD

Fig.11



Darcy permeameter

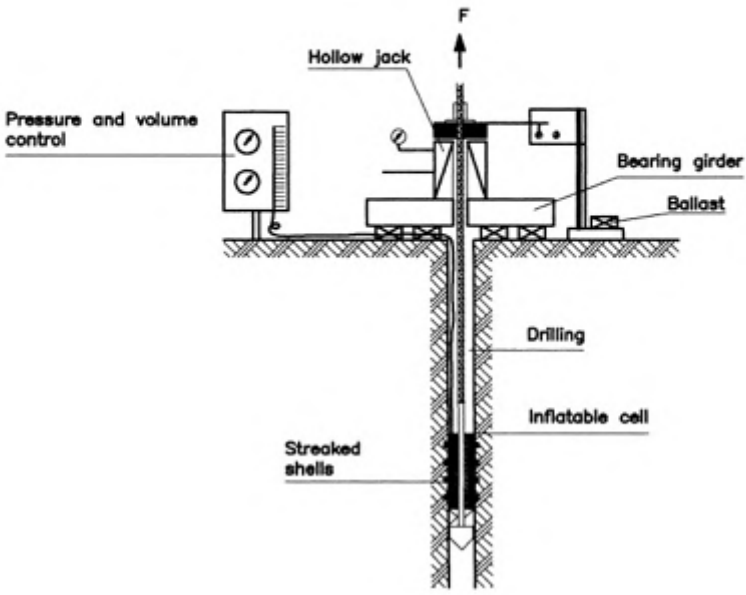
Fig.11a



Permeameter to ascending circulation

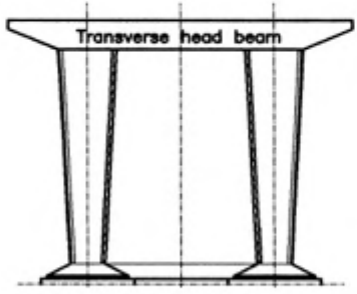
PERMEAMETER

Fig.12



PHICOMETER

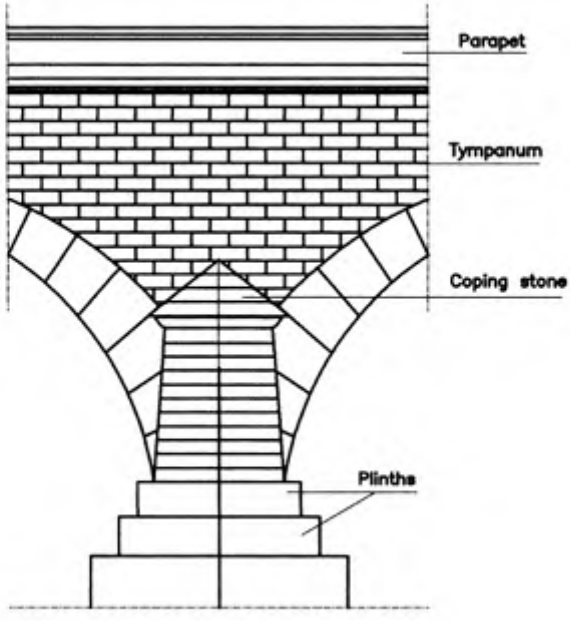
Fig. 13



Double pier of R.C.

PIER

Fig.13a



Masonry pier

PIER

Fig.14

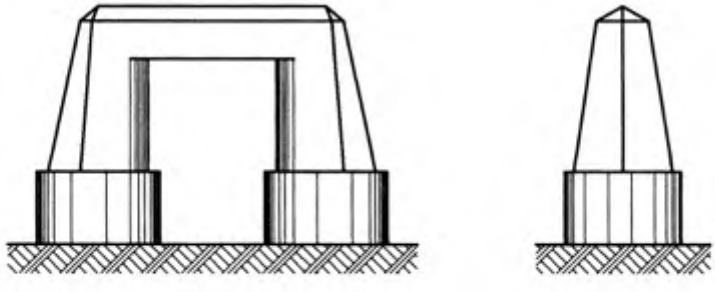
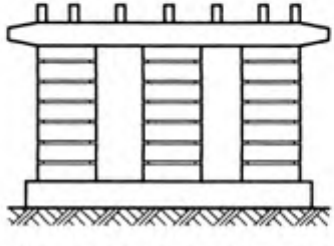
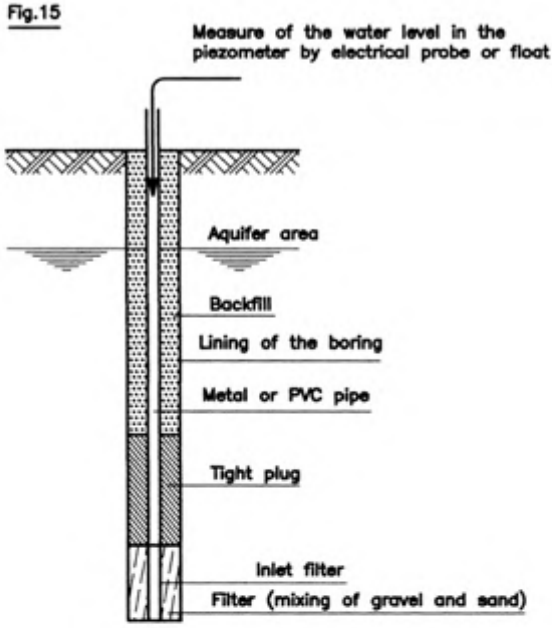


Fig.14a



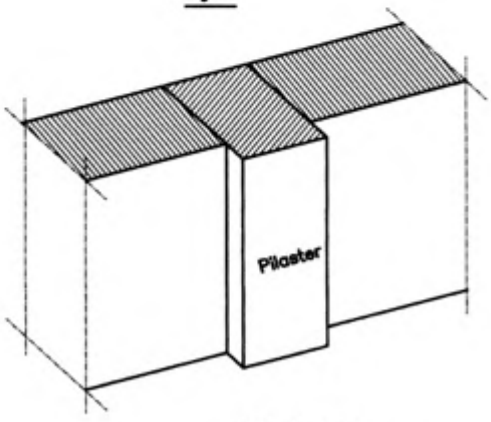
PIER WITH COLUMN AND PIER CAP

Fig.15



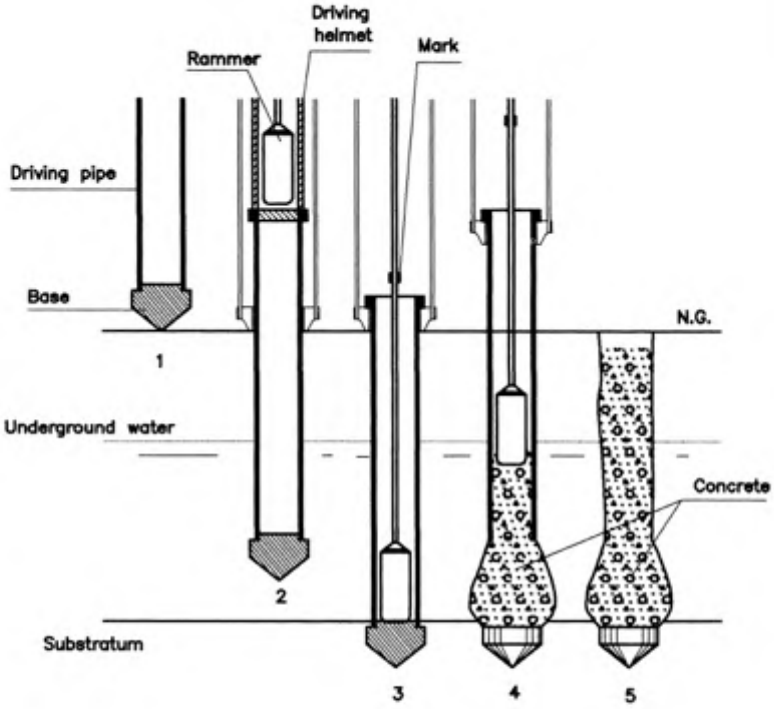
PIEZOMETER

Fig.16



PILASTER

Fig. 17

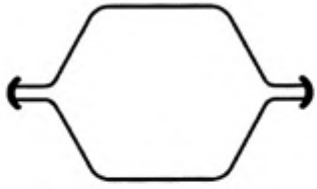


1 – Presentation of the driving pipe
2 – Sealing and driving of the pile
3 – Check on tightness and installation of the mark
4 – Concreting and extraction of the tube
5 – Finished pile

Execution of a driven cast–in–place pile Paumelle

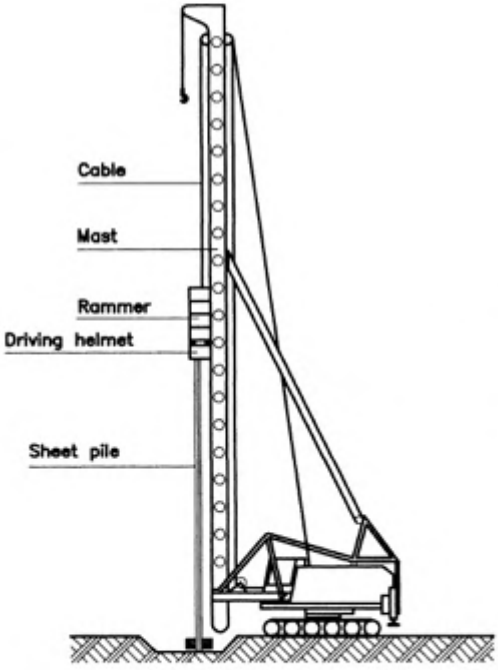
PILE

Fig.18



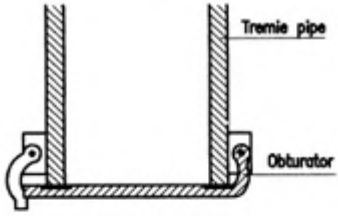
PILE CAISSON or SHEET–PILE CAISSON

Fig.19



PILE DRIVER

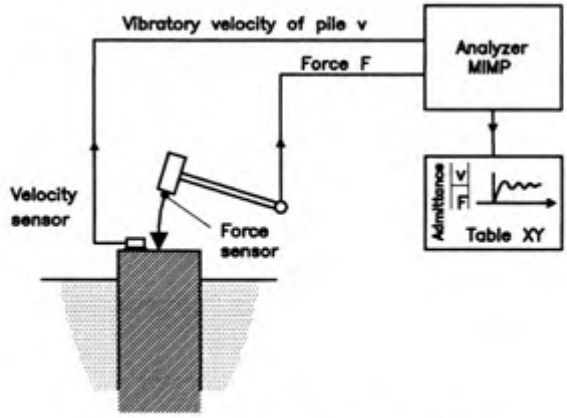
Fig.20



Obturator with articulated valve

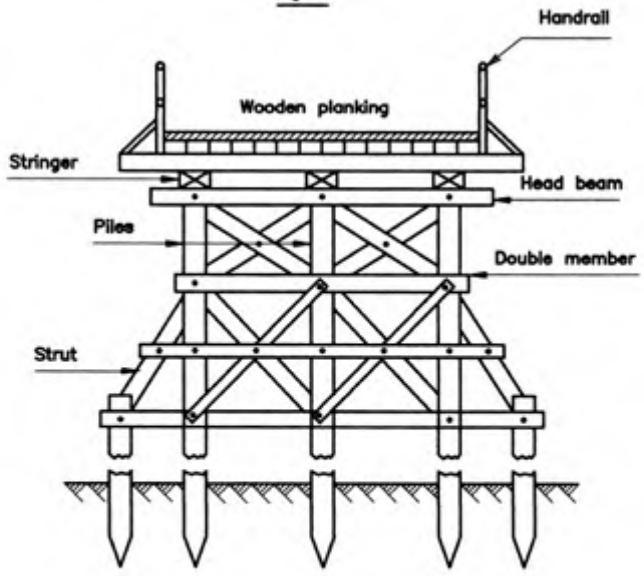
PILE OBTURATOR

Fig.21



PILE TESTING SYSTEM USING
THE IMPULSION METHOD

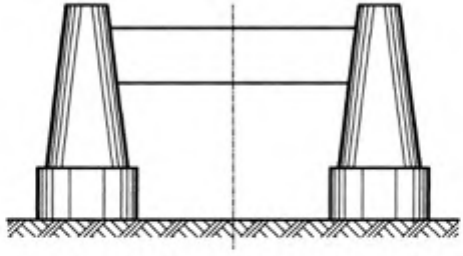
Fig.22



Timber work

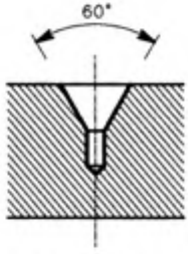
PILE TRESTLE

Fig.23



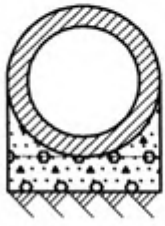
PILLAR WITH TWIN COLUMN

Fig.24



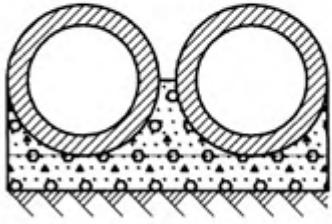
PILOT HOLE

Fig.25



Single–pipe culvert

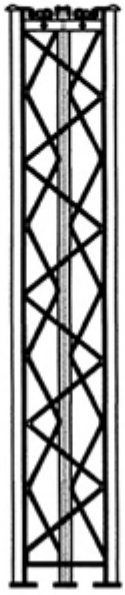
Fig.25a



Double–pipe culvert

PIPE CULVERT

Fig.26



Triangular prop

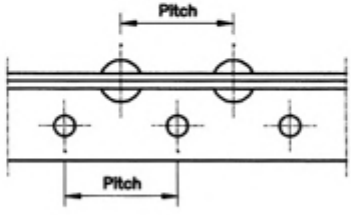
Fig.26a



Metal tube shore

PIT PROP

Fig.27



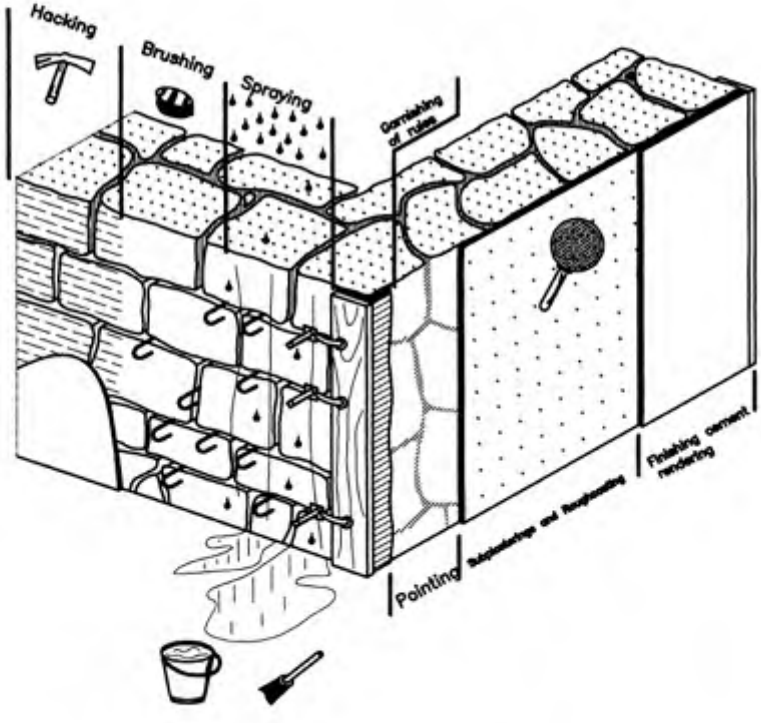
PITCH OF RIVETS

Fig.28



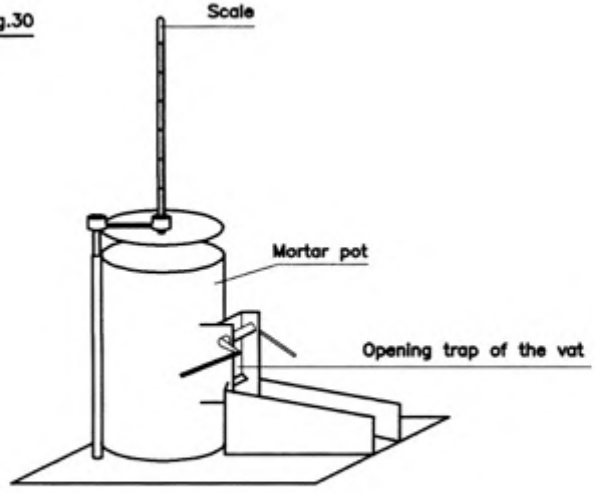
PLAIN CONCRETE

Fig.29



PLASTERING (Method of execution)

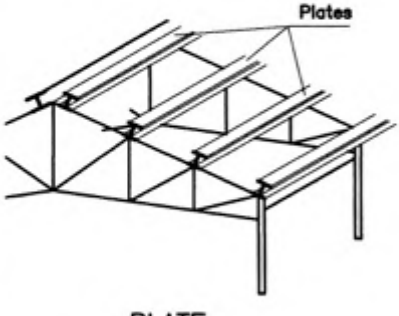
Fig.30



EDF mortar plasticimeter

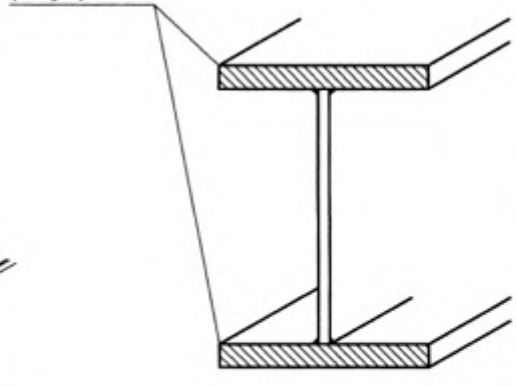
PLASTICIMETER

Fig.31



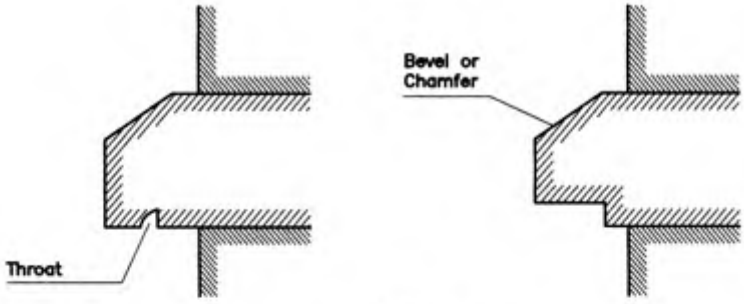
PLATE

Fig.32



(flange) PLATE

Fig.33



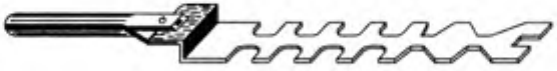
PLINTH

Fig.34



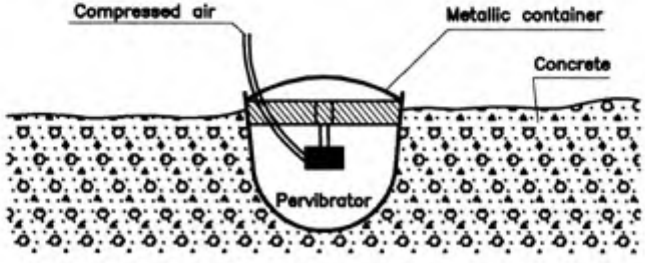
PNEUMATIC BUSH HAMMER

Fig.35



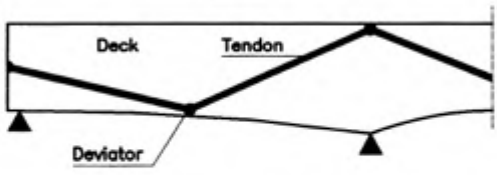
POINTER

Fig.36



POKER VIBRATOR

Fig.37



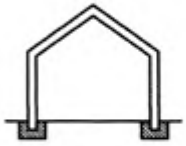
POLYGONAL TRACING

Fig.38



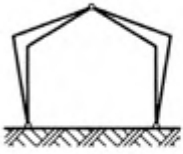
Portal frame with straight cross beam, articulated at the feet

Fig.38a



Portal frame with broken cross beam, restrained at the feet

Fig.38b



Portal frame with 3 articulations, articulated at the feet (isostatic system)

Single portal structures

Fig.38c



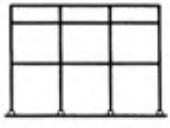
Portal frame with multiple spans

Fig.38d



Upstairs portal frame

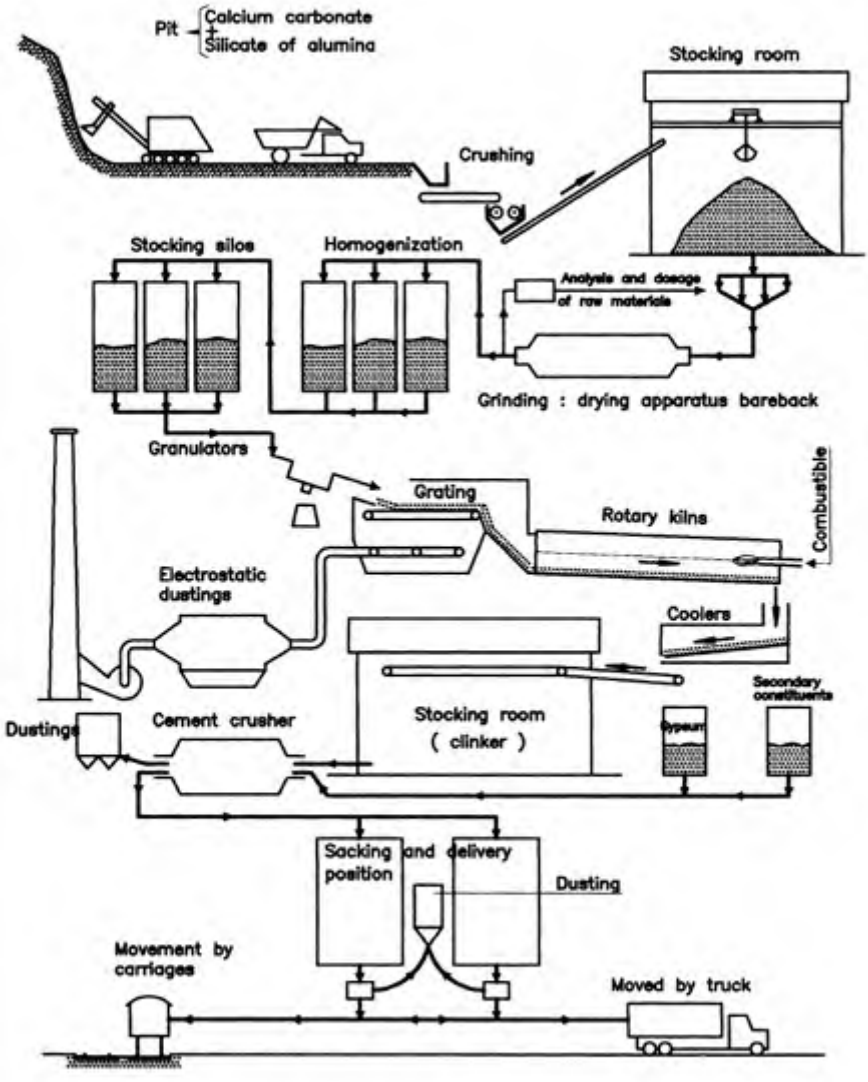
Fig.38e



Portal frame with multiple spans and with upstairs

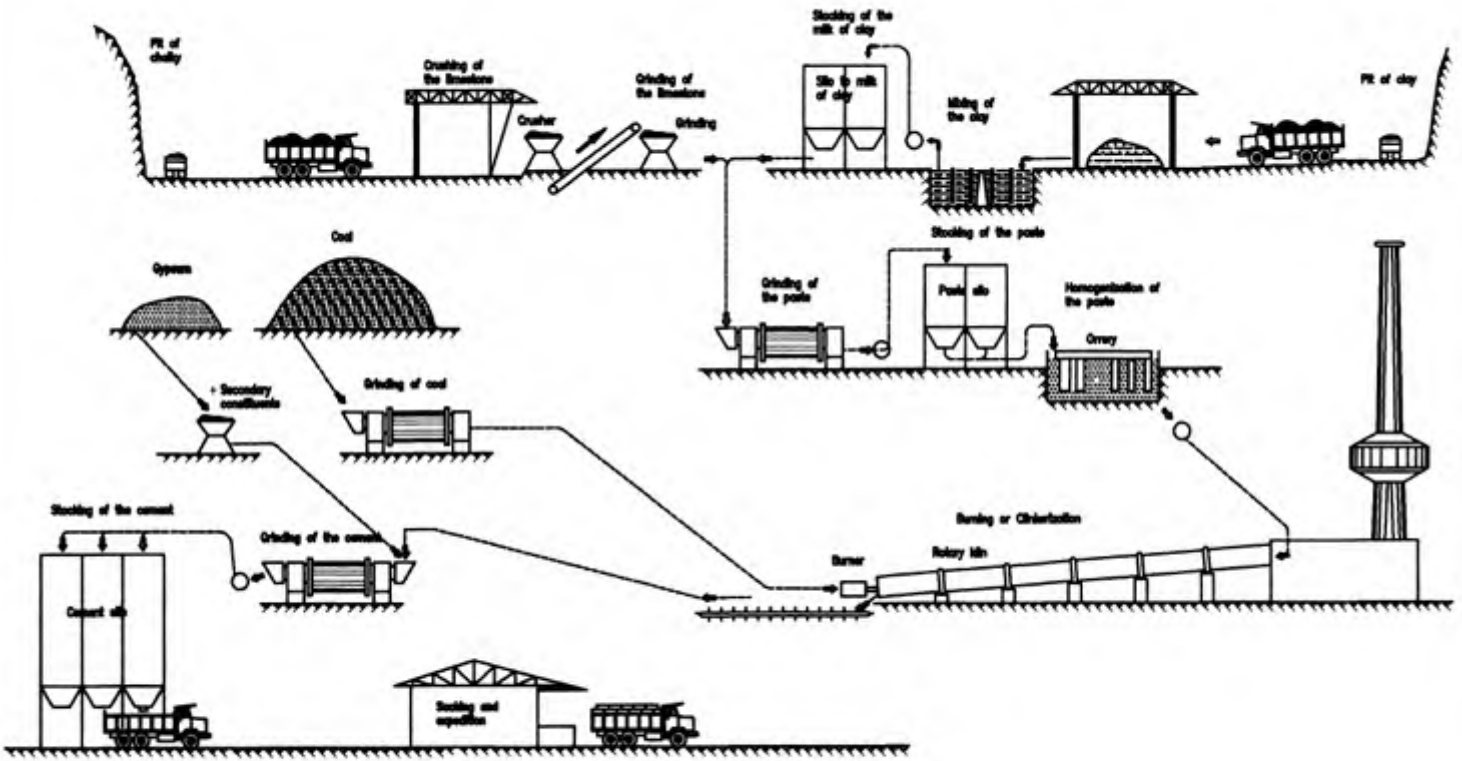
PORTAL FRAME BRIDGE

Fig.39



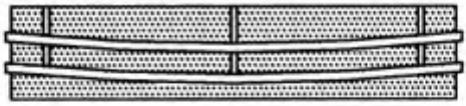
PORTLAND CEMENT (Manufacture by semidry process)

Fig.30a

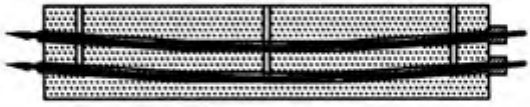


PORTLAND CEMENT (Manufacture by wet process)

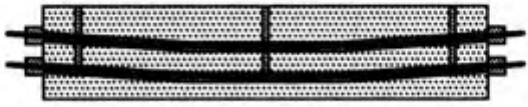
Fig. 40



Installation of the sheaths before concreting



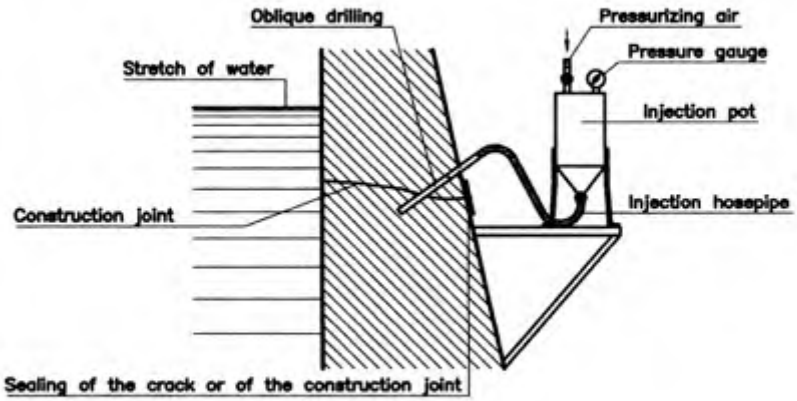
Tensioning after hardening of concrete



Injection after anchorage of taut reinforcements

POSTTENSIONING

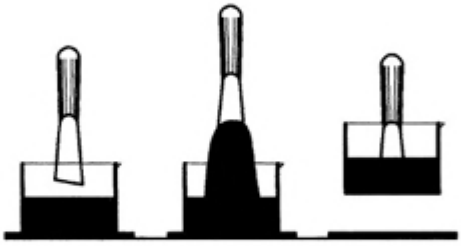
Fig.41



Pot for injection of resin

POT

Fig.42



POT LIFE

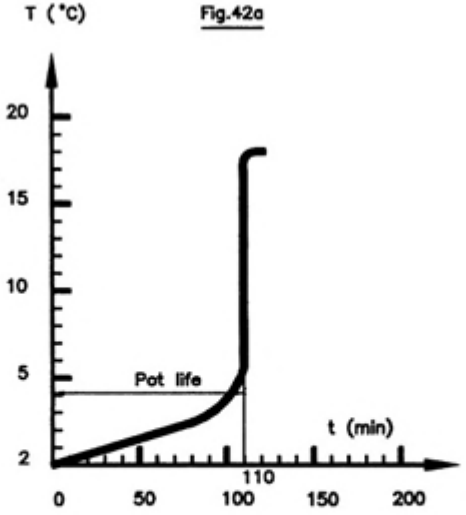
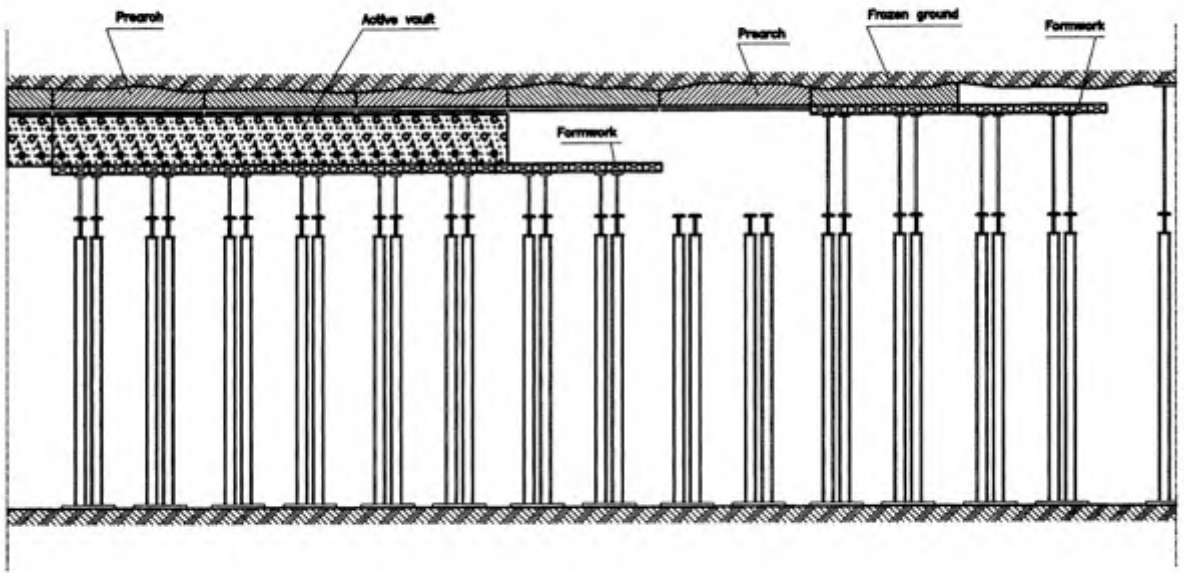


Fig.42a

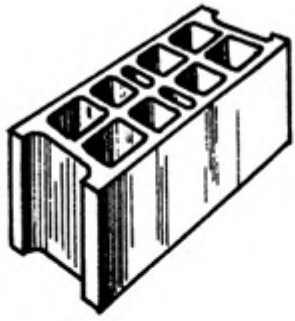
POT LIFE

Fig. 43



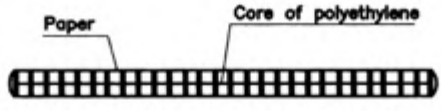
PREARCH

Fig.43

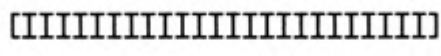


PRECAST CONCRETE BLOCK

Fig.44



Filter of paper treated with a web in plastic



Filter in polyefine to extrudeed perforated

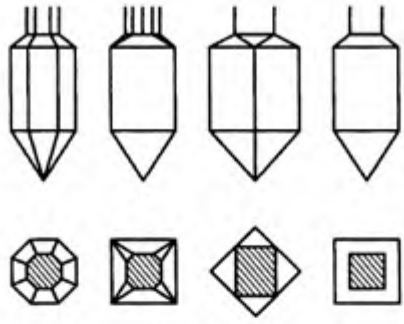


Filter in lashed textile with or without support frame

SCHEMATIC SECTION OF SOME TYPES OF SOME PREFABRICATED DRAINS

PREFABRICATED DRAINS

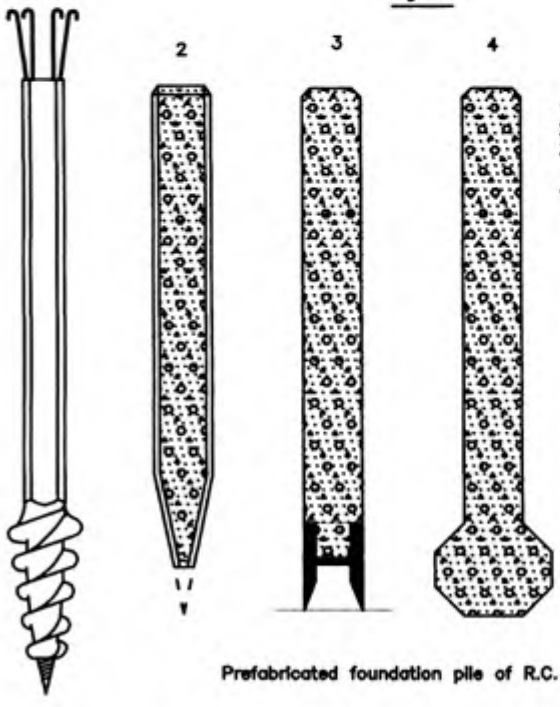
Fig. 45



Belled piles

1

Fig.45a

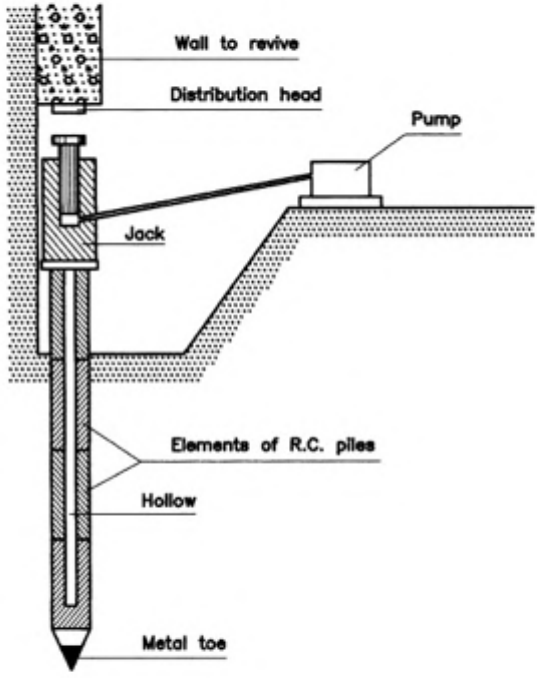


1. Screw pile
2. Pile with square bottom
3. Pile equipped with a cutting curb
4. Bulb pile

Prefabricated foundation pile of R.C.

PREFABRICATED FOUNDATION PILE

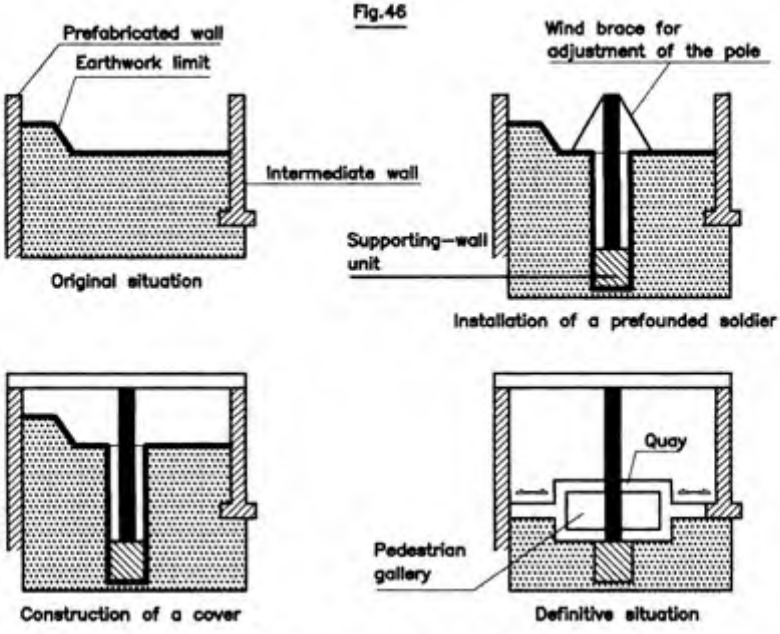
Fig.45b



Jacked foundation pile

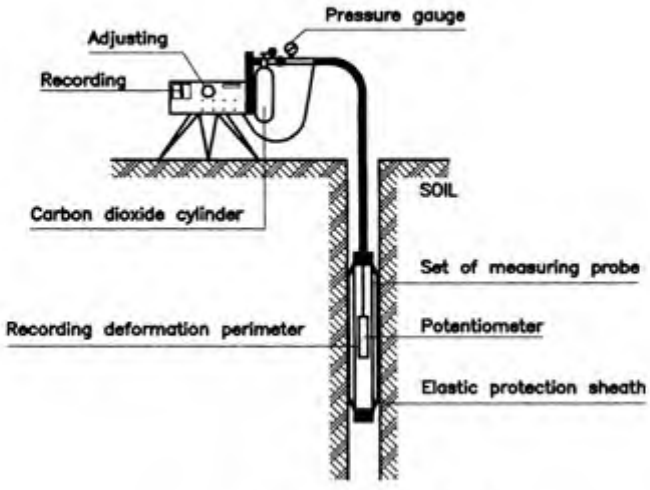
PREFABRICATED FOUNDATION PILE

Fig.46



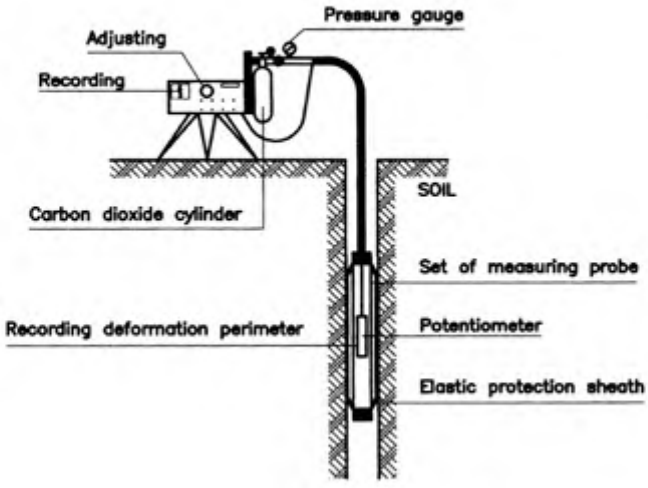
PREFOUNDED SOLDIER

Fig. 47



PRESSURE METER

Fig. 48



PRESSURE METER



a) Installation of the cable and concreting



b) Tensioning



c) Clamping of the cable in tension

Fig.49

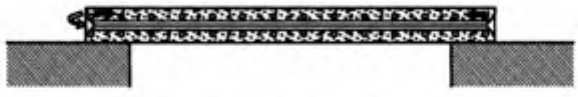
PRESTRESSED CONCRETE BY POST–TENSIONING



a) Installation of the cable and concreting



b) Tensioning



c) Clamping of the cable in tension

Fig.48

PRESTRESSED CONCRETE BY POSTTENSIONING

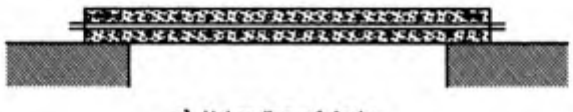
Fig.49



a) Tensioning of cables



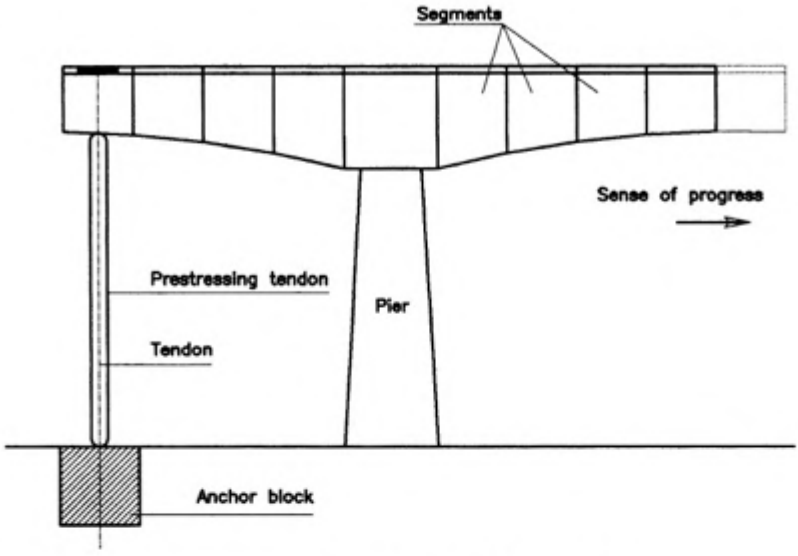
b) Concreting



c) Unbending of jacks

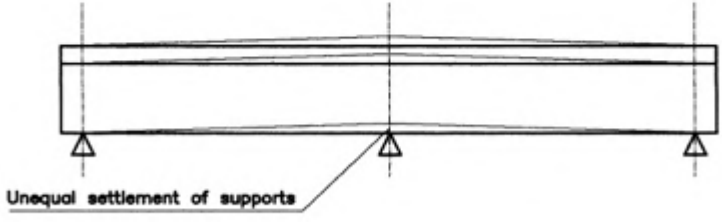
PRESTRESSED CONCRETE BY PRETENSIONING

Fig.50



PRESTRESSED TENDON

Fig. 51



PRESTRESSING BY BEARING DIFFERENCE

Fig.52

CROSS SECTION OF A BRIDGE PLATFORM

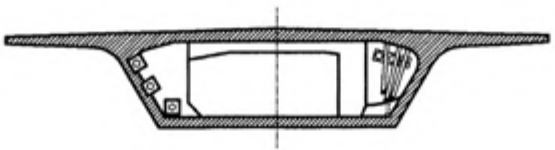
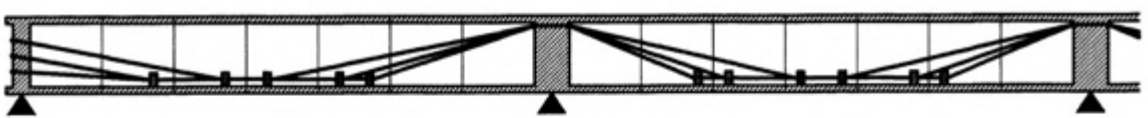


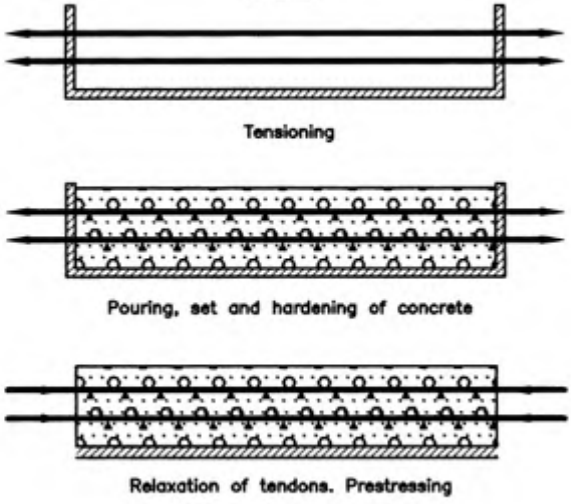
Fig.53

LONGITUDINAL SECTION OF A BRIDGE PLATFORM



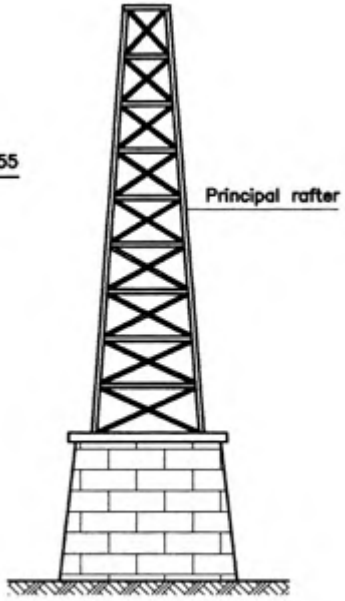
PRESTRESSING CABLEWORK

Fig. 54



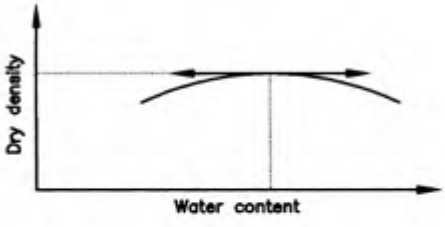
PRETENSIONING

Fig. 55



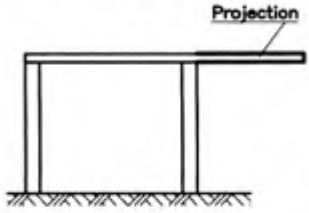
PRINCIPAL RAFTER

Fig.56



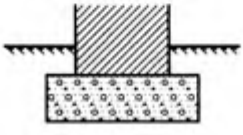
PROCTOR DIAGRAM

Fig.57



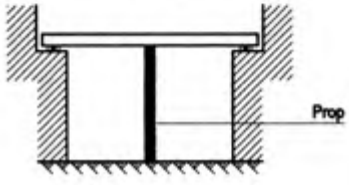
PROJECTION

Fig.58



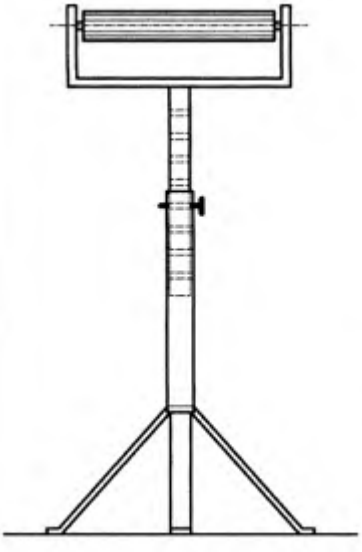
PROJECTION OF FOOTING

Fig.59



PROP

Fig.60



PROP

Fig.61



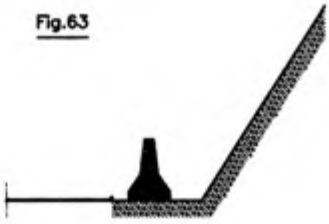
PROPPING

Fig.62



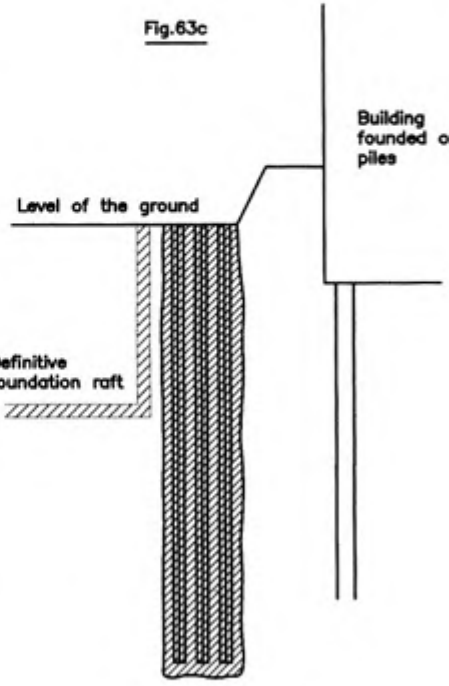
PROT
SEDIMENTOMETER

Fig.63



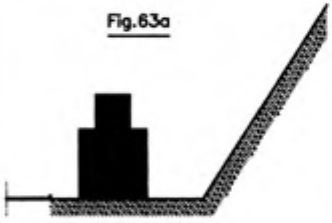
Separator screen of concrete

Fig.63c



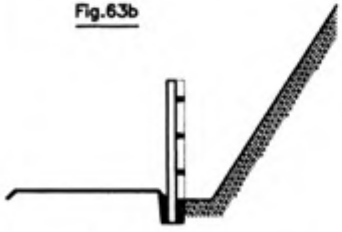
Screen of consolidated earth

Fig.63a



Screen of prefabricated
concrete blocks

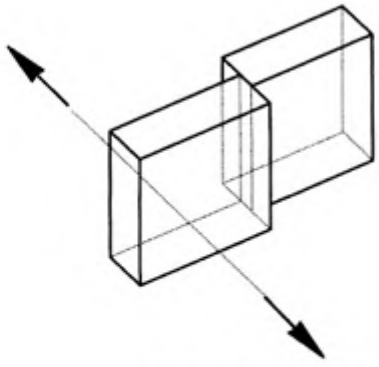
Fig.63b



Latticed screen

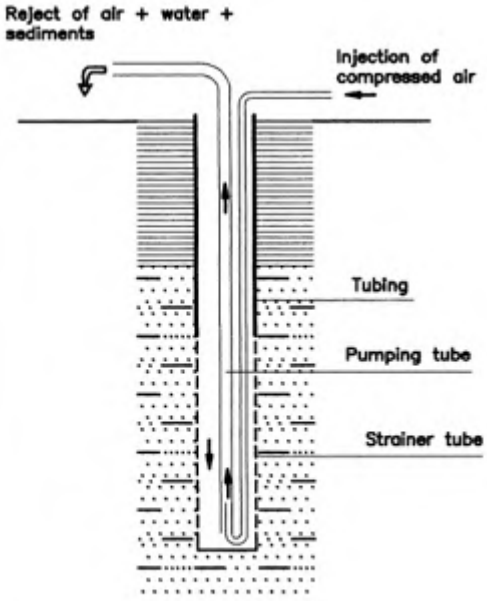
PROTECTIVE SCREEN

Fig.64



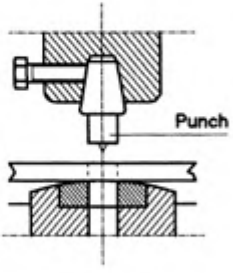
PROUD OF THE
CRACK LIP

Fig.65



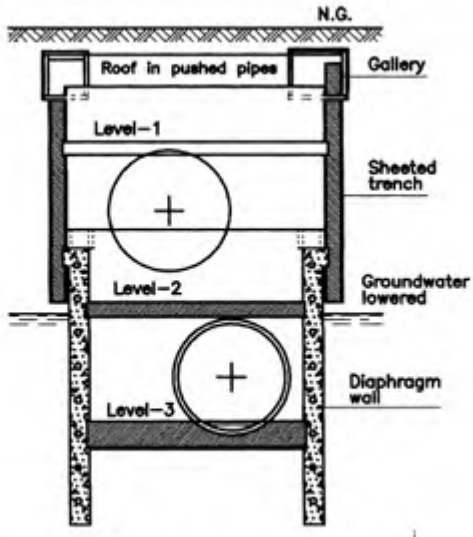
PUMPING TEST

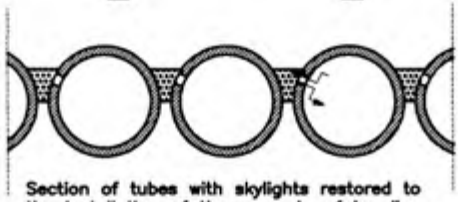
Fig.66



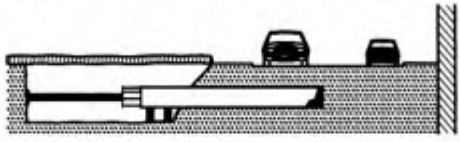
PUNCH

Fig.67

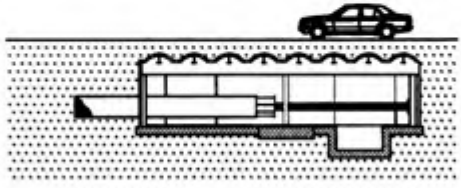




Section of tubes with skylights restored to the installation of the concrete of bonding



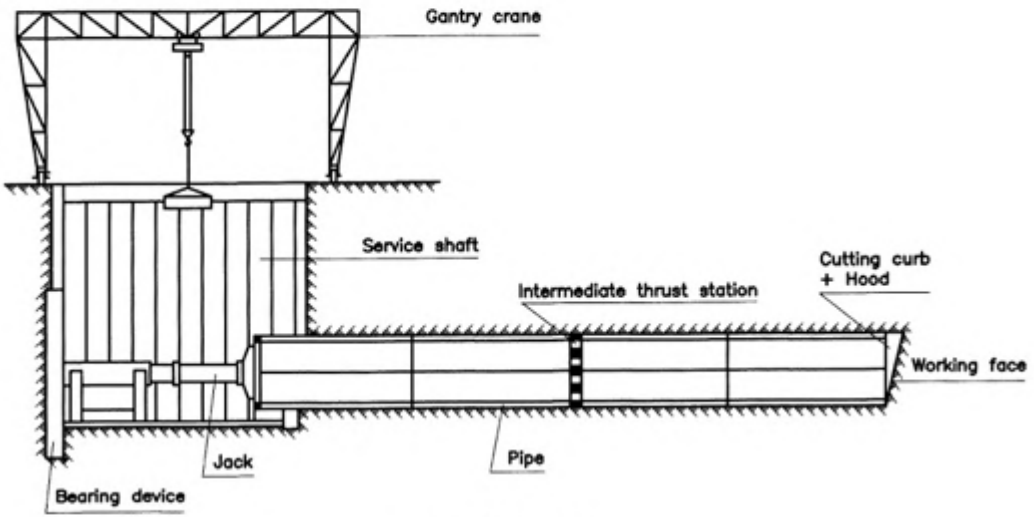
Driving from a trench



Driving from a gallery

PUSHED PIPE METHOD

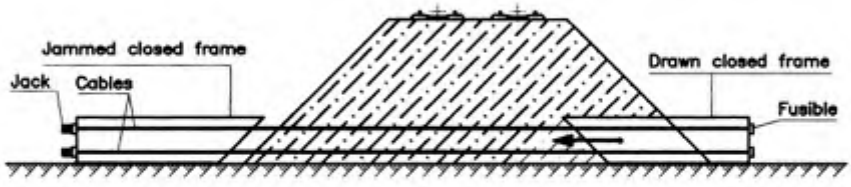
Fig.68



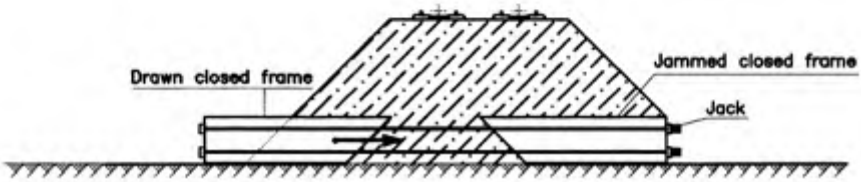
Horizontal pipe jacking

PUSHING

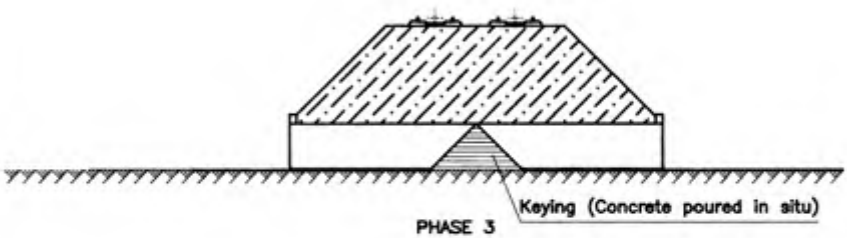
Fig.68a



PHASE 1



PHASE 2

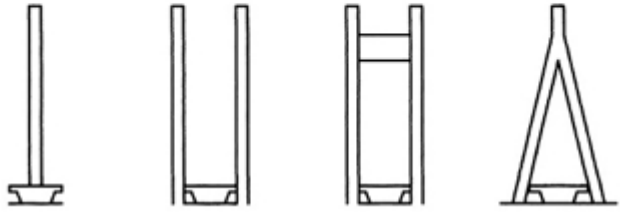


PHASE 3

Driving by hauling

PUSHING

Fig. 69



Single mast | Double mast | Portal frame | Pylon in inverted V

Pylons of cable bridges

PYLON



QUADRANT
Quarderonner
Work
To cut an angle or to carve a profile as the shape of a quarter round.

QUALITATIVE MINERALOGICAL ANALYSIS
Analyse minéralogique qualitative
Test of Materials
A determination method of the nature of mineral species present in a sample. Sometimes by extension, one identifies under this term the qualitative mineralogical composition.

QUALITATIVE MINERALOGICAL COMPOSITION
Composition minéralogique qualitative
Geotechnics
The result of the qualitative mineralogical analysis.

QUALITY
Qualité
Materials and Work
All properties and characteristics of a product or a service that endows the ability to it to satisfy expressed or implicit needs. Syn. with CAPACITY

QUALITY ACCOUNTABLE OF A CONCTRACTOR
Responsable qualité de l'entreprise
Work
A person depending directly of the work manager and that is responsible of the organization of the quality inside the company (it is not integrated into the internal audit). The role of this person is to define, to mastermind and to adapt the document-types of the organization quality of the company to the particular case of each building site. He studies the contractual obligations relating to the quality assurance and assists the operational persons in charge for the development of documents of quality assurance.

QUALITY AUDIT
Audit qualité
Welding
The examination of a situation relating to a product, process, organization in the way of quality, carried out in cooperation with interested parties, in a bid to check conformity of this situation to the preestablished provisions and the adequacy of these last to the required objective.

QUALITY CONTROL
Essai de recette *ou* Contrôle de qualité
Test of Materials
A visual examination and/or destructive analyzes or not (tensile test, hardness test, etc.), intended for making sure of the quality (physical, mechanical, etc.) and the conformity with the standards in force of materials proposed by a provider or a contractor. Syn. with ACCEPTANCE TEST

QUALITY HANDBOOK
Manuel de la qualité
Work
A document describing the general measures taken by a company to build and to ensure the quality of its supplies. Syn. with QUALITY MANUAL

QUALITY OF AN AGGREGATE
Qualité d'un granulat
Building Materials
The property defined by its resistance competence, cleanliness, and its perfectly grading.

QUALITY PLAN
Plan qualité (P.Q)
Contract
A document stating the procedures, resources and the sequence of activities bound to the quality, and relating to a product, a service, a contract or a particular project.

QUALITY STEEL
Acier de qualité
Metallurgy
A material of which conditions of use require particular care to the production such as severer limitation of impurities, reduction of the risk of brittle fracture, etc.

QUANTITATIVE MINERALOGICAL ANALYSIS
Analyse minéralogique quantitative
Test of Materials
All determinations and calculations that allow to establish a quantitative mineralogical composition.

QUANTITATIVE MINERALOGICAL COMPOSITION
Composition minéralogique quantitative
Geotechnics
The quantitative composition in mineral species of a sample. Quantities or contents corresponding to each specie are traditionally expressed in weight percentage. It is the result of the quantitative mineralogical analysis.

QUANTITY SURVEYING
Métré
Contract
A detailed state entered on a register, readings carried out on the ground including the nature of the job, unit price, quantity, etc., of really achieved work. Bill of quantities is intended for the payment of the work carried out by a company. Syn. with BILL OF QUANTITIES; WORKS SURVEY

QUANTITY SURVEYOR
Métreur
Contract
A technician who follows the state of progress of work, notes by measuring the works or parts of works carried out and write down on a summary document intended for the payment ofjobs.

QUARRIER
Chatou
Building Materials
A labour quarry worker that cleaves into small fragments the quarry stones unfit to the cutting.

QUARRIER
Carrier
Materials
Syn. with QUARRYMAN

QUARRIER HAMMER
Batterand
Equipment and Tools
1. A metal sledge hammer for breaking stones.
2. A quarry worker's hammer for inserting wedges in the rock to cut up it.

QUARRIER LEVER
Barre
Equipment and Tools
Quarrymans' lever.

QUARRY
Carrière
Building Materials
Syn. with PIT

QUARRY FACE
Lit de carrière
Building Materials
The natural partition surface of stone benches, parallel to the sedimentation. The quarry face can be horizontal or showing a more or less emphasized dip. Syn. with BEDDING PLANE

QUARRY OPENING
Entamure
Building Materials
Syn. with FIRST CUT

QUARRY MASS
Masse de carrière
Building Materials
The name given to several superimposed stony beds.

QUARRY SAP
Eau de carrière
Building Materials
A moisture which impregnates any rock freshly hewed and that evaporates after extraction and exposure to the free air. Syn. with QUARRY WATER

QUARRY STONE
Moellon; Pierre brute ou velue
Building Materials
1. A small-sized stone showing a thin quarry face which is cut up in quarry to build walls dry-bonded or bonded with mortar. Its weight does not exceed 40 kg and the volume is lower than 1/15 of m^3. Concerning their hardness we can distinguish the hard quarry stone of rock, free quarry stone known as manageable (free bench), and soft quarry stone (royal bench and limestone with mold shell).
There are several grades of quarry stone:
- **quarry stone from free bench** (*le moellon de banc franc*), a soft stone used in common masonry;
- **rock quarry stone** *(le moellon de roche),* a hard material mainly used in hydraulic work;
- **soft quarry stone** *(le moellon tendre)* coming from a royal bench and used in openly faces.

Concerning their use in construction, we can distinguish:
- **dressed stone** (*le moellon d'appareil*), which is perfectly squared and faced as the ashlar, cut up under various shapes for tiles, etc. Works carried out with these quarry stones differ from those built of ashlar only by the least dimensions of their materials;
- **course quarry stone *or* range quarry stone** (*le moellon d'assise*), a stone of low size of which the head is squared and worked more or less finely to draw in facing regular courses. Joints and beds are worked to form a parallelepiped. In this category we can distinguish among others the stung quarry stone, scabbled quarry stone, and axhammered quarry stone;
- **core quarry stone** (*le moellon bloqué*), which is posed dry or with a mortar bath without take the joints into account.

In terms of their preparation, and in particular of their cut, we can distinguish:
- **boss-cut quarry stone** (*le moellon bossagé*), a cut stone presenting a facing with projecting bumps;
- **rubble quarry stone** (*le moellon brut*), which did not undergo different task than that of the quarry; when it is hard and that it does not contain a sand crust, it is used in this state to carry out solid masses and other masonries of a great thickness;
- **rough-hewn stone** (*le moellon ébauché*), a cut stone having a facing roughly rectangular, but not having bed faces not joint at right angle;
- **cleaned off quarry stone** (*le moellon ébousiné*), a stone that the stonemason cuts itself slightly on the beds and joints with his hatchet, as it uses it. This stone is used to build foundation walls and the walls which must receive a rendering;
- **burst quarry stone** (*le moellon éclaté*), constituted by a dressed stone having a facing presenting bumps and hollows;
- **rough-hewn stone** (*le moellon épincé*), a cut stone having undergone a rough cut;
- **squared ashlar** (*le moellon équarri*), constituted by a carefully cut stone, with face of rectangular facing and surfaces cut at right angle on 5 cm at least (it can be bonded in horizontal courses or be cut in archstone);
- **bedded quarry stone** (*le moellon lité*), constituted by a stone on surfaces of beds

relatively flats and parallels, other surfaces being unspecified. This quarry stone is mostly used in tailing work of vault, in normal beds at the intrados (the bedded quarry stone courses as often as not prolong courses of bottom face);

- **common quarry stone** (*le moellon ordinaire*), constituted by a small irregular block of stone of weight lower than 40 kg and whose smallest dimension is higher than 10 cm. It is used in rubble work, without special preparation and sometimes in facing;
- **nidged ashlar** (*le moellon piqué*), constituted by a stone cut with more care than the squared or bedded ashlars so as to make of them the edges square and well straight. This type of quarry stone is often framed by a margin and can also be processed in rustic work;
- **sawn ashlar** (*le moellon scié*) which shows plane or striated surfaces;
- **scabbled ashlar** (*le moellon smillé*), constituted by a stone which one has cut properly enough the facings, beds, and joints. The quarry stone is worked by parallel and oblique passes (45°) using the pick or pickaxe for hard stones, with the comb-hammer or scabble for half-hard stones and rustic for soft stones. Joints are turned over at right angle and dressed on a depth higher than 0.10 m, the beds on a depth higher than 0.15 m. The scabbled ashlar is used in the construction of vaults and walls whose surface is only repointed;
- **axhammered ashlar** (*le moellon têtué*), which differs from the scabbled quarry stone only by one less neat finish of its facing. The former undergoes only one wasting with axhammer in order to show an appreciably plane face without depression neither projection exceeding 0.02 m on the general plan of the facing. The quarry stone can show a parallelepipedic shape and is then used in regular courses, or then it takes on a polygonal shape and it is used in *opus incertum* bonds. **See Figures 1 to 1c.**

2. Syn. with ROUGH STONE; RAW STONE

QUARRY WATER
Eau de carrière
Building Materials
Syn. with QUARRY SAP

QUARRYING
Abattage en carrière; Extraction; Déblai
Building Materials and Earthwork
1. All operations allowing the working of the rock and that is executed by four distinct ways:

- by **stages of small heights** (4 to 10 m) *(par étage defaibles hauteurs)*; **See Figure 2**
- by **foot blasthole** *(par mines de pied);* **See Figure 2a**
- in **funnel-shaped shaft** (*en entonnoir*); mining method of shallow deposit that consists in doing tip out materials in a waste pit and to take delivery of them in a gallery open to that end. **See Figure 2b**
- by **large blastholes** *(par grands fourneaux de mine);* method that consists in introducing into the drillings located at the base of the working face, large blast holes which combine their effects over the length of the working face to be pulled down and cause the fall of the massif; **See Figure 2c**

Syn. with BREAKING AWAY.
2. Syn. with EXTRACTION

QUARRYMAN
Carrier; Débiteur; Epinceur
Materials; Building Materials; Masonry
1. A worker that works or extracts stones in a quarry.
2. The operator of a quarry
Syn. with QUARRIER
3. Syn. with DEBTOR
4. A worker in charge of the coarse cutting of paving stones or quarry stones.

QUARRY-OWNER
Maître-carrier
Materials
A quarry worker that exploits an ashlar quarry.

QUARTER CONE
Quart-de-cône
Construction
The end of an embankment surrounding a work, covered or not with masonry that blooms at the base of the return wall of a work.
Two cases are distinguished.
a) - *case of piers and abutments:* slope connecting the embankment of the common section with the abutment. **See Figure 3**
b) - *case of return walls:* slope connecting that of the common section with the base of the

abutment while partly masking the facing of the return wall. **See Figure 3a**

QUARTER OF STONE
Quartier de pierre
Nomenclature of Materials
Bulky element of ashlar. Syn. with BLOCK

QUARTER ROUND
Quart-de-rond
Building Materials and Architecture
A molding or stick that has a quarter-circle cross section.

QUARTER SAWING
Débit sur quartier
Building Materials
The cutting out of a tree trunk transversely to its fibres. Syn. with RIFT SAWING

QUARTERED TIMBER
Bois de sciage
Building Materials
Syn. with CONVERTED TIMBER; SAWN TIMBER

QUARTER-HARD STEEL
Acier demi-doux *ou* mi-doux
Metallurgy
Ferrous alloy for manufacturing sections and reinforcing bars for reinforced concrete. Strength ranging between 48 and 55 hectobars.

QUARTERSPACE
Quartier tournant
Construction
Serie of steps of a staircase allowing joining two other series of different directions. (If the edges of these steps converge in the same point, they are known as *radiating*; on the contrary case, they are known as *dancing*). Syn. with QUARTERSPACE LANDING

QUARTERSPACE LANDING
Quartier tournant
Construction
Syn. with Quarterspace

QUARTZ
Quartz
Geology
A more or less pure variety of crystallized silica that one finds in a natural state in large-sized crystals. They is an important constituent of the eruptive, metamorphic and sedimentary rocks. Syn. with ROCK CRYSTAL

QUARTZ ROCK
Quartzite
Geology
Syn. with QUARTZITE

QUARZITE
Quarzite
Geology
A quartzose sandstone in which superficial primary grains disappeared so much so that the mass becomes homogeneous; it is used to make pavings or as metalling material. Syn. with QUARTZ ROCK

QUAY
Quai; Appontement
Civil Engineering; Construction
1. An earth levee protected by a facework, established along a waterway (or next to the seaside) and which lets to a public highway through.
2. Syn. with LANDING STAGE; PIER

QUEEN CLOSER
Mulot; Clozot
Building Materials
A nonstandardized brick, of a thickness smaller of half and width lesser than the common brick (generally of 6 x 6 x 22 cm).

QUENCHING STRESSES
Contraintes de trempe
Metallurgy
Residual internal stresses of a metal piece, possibly due to the quick cooling of quenching.

QUICK LIME
Chaux vive
Building Materials
A product obtained by calcination at a risen temperature of the natural calcium carbonate (limestone). The quick lime is notably used to treat fine ground to high water content. Syn. with BURNT LIME

QUICK SETTING
Prise rapide ou rapidité de prise
Hydraulic Binders
1. A product of which the phase of solidification begins practically at the end of its preparation or its implementation.
2. A defect of cements characterized by a quick rise in temperature of hydration, having the effect a premature stiffening of the cement having a detrimental effect on its workability.
3. The speed that puts a binder to make its set. For hydraulic binders this speed is given by the Vicat needle; the quick setting is variable according to the binders used, conditions of temperature and, for cements, according to their nature and grade (of strength).

QUICK SHEARING TEST
Essai de cisaillement rapide
Geotechnics
A test carried out with the shear box that allows to determine the strength and the behavior in the near future of a coherent soil. The quick shearing test been made without preliminary consolidation; the moisture content remains equal to the natural moisture content, this is why this test is also called *undrained test.*

QUICK TEST OF INDENTATION
Essai accéléré d'indentation
Test of Materials (Tightness)
Test for checking the resistance to the punching of asphalt coverings and that is carried out on samples collected at the outlet side of the mixer. A punch of 500 mm^2 surface is applied on the samples during 30 mn at the temperature of 30°C (with a load of 52.5 kg). The punch must penetrate in the asphalt of a length ranging between 2 and 6 mm.

QUICKNESS
Vivacité
Explosives
Speaking about explosives, property which corresponds to the propagation velocity from one point to another of the explosive. (When the quickness is low, the explosive is known as *deflagrating;* when it is high, the explosive is known as *explosive* or *high-explosive*.)

QUICK-SAND
Renard solide
Foundation
Syn. with BLOW; BOIL

QUICK-SETTING CEMENT
Ciment prompt
Hydraulic Binders
A product obtained by baking of a natural clayey limestone at a temperature included between 1000 and 1100°C. It has an extremely short setting time.

QUOIN
Angle; Arête; Chaîne d'angle
Masonry; Nomenclature of Materials and Construction
1. Each stone that belongs at the two contiguous faces of a quoin stones and which has defined dimensions alternating from a face to the other. Syn. with CORNER STONE
2. Syn. with ARRIS; EDGE; GROIN
3. Syn. with COIN STONE; DRESSING; QUOIN STONE

QUOIN (OF STONE)
Carne
Construction
The salient angle of a stone.

QUOIN BONDING
Besace
Construction
1. A stone or brick course of a quoins of which the visible face is less wide than the course located immediately below and above and that is called *toother.* This constructive arrangement appears if and when one looks a face of the quoins and conversely on the other face. In a quoins, toothing-stones and quoins bondings are bonded in alternation. Syn. with CORNER BONDING; IN-AND-BOND; SADDLE
2. The meeting of two sides of masonry of which elements are linked of a course on the other.

QUOIN STONE
Chaîne d'angle
Construction
Syn. with COIN STONE; DRESSING; QUOIN

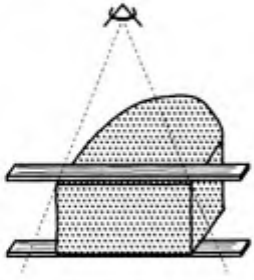
QUOINS
Jambe d'encoignure
Construction Term
Pillar forming the angle of a wall. Syn. with COINS

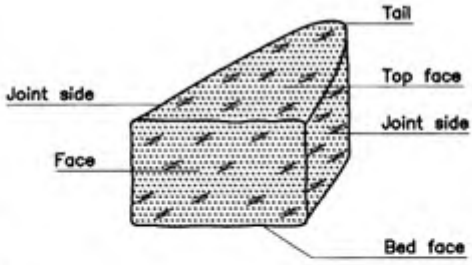
QUOINS DETACHMENT
Décollement de chaîne d'angle
Defects (Masonry)
The separating of the quoins with regard to the rest of the construction that is due to the heterogeneity of the masonry and to the thrusts exerted on the return or wing walls. **See Figure 4**

Figures of the letter



Fig.1c





The FACING, apparent part of a quarry stone after laying

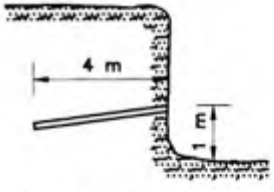
QUARRY STONE

Fig. 2



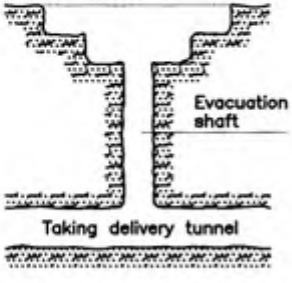
Quarrying by stages of small height (4 to 10 m)

Fig. 2a



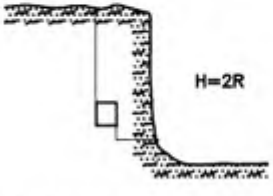
Quarrying by foot blasthole

Fig. 2b



Quarrying by funnel-shaped shaft

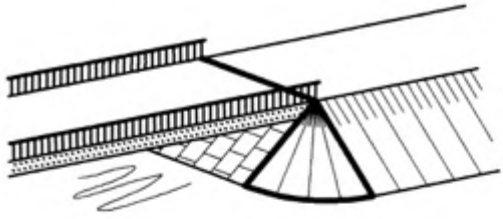
Fig. 2c



Quarrying by large blasthole

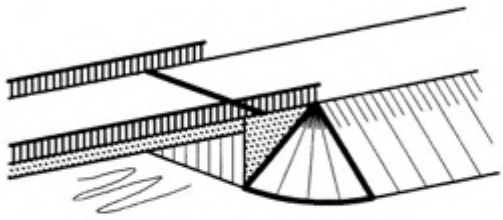
QUARRYING

Fig. 3



Quarter cone (case of abutment and piers)

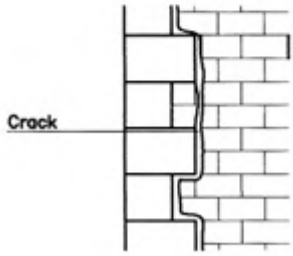
Fig.3a



Quarter cone (case of return wall)

QUARTER CONE

Fig. 4



QUOINS DETACHMENT



RABBET
Feuillure; Rainure; Refouillement; Guillaume
Construction; Carpentry; Equipment and Tools
1. An L-shaped notch carried out in a piece for receiving some another whose edges will come there to rest on. **See Figure 1**
2. A narrow recess making in a part of work. Syn. with BACKBAND; GROOVE; REBATE;
3. Syn. with CHANNEL; FURROW; GROOVE; SLOT
4. A rabbet carried out in situ in a wooden member. Syn. with GROOVE
5. Syn. with RABBET(iNG) PLANE

RABBET(TING) PLANE
Guillaume
Equipment and Tools
A plane of shapes and various dimensions, used by stone masons to carry out moldings, edges, etc. Syn. with RABBET

RACE
Canal
Railway and Canals
Syn. with CANAL; CHANNEL; CULVERT; FLUME

RACEWAY
Chemin de roulement
Handling
Syn. with BALL RACE; CONVEYOR LINE; ROLLERPATH; RUNWAY; TRACK;

RACK
Crémaillère
Temporary Construction
A decenter method deriving of the wedges system and that consists of a kind of triple wedge inserted between two notched soles situated between the centering and its supports. By acting on the rack in a direction or in the other, one can raise or lower the centering. (This system has hardly been used.)

RADAR
Radar
Geophysics
A detection equipment used for the geophysical prospecting of soils and whose principle is somewhat similar to seismic sounding: a shorter electromagnetic impulse is emitted toward the basement, it is propagated in the materials that it comes through and reflects itself on the interfaces between two zones where the speed of the electromagnetic wave is different. One measures the times of way outward journey and return of the impulse which one afterward translates in thickness strata. The apparatus is moved in a continuous way on the surface of the ground.

RADIAL CRACKING
Etoilement
Defects (Building Materials)
Cracks or radiating splits in a coating, a wood, etc.

RADIATING CRACK
Fissure rayonnante
Defects (Welding)
Groups of cracks affecting a weld bead or its immediate surroundings and stemming from a same origin point.

RADIATION TEST
Essai par rayonnement
Test of Materials (Building Materials)
A test that is designed for drawing-up the classification of materials of any thickness, rigid or made such (coating materials), and of flexible materials of a thickness higher than 5 mm (bitumen, asphalt, etc.) in terms of their combustibility.
This test consists in subjecting samples to the action of a radiant source and causing, in definite conditions:
- *possibly the ignition of the released gases,*
- *a propagation of combustion.*

The sample (30 x 40 cm), laid out at 45°, subjected to a defined radiation, emitted by an electric heater whose surface is at 30 mm of the plan of the test specimen. Carbonization gases pass at the touch of inflammatory ones laid out on both sides of the test specimen. Each test lasts 20 mn.

RADIOACTIVE LOGGING
Radiocarottage; Carottage radio-actif
Geotechnics
A borehole log achieved thanks to the radioactivity difference of the various horizons of soil met inside a drilling. Syn. with Gamma-ray logging

RADIOACTIVE TRACERS
Traceurs radioactifs
Materials
Radioactive elements mixed with other substances and used in civil engineering in the case, for example, of the follow-up of injection or the study of the permeability of foundation blocks:
- *case of the study of the permeability of concrete blocks:* radioactive tracers allow to study the porosity of concrete and to highlight porosities in communication which are most dangerous. The radioactive element Indium 113 m is generally used and whose period for 100 mn is well adapted on a time scale of the studied phenomena; it is a simple product to be implemented and easy to be detected even through a thickness of concrete of a few tens of centimeters. This technique can be used in two ways: maybe from only one drilling where one injects round the clock a constant marked water flow, the measurement of the profile of radioactivity detected in this drilling then allows to determine the porous levels; maybe from several drillings: injecting the water marked in one of them and detecting his passage in the others or on the walls of the solid mass, one can determine the journeys followed by this water and measure the medium speed of the flows. This practice, very much used on the concrete foundation blocks, also can be used to study movements of water inside piles and foundations of former river structures;
- *case of the follow-up of injection of the foundations of works:* by marking the grout using a radioactive tracer, one has a nondestructive practice that allows to follow, during the injection, the progress of the grout inside materials and to check that it does not leave apart from the zone to be repaired. The use of Indium 113, period 100 mn and transmitter of gamma radiation, enables to have a practice easy to be used. The marking is achieved in the tank of the grout mixer and detection inside the drillings expected the injection itself. This method allows to determine the range operating of the processing, levels injected, the desirable grid layout for drillings and to test the effectiveness of the various types of grout.

RADIOCHRONOLOGY
Radiochronologie
Geology
A dating method of geological times based on the intensity of the radioactivity emitted by the studied material.

RADIOGRAPHY
Radiographie
Test of Materials
A nondestructive examination method of materials, based on the differential absorption of X-rays by the components of an organic or inorganic structure, crystallized or not, transmitted rays giving an image, detected by a photographic film or by a sweeping electronic detector. Radiography allows to detect the variations of the chemical composition or internal defects of materials. It allows in particular detecting cavities or areas of weaker density, in which absorption of x-rays is less, and which are translated on sensitive film by stains more deepened by comparison to the normal spots. In the same way, inclusions having absorption coefficients different from that of the metal of the part appear as spots more or less deepened. It is also easy to check the good structural and chemical homogeneity of some components or metals. X-rays can be produced by mainline sealed tubes or by accelerated electrons: linear or circular accelerators (betatrons). One uses radiography for the quality control of the welds, compactness of cast pieces, etc. Syn. with X-RAY PHOTOGRAPHY

RADIOGRAPHY TESTING
Contrôle par radiographie
Test of Materials
A nondestructive examination method of materials based on the differential absorption of X-rays by components of an inorganic or organic structure, crystallized or not, transmitted rays giving a frame, detected either by a photographic film, or by a scanning electron detector.
Radiography allows to divulge variations of the chemical composition or internal material defects. It allows notably to divulge cavities or zones of lower density, in which the absorption of X-rays is lesser, and that translate on the sensitive film by stains darker in comparison to the normal ranges. Just as, inclusions having different absorption coefficients of that the metal of the piece appears ranges form more or less dark. It is as easy to verify the good chemical and structural homogeneity of some constituents or metals. X-rays can be produced by mainline bedded tubes or by accelerated electrons: circular or linear accelerators (betatrons). One uses the radiography for the control of the quality of welds, the compactness of cast pieces, etc.

RADIOLARITE
Radiolarite
Geology
A siliceous sedimentary rock of biochemical origin.

RADIOLOCALIZATION
Radiolocalisation
Topography
A bathymetry process that allows to carry out underwater or underriver topographical surveys. We can distinguish systems to a long range, medium range, and short range.

RADIOMETALLOGRAPHY
Radiometallographie
Metallography
A nondestructive examination of metal pieces that is performed with x-rays or gamma rays.

RADIOMETER
Radiomètre
Assaying Equipment
An instrument intended for the analysis of materials; it is able to pick a part of the thermal radiation emitted by a surface, to measure received energy and to deduce from it, by analysis, the temperature of the body. We can distinguish infrared radiometers, radiometers to the total radiations, monochromatic radiometers, bichromatic radiometers.

RADIOMETRY
Radiométrie
Metrology
The measurement of relative magnitudes to radiations.

RADIUS OF GYRATION OF A BODY
Rayon de giration d'un corps
Strength of Materials
In a determined direction, distance of the inertia axis from a fictitious point of mass equal to the total mass and giving even the moment of inertia that this body. One can replace the concept of mass by concept of surface when one considers a cut plane transverse of a section. One arrives then to the formula:

$$i = \sqrt{\frac{I}{A}}$$

i = radius of gyration following an axis,
I = moment of inertia along the same axis,
A = surface of the section.

RAFT
Radier
Earthwork
The soil of the excavated section of a gallery.

RAFTER
Chevêtre; Chevron
Civil Engineering Structure; Building Materials
1. A horizontal piece connecting vertical elements.
2. A square-sawn timber of square section comprising between 40 and 120 mm. Syn. with COMMON RAFTER

RAG BOLT
Boulon de scellement
Materials
A round shank threaded at an end intended for fixing a piece on a masonry block; the shank has lips of various forms that upgrades its tearing strength. Syn. with HOLD-DOWN BOLT

RAGLET
Saignée; Saigner
Construction; Work
1. Syn. with CHASE; HOLE; RAGLET
2. To carry out a channel. Syn. with TO RAGLET

RAIL
Barreau; Lisse; Rail
Construction; Building Materials
1. A small section (round or quadrangular) vertical steel bar component in a railing, a guardrail or a handrail. Bars are connected at top and bottom cross members. We can distinguish:
- **swans neck rail** *(le barreau à col de cygne),* usually made of round iron rod and curved at its base (at the point of connection), supported, tapped and bolted inside the shaft (for a staircase), the web of the end girder (for a metal bridge guardrail);
- **Cul-de-lampe and throughing rail** *(le barreau traversant et à cul-de-lampe),* which passes within the corner iron lining a shaft (for a staircase) or that passes through the top flange of the end girder beam (for the guardrail of a metal bridge) by an oblique hole reserved to this end, and that comes to rest in a small cast-iron cul-de-lampe attached to the shaft or the web of the end girder.

2. A continuous horizontal element (unlike to the midrail) of a guard-rail or a barrier. Syn. with HAND RAIL
3. A section of particular form providing a support and guidance function.

RAIL OF COPING
Lisse de couronnement
Construction
The overhanging upper part crowning a reinforced concrete retaining wall. **See Figure 2**

RAIL SUPPORT
Support de rail S4
Temporary Construction
A device constituted by two I-girders surrounding a rail connected between them by distance pieces (two supports of rails form a track support).

RAILING
Garde-corps; Parapet; Grille
Construction
1. Syn. with GUARD RAIL; HANDRAIL; SAFETY RAIL
2. Syn. with BREAST WALL; PARAPET
3. Syn. with RAILS

RAILING SHAFT
Fût d'un parapet
Construction
Body of the parapet located between the coping and the plinth.

RAILINGS
Lice
Construction
The guardrail of a timber bridge.

RAILS
Grille
Construction
An enclosure formed by a bars more or less worked and whose bars are connected by

crosspieces. Railings are usually defensive works. Syn. with RAILINGS

RAILWAY BRIDGE
Pont-rail; Pont ferroviaire
Civil Engineering Structure
A structure that allows to one or several railways tracks the crossing of natural or artificial obstacles (canal, road, railway track, etc.).

RAIN
Cheminée
Construction
Syn. with CHUTE; FUNNEL

RAIN FLOW
Goutte d'eau
Civil Engineering
A counting method for determining stresses of a structure under the influence of road traffic.

RAIN NETWORK
Réseau pluvial
Sanitary Engineering and Drainage
Set of devices implemented and which are intended for drainage of streaming toward an outlet.

RAIN SLOPE
Verseau
Construction
A form of slope carried out for water runoff located above an entablature or a stringcourse.

RAINPROOF

Hydrofuge
Materials
Syn. with DAMPPROOF; WATERPROOF

RAINWATER PIPE
Descente d'eau
Sanitary Engineering and Drainage
Syn. with LEADER; STACK PIPE; WATERSPOUT

RAINWATER SHOE
Dauphin
Construction
A crooked pipe, generally of (cast) iron, located at the bottom part to a rainwater pipe and intended for evacuating rainwater into or to a gutter. Syn. with LEADER SHOE

RAINWATER SPOUT
Gargouille
Construction
A vertical plan of action intended for the draining of storm waters, making one's way through the thickness of a deck, and laid out so that water does not flow along the vertical walls of the work (abutment, pier). Syn. with WATERSPOUT

RAISE
Surhausser
Work
To heighten a construction.

RAISED EMBOSSMENT
Bossage
Construction; Nomenclature of Materials
1. In some bridge-support apparatus, part in relief composed by:
- **lower raised embossment** *(le bossage inférieur)* in protrusion of the bearing, on which the bridge-support apparatus rests;
- **upper raised embossment** *(le bossage supérieur)* in protrusion of the intrados of the deck above the bridge-support apparatus.

2. Syn. with NUT STOPPER

RAISED TABLE
Tailloir
Architecture
A table resting on a capital. Syn. with ABACUS.

RAISING
Levage; Exhaussement
Handling; Hydrology
1. Syn. with HOISTING; LIFTING UP
2. An abnormal rising of the level of the bed of a waterway which is due to the deposits of alluvia.

RAISING
Rôtie; Surélévation; Surhaussement
Construction
1. Raising carried out on a party wall and of which the thickness is half of the original wall. Syn. with HALF-WALL; ROTIE
2. To carry out the raising of an existing work.
3. The part of a construction that was heightened afterward.
4. Level difference between the high part of a stilted arch and the arch of the same opening which would be of semicircular.

RAISING (OF CRANE)
Chaise
Equipment and Tools
The raising of a tower crane. Syn. with EXTENDING (OF CRANE)

RAISING EDDY
Remous d'exhaussement
Hydrology
A displacement of water brought about by a barrage set up across a waterway. It results by a rise in the water level upstream from the barrage. Syn. with WHIRLPOOL

RAKE
Pente; Fruit
Topography; Construction
The incline of a ground with regard to the horizon.
Syn. with BATTER

RAKE BACK
Déharpe
Masonry
A toother of bricks or quarry stones. (Broken bonds are carried out by degrading successively each course so as to facilitate an ulterior rework.)
See Figure 3

RAKE OUT
Dégarnir des joints; Déjointoyer; Dégarnir
Defects (Masonry); Masonry
1. To pull the mortar of a pointing on a some depth. (This operation precedes the most often a repointing).
2. Syn. with UNPOINT

RAKER
Bracon; Contre-fiche
Carpentry; Temporary Construction
1. An oblique angle brace supporting a corbeled construction.
2. A small angle brace used in the lattice frames, joining the tie beam to the bottom boom of a latticed purlin. The raker stands in the way of the buckling of the tie beam and of the bottom boom of the purlin in the case of uprising due to the wind. Syn. with BRACE; STAY
3. Syn. with BACK SHORE; INCLINED SHORE; RAKING SHORE; SHORING

RAKING
Dégarnissage de pieux ; Rampant
Defects (Foundation) ; Construction
1. Damage characterized by a removal of the material surrounding the piles and that can affect the head or the body of piles.
2. Qualifies all elements included on a sloping plane surface (example, raking beam, raking rail).

RAKING BACK
Déharpement
Masonry
The carrying out of stepped courses of quarry stones or bricks intended for facilitating bondings of masonry.

RAKING PROP
Etai oblique
Temporary Construction
A device that has as a role to take pressures and that can be constituted by a simple beam, a lattice beam, a triangulated system. Syn. with INCLINED SHORE; RAKING SHORE

RAKE-TYPE CLASSIFIER
Classificateur à râteau
Equipment and Tools
A device intended for the hydraulic classification of natural aggregates into which the mixing of the natural aggregates to be classified bathes in a some quantity of water and is introduced into a vat with a sloping bottom. On the bottom of the machine moves a rake that alternately displaces in the longitudinal direction, then in the transverse direction. This double movement shakes the mixture and make concurently coming back up at the high part of the bottom of the vat the largest elements that are naturally decanted, whereas finest elements are directed toward the other end.

RAM
Damer; Pilonner; Dame; Mouton
Earthwork; Equipment and Tools; Assaying Equipment
1. To compact the ground or concrete by vertical percussions. Syn. with BEAT; PUN; TAMP
2. To pun an added material or a stirred ground with a consolidating rammer, a tamper, etc.

3. A cylindrical heavy tool used to compact earths or to sink cobbles. Syn. with HAND RAMMER; PUNNER; RAMMER
4. A testing impact device for metal products, made up primarily of a striking mass which can turn around an axle (ram pendulum) or can fall vertically on the test specimen (vertical ram).

RAM
Mater une soudure; Matir; Mater
Welding
1. To compact a weld, to beat it with a matting tool.
2. To beat a weld joining two pieces with the aim. to make disappear any mark of junction.

RAMMED CLAY
Béton d'argile; Béton de terre
Building Materials
A material composed of gravel, sand, and clay. Its cohesion comes from the fine clayey elements. This concrete is also called *rammed earth.*

RAMMER
Dame; Hie; Mouton
Equipment and Tools
1. Syn. with HAND RAMMER; PUNNER; RAM
2. A mass of variable weight used to make penetrate into the ground, by successive percussions, piles or sheet piles, (see HAMMER). Syn. with DROP HAMMER; PILE HAMMER; WEIGHT MONKEY. **See Figure 4**

RAMMING
Bourrage; Pilonnage; Damage
Metal Construction; Civil Engineering; Earthwork
1. The filling up of the space separating two pieces with a neutral supple matter (with the chemical meaning of the term).
2. The compacting of grounds with a tamper or a similar device. Syn. with POUNDING
3. Syn. with TAMPING.

RAMP
Rampe
Construction
Inclined plane that allows to access from a level to another.

RAMP WALL
Mur en aile
Construction
Syn. with WING WALL

RAMPANT (OF WING WALL)
Rampant
Construction
Syn. with PITCH

RAMSET
Pistosceller
Work
To nail a material with a gun.

RANDOM
Blocage hourdé
Masonry
Syn. with BLOCKING; HARDCORE; UNCOURSED RUBBLE

RANDOM (RANGE) ASHLAR
Mosaïque moderne
Masonry
Syn. with BROKEN ASHLAR; RANDOM (RANGE) WORK

RANDOM RUBBLE WORK
Opus incertum
Masonry
Masonry carried out with quarry stones cut irregularly, laid out in order to fit the more as possible in order to avoid too wide joints. Syn. with OPUS INCERTUM. **See Figure 5**

RANDOM (RANGE) WORK
Mosaïque moderne
Masonry
A bonding of rubble walling largely made up of stones with rectangular facings. Vertical stones must not be brought closer too neared and do not must cross more than three courses to the maximum. Edges are mostly sharp. Syn. with BROKEN ASHLAR; RANDOM (RANGE) ASHLAR. **See Figure 6**

RANGE
Portée
Topography
The distance measured between two consecutive change points of a traversing.

RANGE OF THE OPENING
Souffle d'un joint *ou* Jeu d'un joint de chaussée
Civil Engineering
The relative displacement of two elements in opposite of a pavement joint; distance between its two extreme positions.

RANGEFINDER
Télémètre
Equipment for Measure and Control
An indirect measuring device of distances. Syn. with TELEMETER

***RANKINE* EQUILIBRIUM**
Equilibre plastique; Equilibre *Rankine*
Geotechnics
Syn. with PLASTIC EQUILIBRIUM

***RANKINE'S* THEORY**
Théorie de *Rankine*
Geotechnics
A theory of the thrust and earth resistance of soils according to which Rankine supposes plane slips and an action of the stress of thrust on the screen (see EARTH PRESSURE and PASSIVE EARTH PRESSURE) with a geometrically determined angle. It does not take account in its theory of the roughness of the screen and its relative movement in relation to the ground.

RAPID-ACTION MIXER
Malaxeur à haute turbulence
Equipment and Tools
Syn. with HIGH-TURBULENCE MIXER

RASP
Râpe
Equipment and Tools
A flat iron tool bristled of sharp-edged points, used by stonecutters.

RATCHET-HOIST PULLER
Tirefort
Equipment and Tools
A haulage device equipped with jaws which made advancing a cable using the reciprocating motion of a lever. Ratchet-hoist puller is used to put in place decks, universal beams, etc. **See Figure 7**

RATE OF FLOW (OF A RIVER)
Régime; Débit
Hydrology
1. Syn. with REGIME
2. Syn. with DELIVERY

RATING PLATE
Plaque signalétique
Equipment and Tools
Syn. with NAMEPLATE

RATIO
Coefficient
Strength of Materials: Test of Materials: etc.
Syn. with COEFFICIENT; FACTOR

RAVELING OUT
Queue de billard
Nomenclature of Materials
The progressive diminishing of the thickness of a rendering, a piece, etc., added on a surface. This connection to very lengthened skew profile is especially carried out with an aesthetic goal.

***RAVIER* FOUNDATION PILE**
Pieu-palplanche *Ravier*
Foundation
A reinforced concrete pile caisson used to constitute retaining walls simply embedded into the soil and anchored at the back with tie rods sealed into the ground in order to keep up their stability.

RAW AGGREGATE
Tout-venant
Building Materials
A material such as it is extracted from the pit, that is to say which did not undergo transformation, treatment or grain-size classification. Syn. with ALL-IN MATERIAL; QUARRY-RUN

RAW METAL
Métal brut
Metallurgy
A material in the state where left it the operation which has just produced it, that did not still undergo any mechanical or heat treatment, susceptible of change its form, nature, physical, or chemical qualities.

RAW PRODUCT
Produit brut
Metallurgy
A material which is still in the form and in a state resulting straight from the development of the metal (liquid or pasty) and which has not still undergone any hot working. It is usually intended for being laminated, wrought or embossed, to be transformed into semifinished product or finished product. Raw products include liquid steel and ingots.

RAW STONE
Pierre brute ou velue
Buildings Materials
Syn. with QUARRY STONE; ROUGH STONE

REACH
Bief
Hydrology
The section of a canal included between two consecutive locks and into which waters preserve appreciably the same level; by extension, the portion of the course of a channeled river, also included between two consecutive dams provided with locks such as an actual canal. One calls *summit pond,* that which occupies the climactic part of a canal crossing a collar to pass from a fluvial basin into another.

REACTIVE THINNING AGENT
Diluant réactif
Polymers
A product susceptible to integration by chemical connection to the macromolecule of a polymer.

READY-FOR-USE PRESTRESSING UNIT
Unité de précontrainte prête à l'emploi
Construction of P.C.
The assembly of tendons, cable ducts, active or passive anchorage devices and, possibly, other devices prepared and joined to be able being placed directly inside the works before concreting. These sets are made up from first products which are:
- tendons,
- protective sleeves,
- active anchorage devices,
- passive anchorage devices,

and possibly, every complementary devices going into the making of the cables (central spring, etc.).

READY-FOR-USE PRODUCT
Produit prêt à l'emploi
Building Materials
A designation that designate as well products immediately operational in their delivery condition as of products being able to be obtained at the time of use from individually conditioned constituents, following proportions indicated by the manufacturer.

READY-MIX CONCRETE
Béton prêt à l'emploi
Building Materials
Any concrete prepared in a plant called *concrete mixing plant,* and delivered to a third person on the spot before the initial set. It has the required consistency in so that no other addition or processing for its working is needed. Syn. with PLANT-MIXED CONCRETE

READYMIX TRUCK
Bétonnière portée; Camion malaxeur; Malaxeur porté, Truck-mixer; Toupie
Equipment and Tools
Syn. with AGITATING TRUCK; TRANSIT MIXER TRUCK; TRUCK MIXER

READY-MIXED MORTAR
Mortier industriel prêt à l'emploi
Building Materials
A factory-made premixed product delivered ready for use. There is a wide and varied range. Syn. with DRY MIX

REAL LEVEL OF CUTTING OFF
Niveau réel de recépage
Foundation
The altimetric level of the top part of a trimmed pile.

REAL SET OF A PILE
Fiche réelle d'un pieu
Foundation
The length of a pile accepted for the calculations of bearing capacity, usually counted from the toe.

REAMER
Aléseur; Alésoir
Equipment and Tools
1. A tool used by digging machines by rising boring.

2. Syn. with BORER

REAMING
Alésage
Earthwork, Metallurgy and Metal Construction
Syn. with BORING

REAPPEARANCE
Résurgence
Hydrology
The return to the open air, in spring form, of a water flow having been harnessed by underground cavities. **See Figure 8**

REBATE
Feuillure
Construction
Syn. with BACK BAND; GROOVE; RABBET

REBATED JOINT
Joint feuillé; Joint recouvert
Masonry
A bond of which each stone shows a groove at the right of its joints.

REBORING
Reforage
Foundation
The rebore a hole in the ground that would have been full filled or narrowed under the influence of the confinement stresses.

REBOUND
Perte; Rebond; Retombée
Nomenclature of Materials
Fallout due to the rebounding of a part of solid elements constituting the mortar or concrete during mechanical projection onto a surface.

REBOUNDING HARDNESS TEST
Essai par dureté par rebondissement
Test of Materials (Building Materials)
A test of the elastic rebound of metal parts of any equipment under fixed conditions.

REBUILD A WALL IN CARE
Refaire un mur en mouchoir
Construction
To rebuild partially a wall preserving what is good and that forms an oblique line from the foot to the top.

RECEIVING PIT
Puits de réception
Earthwork
Syn. with RECEPTION PIT

RECEPTION PIT
Puits de réception
Earthwork
Sheeted mostly rectangular excavation excavated up to the reception level of a work sunk into the ground (pipe usually). Syn. with RECEIVING PIT

RECESS
Caponnière; Renfoncement; Trou central; Enchâtre; Evidement; Enfonçure
Construction; Masonry; Geology
1. An emergency recess reserved in the sidewalls of a tunnel or a gallery allowing to the workers or agents of supervision to move aside at the time of the passage of traffics. Syn. with REFUGE HOLE
2. A cavity carried out or reservation fitted out in the facing of a wall or a vault.
3. A space left between two half-works.
4. Of a piece into which another comes fitting.
5. A throughing cavity carried out in a stone.
6. Syn. with CAVITY

RECESSED (JOINT)
Refend
Masonry
A hollow joint of which the apparent face is perpendicular to the beds of stones that it bonds.

RECHARGING
Rechargement; Building-up
Welding
A supply of metal by welding or hot spraying on a metal surface to preserve it from aggressions to which it is likely to be subjected. Syn. with BUILDING-UP WELD; SURFACING WELD

RECONDITIONING PLANT
Installation de régénération
Work
A plant in which the reception of the drilling mud is centralized after a first use in order to be regenerated then reused.

RECONSOLIDATE
Reprendre
Masonry
Partial repairing of a masonry to strenghten it, to return him to a satisfactory service record. Syn. with REINFORCE

RECONSTITUTED PROFILE
Profil reconstitué
Metallurgy
A metallurgical product obtained from welded universal mill plates or of welded sheet metals of which section is identical, similar or higher than that of the sections, mostly symmetrical, hot rolled (H, I, U, etc.).

RECORD
Attachement
Contract
Syn. with ARCHITECT'S STATEMENT OF MATERIALS USED AND WORK DONE; REGISTER

RECORD OBSERVANCE
Registre d'observation
Law
A handbook put at the disposal of the workers of a company so that the latter can annotate all their observations in terms of security and hygiene.

RECORDING OF DRILLING PARAMETERS
Enregistrement des paramètres de forage; Diagraphies instantanées
Geotechnics
Syn. with INSTANTANEOUS BOREHOLE LOGGING

RECORDING THERMOMETER-HYGROMETER
Thermomètre-hygromètre enregistreur
Equipment for Measure and Control
An instrument used in particular on the painting or metal spraying building sites in order to make inquiries that the work unfold under good atmospheric conditions (temperature and relative humidity of air).

RECOVER
Absorber
Painting
To cover a prime coat by a second coat of paint which does not deteriorate the coloring of the first, but modifies it by accentuating or by decreasing the intensity of the dye.

RECOVERED JOINT
Joint recouvert
Construction
A joint of frame, masonry, etc., covered, hidden by the projection of a contiguous element of the construction. Syn. with BLIND JOINT

RECOVERY
Restauration
Metallurgy
A heat treatment being designed to cause the reestablishment at least partial of the physical or mechanical properties of a cold-drawn ferrous product without apparent modification of its structure.

RECRYSTALLIZATION PROCESSING
Traitement de recristallisation
Metallurgy
A heat treatment being designed to provoke the recrystallization of a cold worked metal. Conditions of heating and maintenance in temperature are given according to the composition of the metal and its cold-hammering rate.

RECTANGULAR BEAM
Poutre rectangulaire; Poutre droite
Construction
1. An element of which the section shows the shape of a rectangle.
2. A solid or trussed web beam (or girder) of which the height is constant from end to end. **See Figures 9 and 9a**

RECTANGULAR BEAM ON INCLINED PENDULUM
Poutre droite sur pendule incliné
Construction
A beam resting on the one of abutments by the intermediary of a pendulum articulated on the beam and on the abutment. The axis of the pendulum is sloping of an angle φ to the horizontal. **See Figure 10**

RECTANGULAR TIMBERS
Bois avivés
Building Materials
Aligned, parallel or sharp-edged woods which only has sharp edges, except in case of tolerance

of wane anticipated by norms of classification of aspect. Syn. with SQUARE-EDGED TIMBERS

RECTILINEAR LAYOUT
Tracé rectiligne
Construction of P.C.
Syn. with STRAIGHT TRACING

RECUT A STONE
Tondre une pierre
Masonry
To recut on a small thickness the facing of a stone.

RECUTTING
Recoupement
Masonry
The cutting of a part of ashlar while preserving a face.

RED CLAY
Terre rouge
Geology
A reddish clayey material resulting from a form of decalcification of some chalky soils.

RED LEAD
Minium
Painting
A red-orange pigment made up of 80% orthoplumbate of lead and 20% lead protoxide.

RED ORGANOL PENETRATIVE AGENT
Pénétrant au rouge organol
Test of Materials
A red organol-based product used for checking welds (detection of discontinuities).

RED SHORT IRON
Fer rouverain
Metallurgy
Syn. with BURNED IRON

RED SPOT
Rougeur
Defects (Building Materials)
A coloring indicating the beginning of the decaying cycle of wood.

REDRESS
Ravaler
Works
Syn. with CLEAN; SCRAP

REDUCE
Amaigrir; Doler; Maigrir
Buildings Materials; Carpentry and Masonry
1. Syn. with THIN DOWN
2. To thin down a wooden piece so as to bring it to the required thickness. Syn. with WHITTLE DOWN
3. To thin a timber piece or a stone.

REDUCED SECTION
Section réduite
Strength of Materials
The reduced area of the cross section of a beam or slab which must be taken into account in the evaluation of the deformations due to the shearing action.

REDUCER
Cône réducteur
Materials
Syn. with BUSH

REDUCING
Amaigrissement
Building Materials
Diminution in the width and thickness of stone, steel, or timber piece.

REDUCING PIPE
Réduction
Construction
A joint that allows the junction of two pipes of different diameters. Syn. with TAPER PIPE

REDUCING SCALE
Echelle de réduction
Drawing
A graduation for proportionately reducing all lines of a figure.

REDUCTION
Rabais
Contract
A reduction in price agreed by a company on a contract paid with the price schedule. Syn. with ALLOWANCE

REDUCTION COEFFICIENT
Coefficient de réduction
Foundation
The ratio of the maximum load to the nominal load estimated by a driving formula.

REEL
Dévidoir
Welding
A system that makes automatically advancing the electrode wire in the automatic and semi automatic welding processes under gaseous shield with fuse electrode wire. Syn. with DRUM

REEMERGENT
Résurgent
Hydrology
Of a waterway which, having disappeared from the surface of the ground to follow an underground course, reappears on the surface.

REENTRANT CORNER
Angle rentrant
Construction
Syn. with INTERNAL ANGLE

REEVING
Mouflage
Equipment and Tools
Syn. with TACKLE

REFASHIONED WOOD
Bois refait
Building Materials
A piece that had wanes that have been reworked afterward.

REFERENCE
Nu
Masonry
Syn. with DEVIL FLOAT; NAIL FLOAT.

REFERENCE FRAME
Chaise d'implantation; Broche
Topography; Foundation
1. A marking out system that delimites on the terrain the building lines, squarings, and dimensions of different walls and that is made up of a horizontal board (batter board) nailed on two pegs embedded into the ground. There exists *simple hurdles* and *angle hurdles.* Syn. with HURDLE. **See Figure 11**
2. A layout system delimiting the excavations and that is formed by a horizontal board hold on two stakes knocked into the ground. Some nails, notches, or lines are made on the board which help to have plotter lines tautened. **See Figure 11a**

REFERENCE MARK
Hoche; Repère
Masonry; Topography
1. Syn. with MARK; THICKNESS MARK
2. Syn. with INDEX MARK; LEVEL MARK; REFERENCE POINT

REFERENCE MATERIAL
Matériau de référence
Materials
A material or substance of which one or several properties are sufficiently well defined allowing to use it for the standardization of an equipment, the assessment of a measuring method or the attribution of values to the materials.

REFERENCE POINT
Repère
Topography
1. A mark carried out on the ground, a wall, etc., being designed to point out or find an alignment, a level, etc.
2. A mark made on an object, marking an observation and allowing to remake the last one.
Syn. with INDEX MARK; LEVEL MARK; REFERENCE MARK

REFERENCE SURFACE
Nu de mur
Construction
The plane surface of a wall being useful as base mark to measure overhanging or set back parts.
Syn. with MAIN PLANE; WALL LINE

REFRACTION
Réfraction
Geophysics
The diversion of an acoustic or electromagnetic wave train, when these ones meet nonisotropic mediums or at the meeting of the interface of two different mediums.

REFRACTIVE INDEX
Indice de réfraction
Painting
Physical constant related to the nature of a pigment or a binder and depends of the deviation of a luminous ray after penetration in this one.
Syn. with INDEX OF REFRACTION

REFRACTORY
Réfractaire
Building Materials
Of a material of which physical, mechanical, or chemical characteristics are not deteriorated by heat (in the value of some limits).

REFRACTORY CEMENT
Ciment réfractaire
Hydraulic Binders
Binder withstanding high temperatures.

REFRACTORY CLAY
Chamotte
Building Materials
Syn. with FIRECLAY; GROG

REFRACTORY CONCRETE
Béton réfractaire
Building Materials
A heatproof product made up of aluminous cement and bricks remains usually refractory. Syn. with CASTABLE REFRACTORY CONCRETE

REFRACTORY STEEL and REFRACTORY ALLOY
Acier réfractaire et Alliage réfractaire
Metallurgy
Special steel and alloy withstanding high temperature. These materials withstand corrosion in various environments or to the mechanical stresses.

REFRIGERATING LIQUID
Liquide frigogène
Materials
Generic name of the cryogenic fluids used to freeze soils (example, nitrogen liquid).

REFUGE
Refuge
Construction
Space set back from a bridge deck or a viaduct (often accommodated corbeled), unauthorized to the movement of the pedestrians, but allowing to the authorized peoples circulating or working on the work to move out of the way as road or railway traffic approach.

REFUGE HOLE
Niche; Caponnière
Construction
1. A refuge fitted out in places in sidewalls of a tunnel and which is intended to the move siding of workers working there, as approach traffic. Syn. with NICHE
2. Syn. with RECESS

REFUSAL
Refus
Foundation; Building Materials
1. The medium permanent sinking of a pile under a blow of rammer, measured under a volley of 10 blows. When the pile has reached the sinking fixed in advance, one says that the pile is to the refusal (example, by pile driving formula).
We can distinguish:
- **absolute refusal** *(le refus absolu),* that is to say, impossibility to knock the pile by new flights of blows of rammer; it is the case when the point of the pile has arrived in contact with the substratum or encounters a hard obstacle;
- **elastic refusal** *(le refus élastique),* nonpermanent instantaneous sinking of the pile. Its determination can be done by the direct inscription on the pile body with a stylet. The immediate refusal of a pile is not important in the thixotropic grounds (example, in saturated chalk).

Syn. with PILE-DRIVING RESISTANCE
2. In the processes of injection in autoclave, maintenance of the pressure as a long time as the product continues penetrating wood.

REFUSAL INJECTION
Injection à refus
Work
During the carrying out of masonry or ground injection (filling, etc.), operation which is continued up to the total filling of the cavity, the crack, etc. Generally the rise in pressure indicates that the cavity, the crack, etc. are fulfilled at 100%; resurgences by vent holes are also a good indicator.

REFUSAL TO THE APPLICATION
Refus à l'application
Painting
The impossibility for a paint to form a continuous film on a given substrate.

REFUSE
Refouler
Foundation
Concerning piles or sheet piles, to refuse sinking more deeply into the ground. In some cases and depending on the soil met, the pile can tend to go back up under blows.

REGENERATION
Régénération
Masonry
The strengthening of a masonry by injection, by repair of pointings.

REGIME
Régime
Hydrology
All different variations rate of flow that undergo waterways.
There are several types of regime:
- **glacial** *(le régime glaciaire),* characterized by high water in summer (fusion of the glaciers) and low waters of winter (nival and glacial retention);
- **nival** *(le régime nival),* characterized by a rise in the water level in spring owing to the snow melt;
- **nival-icy** *(le régime nivoglaciaire)* of a waterway having rise in the water level in spring and in summer, because of the snow melt, and of low waters in summer and autumn;
- **rainy** ***or*** **pluvial** *(le régime pluvial),* characterized by a feeding with rainwater prevalence, hence rise in the water level in connection to the most watered seasons;
- **unvarying** *(le régime uniforme);* in a canal of which slope, section, ruggedness, and flow are constant, it is always the uniform regime that ends up to become customary;
- **varying** *(le régime varié);* the presence of a singularity (narrowing, widening, discontinuity, etc.) causes not only one localized loss of energy, but as well as a modification of the free surface. The mode is then different from the unvarying regime; it is called *varying regime.*

Syn. with RATE OF FLOW (OF RIVER)

REGISTER
Attachement
Contract
Syn. with ARCHITECT'S STATEMENT OF MATERIALS USED AND WORK DONE; RECORD

REGISTRAR
Attacheur
Contract
The person in charge of records.

REGRATE
Regratter
Masonry
To scrape an old wall with drag, in particular of ashlars, to restore it the aspect of the new. Syn. with SCRAPE

REGRESSIVE EROSION
Erosion régressive
Hydrology
The ablation of a river bed which propagates toward the upstream. Syn. with BACKWARD EROSION; UNDERCUTTING

REGULAR BOND
Réglé d'appareil
Construction
Of a masonry bonding of which ashlars or quarry stones courses have steady dimensions in height, length, or width.

REGULAR COURSE
Assise réglée
Construction and Masonry
See COURSE. **See Figure 12**

REGULAR COURSE FACING
Parement à assises réglées
Construction
A masonry work of which stone courses are bonded according to regular lines, mostly horizontal.

REGULAR COURSED MOSAIC
Mosaïque assisée régulière
Masonry
A masonry bonding with horizontal courses. Courses have the same height and quarry stones are squared. It is the most common bonding. **See Figure 13**

REGULARIZATION
Régularisation
Geomorphology
The result of an erosion cycle.

REGULATION *or* CORRECTION (OF A RIVER)
Régularisation
Hydrology
The natural or artificial reshaping of the bed and banks of a waterway. Artificial reshaping is carried out with intent to normalize its flow.

REHANDLING
Reprise
Handling
An operation that consists in taking again excavated materials which could not be carried in only once at their location of final employment and had to be stored temporarily in an available site.

REINFORCE
Ferrailler; Reprendre
Building Materials; Masonry
1. To implement reinforcements of a bar setting before concreting.
2. Syn. with RECONSOLIDATE

REINFORCE
Barrer
Construction
To strengthen with bar or rod.

REINFORCE WITH STEEL HOOPS
Fretter
Works
Syn. with BAND; BIND WITH A RING; HOOP

REINFORCED ASPHALT
Bitume armé
Tightness
A hessian, glass, asbestos, etc., armature coated with bitumen. The reinforced bitumen appears in rolls and is used in tightness: single-layer or multilayer dampproof, or as isolating in foundation.

REINFORCED BITUMINOUS CONCRETE
Béton bitumineux armé
Building Materials
Any ordinary bituminous concrete to which has been incorporated a lattice frame of polyester. The objective of this frame is to offer a higher tensile strength and temperature variations and to confer a larger water resistance. It is mainly used as waterproof hydraulic coating in particularly solicited zones (barrages, etc.).

REINFORCED CONCRETE
Béton armé
Building Materials
A material into which are incorporated reinforcements in order to support tensile stresses that the concrete alone cannot support. It is characterized, according to its structure, by the disposition of its reinforcements generally directed following three not coplanar directions, except in flat elements, top slab and shells.
The association concrete/steel is possible only thanks to three essential properties:
- coefficient of thermal expansion of the two materials is appreciably identical,
- passivation of the steel is ensured by the pH of the cement,
- property of adhesion of the steel to the concrete is naturally very intimate and the latter prevents reinforcements of steel to slip in comparison with the concrete that surrounds them.
The reinforced concrete is a heterogeneous and fissurable material: these two characteristics are source of imprecision in the mechanical phenomenon appreciation of strength of the reinforced concrete and justify the use of safety margins in calculations. **See Figure 14**

REINFORCED CONCRETE BEAM
Poutre en béton armé
Construction
An element comprising, at its lower part, a reinforcement constituted by steels which withstand tensile stresses and, on its top part, a reinforcement of other steels called *top bars* which withstand compression forces; stirrups unite these pieces to withstand shearing actions.

REINFORCED CONCRETE STRUCTURE
Ouvrage en béton armé
Civil Engineering Structure
A construction constituted by a network of reinforcements embedded inside a rigid paste (concrete).

REINFORCED COPING (WATERTIGHTNESS) WITH COPPER
Chape armée au cuivre
Tightness
A waterproof blanket made up of copper or bronze thin plates from 0.1 to 0.3 mm thick, placed in covering between two bitumen coats. This type of screed is practically no longer used.

REINFORCED ELASTOMER BEARING
Appareil d'appui en élastomère fretté
Construction
Syn. with ELASTOMER COLLARED BEARING

REINFORCED GROUND
Sol armé; Terre armée
Civil Engineering
1. An expression that designates all modes of ground strengthening such as micropiles, ballast piles, and nailing.
2. Work carried out by ground and reinforcements association. There are high bond linear reinforcements mostly made of notched galvanized steel strings suitable for enduring important tensile stress. Reinforced ground walls are often covered with reinforced concrete plates (scales). This process is used to build abutments and retaining walls. **See Figure 15**

REINFORCED LEAD (WATERTIGHTNESS) COPING
Chape armée au plomb
Tightness
A waterproof blanket made up of lead sheets welded with tin arranged between two layers of bitumen. The second coat being added of 7% fillers of asbestos so as to endow it a certain rigidity. This type of tightness coping is practically no longer used.

REINFORCED PLASTIC
Plastique armé
Building Materials
A material resulting from the combination of textile glass fiber with synthetic resins. Used in many fields such as formworks, molds of prefabrication, etc.; it is a very strong material of a great life span.

REINFORCED SHEET WALL
Ecran armé
Foundation
A process of ground consolidation that consists in creating a solid barrier designed to stabilize an excavation executed near a construction distinguished by two variants.
The first separates into three phases:
- the execution of a series of deep vertical drillings (to a clearly inferior dimension to that of the envisioned excavation) regularly spaced (the spacing is a function of the nature of the terrain) on two parallel lines whose space corresponds to the distance separating two drillings on line. These drillings are equipped with metal strainer tubes, which enable the injection of an appropriated grout;
- the drillings, washed after injection, receiving a metal reinforcement placed inside the metal tube and sealed to this last by a pure cement grout;
- in complement to the disposition of the first two phases, one proceeds to the execution of a supplementary drilling line placed between the two preceding lines and designed to inject them so that they could again subsist.

The second variant is similar to the preceding one and unfolds in two phases:
- the construction of a sill of reinforced concrete to fill an excavation to a depth and a width determined (1.50 to 2 m deep and 1 to 1.50 m wide). This sill is comprised of inclined sheaths of approximately 200 mm diameter in order to enable the passage of drillings;
- the execution of a series of inclined drillings of a diameter of approximately 150 mm deep into the ground (5 to 6 m under the level of the future foundation), implanted in quincunx on two parallel lines at the distance of approximately 60 cm. This triangulated system of drillings provides good stability to the base. A tube, with a strainer attached only 1m from its bottom, serves to fill the drilling with an injection of grout to reinforce the pile. **See Figures 16 and 16a**

REINFORCED TIMBER
Conscience
Construction
A wooden piece lined with iron.

REINFORCEMENT
Armature; Ferraillage
Building Materials
1. Set of steel rods incorporated into the concrete to ensure its tensile strength. The concrete being a more or less heterogeneous material, working very well to the compression but very badly to the traction (1/13 approximately of its compressive strength). It appears necessary to compensate this disadvantage by adding steels. These steels form the reinforcement of the reinforced concrete. Reinforcements are passive in the reinforced concrete and prestressing for the prestressed concrete.
Reinforcing steel rods are classified according two criteria:
- in terms of their mode of production:
• **hot-rolled steel** *(aciers laminés à chaud)* without ulterior heat or mechanical treatment (natural steels), whose mechanical characters depend especially on the chemical composition;
• **hot rolled mild steels** *(aciers doux laminés à chaud),* subjected to a fitting heat treatment intended for increasing mechanical characters of the basic product;
• **cold rolled mild steels** *(aciers doux laminés à froid),* subjected to a cold working treatment:
◦ by traction and/or twist cold, without signficant reduction of section,
◦ by wiredrawing and/or cold rolling, with strong reduction of section
- in terms of the shape of their surface:
• **smooth bars and drawn smooth wires** *(barres lisses et fils tréfilés lisses)* with circular section;
• **high bond bars and wires** *(barres et fils à haute adhérence)* of which side surface presents asperities judiciously laid out (flanges, bolts), intended for upgrading the quality of bonding to the concrete.
The concrete/reinforcement association is possible and durable owing to several factors of which the three primary ones are:
◦ the thermal coefficient of expansion near;
◦ the physical protection of steel due to the alkalinity produced during the hydration of the cement;
◦ physical protection by concrete cover which acts as barrier regarding the environment.
2. Syn. with BAR BENDING; BAR SETTING; STEEL FIXING

REINFORCEMENT
Armature; Renforcement
Carpentry; Work
1. The lagging on centering made of provisional frame, carried out to bear elements of an arch or a vault under construction.
2. Syn. with BACKING (OF A WALL); STIFFENING

REINFORCEMENT BAR
Rond à béton
Building Materials
Syn. with REINFORCING BAR; ROUND REINFORCING BAR

REINFORCEMENT BOND
Adhérence des armatures
Construction of R. C and P. C.
The action of bonding strengths which stands in the way of the slipping of the reinforcing steel rods along their axis in relation to the concrete which coats them. The phenomenon appears as a buttressing in pawl of the concrete elements on the surface of the (concrete) reinforcement when one exerts on it a force parallel to its axis. Adhesion allows to transmit stresses of the reinforcements to the concrete or reciprocally.

REINFORCEMENT BY GROUND COLUMNS PROCESSED WITH LIME
Renforcement par colonnes de sol traitées à la chaux
Foundation
Consolidation process of clayey soil by mixing of quicklime with the ground in place with a drilling machine equipped with a special auger. One thus carries out columns about 15 m deep and 0.50 m in diameter. This process is used in particular to reinforce clayey foundations which support fillings, to strengthen slips of natural slopes, to carry out retaining works.

REINFORCEMENT CAGE
Cage d'armatures
Construction of R.C. and P.C.
1. Each section of a preworked and subassembled vertical bar setting of an abutment, a pier, etc., put in place separately and then connected between them by assembly reinforcements.
2. A preworked and subassembled isolated bar setting, vertically arranged at its final place

without other intervention that its wedging (bar setting of poles, piles, supporting-wall unit, etc.).

REINFORCEMENT COVER METER
Profomètre
Equipment for Measure and Control
Equipment for detecting metals, in particular reinforcements in the concrete (positioning and direction) and that gives the value of the concrete cover and the diameter of bars. Syn. with PROFOMETER; REINFORCEMENT DETECTOR

REINFORCEMENT CROOK
Crochet d'armature
Nomenclature of Materials
Syn. with CURTAILMENT; REINFORCEMENT HOOK

REINFORCEMENT HOOK
Crosse
Nomenclature of Materials
1. The end hook of a reinforcing steel rod that ensures the anchorage of the bar in the concrete or that, in the interest of security (for vertical starter bars), avoids to the workers risks of accidental impalement. Syn. with CURTAILMENT
2. The semicircle termination of a (concrete) reinforcement ensuring a best anchorage of this one. We can distinguish two types of curtailments:
- **normal curtailment** *(le crochet normal)* which comprises:
  - a semicircle part whose radius (measured in the axis of the bar) cannot be less than three times the diameter of the bar used,
  - a rectilinear return (parallel to the bar) of an equal length to twice diameter of this last;
- ***Considère* curtailment** *(le crochet Considère)* which is a normal hook whose radius of curvature is equal to three time the diameter of the bar.

REINFORCEMENT DETECTOR
Profomètre
Equipment for Measure and Control
Syn. with PROFOMETER; REINFORCEMENT COVER METER

REINFORCEMENT DRAWING
Dessin d'armatures
Drawing
On a drawing, representation that stands the position of the reinforcing steel rods in the formwork as their shapes, lengths, diameters, number, spacing, covering, etc.

REINFORCEMENT LAYER
Nappe de ferraillage
Construction of R.C. and P.C.
Set of the grid formed by assembled bars of a horizontal bar setting.

REINFORCEMENT MAT
Treillis soudé
Building Materials
Syn. with WELDED WIRE MESH

REINFORCEMENT OF GROUND BY ELECTROCONSOLIDATION
Renforcement de sols par électroconsolidation
Foundation
The strengthening of a ground caused by circulation of an electrical current inside the ground having for effect to make migrate into this one ions that the slight permeability of the ground would not allows to introduce by hydraulic filtration or injection. One thus reinforces the structure of the ground with ions coming, either of iron bars, or by silicate of sodium solution, chloride of ammonium solution, etc.

REINFORCEMENT STEEL
Acier pour armature
Building Materials
A metal product of a circular, plain, or toothed cross section, of which diameter is mostly included between 4 and 50 mm. These rods, incorporated into the concrete, endow them qualities of tensile and bending strength. Steels used for (concrete) reinforcement are subdivided into two categories:
- **toothed steels** *(les aciers crénelés),* constituted by steel bars, where the bond with the concrete has been upgraded giving them an indented shape. These steels, after setting into the concrete, work to tensile stress. These tensile stresses are converted in compression force in the concrete mass.

▪ **plain steels** *(les aciers lisses)* which appears as reinforcing bars of half mild steel which are only used to build works of low importance, as starter bar in a construction joint where there are risks of folding and unfolding in the process of work, or as binder bars or stirrups in the beams of small dimensions.

REINFORCEMENT STOWAGE
Arrimage des armatures
Construction of P.C. and P.C.
Fixing for ensuring the keeping in position of (concrete) reinforcements. This operation is made by ties or by welding crosswise.

REINFORCING
Confortement
Civil Engineering Structure
Syn. with STRENGTHENING

REINFORCING BAR
Rond à béton
Building Materials
Standart soft steel bar of circular section used as reinforcement in the reinforced concrete. The reinforcing bars can be plain, creneled, or ribbed. Syn. with REINFORCEMENT BAR; ROUND REINFORCING BAR

REINJECT
Réinjecter
Work
To start again an injection or to make an extra pass.

REINSERT
Recheviller
Work
To put a stud back at its primitive site or to replace it with a new.

RELATIVE COMPACTNESS OF GROUND
Compacité relative d'un sol
Geotechnics
The quotient of the dry density of a soil by the dry density of a sample compacted in defined conditions.

RELATIVE HUMIDITY
Degré hygrométrique; Etat hygrométrique
Metrology
1. The ratio, expressed in percentage, of the real pressure of the steam in the air to the saturating steam pressure at the same temperature to dry bulb.
2. The ratio between the steam pressure in the air and maximum steam pressure at the temperature of the air, or again at the maximum steam pressure if the air was saturated. The hygrometric state (sometimes called *moisture content)* does not indicate the absolute quantity of steam contained in a volume of air, but the relative quantity.

RELATIVE POROSITY OF STONE
Porosité relative d'une pierre
Building Materials
The ratio of the maximum volume of imbibition water to the total volume of the stone.

RELAXATION
Relaxation
Metallography
The dropoff in time of the stress of a steel test specimen following a preliminary tensioning. When a taut steel test specimen preserves a constant length, the sum of the elastic and plastic deformations remains constant: the plastic deformation grows in time and correlatively the elastic part decreases, therefore the stress decreases. It is said that *steel relaxes.*

RELAY
Relais
Handling
In the clearing operations, distance that separates two workstations.

RELEASE AGENT
Huile de décoffrage
Construction of R.C. and P.C.
Syn. with FORM OIL; MOLD OIL

RELIEF
Dépouille
Metallurgy and Construction of R.C. and P.C.
The slight slant given to the almost parallel faces of a mold so as to facilitate the demolding of the piece. Syn. with CLEARANCE. **See Figure 17**

RELIEF HOLE
Mine de couronne
Explosives
In an operation of explosive earthwork of a tunnel or a gallery, blasthole that is drilled on the

top part of the digging face and of which the position will determine the shape of the relief.

RELIEF WELL
Puits de drainage ascendant
Sanitary Engineering and Drainage
A well of which function is to drain the water of an artesian aquifer located beneath the level of an underground drain that communicates with the well.

RELIEF-PATTERNED SHEET
Tôle gaufrée
Metallurgy
Iron and steel product comprising many imprints of various forms, mostly of the spherical caps or diamond head, obtained by flanging.

RELIEVE
Allégir
Nomenclature of Materials and Construction
To create a space within a structure during its building, to hollow a material, in order to give it more lightness (example, opening vault of a structure).

RELIEVING ARCH
Arc de décharge
Construction
Syn. with DISCHARGING ARCH; DOORWAY ARCH; SAFETY ARCH. **See Figures 18 to 18b**

RELIEVING VIADUCT
Viaduc de décharge
Civil Engineering Structure
Serie of arches built to create an extra outlet to the flood waters of the main watercourse. Syn. with SAFETY VIADUCT

RELOAD
Engraisser un talus
Civil Engineering
To refill an embankment with a lot of nobler materials than those in place.

RELOADING
Engraissement
Civil Engineering
The widening of a slope by supply of materials.

REMANENCE
Rémanence
Strength of Materials
The persistence of a state of deformation of a material even after suppression of the stress which was affected it. Syn. with RETENTIVITY

REMESH A WALL
Remailler un mur
Masonry
To extract one by one defective elements to replace them by new materials.

REMINDER LINE
Ligne de rappel
Drawing
Each line prolonging the edges of the element involved by a dimension line.

REMINERALIZATION
Reminéralisation
Building Materials
A process for stones or concrete processing with products enabling to reconstitute partially the original texture of the material. The remineralization also enables to increase qualities of the physical and chemical strength of treated materials.

REMOTE SENSING
Télédétection
Geophysics
A geophysical means of investigation that consists in recording electromagnetic radiations emitted by natural sources. In the spectrum of electromagnetic radiations, spots which are most usually used are
:: visible and the close infrared;
:: medium infrared collected by radiometers, which give thermographic images of the natural sources.

REMOVABLE METAL VIADUCT
Viaduc métallique démontable (V.M.D.) ; Toboggan
Temporary Construction
1. A provisional overcrossing made up of a succession of elements (spans and bearings) entirely prefabricated in factory and reusable. **See Figure 19**
2. A metal viaduct that can be dismantled after its use and reusable on other site.

REMOVABLE SHUTTERING
Hausse
Construction
A fixed or moving piece being designed to raise the height of a work or an element of work.

REMOVAL
Dépose; Déblaiement
Masonry; Handling
1. A method of unbuilding a work or a part of a masonry work. We can distinguish two practices of deposit:
- in *demolition,* that consists in removing quarry stones, gritstones, or ashlars without particular precautions;
- in *conservation,* that consists in removing stones or quarry stones with care for reuse.

2. The removal of a bridge deck (temporary or not) from its site, either to replace it or to destroy it definitively.
3. Syn. with CLEARING AWAY; MUCKING

REMOVE MOLDING
Ebarber
Metallurgy
To remove a molding so as to allow the carrying out of an assembly.

REMOVE MOLDS
Décoffrer
Temporary Construction
To deposit formworks after the concrete hardening. Syn. with STRIKE THE SHUTTERING; STRIP

REMOVE ROUGHCAST
Décrépir
Masonry
To hack the surface of a rendering or a roughcast.

REMOVER
Décapant
Materials
A liquid or a semipasty product used to clean or expose a surface with a view to a given processing. Removers are naturally varied and depended both on the object to prepare and of the operation which is to follow. Syn. with STRIPPER

RENDER
Cimenter une surface
Masonry
To cover a surface with a cement or mortar bed.

RENDERER (MASONRY); **COATER** (PAINTING)
Enduiseur
Masonry and Painting
A worker specialized in the application of coating (painting) or rendering (masonry).

RENDERING
Ravalement; Enduit
Masonry
Syn. with PLASTERING; ROUGH COATING

RENDERING CEMENT
Enduit
Masonry
A thin layer of mortar applied on a vertical support. (Rendering is called *screed* if it is applied on a horizontal support.) Syn. with CEMENT PLASTER

RENDERING COAT
Couche d'accrochage ou Gobetis
Masonry
Syn. with BONDING GROUT; ROUGHCAST(ING)

RENDERING TENSILE STRENGTH tS
Résistance à la traction Rt d'un enduit
Test of Materials (Building Materials)
A value that translates the cohesion of a coating. Each one of its characteristics does not separately make it possible to assess the sensitivity of a rendering to the cracking, its behavior resulting indeed from the conjugation of three components: tensile strength *tS*, modulus of elasticity *E,* shrinkage. The *E/tS* ratio enables to characterize better the product. It translates the ability of the rendering to withstand stresses without fissuring. The coating will behave even better when this ratio is smaller.

RENFORMIS
Renformis
Construction
The extrathickness given to a concrete slab of a mixed structure, directly below to the main beams and transverse girders.

RENOVATE
Ravalement
Masonry
Syn. with RENOVATION

RENOVATER
Ravaleur
Work
A worker who carries out a restoration. Syn. with STONE RESTORER

RENOVATION
Ravalement
Masonry
Operations including cleaning, smoothing, and repointing of a masonry surface. Syn. with RENOVATE

REPAIR
Réparation
Work
The restoration of a construction of a level of lost service by proper work. The decline of the level of service can have all kinds of causes, the most frequent ones being the progressive degradation of the properties of the materials (atmospheric aggressions, modification of the properties of materials), the intensive use (effect of the repetition of the loads) and abusive (use beyond the specified loads), accidents and disasters (shocks, fire).

REPAIRING
Rhabillage
Masonry
An operation of renovation that consists in repairing degraded zones by reinforced veneerings or bricks or quarry stones masks. Such an operation is carried out when damage of facing are deep and concern large surfaces. Syn. with OVERHAUL

REPLACEMENT
Renouvellement
Work
To replace faulty elements of a work.

REPLASTERING
Recrépissage
Masonry
To re-roughcast; the result of this action.

REPOINT
Refícher
Masonry
To repoint deeply a masonry; to remake the debased filling of a bearing.

REPOINTING
Rejointoiement
Masonry
1. The reconstitution of a pointing of masonry raking out by contribution of mortar.
2. An operation of pointing that includes the degradation of the mortar in the pointings of construction and their filling with a mortar as close as possible as the set up at the origin. We can distinguish two processes of repointing:
- **hand-driven repointing** *(le rejointoiement manuel),* an operation mostly carried out when the joints have a small thickness (around one centimetre) or when surfaces to be treated are of a weak extent. The stopping is done by energetic repression of the mortar on the bottom of the joint with a gauging trowel; the completion comes true by smoothing with a jointing tool;
- **mechanical repointing** *(le rejointoiement mécanique),* an operation mostly carried out when the pointings are opened or when masonry is in a state where joints are very widened. The repointing is carried out by shotcrete, either by wet process (joints of facing or narrow) or by dry process for very open joints.

Syn. with RETOOLING

REPRODUCTION
Reproduction
Metal Construction
Operation that follows the marking out in the production line of the parts of a steel construction.

RESERVATIONS
Réserves
Work
Observations done at the time of the provisional acceptance of a building site by the building owner and giving place either to the reworks, demolitions and rebuilding, etc., for nonconformity to the detailed estimate, trade practice or tender specifications, or to an allowance of price.

RESERVOIR
Bassin de rétention et limiteur d'évacuation ; Réservoir
Hydrology; Geohydrology
1. A structure used to store a limited quantity of water resulting from a heavy rainfall, which exceeds the capacity of the existing water treatment system, for a relatively short period of time. An outlet nozzle located in the lower portion of the reservoir is used to regulate an outflow compatible with waste treatment facilities capacity located downstream. When the downstream facilities have limited capacity, a flow limiter valve is used upstream from the outlet nozzle. This setup allows to limit the flow and filter out excess water from the reservoir.
2. The abbreviation of reservoir rock.

RESERVOIR ROCK
Roche magasin; Roche réservoir
Geology
A very porous material containing fluids (water, gas, etc.) being able to be exploited. They are sandstones or limestones.

RESIDUAL CLAY
Argile résiduelle
Geology
A material formed by decomposition on the spot of the parent material; it provides ground known as *infusible* (china).

RESIDUAL SAND
Sable résiduel
Geology
A granular material resulting from deterioration and not having undergone a carriage; it is very heterogeneous. This sand constitutes accumulations which can be an interest as aggregate deposit. Syn. with ARENA

RESIDUAL SIGNAL
Signal résiduel
Welding
An erratic signal which, in the tightness inspection of a weld with helium, is delivered by mass spectrometer in the absence of gas of test, generated at the same time in the cell of analysis and in the associated electronic circuits and which itself is expressed as a percentage of the most sensitivescale .

RESIDUAL STRESS
Contrainte résiduelle
Strength of Materials
A tension having an influence on the conditions of stability of a trench, a underground gallery, etc., due to the fact of the modification of natural stresses due to the opening of these trenches, galleries, etc.

RESIDUAL STRESSES
Contraintes résiduelles
Metallurgy
Internal compression or tension stresses developed inside a casting crude metal piece, due to the fact of the contraction irregularities undergone by its various parts, during the cooling or heat treatment.

RESIDUE
Refus d'un tamis
Building Materials
In grading and sedimentology, set of the elements which have refused to pass through a sifting surface at the end of a sifting. We can distinguish: the partial refusal and the accrued refusal. Syn. with OVERSIZE AGGREGATE; SCREENING

RESILIENCE
Résilience
Building Materials
The power of a material to withstand shocks. Syn. with IMPACT STRENGTH; IMPACT VALUE

RESILIENCE TEST
Essai de résilience
Metallography
A test that consists in breaking at once, under definite conditions (in particular of temperature), a test bar beforehand nicked in its middle, and in measuring the energy absorbed by this rupture. Impact strength is the quotient of this energy by the section of the test bar at the level of the notch and it is expressed in decajoules per square centimeter. Impact tests are carried out with the Charpy machine. The reading of the angle of backup of the pendulum allows, according to a scale arranged for each apparatus, to know the absorbed energy by breaking the test bar. Test bars currently standardized are:
- bar with U-shaped notch;

- bar with V-shaped notch.

Impact tests use blows which are not those of the normal service stresses. **See Figure 20**

RESIN
Résine
Polymers
A natural or synthetic macromolecular compound, used in the plastics, paints, adhesives, etc., industries.
Among the primary resins we can distinguish acrylic, epoxy, vinyl, silicone resins, etc. Resins are classified, according to a chemical criterion and according to their process of formation, as:
- **polymerization** *(résines de polymérisation)* (there is increase in the molecular weight owing to the suppression of some double connections);
- **polycondensation** *(résines de polycondensation)* (by elimination of a substance, water mostly);
- **polyaddition** *(résines de polyaddition)* (without the release of a product). **See Figure 21**

RESIN (WATERTIGHT) COPING
Chape mince à base de résine
Tightness
A waterproof blanket made up of a mixture of coal tar pitch with epoxydic resin that one applies in thin film on its support. The application takes either with the brush, or with the squirt gun in two crossed coats. The final thickness of the film is about 1.5 mm.

RESIN PLANT
Résinerie
Polymers
A factory where resins are manufactured.

RESINOGRAPHY
Résinographie
Test of Materials (Polymers)
A similar technique to the metallography that allows to study the physical structure of resins, plastics, rubber, and to appreciate the wetting of a batch by a resin in a cast object.

RESINOUS
Résineux
Polymers
Of a product that contains a resin.

RESINOUS BINDER
Liant résineux
Polymers
A product made up of the resin and its partner of reaction (hardener, catalyst, initiator, accelerator).

RESISTANCE
Résistivité
Metrology
The opposite of the conductibility; it is expressed in ohms per meter. Syn. with SPECIFIC RESISTANCE

RESISTANCE METER
Résistancemètre
Assaying Equipment
Equipment intended for the bending breaking tests of concrete cubes 4 x 4 x 16 cm.

RESISTANCE PROBE
Sonde à résistivité
Equipment for Measure and Control
A moisture content measuring device of materials of which the principle is based on the resitivity variation of the environment according to its water content.

RESISTANCE TEST FROM MICROORGANISMS
Essai de résistance aux micro-organismes
Test of Materials (Painting)
Trial for testing the resistance of a paint put in the presence of microorganisms.
Various trials are considered by the standard according to the use to which the paint is intended:
- **burying test** (*l'essai d'enfouissement*) intended for testing the resistance of a paint coating in contact with the ground;
- **resistance test from the fungical agents** *(l'essai de résistance aux agents fongiques):*
  - in tropical atmosphere,
  - with dry heat,
  - with humid heat,
  - with exposure to the light.

Tests are carried out by sowing with same founders of various mushroom species by comparison with pilot test specimens.

RESISTANCE TO LATERAL FRICTION
Résistance au frottement latéral
Foundation
The resistance observed along the shaft of a pile, walls of a driven work, etc., due to the reaction of the ground and that depends of the nature of the ground.

RESISTANT POINT
Fort
Construction
The most resistant zone, place, point of a piece, a construction. Example: the resistant point of a beam, the resistant point of a vault.

RESISTANT WALL
Paroi résistante
Civil Engineering Structure
A supporting work usually made up by thick masonry (formed concrete, stone, or brick), by a reinforced concrete wall, or again by a thin shell of R.C. associated with transverse buttresses. This wall is always bored by drainage channels, in a sufficient number to prevent the water to accumulate behind the wall. The footing is made of coarse or reinforced concrete.

RESISTING CONCRETE
Béton résistance
Building Materials
A material whose hardening is obtained by a power heat treatment. The principle consists in inserting electrodes being of use as resistance in the concrete. Electrodes remain to residence after treatment. In certain circumstances, these are reinforcements that make office of resistance.

RESPIRATION
Respiration; Souffle d'une fissure
Civil Engineering Structure; Defects
1. Variation of the distance (positive or negative) separating two sidewalls of a work, due to various phenomena such as variation in temperature, swelling or destressing of the country rock, variations of the hydrological system, etc. This variation is mostly measured with a distance meter.
2. The variation of the amplitude of the opening of a crack.

RESPONSE TIME OF A PIEZOMETER
Temps de réponse d'un piézomètre
Hydrology
Time between the moment when a sudden variation of the pore water pressure inside the ground occurs and the moment when the piezometer shows a certain percentage of this variation. The response time depends on the permeability of ground to be studied and the volumetric coefficient of the piezometer.

RESTORATION
Reconstitution; Restauration
Work
1. In repair of work, operation allowing the structure to ensure suitably the role which it should play at the time when work is decided. The restoration mostly consists of supply or substitution of materials, to give again the structure its lost qualities. It is, in particular, the case when one uses a shotcrete which must contribute to a resumption of strains in a structure.
2. The repair of a work or a part of work.

RESTORATION TREATMENT
Traitement de restauration
Metallurgy
A thermal operation being designed to cause the restoration of a cold-worked metal; it is carried out at a lower temperature than that of the recrystallization treatment.

RESTRICTED
Embarras d'étais
Work
Of a job carried out in an excavation supported with head frames and trench braces that are a cause of hindrance for the carrying out of work.

RESTRICTED REWORK (*or* BUILDING)
Reprise ou Construction dans l'embarras des étais
Work
To build or repair a building with for principal subjection to carry out the job in a constraining context, that is to say obstructing the evolution of the workers and implementation of materials (and equipment possibly).

RESUMPTION
Reprise
Masonry
To repair or consolidate low parts of a construction (wall, pier, etc.); its result.

RETAINING BANK
Vergne
Hydraulic Work
Supports placed against river banks using close piles to create a supporting curtain.

RETAINING WALL
Mur de butée; Rideau
Construction
1. A concrete, masonry or reinforced earth structure built downhill from a landslide (or of its active part) and equipped with drainage channels so that the water of the ground does not accrete behind the wall.
2. A building intended for preventing the fall of earth or the slipping of abrupt slopes and which can be implemented on a purely temporary or permanent basis.
See Figure 22a and 22b

RETAKING
Reprise
Handling
To take again materials stored in a place (relay) to store them in another or to evacuate them to the rubbish tip.

RETARDER
Retardateur; Retardateur de prise
Polymers; Hydraulic Binders
1. An addition mixed with a monomer with intent to differ its polymerization. Syn. with TEMPER
2. Syn. with RETARDER OF SET; SETTING RETARDER

RETARDING ADMIXTURE
Retardateur de prise
Hydraulic Binders
Syn. with RETARDER; SETTING RETARDER

RETEMPERING
Rebattage
Building Materials
Mixing again of a mortar or a hydraulic concrete having already begun its set. Syn. with KNOCKING UP

RETENTION
Rétention
Building Materials
The total quantity of product remaining into the wood at the end of a curative preventive treatment, which is mostly expressed in liters or kilograms of product per cubic meter of treated wood.

RETENTIVITY
Rémanence
Strength of Materials
Syn. with REMANENCE

RETICULATED RUBBLE WORK
Opus reticulatum
Masonry
The bonding of a reticulated wall.

RETICULATED SYSTEM
Système réticulé
Construction
By difference with a full shell, constructive system in which forces that solicit a frame are compelled to cover a network of bars or ribs which imposes an advance upon them (example: lattice girder, sway frame including triangulation bars).

RETICULATED SYSTEM IN THE SPACE
Système réticulé dans l'espace
Strength of Materials
A reticulated system in the space consists of bars united at their ends (knuckles) by spherical articulations. The system is known as *isostatic* if the balance equations of statics make it possible to determine strains in the bars and reactions of the bearings. If it is not the case, the system is *statically indeterminate;* in this case it can happen that the equations of statics make it possible to express bar forces according to the forces given and the reactions of the bearings; the system is then inwardly isostatic. One can also calculate reactions of the bearings by means of the equations of statics, without having to determine strains in the bars; it is for example the case of an that will keep its shape system resting on bearings exerting on the system six forces whose supports do not meet a same right line; the system is in this case *externally isostatic.*

RETICULATION
Réticulation
Polymers
Syn. with CROSS-LINKING

RETICULATION *or* POLYMERIZATION
Durcissement
Polymers
The development of a polymer from the prepolymer state to a cross-linked form.

RETICULE
Réticule
Topography
Syn. with CROSS LINE

RETOOLING
Jointoiement après coup; Rejointoiement
Masonry
Syn. with REPOINTING

RETRACTABILITY
Rétractabilité
Building Materials
The property of a wood to vary in dimensions and volume when its dampness state evolves between some limits included between the anhydrous state and the saturation state of cellulosic grains. Under the influence of the variations of dampness, one says that wood *warps.*

RETRACTOMETER
Rétractomètre
Equipment for Measure and Control
1. A measuring device of the convergence of sidewalls of a tunnel provided with a comparator of which the precision is about 0.05 mm.
2. A laboratory instrument intended for measuring linear variations of concrete test specimens.

RETURN
Retour
Construction
1. The inherent part of a construction presenting a setback in withdrawal and located between a reentrant angle and a salient angle. **See Figure 23**
2. The inherent part of a construction presenting a setback appreciably directed perpendicular to the remainder of the construction forming a salient angle (return wall, for example). **See Figure 23a**
3. The change of direction of a staircase at an intermediate landing, or of a flight at a quarter-space, at a half-pace.

RETURN WALL
Mur en retour
Construction
A construction that is connected with the headwall of a work and is its continuation; like it, it is intended for supporting the filling laterally. The return wall is situated in the same plan as the headwall, or widens in an arc of circle, or widens in setbacks to provide a transition, if necessary, differences in width of platform beyond the work. The return wall is mostly ended by a coping of ashlars. It requires quarter-cones at the ends of slopes. Syn. with SIDE WALL. **See Figures 24 and 24a**

REUSE
Remploi *ou* Ré-emploi
Building Materials
Of the recovery materials having already was useful in an earlier construction.

REVERSE GRADIENT
Contre-pente
Hydrology
Syn. with ASCENDING SLOPE; BACKFALL; REVERTS SLOPE

REVERSE JETTING
Jet inverse
Public Works
The inversion of the direction of the jets of the drilling fluid inside the parts of a reaming bore bit to clean them and to evacuate cuttings.

REVERSE SLOPE
Contre-pente
Hydrology
Syn. with ASCENDING SLOPE; BACKFALL; REVERTS GRADIENT

REVERSIBLE THERMAL EXPANSION
Dilatation thermique reversible
Strength of Materials
The phenomenon of voluminal or linear increase of a material under the effect of the rise of temperature and the return to its original

dimensions after the disappearance of the cause of its expansion or its elongation.

REVETMENT
Revêtement
Building Materials; Metallurgy
1. Syn. with COATING; CLADDING; FACING; LINING; SHEATHING
2. Syn. with COATING

REVETMENT WALL
Epaulement; Accotoir
Construction; Masonry
1. A mass erected with intent to support (an embankment, a wall, etc.). Syn. with RETAINING WALL; RIB. **See Figures 25 and 25a**
2. Syn. with STONE FACING

REVIVE
Aviver; Blanchir; Rafraîchir
Building Materials; Masonry
1. A job that consists in squaring off the faces of a timber piece to obtain sharp edge. Syn. with BRIGHTEN
2. To recut former pointings and stony beds.

REVIVE A TIMBER
Rafraîchir un bois
Building Materials
To eliminate the altered parts of a wood up to reach the healthy part.

***REYNOLDS* NUMBER**
Nombre de *Reynolds*
Rheology
A number that indicates the influence of the viscosity and that represents the ratio of the inertia forces to the forces of viscosity. It defines, in mechanics of fluids, conditions of similarity of flow without the free surface of which limits are geometrically similar.

***RHÉAX* SEPARATOR**
Séparateur *Rhéax*
Equipment and Tools
A device intended for the hydraulic classification of aggregates; it is made up of classifying cones allowing precise classifications. We can distinguish the vertical separator, horizontal separator, compound separator, blender separator, and ins and outs separator.

RHEOGRAPH
Rhéographe
Equipment for Measure and Control
Instrument for measuring rheological properties of mortars and concretes.

RHEOGRAPH C.E.R.I.L.H. PRACTICE
Méthode du rhéographe C.E.R.I.L.H.
Test of Materials
A means of determination of the setting time of a cement paste, that consists in measuring the shear strength of the cement paste with dynamometric probes with a diameter ranging from 1 to 12 mm. The rheograph is endowed with six probes,allowing one to determine the necessary force to make them penetrate 20 mm into the paste. From the obtained results one deducts the curve from the threshold of shearing according to the time, which enables to define:
- the duration of conservation of the threshold of shearing (still period);
- the setting rate of the binder, given by the slope of the curve in its appreciably linear part.

RHEOLOGICAL MEASUREMENT OF A CEMENT GROUT
Mesure rhéologique d'un coulis de ciment
Rheology
The determination of the cement grout fluidity. This measurement is carried out usually with a Marsh flowmeter.

RHEOLOGY
Rhéologie
Rheology
A science that concerns the laws of the material behavior that link, at a given moment, stresses to deformations. We can distinguish various types of rheological behavior:
- *elastic* (the body resumes instantaneously its initial shape after unloading; it is a reversible behavior);
- *plastic* (unloading is accompanied by a permanent residual deformation);
- *elastic-plastic* (the behavior remains elastic as long as the stresses remain lower than a certain limit; as soon as this one is reached, the behavior becomes plastic);
- *viscous* (the deformations evolve in time at a speed that depends on the stresses);
- *viscoelastic* (the body resumes its initial shape with a certain delay after unloading; this

behavior is known as *linear,* or *Boltzmann,* if the deformations depend linearly on the stresses).

RHEOPEXY
Rhéopexie
Rheology
The reverse phenomenon of the thixotropy: when a colloidal liquid solution is shaken, this one thickens.

RHEOPLASTIC MORTAR
Mortier rhéoplastique
Building Materials
A runny material (high fluidity) and free from segregation, having thixotropic properties with a low heat of hydration, free from shrinkage, ductile, waterproof. This mortar is endowed with a high mechanical strength.

RHODIUM DEPOSIT
Rhodiage
Metallurgy
An electrolytic deposit of a very hard and bright coat of rhodium on a metal surface.

RHYOLITE
Rhyolite
Geology
A volcanic rock, equivalent of granite.

RIB
Vau; Etançon; Epaulement; Nervure
Temporary Construction; Construction
1. The part of a centering that supports all or part of a vault during its construction and on which the lagging rests. The upper face of the ribs is carved in curve, parallel to the concave interior of the vault at a distance equal to the common thickness of the lagging and of the battening that surmounts them. Their lower and side faces are plane. Ribs are made up, according to the cases, of one, two or three wooden pieces, superimposed and bolted. **See Figure 26**
2. Syn. with PROP; SHORE; STAY; YIELDING PROP
3. Syn. with REVETMENT WALL
4. In the retaining walls of R.C., horizontal beam associated with the shell and crowning this one.

RIB OF ORTHOTROPIC SLAB
Nervure d'une dalle orthotrope
Construction
Syn. with LONGITUDINAL RIB

RIBBED DEFORMATION
Pincement
Defects (Civil Engineering Structure)
1. Diagonal rib deformation of a vault which result on a photoprofile by an uprising of the key with a disflushing between courses of bricks or quarry stones in the case of a tunnel of masonry. Usually this damage is accompanied by a convergence of the sidewalls.
2. A diagonal rib deformation in the haunches of a masonry vault, due to the lateral thrusts. At the place of the nipping the compressive stresses are such as materials break up into small dices and can be even completely crushed.

RIBBED FOOTING
Semelle nervurée
Foundation
An isolated reinforced concrete footing braced by reinforced concrete beams intertwined and connected in the axis of the footing at the right of the post whose it is used as base. **See Figure 27**

RICH CONCRETE
Béton gras
Building Materials
Syn. with FAT CONCRETE

RICHNESS MIXTURE
Dosage d'un béton, d'un mortier
Building Materials
Syn. with MIXTURE RATIO; PROPORTIONS

RICHNESS MODULUS OF A MORTAR or OF A BITUMINOUS CONCRETE
Module de richesse d'un mortier ou d'un béton bitumineux
Building Materials
The ratio of the percentage of binder (expressed in weight of the aggregates) to the fifth root of the specific surface of the mineral frame (the surface expressed in m^2/kg).

RIDGE
Faîte; Faîtage; Crête
Carpentry; Construction
1. A piece generally horizontal, that forms the top edge of a height and that receives the rafters. Syn. with RIDGEPOLE
2. Syn. with CREST; TOP

RIDGE BEAM
Longrine de chevalement
Temporary Construction
Concerning the sheeting of a timbered gallery, running lengthways timber piece resting on the head frame posts.

RIDGE PURLIN
Panne faîtière
Carpentry
A member located at the top of the principal rafter.

RIDGE RIB
Lierne
Foundation and Temporary Construction
A metal section (mostly a channel iron) put horizontally on the head of a sheet-pile curtain or connecting poles of a Berliner or Parisian sheeting, so as to make interdependent them.

RIDGEBEAM
Arbalétrier
Carpentry; Temporary Construction and Metal Construction
Syn. with MAIN RAFTER; PRINCIPAL RAFTER

RIDGEPOLE
Faîte; Faîtage
Carpentry
Syn. with RIDGE

RIDGING
Crissure
Defects (Metallurgy)
A ridge more or less pronounced affecting a metal sheet.

RIFT
Faille; Fente
Geology; Defects
1. One of the manifestations of the discontinuous deformation of rocks translating into a relative surface displacement in opposite: it therefore presents a fault throw. A fault is large scale, a displacement that run through a country or region, as opposed to joints or fractures, which are breakings on a local scale.
A rift results from a shear failure. Vein walls of the breakage are often marked by strias or grooves, known by the name of slickenside, which indicates the direction of movement: it is in this direction that the rift can be play again more easily. A rift includes the entire zone that has partially recemented through ulterior recrystallization.
By their extension, their continuity and their weak shearing strength, rifts constitute potential failure surfaces that are particularly dangerous or unstable.
Unlike joints, in a rift there is always a displacement of one or of the two compartments stemming from the break.
Types of faults:
- **compressive** *(les failles de compression),* closed and often accompanied by grinding (mylonite to the level of the discontinuity);
- **tensile** *(les failles de traction),* open, often underlined by volcanic intrusions, without grinding of the rock;
- **rifts of thrust** *(les failles de chevauchement)* that result from the exaggeration of a fold.

Syn. with FAULT; GEOLOGICAL FAULT. **See Figure 28**
2. Syn. with CREVICE; FISSURE

RIFT SAWING
Débit sur quartier
Building Materials
Syn. with QUARTER-SAWING

RIFT-GRAINED WOOD
Bois maillé
Building Materials
Syn. with COMB-GRAINED WOOD; EDGE-GRAINED WOOD.

RIGHT OF AWAY
Emprise
Law
Syn. with TOTAL LAND REQUIEREMENT

RIGIDITY FACTOR
Facteur de rigidité
Strength of Materials
The multiplicative factor that corresponds to a displacement given the stress that is the cause, in the linear elastic range.

RILL WASH
Ruissellement concentré; Rill-wash
Geomorphology and Hydrology
1. Syn. with CONCENTRATED RUNNING

2. The fast-flowing dispersion of the streaming waters from pluvial origin in catch drains which they dug in the ground.

RIMMING STEEL
Acier effervescent
Metallurgy
A material having undergone a kind of boiling in the melting bath of the weld which results in the defects of structure, what harms its quality.

RING
Anille; Couronne; Rondelle; Collerette
Construction; Foundation; Materials
1. An iron ring used to keep up ward poles put on the faces of the upstream cutwater of bridge piers.
2. A steel hoop ring surrounding the head of a pile to avoid that this last one splits during driving.
3. Syn. with WASHER
4. Syn. with COLLAR

RING BUND
Digue d'enceinte
Hydraulic Work
A dam provisionally built in the bed of a waterway and surrounding a building site of engineering work built in aquatic site.

RING GIRDER
Ceinture métallique
Construction
Syn. with METAL CIRCLE

RING OF LINING
Virole
Equipment and Tools
A sheeting section in hydraulic tunnels.

RING SHAKE
Roulure
Defects (Building Materials)
A wood defect being characterized by circular splits separating one or several annual growth rings. This defect is very serious because it breaks the solidarity of grains. It is due to the violent winds or strong frosts. Syn. with ARC SHAKE

RINGWORM
Teigne
Defects (Building Materials)
The sickness of the scab affecting bark.

RIP
Défoncer
Earthwork
To turn over the ground on a great depth (ranges from 40 to 80 cm), so as to loosen it. Syn. with PLOW

RIPE STONE
Pierre faite
Building Materials
A tooled rock and ready for use.

RIPPER
Défonceuse; Défonceuse portée; Ripper
Equipment and Tools
1. A vehicle used to loose the ground before the passage of earthmovers or scrapers. Syn. with RIPPING MACHINE; ROOTER
2. Earthmover for loosing the ground, before the bulldozers or scrapers passage. Rippers are heavy harrow with three or five teeth, assembled on a robust framework and towed by powerful tractors; the job is carried out in several passes. Syn. with ROOTER ATTACHMENT

RIPPING
Refente
Building Materials
The lenghtwise sawing of a wood. Syn. with RIPSAWING

RIPPING MACHINE
Défonceuse
Equipment and Tools
Syn. with RIPPER; ROOTER

RIPPLES
Ridage; Ridement
Defects (Painting)
The formation of folds on the surface of a paint film; this defect is usually the result of the application of a too thick coat.
The air cannot diffuse inside a film too thickly, so that a uniform drying is impossible. Surface hardens, the bottom part of the film remains liquid and hardens then slowly by repelling the surface that ripples. A defective drying brings

about the ripple sometimes. Changes of temperature and any excessive humidity favor the ripple, just as an excess of driers, in particular of siccative cobalt. Syn. with WRINKLING

RIPPLING
Grippage
Defects (Painting)
The wrinkling of a paint film.

RIPRAP
Perré; Enrochement
Construction; Foundation
1. Syn. with PITCHING; STONE FACING
2. Syn. with BEDDING; ENROCKMENT; PITCHING; ROCKFILL

RIPSAWING
Refente
Building Materials
Syn. with RIPPING

RISE
Montée d'une voûte; Flèche; Hauteur; Hauteur sous clef
Construction
1. In an arched work, vertical distance measured between springing lines and the keying point of a vault. Syn. with HEIGHT OF A VAULT
2. The level difference of two consecutive steps of a staircase.
3. The distance measured between the horizontal plan of the springings and the intrados of the keystone. **See Figure 29**

RISE
Vidage
Construction
Raising formed on each bank of a canal by the earth which is extracted from it.

RISER
Contremarche
Construction
The vertical part of the step of a staircase.

***RITTER'S* METHOD**
Méthode de *Ritter*
Strength of Materials
A calculation method of the steel lattice girders and which is used when the number of bars met to a panel point of lattice does not allows the application of the graphic method of Crémona. The method consists in cutting three bars, in applying directly below of the sections three unknown forces in prolongation of the bars, and in writing, for three centers located each one to the meeting of two of the three bars, balance between moments, that is to say the sum of the moments of the forces applied on the remaining construction on the one hand, the moment of the unknown force on the other hand. The three unknown forces being determined, one continues according to the method of Cremona. The most frequent application of this method is that of the calculation of the Polonceau trusses.

RIVER
Rivière
Hydrology
Generally, tributary of another waterway more important. Syn. with STREAM

RIVER ABRASION
Abrasion fluviale
Geomorphology
The mechanical erosion of the in-situ rock by waters conveying remains and sands. Syn. with FLUVIAL ABRASION

RIVER CAPTURE
Capture
Hydrology
Syn. with BEHEADING; CAPTURE; STREAM CAPTURE

RIVER CLAY
Argile fluviatile
Geohydrology
Syn. with FLUVIATILE CLAY

RIVER DISCHARGE
Perte de rivière
Hydrology and Geomorphology
Syn. with LOSS OF RIVER

RIVER DYNAMICS
Dynamique fluviale
Hydrology
Syn. with FLUVIAL DYNAMICS

RIVER SANDBANK
Bane
Geomorphology
A sand or gravel accumulation that settles onto the bed of a river, and whose formation, extent and morphology, depend on water movement.

RIVET
River; Riveter
Metal Construction
1. To put in place a rivet passing into the hole of the parts to be jointed, then hammering the body of the rivet which exceeds with a rivet set that upsets the metal into the hole and forms a second head.
2. To join with rivets.
3. Element of mechanical assembly of metal parts formed by a cylindrical rod (shank) endowed at an end with a half-spherical or countersunk head and of which one crushes the other end after having threaded it in a calibrated hole made in the parts to be assembled.
The rivet is soft steel. To ensure the connection, the shank is introduced into the superimposed holes bored in the parts to be linked; the salient part is then driven back and hammered head-shaped known as closing, whose the length is 1.3 up to 1.7 times the diameter of the shank. It occurs thus an energetic tightening of the parts, of which adhesion allows the rigidity of the assembly. Up to 10 mm diameter, steel rivets are cold-posed; from 10 to 30 mm, work is done hot, the rivet being red-heated from 800 to 900°C. The head of installation is placed on a counterrivet set, or heap, and, at the opposite, the rivet set, or hollow die, form by pressure the closing head. During this operation, a press device keeps up firmly the two parts to be joined. In structure one uses the calibrated died rivet with solid shank. **See Figure 30**

RIVET HEAD
Tête de rivet
Nomenclature of Materials
The part of a rivet located at each end of its body and allowing the work-holding to assemble. Heads of rivet are mostly half-hemispherical; they can be flat or milled. We can distinguish:
- the **first head** *(la tête première),* which is the original head of a rivet;
- the **second head** *(la tête seconde),* head of a rivet carried out at the assembly time. **See Figure 31**

Syn. with CUPHEAD

RIVET SET
Bouterolle
Equipment and Tools
Syn. with RIVETING TOOL; SNAP; SNAP TOOL

RIVETER
Rivoir; Riveteuse; Riveteur
Equipment and Tools; Metal Construction
1. Syn. with RIVETING MACHINE
2. A worker specializing in making riveted joints.

RIVETING
Rivetage; Rivure
Metal Construction
1. The assembly and integral union of metal parts with rivets.
2. The pitching of the rivets carrying out an assembly. Syn. with PINE JOINT. **See Figures 32 to 32b**

RIVETING HAMMER
Matoir; Rivoir
Equipment and Tools
1. A hammer used to hot-implement rivets.
2. A riveter's hammer whose peen is slightly bulged and that is used to rivet without forming head or carrying out a roughly done head.

RIVETING MACHINE
Riveteuse; Riveuse
Equipment and Tools
A machine, mostly pneumatic, used to assemble metal pieces with rivets.
We can distinguish the:
- **percussive riveting machine** *(la riveteuse à percussion),* Syn. with PNEUMATIC RIVETING HAMMER;
- **pressure riveting machine** *(la riveteuse à pression),* device with which the rivet is upsetted of only one blow of piston into its housing, which it fills in a complete manner, metal in a pasty state penetrating even in the interstices remaining between sheets; the head of the rivet is worked without the rivet undergoing appreciable cooling since the moment when it was presented to its site. The device shows horseshoe-shaped

with lengthened branches carrying at the lower branch, the head cup dolly and on the higher branch, the piston. **See Figure 33**

RIVETING PIN
Broche
Equipment and Tools
Syn. with DRIFT BOLT

RIVETING TOOL
Bouterolle
Equipment and Tools
Syn. with RIVET SET; SNAP; SNAP TOOL

RIVETS *or* BOLTS BREAKING
Rupture de boulons ou de rivets
Defects (Metal Construction)
In a metal work, damage whose gravity is variable according to the number of elements broken in the same assembly. Causes of rupture are corrosion, movement of assembly, stresses, etc.

ROAD
Route
Civil Engineering
A work allowing to the traffic (pedestrians, two-wheeled vehicle, cars and heavy lorries) to go from point A to point B. Syn. with HIGHWAY

ROAD BRIDGE
Pont-route; Passage supérieur; Pont routier
Civil Engineering Structure
A structure that delivers passage to a road way and which is built above a railway track, roadway, or of any other obstacle. Syn. with HIGHWAY BRIDGE

ROAD CRACKING
Marronnage
Defects (Civil Engineering)
Cracks and fractures observed on a carriageway surfacing.

ROAD CURB
Bordure
Civil Engineering
A row of parallelepipedic stones which is placed on the edge of sidewalks, on the roadway side.
Road curbs can also be made of cement concrete or bituminous concrete. In a town, on the one hand, they delimit the field of cars and pedestrians, on the other hand, they serve as bank to rainwater coming across the roadway or on sidewalks.

ROAD FOUNDATION
Corps d'une chaussée
Civil Engineering
The whole formed by the base course and the surfacing of a roadway. Syn. with PAVEMENT

ROAD METAL
Cailloutis
Civil Engineering
Crushed pebbles for metalling roads.

ROAD METALLING
Revêtement de chaussée; Cailloutage
Civil Engineering; Construction
1. Syn. with CARPET; PAVEMENT; ROADWAY COVERING
2. The action of to pebble.

ROAD ROLLER
Rouleau compresseur; Compacteur à jantes métalliques; Rouleau-compresseur
Equipment and Tools
1. Syn. with ROLLER; TOWED COMPRESSION ROLLER
2. Syn. with STEEL-WHEELED ROLLER

ROAD SIGNING
Signalisation de jalonnement
Civil Engineering
Signposting intended for guiding the road users (signs, crash barriers, etc.) when the achievement of work modifies the usual alignment of a roadway.

ROAD SURFACE
Revêtement de chaussée
Civil Engineering
A layer, or set of layers, forming the roadway of the bridges and footbridges on which travel (or walk) users. Concerning bridges with an orthotropic slab, the road surface plays at the same time the role of damp-proof course and corrosion-protective coating of the bridge covering. Syn. with CARPET; PAVEMENT; ROAD METALLING

ROADBED
Assiette
Civil Engineering
Syn. with BOTTOM; LAYING OUT (OF RAILWAY LINE).

ROADMAKING MATERIAL
Matériau de viabilité
Civil Engineering
All rocks used in roads construction. Syn. with HIGHWAY CONSTRUCTION MATERIAL

ROADSIDE
Accotement; Bas-côté
Construction; Civil Engineering
1. Syn. with BANK; BENCH; CESS SIDE; SHOULDER; SIDE PATH
2. The part of the shoulder of a roadway that can only be used by pedestrians. Syn. with GRASS VERGE

ROADTRUCK
Camion
Equipment and Tools
Syn. with LORRY; TRUCK

ROADWAY
Chaussée
Civil Engineering
The part of a road built for the traffic which supports mechanical actions of vehicles and transfer them on the undisturbed soil (or underlying ground). By extension, whome of layers of materials setting on the deck to support the traffic of vehicles.
There are several types of roadway:
- **roadway lined with stones** *(la chaussée empierrée),* whose road surface is made up of materials (stones) overlapped some in others and compacted;
- **concrete carriageway *or* rigid pavement** *(la chaussée rigide),* whose road surface constituted by a concrete slab that bends elastically under loads and distributes strains over a great surface;
- **flexible carriageway *or* flexible pavement** (*la chaussée souple),* constituted by superposed layers of elements of variable grading, compressed, mixed or not of various binders or coated by these binders.

Syn. with CARRIAGEWAY; PAVEMENT

ROADWAY SYSTEM
Voirie
Civil Engineering
All terrestrial channel of communication.

ROBOT CONCRETING
Robot de bétonnage
Equipment and Tools
A tracked or pneumatic-mounted engine for carrying out sprayed concrete or shotcrete on the building sites of some importance. This autonomous unit can be equipped with a simple or double arm with basket and shotcreting arm.
The machine with double arm is equipped:
- *of two independent concrete pumps with pistons*;
- *of two cabins controlling each one a directional and telescopic arm with head of jigging shotcreting;*
- *of two proportioning pumps for setting agent enslaved to the debit of the concrete;*
- *pipes and nozzles necessary to the mechanical application of the material.*

The concrete to be shotcreted is supplied by truck mixer and is directly poured in the receiving hopper with which is equipped the machine. This hopper communicates with two concrete pumps which propel material into the pipes. Of their cabin, gunite applicators regulate the debit, the orientation and pressure of shotcreting (some robots are programmable and the operator is satisfied to overlook the good performance of shotcreting).
The yield is about than 20 m³/h.

ROCHE MOUTONNÉE
Roche moutonnée
Geology
A blunted or smooth stone which one finds on the rocky surfaces formerly occupied by a glacier or an inlandsis. Syn. with ICE-SMOOTHED ROCK

ROCK
Roche
Geology
1. A term that applies not only to a hard mineral substance, but also to the solid (limestones), soft (clays), noncohesive (sands), liquid (water), and gaseous (air) matter. The subunit of a rock is the mineral.

One classifies rocks by taking account of various types of character:

- *According to the physical conditions of their formation:* exogenous rocks (formed on the surface of the sphere), endogenous rocks (formed inside);
- *According to their origin:* sedimentary, eruptive, magmatic, metamorphic rocks;
- *According to their facies,* namely their mineralogical and/or paleontological contents;
- *According to their mineral composition:* chalky, quartzitic, granitic rocks, etc.;
- *According to their mechanical properties:* rocks qualified: hard, compact, porous, plastic, liquid, gaseous, etc.;
- *According to their use:* ore, of building, etc.

The classification by origin distinguishes:

- **eruptive** *(les roches éruptives),* endogenous rocks being able to be stemming from the interior of the sphere of two manners:
  - either by volcanic eruptions (volcanic rocks),
  - or consecutively to the phenomena of erosion or deformation of the Earth's crust (plutonic rocks).

These two types of rocks are gathered under the general name of "eruptive" or "igneous" rocks. The main eruptive rocks are granites, porphyries, lava, and basalts;

- **metamorphic** *(les roches métamorphiques),* formed by crystallized elements laid out in parallel layers identical to the sedimentary rocks, and resulting from the penetration of eruptive rocks in some sedimentary rocks. Among the main metamorphic rocks, we can distinguish schists, gneiss and marbles. Syn. with CRYSTALLOBLASTIC ROCK;
- **sedimentary** *(les roches sédimentaires),* stemming from the sedimentation of alteration materials of biochemical or volcanic origin, and formed on the sphere's surface. Rocks are presented such as coursed benches, strata, resulting from a deposit carried out slowly in the time, and are located on the surface of the lithosphere. Among the principal sedimentary rocks, we can distinguish sandstones, limestones, gritstones, flints, conglomerates.

Sedimentary rocks are classified according to their composition in chalky, clayey, siliceous, saline, and combustible rocks:

- *clayey sedimentary rocks (les roches sédimentaires argileuses)* are soft materials, scratchable with the nail (clay) or knife (bauxite) and contain silica, alumina and ions H^+ and OH^-. To this class of sedimentary rocks belong actual clays, soft, deformable and often plastics; marls, which are clays mixed with limestone; schists, like slate and bauxites;
- *biogenic sedimentary rocks (les roches sédimentaires biogènes)* are various origins, conchiferous for example (accumulation or physicochemical transformation of shells), or of vegetable origin;
- *carbonated sedimentary rocks (les roches sédimentaires carbonatées)* are very abundant and closely linked, generally speaking, with the organic activity; they contain natural carbonates that made it possible to classify them:
  - calcium carbonate is present in chalky rocks;
  - iron carbonate is present in siderites;
  - sodium carbonate is present in natrons;
  - double carbonates of calcium and of magnesium or dolomites are present in the dolomitic rocks. The main families of the carbonated sedimentary rocks are chalky rocks, dolomitic rocks, siderites, natrons,
- *carbonaceous sedimentary rocks (les roches sédimentaires carbonées)* contain carbon in notable proportions (more than 50% of their mass) and are used generally speaking as combustible. They can be presented in a solid or liquid form. We can distinguish diamond, coal, bitumen, and oil;
- *composite sedimentary rocks (les roches sédimentaires composites)* which contain silica, clayey minerals and carbonates. Rocks containing clays and carbonates are called differently, according to their content of clay:
  - marly limestones (5% to 35% clay),
  - marls (35% to 65% clay),
  - clayey marls (65% to 95% clay).

  In this composite rocks family we can distinguish loess, molasses, flysch, breaches;
- *detrital sedimentary rocks (les roches sédimentaires détritiques)* are made up of at least 50% of remains coming from the erosion. According to the size of elements, one will distinguish rudites, sand rocks, and lutites,
- *ferruginous sedimentary rocks (les roches sédimentaires ferrugineuses),* of physicochemical origin are either eluvial (siderolithic clay, laterite), or marine (oolitic ore of the minette type or ferruginous sandstone);
- *organic sedimentary rocks (les roches sédimentaires organiques)* largely result of the

activity of alive beings (radiolarites, built limestones, faluns, etc.);

- *phosphatic sedimentary rocks (les roches sédimentaires phosphatées)* contain lime phosphate (tricalcium phosphate). In the common deposits, the mineral is in place in its gangue and is mixed with limestone, clays, etc. Their origin is especially organic (bone and excrements of dead individuals);
- *saline sedimentary rocks (les roches sédimentaires salines)* result from chemical processes resulting from the crystallization of chlorides, sulphates or carbonates at the expense of aqueous solutions. Main saline rocks are gypsum and gem salt;
- *siliceous sedimentary rocks (les roches sédimentaires siliceuses)* are hard materials where dominates the free silica or quartz. Most of these rocks scratch glass and steel. We can distinguish:

- detrital siliceous rocks *(les roches siliceuses détritiques),* which can be soft, namely made up of separated elements, or consolidated, when the fragments are joined by natural cement due to the deposit of seepage water. In the first case, one speaks, according to the size of the fragments, about blocks, stones, pebbles, gravels, sands, fine sands, etc; in the second case, one lies in the presence of conglomerates, sandstone, etc.;
- chemical siliceous rocks *(les roches siliceuses d'origine chimique),* due, like all sedimentary rocks of the chemical origin, to the precipitation of substances in solution. It is flints, gritstones, cherts;
- organic siliceous rocks *(les roches siliceuses d'origine organique)* are radiolarites, diatomites, and spongolites.

2. A hard material, fragmented and coming from the surface of the Earth; stone, pebble.

ROCK
Roche
Building Materials
1. In quarry, the hardest chalky bench.
2. The hardest stone used in a construction (one also says rock stone).

ROCK
Rocher; Roc
Geology
1. A more or less significant hard stone mass, mostly steep, emerging from the ground.
2. A solid block of stone more or less buried that forms a unit with the basement.

ROCK AVALANCHE
Éboulement
Geomorphology
Syn. with ROCKFALL; ROCKSLIDE.

ROCK BOLTING
Boulonnage
Civil Engineering Structure
A process of repairing, consolidation that consists in sealing a high-strength steel bar with a mechanical device. In general, the anchorage is carried out with an expansion bolt, whose space is controlled by tightening the bolt, one injects afterward the annular space.

ROCK BREAKER
B.R.H. (Brise Roche Hydraulique); Dérocteuse ; Rock breaker
Equipment and Tools
1. A superjackhammer that is set at the end of the arm of a hydraulic excavator instead of its bucket. Syn. with STONE CRUSHER.
2. Syn. with ROCK CUTTER.
3. A device intended for the fragmentation and demolition of rocky massifs or concrete works. The principle of bursting is based on a brutal gas outburst bringing about the thrust of a liquid (water) on the walls of holes drilled as a preliminary in the material to be demolished.

ROCK BREAKER VESSEL
Dérocheuse
Equipment and Tools
Syn. with ROCK CUTTER VESSEL.

ROCK BREAKING
Dérochage; Déroctage
Masonry and Earthwork
1. Syn. with ROCK EXCAVATION WORK and PULLING DOWN THE MASONRY
2. The fragmentation of large blocks of rock into small pieces.

ROCK BUTTRESS
Butée d'enrochement
Civil Engineering Structure
A mass of ripraps or cribs to create an effect of stop which is placed forward and at the bottom

of a landslide or instead of this bottom and which plays the role of a self-draining mass.

ROCK COMPRESSIVE STRENGTH
Résistance à la compression d'une roche
Geotechnics
The pressure which a rock can bear without being crushed.

ROCK COMPRESSIVE STRENGTH TEST
Essai de résistance à la compression d'une roche
Geotechnics
A test that consists in determining the strength of a rock by compression of a cylindrical or cubical sample. The sample of rock is placed between two trays of a hydraulic press and the test proceeds as for the concrete cylinder tests (see COMPRESSION). As the exerted strain progresses, the sample shortens and its transverse dimension increases; this phenomenon enables to calculate its elasticity modulus. Tests are achieved on a number of dry samples and a number of samples saturated with water.

ROCK CRYSTAL
Quartz
Geology
Syn. with QUARTZ.

ROCK CUTTER
Dérocteuse
Equipment and Tools
A plant used for pulling down work of masonry or rock excavation. Syn. with ROCK BREAKER.

ROCK CUTTER VESSEL
Dérocheuse
Equipment and Tools
A dredger used for pickling to create or improve a maritime channel into a rocky bed. These floating machines are of two types: tampers, that fracture the rock by the free fall of steel pestles, and the drilling machines, that bore both several blastholes used for the high-explosive explosives setting. Syn. with ROCK BREAKER VESSEL.

ROCK DRILL
Perforatrice
Equipment and Tools
Syn. with DRILLING MACHINE; HAMMER DRILL; PERCUSSION DRILL; ROTARY DRILL

ROCK DRILL HAMMER
Marteau perforateur
Equipment and Tools
Syn. with HAMMER DRILL; JACK HAMMER DRILL

ROCK EXCAVATION WORK
Déroctage
Earthwork
An excavation carried out in a rocky terrain. Syn. with ROCK BREAKING

ROCK FRAGMENTATION
Fragmentation
Geomorphology
A division of some rocks in the aftermath of natural mechanical processes that can be brought about by stresses due to the:
- important temperature variations (thermoclasty);
- presence and absence alternations of water (hydroclasty);
- action of the frost of water in the pores of the rock (congelifraction);
- crystallization of salts (haloclasty);
- vegetation (roots of trees).

ROCK GARDEN
Rocaille
Building Materials
Syn. with ROCKERY.

ROCK MECHANICS
Mécanique des roches
Geotechnics
The application of the general laws of mechanics of the deformable solids to the behavior of rocks. The study of the rheological behavior of rocky structures makes the rock mechanics the most inherent discipline of the underground working: problems of supporting and roof control, stability conditions, mechanisms of destruction of the rock.
Rock mechanics concerns:

- *the behavior of rock massifs:* practically no rock is free from important defects of structure, joints and grain joints, cracks and fractures, which prevent from considering the rock as a continuous material *stricto sensu.* Furthermore, many rocks are bedded, namely made up of a stacking of strata more or less differentiated and regular, whose result is an anisotropy marked of all characteristics: a rock is more bending (out of shape) when it is solicited perpendicularly to its bedding plan than in any other direction. The dimension of heterogeneities and their orientations have important consequences on the behavior of rocks; their strength is subjected particularly to a scale effect: the more the considered volume is important, the more it has odds to comprise discontinuities of great dimension and the more its strength is low. Characteristics measured on samples of a few decimeters in the laboratory are not thus directly usable to qualify behavior on the scale of the real structures. Actually, in many cases, stability is apparent more with that of an accumulation of more or less interlocking blocks than to that of a continuous medium: the deformability then depends especially on the slipping possibilities of each other blocks. The presence of water inside the rocks disturbs their behavior in the short and long terms: in the rocky matrix, it decreases the global strength of the solid mass lubricating joints and cracks and possibly widening those in the aftermath of the pressure. Some rocks, such as salt, gypsum, limestones, are practically destroyed by solubilization; others are altered temporarily (humidified marls become mud, which can again be solidified if water disappears) or final (deterioration of feldspars into clay, laterite formation). Finally, water circulation induces stresses that are added to the natural stresses due to gravity. However, these natural stresses are not generally those which could be anticipated by applying the laws of the continuous mediums mechanics (elasticity), especially at a great depth. Before any digging in the rock, if the rocky massif was not subjected to orogenetic disturbance, stresses in a whichever point should be: a vertical compression equal to the weight of the sublying grounds; a transverse compression equal with a certain proportion (close to 1/3, in all cases < 1) of the vertical stress. However, it is often observed that vertical compression is different from the weight of the ground in particular (in particular when the topography of surface is tormented) and that transverse compression is a very variable proportion (from 0 to 2, or 3). The alternation of rocky benches having different deformation properties creates moreover, at the touch between these benches, of the inherent stresses that contribute to the weakening of the massif as a whole. The behavior of the rocky massif is thus extremely complex and would require the establishment of specific laws;
- *characteristics of deformability of the rocks:* those in which one is interested are those which define an elastic behavior (the reversible reaction of the rocky structure to the external disturbances) and those that define stability limits (breaking and plasticity criterion). The modulus of deformability E is obtained from a direct compression test on a rock specimen gradually compressed between the trays of a press. The transfer on a graph of the values of the stress and corresponding values of the longitudinal deformation of the test specimen gives the force-deformation curve. The slope of the linear part is the module sought E. On this occasion, one notes that the rock does not have perfectly elastic behavior (the curve would be a straight line passing through the origin). There is usually, at the beginning of compression *(OA'),* a tightening period corresponding to the closing of the cracks and hairline cracks. Afterward, in some field *(A'B'),* the curve is more or less linear then, beyond, it curves again until the breaking *(B'C').* At the same time, one can measure the transverse deformations and note, in the same manner, a linear zone that finishes at the point *B".* The ratio of the slope *A'B'* and *OB"* defines the Poisson coefficient ν. This curve allows to define strength in instantaneous compression *Rc,* which is the stress causing the immediate breaking of the elastic limit which is either *RL,* reflecting the longitudinal elasticity, or *RT,* reflecting the transverse elasticity. The justification of the choice of these elastic limits lies in the observation of the differed rocks behaviour subjected to a compression during a well enough long time. If this permanent compression is lower than *RT,* the deformation grows during some time, then is stabilized. If compression is higher than *RT* but lower than *RL,* the deformation continues indefinitely until the breaking, that intervenes within a definite

period but difficult to specify. Lastly, if compression is higher than *RL,* the breaking of the test specimen by crushing is imminent. Finally, the force-deformation curve can be continued beyond the rupture *(C')* to study the behavior postbreaking of the rock: according to the lateral confining pressure, one observes various possible levels of the residual strength *Rr* which can bear the rock after being strongly deformed. The determination of an intrinsic curve (place of the points corresponding to a balance limit) for a given rock is carried out in a traditional way subjecting test specimen of rocks to a triaxial stress field in special cells. Mohr's circles, limits corresponding to the breaking under a lateral embrace, enable the construction point by point of this intrinsic curve. There again, one is constricted by the heterogeneity of the rocky massifs and consecutive dispersion of the results of measurement, to determine the cohesion *C* and natural angle of internal friction (φ). if the intrinsic curve can be comparable to the straight line of Mohr-Coulomb. Some practices make it possible to determine all the intrinsic curve on the sole test specimen, that is subjected successively to all stress fields likely to bring it to the limit of plastic deformation (device of isothermal biaxial relaxation). The tensile strength of the rocks is always low (about 10 times lower than the instantaneous compressive strength). This defect, which limits the stability of the excavations, is by contrast used in a systematic way for felling and comminution of the rocks. The tensile strength is mostly measured by the Brazilian test that consists in crushing a cylinder of rock by subjecting it to a compression along a generatrix, that creates an indirect tension on the diametrical plan. The cylinder breaks according to this plan, and it is shown that the tensile strength *Rt* is related to the force *F* that brings about the breaking. This measurement gives a value by excess of tensile strength, because a rock subjected to a direct tension always breaks in the weakest section, whereas, in the Brazilian test, one obliges it to get broken according to a given plan.

The shear strength is measured by the force necessary to the relative displacement of the two halves of a rigid box locking up the sample of rock.

Creep tests are designed to put in obviousness the differed deformation of a test specimen subjected during a well enough long time to a stress higher than its elastic limit.

All these characteristics are measured in laboratory, therefore on test specimens of reduced size that constitute a sample of the rocky massif. Some measurements can also be taken in situ, either punctually, or on a large scale, to reach values of the same parameters or to control the stability of exploitation. Thus, the plate test, that consists in applying with a known force a rigid plate to a plane zone of the rocky massif and measuring the sinking of this plate, enables to estimate the modulus of deformability *E.* Other techniques make it possible to access to the stresses inside the rocky massif by measuring deformations, for example at the bottom of a circularhole.

One assesses the density of fracturing of a rocky massif, either from a velocity measurement of the sound (that moreover provides a modulus of dynamic deformability all the lower since the rock is fractured), namely by the establishment of the RQD (rock quality designation) index, that measures in a trial boring the proportion of length core samples higher than 10 cm.

Deformation of the rocks is routinely measured in the underground workings to check that the structure behaves well as it was anticipated. Convergence meters measure convergence roof-walls of the galleries. Dilatometers make it possible to measure the dilation of the walls of the galleries.

- *the model behavior of rocks*: for anticipating the behavior of any rocky structure, one can establish either physical models (models on reduced scales), or mathematical models (laws of the mechanics of continuous mediums). The general problem to solve is as follows: external forces are applied to a structure and it ensues some deformations and stresses in this structure; comparing these stresses with a criterion of stability defined beforehand, one can determine if the structure is stable. This problem can be entirely solved if one knows perfectly: the system of the external forces; modes of reply of the various parts of the structure to these disturbances; a criterion of stability (or, with the limit, of breaking) of this type of structure. To establish a model consists in choosing a particular mode of representation for each one of these three elements. This model will be of as

much better than the representation will be closer of the reality.

ROCK POCKET
Nid de cailloux
Defects (Construction of R.C. and P.C.)
Syn. with HONEYCOMBING.

ROCK SALT
Sel gemme *ou* Halite
Geology
Syn. with HALITE

ROCK SHELTER
Abri sous-roche
Geomorphology
The lower part of an escarpment less deep than a cavern and protected by overhanging rocks. Frequent in chalky countries, the rock shelter is mostly the result of a former splitting by frost in the course of cold periods of the quaternary.

ROCK SPUTTER
Eclateur
Equipment and Tools
A tool used to penetrate or force the expansion of a wedge in a drilled hole in order to demolish material.
There are several types of rock splitters:
- **needle** (*l'éclateur à aiguille*), a tool used in drilling, made up of articulated sides between which moves a rod used as a concrete breaker. This rod, by placing force on all sides induces the cracking of the material;
- **pin** (l'*é*clateur à cheville), a tool used in drilling, made up of two counterwedges between which another wedge is sunk with the help of a pneumatic hammer. The sinking of the wedge induces the cracking, then the disintegration of the material to be demolished;
- **wedge** *(l'éclateur à coin),* a tool made up of conical metal wedges placed in a drilling hole in order to demolish material. A wedge is introduced between wedges; pressure is exerted by means a piston inducing the cracking and the dislocation of the material to be demolished;
- **piston** *(l'éclateur à pistons),* a machine made up of a half-cylinder that is introduced in a drilling to demolish material. The plane face of the half cylinder is equipped with several small pistons driven hydraulically. The pressure exerted by these provokes the cracking and the dislocation of material.

ROCK STRAP
Bilboquet
Building Materials
A stone part coming from the cutting of a block used only for making quarry stones.

ROCK TENSILE STRENGTH TEST
Essai de résistance à la traction d'une roche
Geotechnics
A test that consists in determining, by a diametral compression testing (mostly the Brazilian test), the tensile strength of a rock.

ROCKER
Rocailleur
Masonry
A worker who carries out a packing (or gaveting).

ROCKER BAR
Biellette
Construction
In the metal bearings equipped at least four rolls, metal piece connecting rolls between them and on which they are fixed. Syn. with SMALL ROD

ROCKERY
Rocaille
Building Materials
A ground covered or containing a lot of pebbles.
Syn. with ROCK GARDEN; ROCKY GROUND

ROCKFALL
Eboulement
Geomorphology
A discontinuous phenomenon observed on some coherent rocks, implying that a portion of rock (of any volume) gets detached from the rocky mass.
The kinematics of the phenomenon is rapid to very rapid. Rock falls are subdivided into three categories, following a volumetric classification:
- **rockfall in mass,** when the total mass is equal or higher than 1 m^3.
- **rockfall of blocks,** if elementary volumes are contained between 1 and 1000 dm^3.
- **rockfall of stones,** when elementary volumes are lower or equal than 1 dm^3.

Syn. with ROCK AVALANCHE; ROCKSLIDE

ROCKFILL
Enrochement
Foundation
Syn. with BEDDING; ENROCKMENT; PITCHING; RIPRAP

ROCKFILL ABUTMENT
Enracinement
Construction
A kind of bridge abutment, resting on an entanglement of piles and rocky blocks.

ROCKLITE
Rocklite
Building Materials
Expanded shale.

ROCKLITE CONCRETE
Béton de rocklite
Building Materials
A material whose aggregate consists of an expanded shale to 2000°C, called *rocklite.*

ROCKMILL
Hydrofraise
Equipment and Tools
Syn. with HYDROFRAISE; HYDROFRAISE CUTTING MACHINE

ROCKSLIDE
Eboulement
Geomorphology
Syn. with ROCK AVALANCHE; ROCKFALL

***ROCKWELL* HARDNESS TEST**
Essai de dureté Rockwell
Test of Materials (Metallurgy)
A test of metal hardness by measuring the depth of the imprint left by a standardized impressor (diamond cone or steel ball) acting under a load *F* and put beforehand in contact with the surface by means of a preload F_0. This test is used for finished pieces having undergone heat treatment to the core and whose hardness can go until 72 *Ro.*

ROCKY GROUND
Rocaille
Building Materials
Syn. with ROCK GARDEN; ROCKERY

ROD
Bielle
Construction
1. A mechanical piece for transmitting a movement.
2. A piece connecting rollers of a bridge-support apparatus made up of more than three rollers.

ROD BENDING MACHINE
Cintreuse
Equipment and Tools
A machine to give circular shapes to materials such that sheet metals, tubes, bars, etc. Syn. with BAR BENDER; BENDING MACHINE; STEEL, BENDER; TUBE BENDING MACHINE;

ROD MILL
Broyeur à barres
Equipment and Tools
Device for manufacturing pit sands and whose fragmentation is obtained by collisions and frictions between steel bars that move with the materials to be processed in a cylinder turning around a horizontal axis.

RODDING
Piquage
Test of Materials (Concrete)
1. The placing of concrete into a test mold with a standardized metal rod.
2. A rudimentary process of placing and compacting of the concrete with pointed metal rods. Under the influence of the impulse of the rods, the concrete mass blooms and spreads throughout all parts of the formwork (or the mold).

ROGUE
Margoulin
Work
A worker or contractor who makes some bad work.

ROLL
Rouleau; Mouliner; Laminer; Bille
Construction; Building Materials; Metallurgy; Equipment and Tools
1. Each of the superimposed beds built from the centering to carry out the thickness of the vault of a bridge. Rolls can be interdependent or independent. **See Figures 34 and 35**

2. To treat the stone with the sandstone wheel or the hammer.
3. To proceed to the rolling.. Syn. with LAMINATE
4. Syn. with CYLINDER

ROLL CRUSHER
Broyeur autogène
Equipment and Tools
Concerning mineralogy, cylinder of very big diameter turning around of its horizontal swivels. It carries out straight the grinding of large pieces by the fall of these, which fall again some on the others during the rotation of the device.

ROLL(ED) PEBBLE
Caillou roulé
Geology and Building Materials
A material showing a beautiful smooth and roundness shape due to the polishing action of a river or seawater. Syn. with POLISHED PEBBLE; SHINGLE

ROLLED
Roulé
Defects (Building Materials)
Of a defective wood in which the annual growths rings are desunited.

ROLLED LEAN CONCRETE
Grave-ciment
Building Materials
Syn. with CEMENT-GRAVEL MIXTURE

ROLLED SECTION
Profilé
Buildings Materials
Syn. with EXTRUDED SECTION; SECTION

ROLLED STEEL
Acier laminé
Metallurgy
A ferrous alloy rolled to the rolling mill to obtain sections such as rails, IPN, etc.

ROLLED-IRON PRODUCT
Laminé
Metallurgy
An iron and steel product resulting from the rolling of a block of steel. It is the production the most used in steel constructions.

ROLLED-STEEL JOIST
Poutrelle
Building Materials; Construction
Syn. with JOIST; UNIVERSAL BEAM SECTION; SMALL BEAM

ROLLED-STEEL SECTION
Profilés dits poutrelles et analogues
Buildings Materials
Syn. with CONSTRUCTIONAL STEEL; SECTIONAL IRON

ROLLER
Cylindre; Rouleau compresseur; Roule; Rouleau
Equipment and Tools
1. A compactor used for rolling. We can distinguish rubber-tired rollers, cylinders compactors, and vibrating rolls.
2. Syn. with ROAD ROLLER; TOWED COMPRESSION ROLLER;
3. A cylindrical piece of hard wood, used by stonecutters to operate blocks. Syn. with ROLL
4. A wooden or steel cylindrical solid of a small diameter laid out under heavy burdens to move them on short distances.

ROLLER
Galet
Construction
1. A piece of cylindrical or derived shape which allows in a bridge-support apparatus the roll; that is to say which authorizes the longitudinal displacement of the deck to the bearing. The term of *roller* is used preferentially when the cylinder is not complete. By extension, also refers a wheel of a small diameter (example: the roller of a launching chair).
2. In the movable bridge-support apparatus, device that allows the expansion of the work in only one direction. Rollers can be circular or curtailed (segments or rods). The term *roller* is used preferentially when the generatrix is long in comparison with the diameter.

ROLLER BRACKET
Chaise à galets
Handling
A device for longitudinal launching of works made up of one or several equalizers and two rollers or more, for roller brackets on equalizer. There also exists roller brackets mounted on

cables. In this system, the rollers that bear the guidance rail bound to the frame, are made jointly liable by the tensioning of a cable. **See Figure 36**

ROLLER WORKMAN
Cylindreur
Civil Engineering
Worker in charge of supervising accomplishing rolling.

ROLLERPATH
Chemin de roulement
Handling
Syn. with BALL RACE; CONVEYOR LINE; RACEWAY; RUNWAY; TRACK

ROLLING
Cylindrage; Laminage
Civil Engineering; Metallurgy
1. The roadway compacting that makes call for different machines following the nature of the pavement to be rolled. If it a matter of to compact a hardcore or tarmac to well overlap stones unite them in others, the operation is made with cylinders with smooth steel-wheeled rollers, weighing usually 8 to 15 metric tons.
2. Shaping by lengthening of a metal by passing between rolls turning in opposite direction. Rolling is carried out either to hot or to cold

ROLLING CAVITY
Travers
Defects (Metallurgy)
Syn. with SMITHING CAVITY

ROLLING IN BENDING
Brisage
Metal Construction
A sheet metal bending operation that consists in bending alternately the two sides of a sheet metal by decreasing the bending radius so as to avoid the formation of ribs on thin sheet metals.

ROLLING LOADS
Charges roulantes
Strength of Materials
Syn. with LIVE LOADS; MOVING LOADS

ROLLING SCRATCH
Rayure de laminage
Defects (Metallurgy)
A superficial defect on a laminated piece, characterized by thin longitudinal grooves often due to defects affecting the rollers of the rolling mill.

ROOF
Ciel
Quarry
Syn. with BURDEN

ROOF BOLTING
Boulonnage
Foundation and Earthwork
A supporting process that consists in supporting the ground around an excavation by making interdependents among them superficial beds and deep beds with bolts of great length.
The bolting is the mode of supporting the most widespread after the walking support. The role of the bolts is complex: first considered as suspended supporting (one hangs the superficial part of the disconsolidated rock to a more resistant bench), they are used everywhere the punctual anchorage is possible. One has realized that the tightening of the plate had an effect of reconsolidation of grounds throughout the deepness corresponding to the length of the bolt; the same result is obtained with the split bolt, even without plate and even in the little cohesive soils. One can from that time on estimate that the bolting of a gallery reconstitutes around the excavation a ring of cohesive soil, that slows down the deformation of the rock in depth. Syn. with ROCK BOLTING; STRATA BOLTING

ROOF PLANK
Planche de ciel
Temporary Construction
In a sheeting of an underground gallery, board placed in ceiling at the touch of the ground and which is pressed against the earths by a false coping resting on the frame through the channel of edges.

ROOF POLE
Tintias
Temporary Construction
In tunneling and in the timbered galleries method, small poles supporting roof planks setting progressively of the progress. **See Figure 37**

ROOT CONCAVITY
Retassure à la racine
Defects (Welding)
A lack of thickness of metal at the root due to the contraction of the molten metal.

ROOT FACE
Méplat; Talon
Welding
The two parallel portions of a half-flat. (The root face is in general perpendicular to the surface of sheet metals to be assembled.)

ROOT OF WELDED JOINT
Racine de la soudure
Welding
The area of the first pass of a weld bead, the furthest away from the welder.

ROOT RADIUS
Rayon à fond de chanfrein
Welding
The radius located at the root of the curvilinear profile of a joint.

ROOTER
Défonceuse tractée; Rooter; Défonceuse; Défonceuse portée
Equipment and Tools
1. An earthmover similar to the ripper, equipped of two wheels and towed by a tractor. Syn. with TOWED-TYPE ROOTER
2. Syn. with RIPPER; RIPPING MACHINE
3. Syn. with (ROAD) ROOTER

ROOTER ATTACHMENT
Défonceuse portée; Ripper
Equipment and Tools
Syn. with RIPPER

ROPE
Brêler; Brelage; Brayer; Troussière; Câble
Temporary Construction; Handling; Equipment and Tools; Materials and Construction
1. To join girders of the deck of a temporary bridge with the bearings of this bridge by the means of ropes or cables.
2. To make a temporary assembly with ropes.
3. A rope that fastens the assembly of different elements of a wooden scaffolding.
4. To tie with sling rope.
5. A rope for joining two parts of a scaffolding.
6. Syn. with CABLE; WIRE ROPE

ROPE SPEAR
Harpon
Equipment and Tools
A tool used to recover a hollow stand of drill pipe of drilling remained jammed inside a drilling following a break. The rope spear allows to fish out the unit by seizing it by the inside of the rods. Syn. with DEVIL'S PITCHFORK

ROPE WORKMAN
Brayeur
Handling
A worker in charge to fix the sling ropes around ashlars and hanging them at the hook of a winch to carry them up.

ROPINESS
Viscosité; Cordage
Painting; Defects
1. A discarded term in the industry of paintings. *Consistency* is the appropriate term. Syn. with CONSISTENCY
2. An initial imperfection of a paint film, characterized by appreciably rectilinear and parallel strias and that observes especially during the application with the brush. Syn. with ROPY FINISH

ROPY FINISH
Cordage
Defects (Painting)
Syn. with ROPINESS

ROSE
Rose
Defects (Metallurgy)
A visible defect in the centre of the break of a metal piece and which appear as a yellow, orange, or blue stain.

ROSIN
Colophane
Adhesives
An adhesive of vegetable origin. The gum is the resinous juice of the maritime pine that gives, by purification, turpentines whose distillation allows the separation between the turpentine and residue that, according to the color, is called *rosin, black pitch.*

The rosin is solid, soluble in the benzene, sulfide of carbon, and alcohol. It is not used pure but mixed with different resins (polyvinylic acetate) and in solution in organic solvents (mainly vinyl ethers). Syn. with ROSIN; COLLOPHANE

ROT
Champignon; Pourriture
Defects (*Building Materials*)
1. Parasites constituted by the vegetable elements which attack the standing timber or timber in work and produce either a simple incipient decay, or a real rot.
We can distinguish:
- **discoloration fungus** (*les champignons lignicoles*) are the vegetable of discoloration whose presence inside the wood brings about color modifications without altering gravelly mechanical properties. The turning blue is the principal discoloration;
- **lignivorous fungus** (*les champignons lignivores*) can destroy all or part of the elementary wood constituents. Their attacks bring about the rot phenomena whose main types are cubical rot (brought about by the serpula), fibrous rot, and soft rot. Among lignivorous and discoloration dry rots one distinguishes two other categories, substrate dry rots and told these of surface:
- *substrate rots* (*les champignons de substrat*) which are thus called because they erect a mycelium inside the wood. Their destructive action begins inside the wood and extends gradually to the outside. The damage is characterized by the rectangular breakage appearance that disintegrate effortlessly some small cubes;
- *surface rots* (*les champignons de surface*) which, besides a mycelium penetrating inside the wood, erects a spawn in surface. The destruction of the wood originates from the outside and propagates progressively toward the inside.

Syn. with DECAY; DRY ROT; FUNGAL DECAY; FUNGUS
2. An alteration of the wood brought about by fungi that attack the tissue of the wood, manage in dissociating the elements and to bring down them finally in dust. Wood takes an aspect and a different color following the specie and nature of the fungus. The mostly met cryptogam is the serpula. The contamination can extend highly far. Syn. with FUNGAL DECAY

ROT PURGING
Bûchage
Building Materials
The removal of the wormeaten or rotten parts up to the healthy wood of a member, for example.

ROTARY
Rotary
Work
A drilling process in which the bore bit is driven by a rotational movement; it consists in using roller bits or diamond bits, on which one pushes and which one turn. The combined action of the weight and rotation allows to the teeth of the roller bits to scale the rock or diamond bits to streak and destroy this one. The bore bit is mounted at the end of a drilling string, driven by a rotary table, which overcomes a square or hexagonal driving rod.
The whole of the equipment which is used for drilling is suspended at the frame of a derrick, which can reach several tens meters height.
As they advanced of the drilling, one injects under pressure, inside drilling string, a stream of mud whose principal role is to cool the bore bit at the point of attack of the rock; over pressure makes go up the mud outside the drilling string, what ensures the cooling of the unit. At the same time, the mud lubricates the equipment, trnasports the rocky remains, etc. At the exit of drilling, the mud is recovered, sieved and sent in the circuit of drilling by powerful pumps.
The remains brought back to surface can be studied in laboratory to know the nature of the crossed grounds.

ROTARY DRILL
Perforatrice rotative
Equipment and Tools
A pneumatic or electric equipment working exclusively in rotation and that drives a drill bit (or helical drill steel). This tool is used to drill holes of a small diameter in relatively soft materials. Syn. with ROCK DRILL

ROTARY DRILLING
Forage rotary
Work
A drilling process of the ground that consists in using roller bits or drill bit with diamond inserts, on which one leans and that one makes turn.

The combined action of the weight and rotation allows to the roller bits to scale the rock or to set with a drill bit with diamonds insert to streak and to destroy this one. The rotation of the bore bit is obtained making turn the whole of drill rods that connect the bore bit to the surface. To eliminate detached rock remains of the bottom by the bore bit, one uses the water or drilling mud that is injected inside drill rods. This one, passing by orifices of the bore bit, going back up inside the annulus existing between the hole and drill rods carrying cuttings up to the surface.

ROTARY DRILLING MACHINE
Foreuse rotative avec ou sans percussion
Equipment and Tools
A drilling plant mounted on a truck or trailer or on tracked chassis mainly equipped of an engine, a groove holder tool and adjustable guidance, of a drilling string carrying the drilling tool. There also exists of drilling machines on fixed chassis with grooves that are notably used to drill in a masonry. In this type of drilling machine, it is the drilling string that is put in rotation. **See Figure 38**

ROTARY DRILL-PERCUSSION
Rotopercussion
Work
A boring process combining rotation and percussion.

ROTARY FLOAT
Hélicoptère
Equipment and Tools
Syn. with HELICOPTER; MACHINE TROWEL; POWER FLOAT

ROTARY TABLE
Table de rotation
Equipment and Tools
In an installation of vertical drilling, circular plate equipped with an axial hole by which passes the kelly that drives the stand of drill pipe.

ROTARY TESTING
Sondage au rotary
Geotechnics
A soil survey method by rotary drilling that consists in grinding the ground; the useful data are brought by sediments risen by cooling water.

ROTARY VISCOSIMETER
Rotoviscosimètre
Equipment for Measure and Control
Equipment for measuring the viscosity of a liquid using a cylindrical solid turning at a given speed in the liquid to be tested. The viscous friction generates a torque that measures the viscosity.

ROTARY-HAMMER DRILLING CRAWLER RIG
Motofore
Equipment and Tools
Syn. with DRILLING (CRAWLER) RIG

ROTATION LAUNCHING
Lancement par conversion
Handling
Syn. with TURNROUND LAUNCHING; WHEEL LAUNCHING

ROTIE
Rôtie
Construction
Syn. with HALF-WALL; RAISING

ROTTED CAVITY
Huppe
Defects (Building Materials)
A defect met in certain knots of the wood characterized by a cavity filled with wood in decomposition.

ROTTEN KNOT
Gouttière
Defects (Building Materials)
A rotten knot surfacing on the surface of the trunk of a tree, open to outside and by which water can soak through. The rotten knot is the sign of a deterioration of the wood which can be more or less deep.

ROUGH
Brut; Cru
Building Materials; Hydraulic Binders
1. The state of a material before its use or its implementation.
2. A clay and limestone mixture reduced into powder for manufacturing cement (the mixture can be dry or damp).

ROUGH COATING
Ravalement
Masonry
A rendering mechanically or manually carried out up and down on a wall in order to restore the aspect of the new. Syn. with RENDERING

ROUGH CUT
Epannelage; Epannellement; Epanneler
Masonry
1. A rough-hewn preparatory cutting of an ashlar on which one must sculpt moldings. The rougher leaves solely the necessary matter for the finishing off. **See Figure 39**
2. A face of a stone intended for undergoing dressing of moldings.
3. To rough-hew an ashlar with a view to the achievement of a rough cut.

ROUGH CUTTER HAMMER
Epinçoir
Equipment and Tools
A large hammer of the stonecutter having two wedge-shaped peens, that is used to split quarry stones and to hew their faces.

ROUGH CUTTING
Taille d'épannelage
Masonry
The rough-hewn shaping of the faces of a stone course intended for receiving the cutting of molding.

ROUGH DRAWING
Croquis
Drawing
A drawing mostly carried out freehand. Syn. with ROUGH SKETCH

ROUGH DRESSING
Taille brute
Masonry
The rough aspect of a stone facing.

ROUGH FACE
Parement brut
Construction
The visible surface of stones, quarry stones or concrete neither cut nor polished.

ROUGH HAMMER
Brette; Bretture
Equipment and Tools
1. A tool used to dress a rough rendering. This tool comprises an indented side and a smooth side.
2. An ancient tool (from the Middle Ages), sharp and indented that had used to comb-hammer the stone facings and that has been replaced by the combhammer.

ROUGH MASONRY
Hourdis; Pierré; Hourdage
Construction; Masonry
1. In the old metal works, masonry or concrete cover elements placed between the metal elements of the frame on which they lean on (example: jack arches).
2. A construction built with large pebbles accumulated bed by bed with mortar.
3. Syn. with ROUGHCASTING

ROUGH MATERIAL
Brut
Building Materials
The state of a material such as it is used; that is to say without any finishing, facing or trimming.

ROUGH PENDANT
Pendant brut
Building Materials
A flat and lengthened ordinary quarry stone which is particularly used to build vaults.

ROUGH PLANE
Corroyer
Building Materials
Syn. with DRESS; TRIM

ROUGH RENDERING
Mouchetis; Crépi tyrolien
Masonry
Syn. with ALPINE FINISH; ROUGHCAST; TYROLEAN FINISH;

ROUGH SHAPE
Ebauche
Work
A work that is begun only in its general shapes, the general form.

ROUGH SKETCH
Croquis
Drawing
Syn. with ROUGH DRAWING

ROUGH STONE
Pierre brute *ou* velue
Building Materials
A rock not having undergone any cut. Syn. with QUARRY STONE; RAW STONE

ROUGHCAST
Crépi; Hérissonner; Hourder; Hourdir; Mouchetis; Crépi; Crépi tyrolien
Masonry
1. A rendering, usually of cement mortar, sprayed on the walls of a work with a trowel or a brush. Generally, the roughcast is intended for being of use as base to a finishing cement rendering. Syn. with CEMENT RENDERING COAT
2. To rough coat or resurface the facing of a wall.
3. To set up a construction of bricks, quarry stones, or breeze blocks, bonded with lime, cement, or lime-and-cement mortar.
4. Syn. with ALPINE FINISH; ROUGH RENDERING; TYROLEAN FINISH;

ROUGHCAST
Talocher
Masonry
To dress a rendering or a screed with a hawk.

ROUGHCAST APPLICATOR
Tyrolienne; Crépisseuse; Moustiquette
Equipment and Tools
Syn. with ROUGHCAST MACHINE; TYROLEAN MACHINE

ROUGHCAST MACHINE
Tyrolienne; Crépisseuse; Moustiquette
Equipment and Tools
A device for carrying out renderings which includes one or two tanks filled with a few liters of mortar to be sprayed on the surface to be plastered by a rotary system made up of supple paddles. This system is ordered manually by a crank. Syn. with ROUGHCAST APPLICATOR; TYROLEAN MACHINE

ROUGHCAST MORTAR
Hourdi
Building Materials
A mortar used to roughcast.

ROUGHCAST RENDERING
Rudération
Masonry
A rough rendering applied on a wall; the application of this rendering.

ROUGHCAST SEMIFINISHED PRODUCTS
Massiaux
Metallurgy
Raw semifinished products obtained by shingling of loops or iron masses at high temperature, or by rolling at high temperature that welds steel or iron fragments.

ROUGHCAST TO MORTAR BED
Hourdir à bain
Masonry
To build a brickwork, stonework, etc with a surplus of pointing mortar.

ROUGHCASTING
Gobetis; Couche d'accrochage; Hourdage; Renformis; Ravalement
Masonry; Building Materials
A thin mortar coat of very plastic consistency thrown up with trowel (or mechanically) and intended for clogging pointings and being of use as underlayer for the body of a rendering. Syn. with DASH-BOND COAT
2. Rough bricklaying or stonelaying. Syn. with ROUGH-MASONRY
3. A roughcast carried out with intent to take up the unevennesses of a facing of an old masonry wall in order to level it before the application of a finishing rendering.
The purpose of the roughcasting is also to restore a certain solidity to the wall so treated.
4. The definitive cut of the visible facing of a stone applying especially to the soft stones that are bonded incompletely cut to avoid the chippings. The roughcasting is a real finish cutting that consists in cutting down the surplus thickness left by the rough cutting and to finish edges, moldings, and various ornaments. The stone restorer uses stonecutter tools and special tools such as the rabbet plane, nail float, and stone saw.

ROUGH-DRESSED STONE
Pierre essuyée
Building Materials
A rough-hewn squared rock.

ROUGHER
Epanneleur
Masonry
A worker specializing in rough cut.

ROUGH-GRIND
Dégrossir
Building Materials
To rough-hewn a material. Syn. with HEW; ROUGH-OUT

ROUGH-HEW
Ebaucher
Work
Syn. with ROUGH-OUT

ROUGHING CHISEL
Ebauchoir
Equipment and Tools
A large hand-chisel used either by the builder to cut materials such as brick, or by the stonecutter to rough-hew the shaping of quarry stones or ashlars. Syn. with BOASTER

ROUGHING HAMMER
Chien
Equipment and Tools
A stonecutter's hammer with large toothing.

ROUGHING OUT
Ebauchage; Taille d'ébauche
Building Materials; Masonry
1. The removal of the maximum of matter surrounding a rough piece, leaving only a minimum allowance for the finish.
2. Outlines of a profile of molding or sculpture on a stone, to hollow out an angle or a splay.

ROUGHING ROLLER
Boucharde
Equipment and Tools
Roll whose surface is covered by diamond cutters. It is used for the finishes of a concrete or mortar screed. Syn. with CEMENT ROLLER

ROUGHNESS
Rugosité
Metallurgy
Syn. with RUGGEDNESS; RUGOSITY

ROUGHNESS METER
Rugosimètre
Equipment for Measure and Control
An instrument for checking or analyzing the ruggedness of a surface. Syn. with ROUGHOMETER

ROUGHOMETER
Rugosimètre
Equipment for Measure and Control
Syn. with ROUGHNESS METER

ROUGH-OUT
Ebaucher; Dégrossir
Work; Building Materials
1. To rough-hew approximately a material to give him forms and dimensions close to those of the finish. Syn. with ROUGH-HEW
2. Syn. with HEW; ROUGH-GRIND

ROUGH-PLANED WOOD
Bois corroyé
Building Materials
A planed piece. Syn. with DRESSED TIMBER; SURFACED TIMBER

ROULEUR SANS-CESSE-EXPRESS
Rouleur sans-cesse-express
Equipment and Tools
A handling device constituted with interconnected cylindrical rollers by a chain and set in a steel frame including an upper tray; the whole forming a cart. During the handling operations, rollers work like an endless band. Rouleurs sans-cesse-express are used to move heavy loads (example: sliding along of deck). **See figures 40 and 40a**

ROUND
Rond; Roule; Roulé; Volée
Metallurgy; Material; Building Materials; Explosives
1. A standard section with circular cross-section of a diameter at least 5 mm. Syn. with ROUND BAR STEEL
2. A cylindrical wooden piece used to form a shaft intended for the transportation of loads.
3. Of a fine gravel coming from alluvia, of naturally rounded form, used as aggregate in the making of concretes.
4. All explosive charges fired in only once.

ROUND BAR STEEL
Rond
Metallurgy
Syn. with ROUND

ROUND BATTEN (MOLDING)
Baguette
Architecture
Syn. with SMALL TORUS

ROUND HEAD
Musoir
Construction
The end of a dike. Syn. with PIER HEAD

ROUND IN QUADRANT
Carderonner
Materials
To round off an angle in quarter of circle.

ROUND MOLDING
Bague; Boudin
Architecture
1. A small circular molding encircling the shaft of a column.
2. A large round molding.

ROUND OFF
Bouter
Metal Construction
To round a piece of steel with the file.

ROUND REINFORCING BAR
Rond à béton
Building Materials
Syn. with REINFORCEMENT BAR

ROUND TIMBER
Bois en grume
Building Materials
The trunk of the stripped tree and longways cut up. Syn. with UNBARKED TIMBER

ROUND WALL FACE
Tour ronde
Construction
The outside facing of a cylindrical wall. **See Figure 41**

ROUNDED FORM (OF STONE, ETC.)
Angle arrondi; Arrondi
Materials; Nomenclature of Materials and Construction
1. A chamfered edge or edge fashioned in a circle.
2. The portion of a cylindrical or toric surface joining up the faces of a salient angle and removing an arris. Syn. with ROUNDED OFF

ROUNDED OFF
Arrondi
Nomenclature of Materials and Constructions Term
Syn. with ROUNDED FORM

ROUND-HEADED NAIL
Bossette
Materials
A small round-headed nail.

ROUND-HOLE SCREEN
Passoire
Equipment and Tools
Syn. with ROUND-HOLE SIEVE

ROUND-HOLE SIEVE
Passoire
Equipment and Tools
A container whose bottom consists of a sheet metal perforated with circular holes of given size. The round-hole sieve is used to sift aggregates during a grain size analysis (not to be confused with the sieve whose fabric presents square meshes). Syn. with ROUND-HOLE SCREEN

ROUTINE MAINTENANCE
Entretien courant
Civil Engineering Structure
Syn. with STANDARD MAINTENANCE; USUAL MAINTENANCE

RUBBER
Caoutchouc
Polymers
A macromolecular matter showing a long elasticity range associated with an important property of distortion. Syn. with INDIA RUBBER

RUBBER RESIN
Résine de caoutchouc
Polymers
A product resulting from a chemical modification of the hydrocarbon rubber, modification whose a marked effect is to decrease more or less considerably the long elasticity range of this natural elastomer.

RUBBER RING FLATTENS
Joint d'étanchéité
Tightness
An elastomer sealing strip ensuring the sealing at the join of two metal or concrete pipes.

RUBBING
Regrattage
Masonry
The restoration of a wall carried out with the drag or similar tools.

RUBBISH
Gravats; Gravois
Works
Syn. with BUILDER'S RUBBISH; WASTE

RUBBISH DUMP
Décharge
Earthwork
Syn. with DUMP; RUBBISH TIP

RUBBISH PAVINGSTONE
Brocaille
Building Materials
The set of rejected small paving stones used for metallings.

RUBBLE
Garnis; Graillon; Pierraille; Chute; Limousiner
Building Materials; Geomorphology; Nomenclature of Materials; Masonry
1. Small stones, remains of cut, etc., designed to wedge the largest stones or to furnish the too wide pointings in the stoneworks and serve as filling materials in the haunches of vault. **See Figure 42**
2. A small waste resulting from the cut of a stone.
3. A heap or accumulation of stony remains. Syn. with BALLAST
4. Syn. with OFF-CUT (WOOD); SHOOT (OF STONE); SCRAP (OF METAL)
5. Syn. with BOND

RUBBLE CONCRETE
Béton cyclopéen
Building Materials
Concrete into which is mixed large aggregates (remains of rock, quarry stones, etc.). Syn. with CYCLOPEAN CONCRETE

RUBBLE DRAIN
Pierrée
Sanitary Engineering and Drainage
A trench filled with dry stones, carried out according to the greatest slope of a bank (or embankment) and intended for use in sanitation.

RUBBLE STONE
Soupier; Blocaille; Garni
Masonry; Building Materials
1. A kind of quarry stone.
2. Syn. with HARDCORE
3. A small quarry stone.

RUBBLE STONE WITHOUT SANDCRUST
Bourru
Building Materials
A quarry stone or stone cleared from the sand crust; quarry stone in its natural state.

RUBBLE STONES
Chailles
Civil Engineering
Crushed stones for metalling roadways.

RUBBLE WALL
Emplecton
Masonry
A masonry construction built in the next manner: two walls of stones, bricks, or concrete blocks are raised and between which a filling of mortar and materials not being able to be used in facing (wastes of stones, bricks, etc.) is carried out. **See Figure 43**

RUBBLE WALLING
Limousinage; Limosinage
Masonry
A stonework with quarry facings bonded with mortar (or with plaster), lined with the line.

RUBBLE WEDGE
Moellonier
Equipment and Tools
A wedge used in quarry to divide stone from its bed.

RUBBLE WORK
Moellonnage; Blocage
Masonry
1. A construction built with quarry stones.
2. The cut, cleaning off, and building of quarry stones.
3. Syn. with FILLING UP (RUBBLE)

RUBBLING
Emplage
Masonry
A masonry construction constituted by a filling made of mortar and fragments of stones that one places and that one compresses between two rows of tooled stones.

RUBBLY
Blocageux; Blocailleux
Civil Engineering Structure
Is said of what is built in rubble work.

RUDITE
Rudite
Geology
A sedimentary rock such as pebbles, gravels, and blocks.

RUGGED DIRT TRACK
Tôle ondulée
Defects (Civil Engineering)
A defect of a roadway characterized by a whole of deformations similar to small waves. Syn. with CORRUGATIONS; FORMATION OF WASHBOARD WAVES; WASHBOARDING

RUGGEDNESS
Rugosité
Metallurgy
A surface state of a metal piece that shows harshnesses and microscopic hollows, obtained by sanding or blast cleaning before a surface treatment such as metal spraying. The ruggedness is the medium arithmetic of the gaps between the harshnesses and hollows; it is expressed in micrometers. Syn. with ROUGHNESS; RUGOSITY

RUGOSITY
Rugosité
Metallurgy
Syn. with ROUGHNESS; RUGGEDNESS

RUGOTEST™
Rugotest
Equipmentfor Measure and Control
An equipment for measuring the roughness state of the surface of a metal after blast cleaning, sanding, etc.

RUIN
Pousser en dehors
Defects (Masonry)
Speaking about of a wall, to make stomach and threaten ruin. Syn. with BELLY OUT

RUIN CRITERION
Critère de ruine
Strength of Materials
The criterion conventionally chosen, so that the calculations referring there are based, either on the experimental data expressed statistically, or, failing that, on a theoretical method giving results estimated equal of the semiprobability point of view.

RULE
Règle
Equipment and Tools
Syn. with SCREED BOARD

RULE (CROSS) HATCHING
Règle à griser
Drawing
A designer's instrument that allows to draw various kinds of hatchings.

RUN
Parcours
Construction
Path that follows a piping on or inside of a work.

RUN A MOLDING
Pousser à la main
Masonry
To cut a molding on an ashlar.

RUNNEL
Caniveau
Sanitary Engineering and Drainage
A strip of some decimeters width located between the roadway and the curbstone, intended for collecting and guiding streaming waters.

RUNNER
Alliement
Equipment and Tools
A knot carried out in a rope passed around a load in order to be able hoisting it with a lifting appliance. Syn. with KNOT

RUNNER WAY
Chemin de roulement sur galets
Handling
A setting device of works by moving on a roll path constituted by rollers equipped in roller paths provided sideways of guidance cheeks and assembled by rocker bars.

RUNNING
Ruissellement; Coulure
Geomorphology and Hydrology; Defects
1. Syn. with RUNOFF; STREAMING
2. Syn. with RUNOUT

RUNNING GROUND
Terrain boulant; Terrain coulant
Geology and Earthwork
1. A low-cohesion ground formed by pebbles, sands and/or gravels.
2. Aquiferous sand or very dry sand which cannot be supported without sheeting.

RUNNING LENGTHWISE BEAM
Longrine
Foundation
Syn. with LONGITUDINAL BEAM

RUNOFF
Ruissellement; Ecoulement
Geomorphology and Hydrology
1. Syn. with RUNNING; STREAMING
2. Syn. with FLOW; OUTFLOW

RUNOUT
Coulure
Defects
1. An initial defectiveness consisting of overthick paint in the form of draperies, drops or festoons. It is generally caused either by a too-thick application of paint or by the use of an excessively fluid paint. Syn. with CURTAINING; RUNNING
2. A deposit or visible trace on the surface of a facing resulting from a flow of water which may or may not contain calcite or other substances.

RUNWAY
Chemin de roulement
Handling
A transverse or longitudinal moving device of work or part of work. The moving can be made on rollers, balls, rouleurs sans-cesse-Express, trolleys, or all other similar systems. Syn. with BALL RACE; CONVEYOR LINE; RACEWAY; ROLLERPATH; TRACK

RUPTURE
Rupture
Strength of Materials
Syn. with BREAKING; FAILURE

RUPTURE BY SOIL SHEARING
Rupture par cisaillement d'un sol
Geotechnics
The result of the slipping of a part of a massif on a bearing surface remaining in place.

RUST
Rouille
Defects
1. A defect affecting stones, in particular some granites, characterized by the presence of brownish tasks which would be due to the presence of ferrous oxides or pyrites disseminated in the stone.
2. A mixture of hydrated iron oxides which are formed on the surface of iron or steel in the presence of humid air.
The alteration of iron and the little alloyed steels in the presence of oxygen and humidity bring about the formation of rust, porous product of corrosion through which continues the degradation of metal up to the core of the piece. Heterogeneousness of iron favor the formation of rust by electrochemical action. One protects irons and steels by covering them with a passivating product or by isolating them from the ambient conditions by deposit of paint or a protective coating. We can distinguish:

- **superficial adherent rust** *(la rouille adhérente superficielle),* a normal oxidation of steel to the air;
- **corrodent rust** *(la rouille corrodante),* especially due to the action of smokes and water which is added to the normal action of the air and water;
- **abundant rust** *(la rouille foisonnante),* an oxidation largely favored and accelerated by the continuous presence of water or dampness in some badly broken down places.

RUST BLISTER
Pustule de rouille
Defects (Painting)
A variety of deep alterations that can be observed on a paint film, a kind of the pittings of corrosion, whose products of the corrosion of the substrate forms bumps.

RUST BLOOMS
Fleur de rouille
Metallurgy
A thinner film of oxide covering a metal piece

RUST EXPANSION
Foisonnement de rouille
Metal Construction
The increase in volume of the oxide due to a pellicular separation of the metal often provoking festooning in the chords of riveted metal works. The rust expansion can also occur on the free surface of some pieces. **See Figure 44**

RUST PREVENTING
Antirouille
Materials
Syn. with ANTIRUSTING; RUSTPROOF

RUSTIC
Rustique
Building Materials
A wood whose fibers are twisted and tied the ones with the others.

RUSTIC (STONE WORK)
Rustique
Masonry
Of a masonry work whose facing is built of rough or tooled stones to imitate the rough or of a mortar encrusted with pebbles, shells, at the manner of a packing.

RUSTICATE
Rustiquer
Masonry
1. To carry out a masonry work of rustic style.
2. To coat a wall with a very clear mortar.

RUSTICATED FACE
Parement rustiqué *ou* brettelé
Masonry
A comb-hammered surface of ashlar or quarry stone obtained with special rustics called *axhammers, rough hammers, pinch bar, roughing hammer, diamond-point chisel,* and whose peen is in more or less thin teeth.

RUSTINESS
Enrouillement; Rouillure; Rubigineux
Defects; Building Materials
1. A film of oxide covering the surface of metal objects.
The rustiness of steels in a ventilated aqueous medium results from three simultaneous elementary reactions. The first reaction is the dissolving (oxidation) of the metal; the second is the cathodic type (reduction): alkalinization of the medium containing the metal. The third reaction is the precipitation of a compound (hydroxide, hydrated oxide, etc.) on the surface of the metal: it is the reaction of recovery or passivation. This formation of oxide (or hydroxide) is impossible without oxygen in the aqueous medium. In the case of iron or carbon steels, the layer of recovery is rust that is more or less permeable. For reinforcements of the R.C., the rustiness is only a particular case of what is described above. When the interstitial water of the hardened cement has a particular composition, the layer of recovery (passivation) formed on steels becomes porous. If chlorides present in the concrete exceed a certain threshold, they provoke nonpassivation, bringing about the corrosion of steels.
2. A structure or metal element covered by a film of rust.
3. Of the hue of rust; covered with rust.

RUST-INHIBITING PAINT
Peinture antirouille
Painting
Syn. with ANTIRUST PAINT; RUST-PREVENTIVE AGENT

RUST-PREVENTIVE AGENT
Antirouille
Painting
Designation given by contraction to the paints for anticorrosive prime coats. Syn. with ANTIRUST PAINT; RUST-INHIBITING PAINT

RUSTPROOF
Antirouille
Materials
Refers to a product that is apt to protect ferriferous alloys from oxidation. Syn. with ANTIRUSTING; RUST PREVENTING

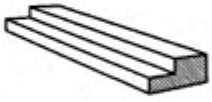
RUT
Ornière; Grippure
Defects
1. The more or less deep hollowed-form affecting a roadway and brought about by the wheels of the heavy goods vehicles.
2. Syn. with FURROW; SANDSKIN

RUZ
Ruz
Geology
The notche of a waterway on the side of a mount that corresponds to an anticline.

Figures of the letter

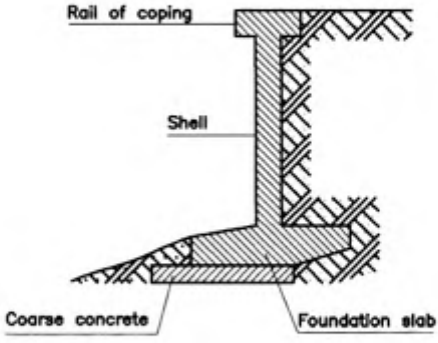


Fig. 1



RABBET

Fig. 2



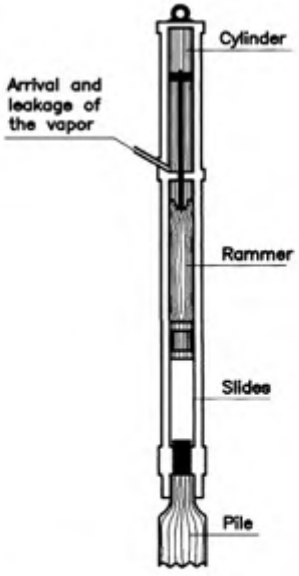
RAIL OF COPING

Fig. 3



RAKE BACK

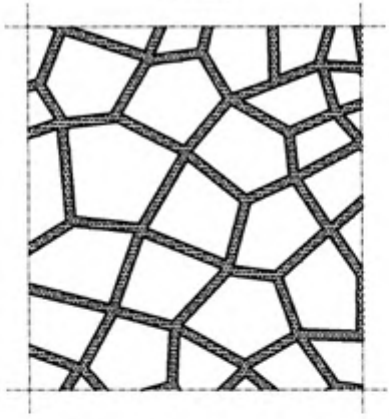
Fig. 4



Single-effect steam rammer

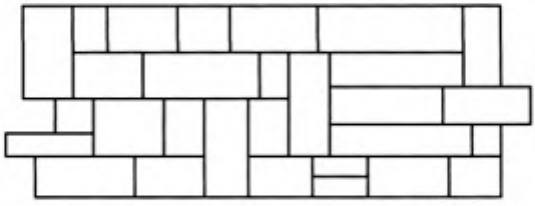
RAMMER

Fig. 5



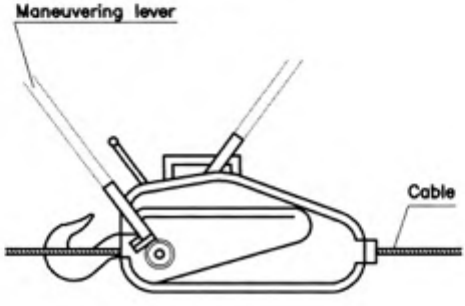
RANDOM RUBBLE WORK

Fig. 6



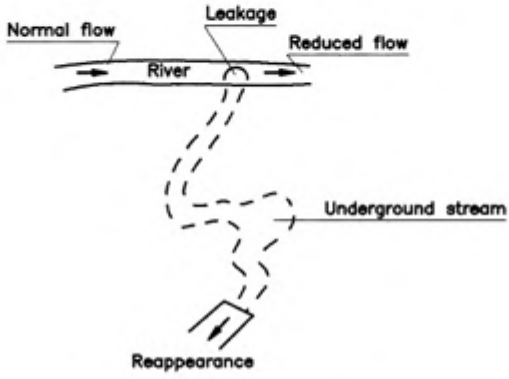
RANDOM (RANGE) WORK

Fig. 7



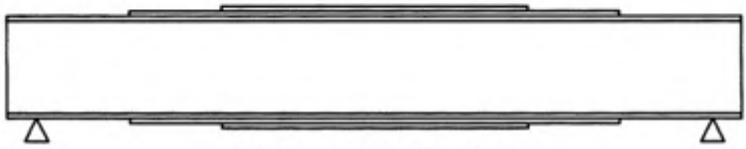
RATCHET–HOIST PULLER

Fig. 8



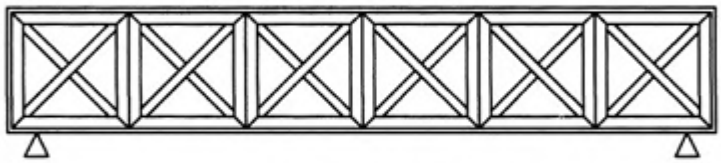
REAPPEARANCE

Fig. 9



Rectangular beam with solid web

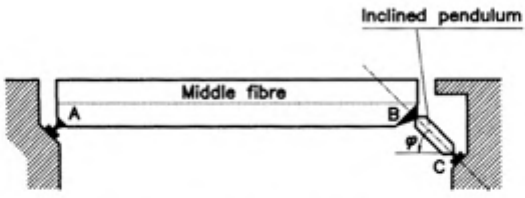
Fig.9a



Lateral rectangular lattice girder

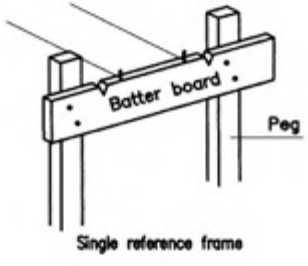
RECTANGULAR BEAM

Fig.10

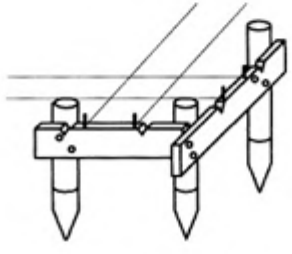


RECTANGULAR BEAM ON INCLINED PENDULUM

Fig.11

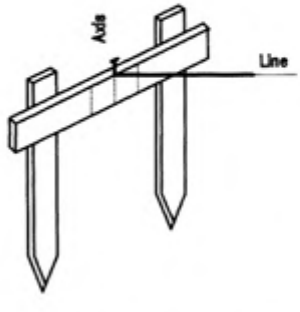


Single reference frame



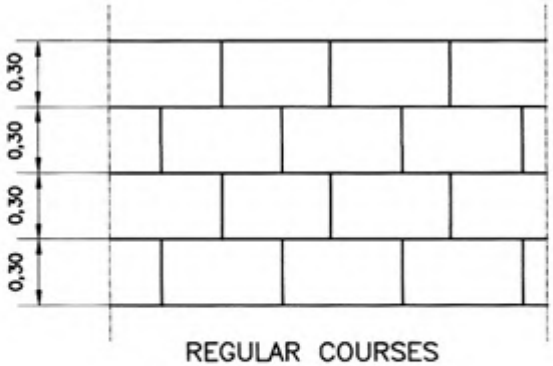
Angle reference frame

Fig.11a



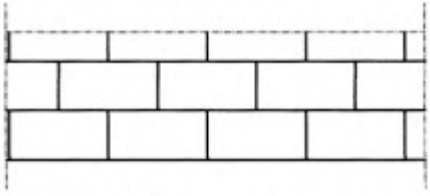
REFERENCE FRAME or HURDLE

Fig. 12



REGULAR COURSES

Fig.13



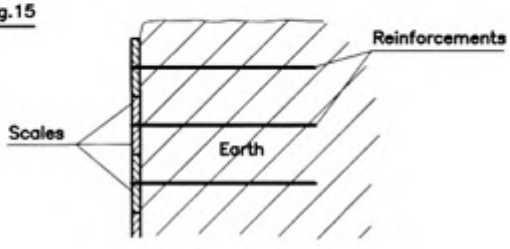
REGULAR COURSED MOSAIC

Fig.14



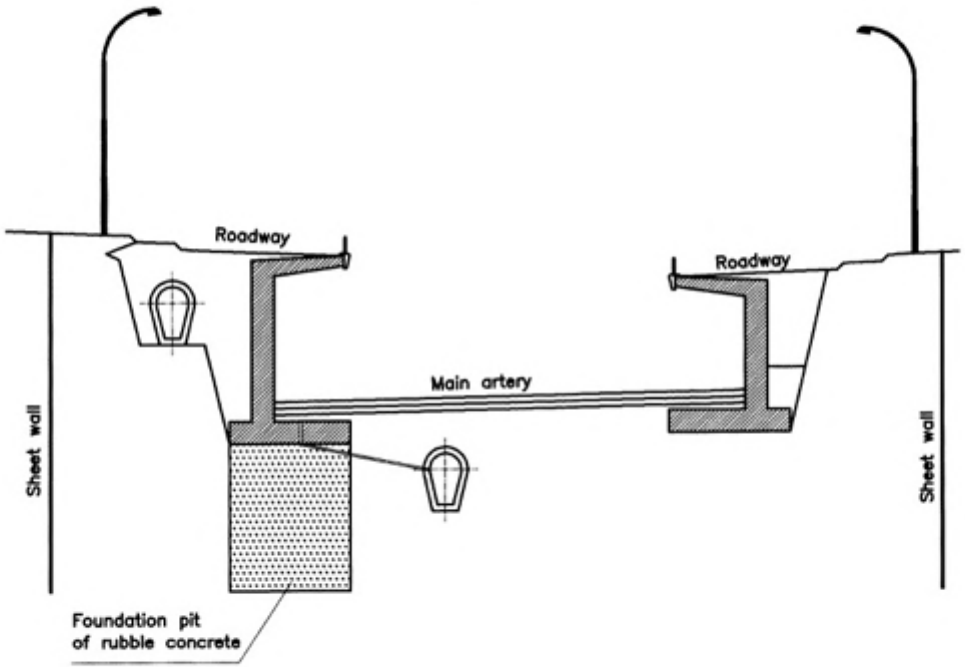
REINFORCED CONCRETE

Fig.15



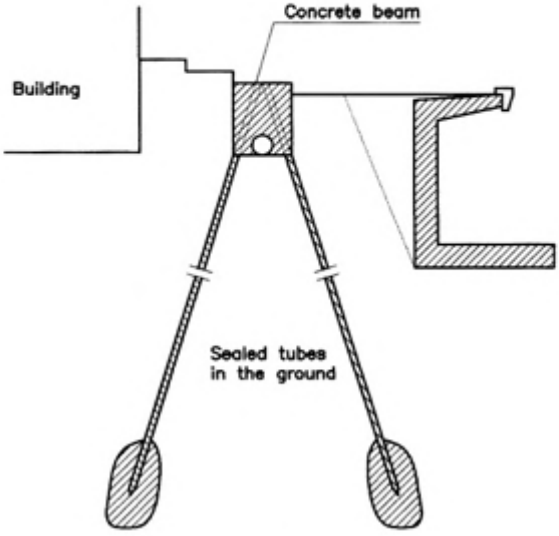
REINFORCED GROUND

Fig.16



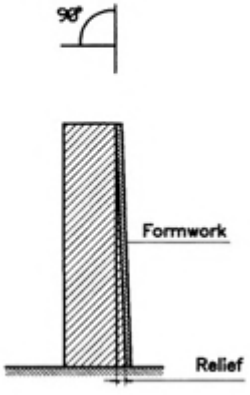
REINFORCED SHEET WALL

Fig.16a



REINFORCED SHEET WALL

Fig.17



RELIEF

Fig.18

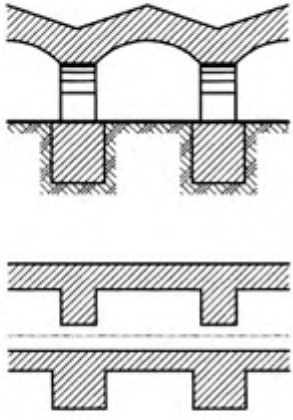


Fig.18a

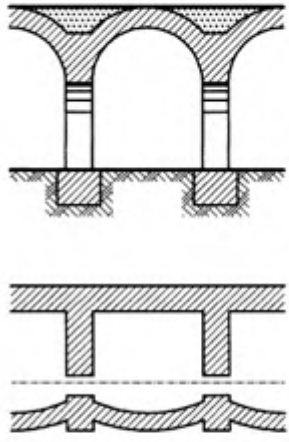
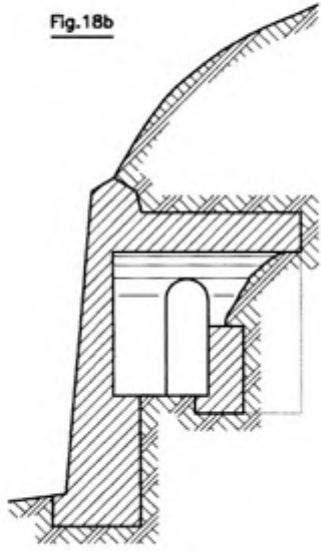
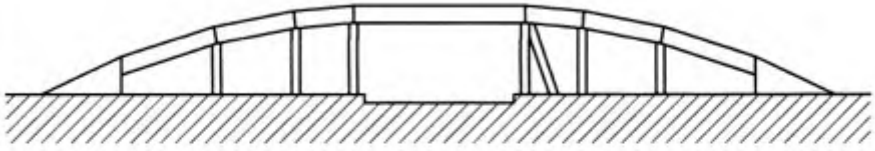


Fig.18b



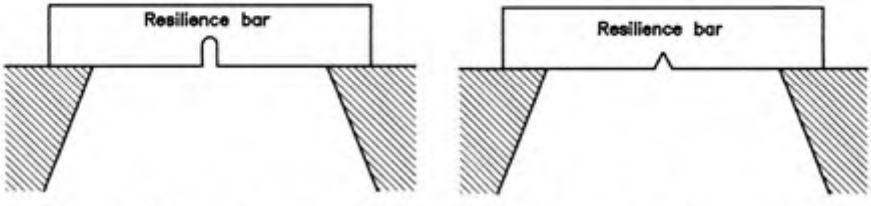
RELIEVING ARCH

Fig.19



REMOVABLE METAL VIADUCT

Fig.20

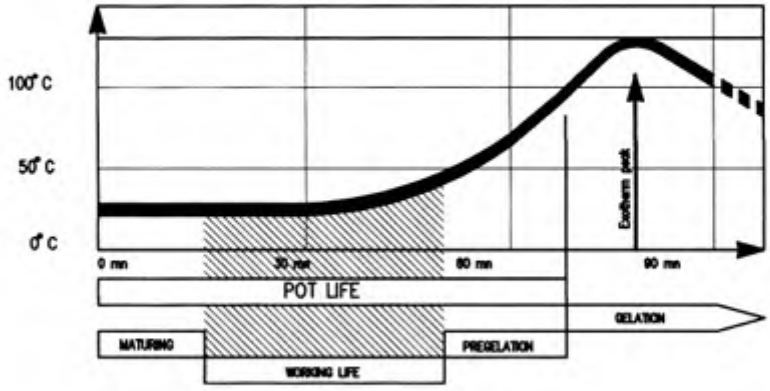


Resilience bar with U–notch

Resilience bar with V–notch

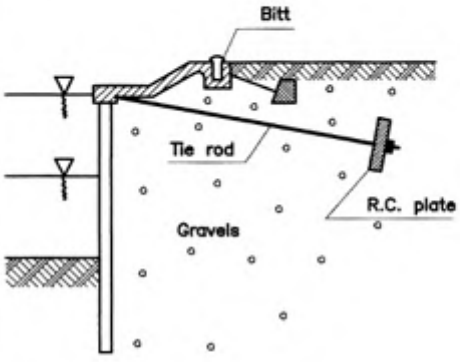
RESILIENCE TEST

Fig.21



RESIN (Cross–linking process)

Fig.22



Supporting of bank with sheet piles

Fig.22a

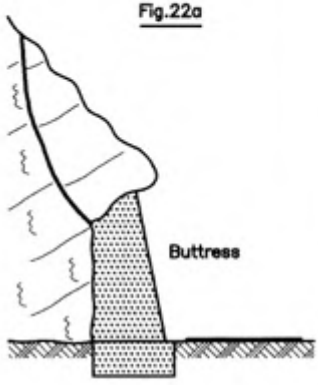


Fig.22b

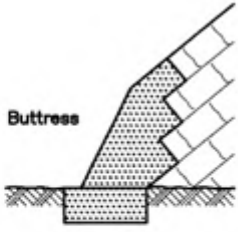
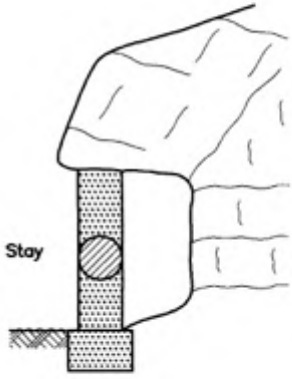


Fig.22c



RETAINING – SUPPORT

Fig.23

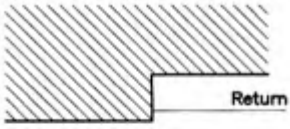
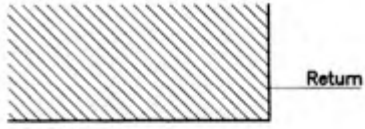


Fig.23a



RETURN

Fig.24

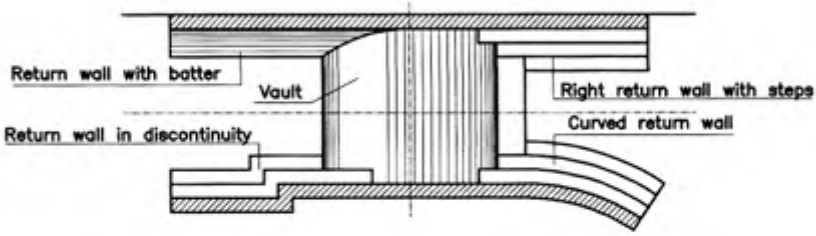
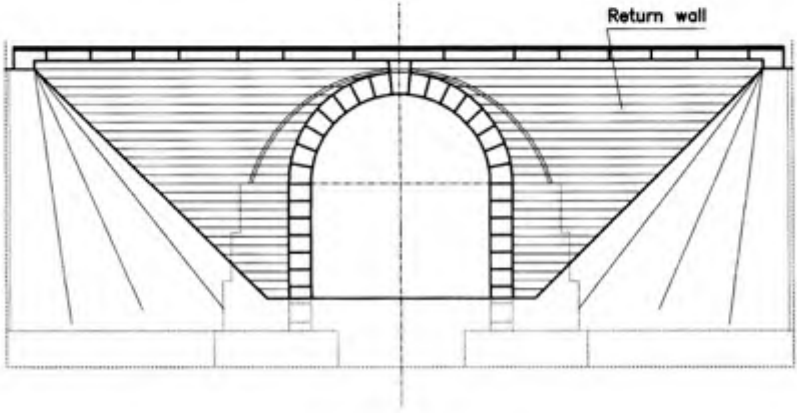


Fig.24a



RETURN WALL

Fig.25

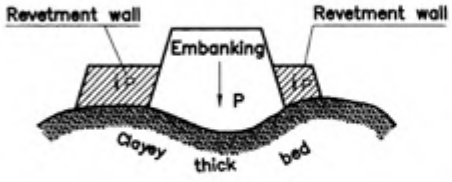
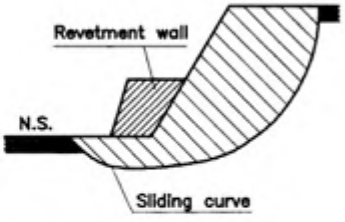
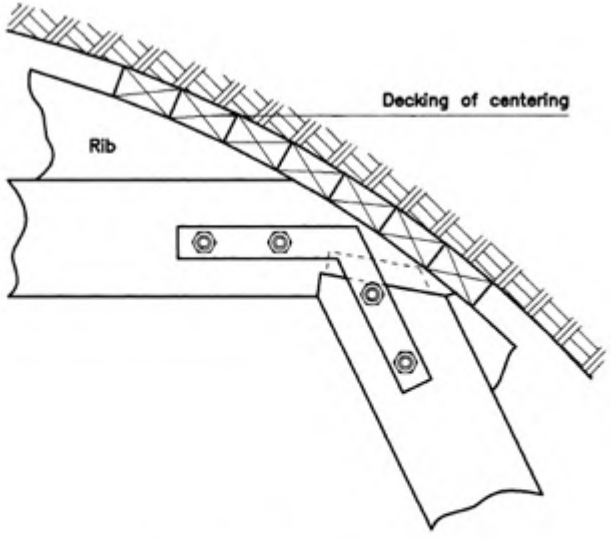


Fig.25a



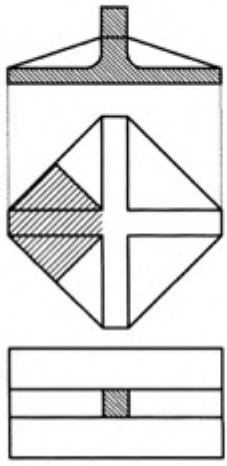
REVETMENT WALL

Fig.26



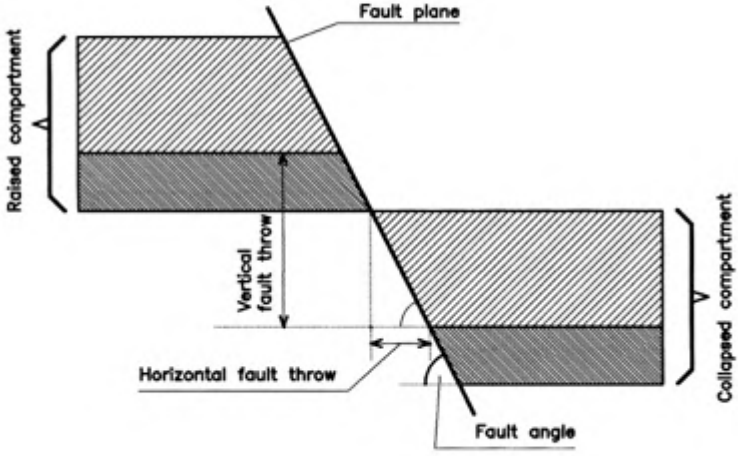
RIB (Detail of joining)

Fig.27



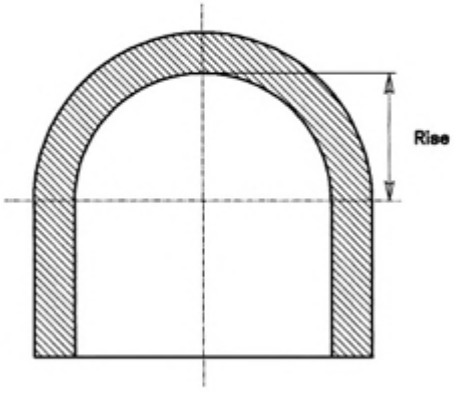
RIBBED FOOTING

Fig.28



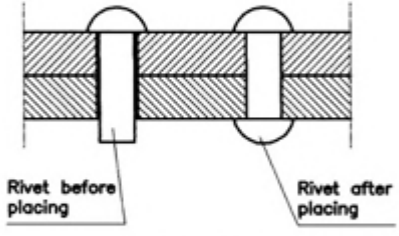
RIFT

Fig.29



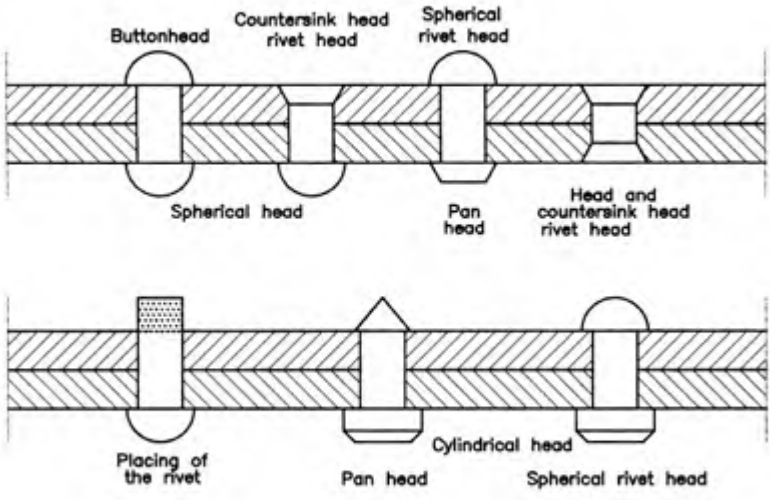
RISE

Fig.30



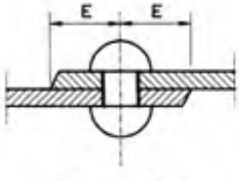
RIVET

Fig.31



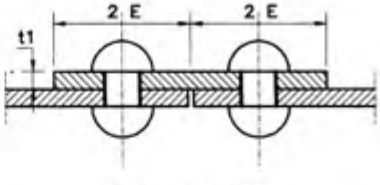
RIVET HEAD

Fig.32



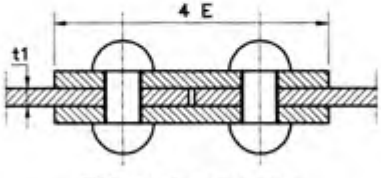
With covering

Fig.32a



With cover plate

Fig.32b



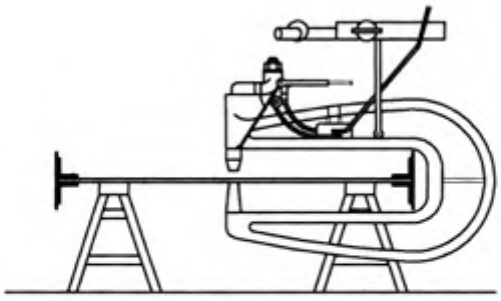
With double cover plate

E : Edge distance of riveting

t1 : Thickness of the cover plate = thickness of the sheet metal x 0.65

RIVETING

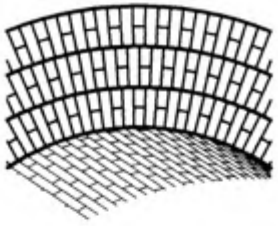
Fig.33



Pressure riveting machine

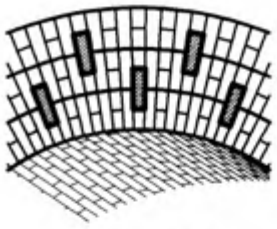
RIVETING MACHINE

Fig.34



Independent roll

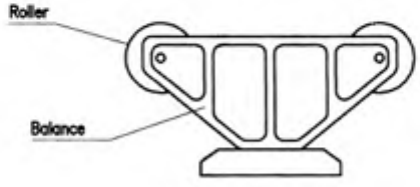
Fig.35



Integral rolls

ROLL

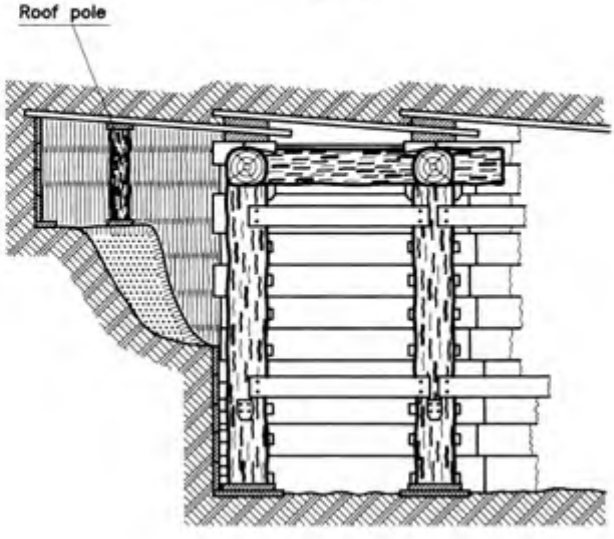
Fig.36



Roller bracket on a balance

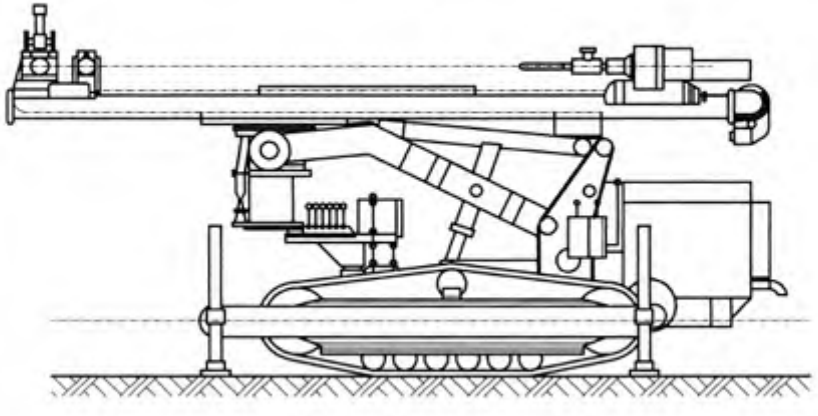
ROLLER BRACKET

Fig.37



ROOF POLE

Fig.38



ROTARY BORING MACHINE

Fig.39



ROUGH CUT

Fig.40

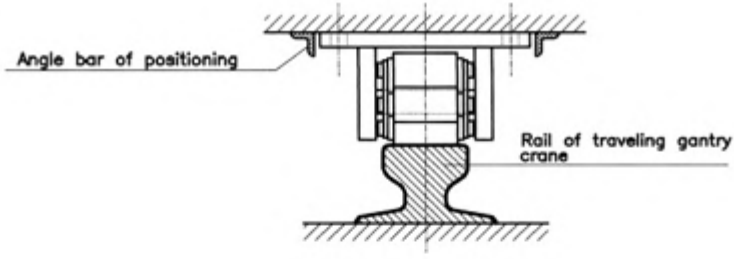
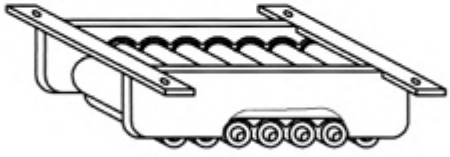


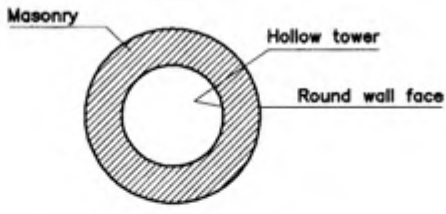
Fig.40a



Detail of a rouleur sans-cesse-express

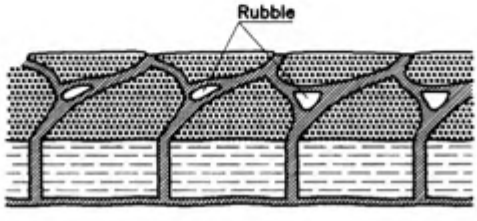
ROULEUR SANS-CESSE-EXPRESS

Fig.41



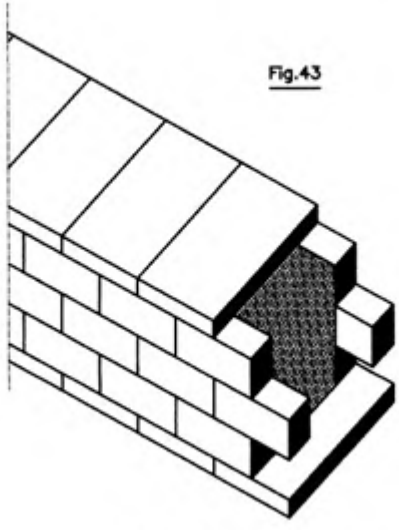
ROUND WALL FACE

Fig.42



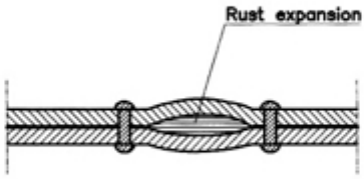
RUBBLE

Fig.43



RUBBLE WALL

Fig.44



RUST EXPANSION



SA, SA 3, SA 2, etc.
Metallurgy
The scouring rating of the steel after abrasive blasting in reference to the Swedish standard SIS 05 5900/1967.

SABLER
Sableur
Work
A worker who proceeds to the cleaning or scouring of a material by sandblasting.

SACCHAROIDAL ROCK
Roche saccharoïde
Geology
A material resembling (coarse) granulated sugar in appearance (for example, saccharoidal gypsum).

SACRIFICIAL METAL
Métal sacrificiel
Metallurgy
A material that acts as anode to protect another metal being attacked in its place; it is the principle of cathodic protection.

SADDLE
Selle; Besace
Construction
1. A piece presenting a round face allowing the inflecting of the cables or guys of a suspension bridge. **See Figure 1**
There are several types of saddles:
- **bearing** *or* **cable** *(la selle d'appui),* organ which allows the inflection of the cables and the transfer of vertical loads to the pylons in the quite common case, highly bread-and-butter, of the rigid pylons restrained at foot. The saddle also authorizes the horizontal movement of the in relation to the pylons. The bearing saddle is set on the top of the pylons. **See Figure 1a**
- **flowering** (*la selle d'épanouissement*), saddle of bending which plays, moreover, the role of a blooming necklace; **See Figure 1b**
- **bending** *(la selle d'infléchissement),* part presenting a round face allowing the bending of the cables of suspension bridges or the guys of stayed-cable bridges and which is set close to the anchorages. **See Figure 1c**

2. Syn. with CORNER BONDING; IN-AND-BOND; QUOIN BONDING;

SADDLE COPING WALL
Mur bahut
Construction
1. A low wall height used as enclosure or as parapet which does not mask the view; it can be surmounted by a railing.
2. A low parapet erected above the spandrel wall of a masonry work. The saddle coping wall is made from the bottom up of the plinth, railing shaft, and capping.

SADDLEBACK COPING
Bahut
Construction
A slightly convex profile of coping posed on a wall, a parapet or a balustrade. Concerning a parapet, the saddleback coping is sealed on the railing shaft. One calls *undercoping* a stone also being an integral part of the parapet, placed directly under the saddleback coping.

SADDLE-JIB CRANE
Grue-marteau
Equipment and Tools
Syn. with GIANT CANTILEVER CRANE; HAMMERHEAD CRANE

SAFE LOAD
Pression admissible
Geotechnics
The stress that a ground intended for receiving a foundation will be able to bear.

SAFETY
Sécurité
Strength of Materials
The property of a structure to withstand to the stresses to which the designer has forecast that it could be subjected. The justification of the safety of a structure with respect to the ultimate limit states is achieved according to the following principle: loads are multiplied by a coefficient higher than the unit, fixed by regulations; the calculation of the resulting most unfavorable stresses is carried out from these increased loads. Simultaneously, the strength of materials that constitute the structure is supposed reduced; being divided for this purpose by a coefficient higher than the unit given by regulation. It is then advisable to ascertain that the materials whose mechanical characters were thus undervalued can balance the stresses due to the increased loads.

SAFETY AND HYGIENE PLAN
Plan d'hygiène et de sécurité (P.H.S.)
Contract
A document on which appear the rescue station, address and telephone number of doctors and hospitals (or private clinics) closest to a building site, name of the first-aid workers, and so on, and which must be obligatorily displayed in premises of building site.

SAFETY ARCH
Arc de décharge
Construction
Syn. with DISCHARGING ARCH; RELIEVING ARCH

SAFETY BENCH
Banquette de sûreté
Construction
Any ground mantle of safety established on the side of roads in embankment.

SAFETY BOUNDARY
Borne
Construction
A truncated-shaped stone which is placed on the corner of a passage. It protects masonries from shocks.

SAFETY COEFFICIENT
Coefficient de sécurité
Strength of Materials; Foundation
1. Concerning complex structures, coefficient applied at the results of calculations by formulae deriving of the strength of materials. These calculations, often hit-and-miss, lack of precision and only give orders of magnitude of elasticity, deformations, stresses phenomena, and so on. To fill a gap, one introduces the notion of safety coefficient that intervenes under two aspects: on the one hand, calculations are executed for external loads increased by a first coefficient; on the other hand, the maximal admitted stress is the elasticity stress limit, or breaking point, decreased by a second coefficient. These coefficients make the object of regulations or standards.
2. The ratio of the breaking load to the allowable load.
Syn. with SAFETY FACTOR

SAFETY FACTOR
Coefficient de sécurité
Foundation and Strength of Materials
Syn. with SAFETY COEFFICIENT

SAFETY HOOP
Crinoline
Construction
1. Any protection surrounding a ladder giving access to the pylons, piers of great height, and so on, intended for retaining a person in the case of rear swinging. A safety hoop is made up of a number of templates of flat iron connected by stringers arranged on the periphery of the templates; the internal diameter is usually close to 0.70 m.
2. A temporary device installed at the extremity of a transverse catwalk to allow the examination of the outside faces of the beams.

SAFETY-NUT
Contre-écrou
Materials
Syn. with BACK-NUT; CHECKED NUT; COUNTER NUT; LOCK-NUT; SET-NUT

SAFETY PORTAL FRAME
Portique
Construction
A provisional or definitive device allowing the maintenance in exploitation of a tunnel during the execution of work for instance.

SAFETY RAIL
Garde-corps
Construction
Syn. with GUARD RAIL; HANDRAIL; RAILING

SAFETY RECORD
Registre de sécurité
Law
A handbook run by the contractor who must name there the nature and dates of the examinations of the equipment and machines. These inspections must be achieved by a competent person designated by the contractor.

SAFETY SCREEN
Ecran de protection
Construction
Syn. with PROTECTIVE SCREEN

SAFETY STRUCTURE
Structure de protection
Tightness
All elements set up on a geomembrane to protect it from various stresses during the implementation and operational.

SAFETY VALVE
Soupape de sécurité
Equipment and Tools
A special device inserted inside a stand of drill pipe avoiding sudden rejections of fluids.

SAFETY VIADUCT
Viaduc de décharge
Civil Engineering Structure
Syn. with RELIEVING VIADUCT

SAG
Flèche
Strength of Materials; Defects
1. The vertical movement of the section of X-coordinate of a straight beam throught the agency of the loads and/or overloads which solicit it. The sag results, for its greater extent, of the intervention of the bending moment. The deformed medium fibre is called *the elastic line of the beam.* Syn. with DEFLECTION; SPAN-TO-DEPTH RATIO
2. The measurable gap between the position at rest of a slab, a deck, a beam and the amplitude of its deflection under the effect of a static or dynamic load. Syn. with CAMBER. **See Figure 2**
3. To subside speaking about of a structural member.

SAGGING
Sagging; Feston; Effondrement
Defects
1. Runouts appearing on the surface of a paint film after its application onto a vertical substrate. This defect is characterized by an inconsistency of the film that shows zones of greater thickness. It can be a defect of application (if paint is applied too thick) or a defect of the paint (paint too liquid or not thixotropic enough).
2. A running variety presenting allowances in undulations more or less regular and low amplitude.

3. The depression of the deposited metal due to an excessive fusion bringing about (by gravity) to an excess and (or) to a lack of metal.

***SAINT-MAXIMIN'S* STONE**
Pierre de *Saint-Maximin*
Building Materials
An ashlar of excellent quality extracted from quarries located in the Oise (France).

***SAINT-VENANT'S* PRINCIPLE**
Principe de *Saint- Venant*
Strength of Materials
A theory according to which stresses and deformations in an area of a solid sufficiently far away from the application points of the external strains only depend on the torque (force and moment) resulting from these strains. The purpose of this stating of Saint-Venant is to simplify strength calculations in static mechanics and mechanics of the continuous mediums.

SALAMANDER
Loupe
Metallurgy
A solid mass of iron, frequently weighing many tons. Syn. with BLOOM

SALIENT ANGLE
Angle saillant
Construction
An angle whose meeting of the lines or surfaces is made overhanging forming an edge.

SALIFIABLE
Salifiable
Materials
One calls salifiable materials able to be transformed into salts (example: anhydride).

SALIFY
Salifier
Materials
To modify chemically a body with intent to lead to salt formation.

SALINE MARBLE
Marbre salin
Geology
A marble whose mass is granular.

***SALING* PROFILOGRAPH**
Profilographe *Saling*
Equipment and Tools
A profilograph wagon that transversely spots the vault of a tunnel thanks to a mechanical system made up of a probing arm added with a reducing pantograph allowing to draw the section of a tunnel at the tenth. (This profilograph is replaced by the photoprofile wagon.)

SALT
Sel
Materials
A granulated substance resulting from the action of an acid on a base, or a base on a metal.

SALTATION
Saltation
Geomorphology
A mode of displacement by jumps of the coarse alluvial particles, which concerns the remains too large to be taken in suspension and occurs when the stream velocity crosses a certain threshold. Under the effect of the wind, sand is always carried in saltation; only silts are carried in suspension.

SALTPETER
Nitrate de sodium
Mineralogy
A mineral of chemical precipitation.

SALTPETER FORMATION
Salpétrage
Defects
The appearance, formation of saltpeter onto the surface of a facing.

SALT-SPRAY TEST
Test du brouillard salin
Test of Materials (Painting and Metallurgy)
A test for determining the painting's resistance to the corrosion (or other protective coatings) exposed to a marine atmosphere. This test consists in testing painting samples (or other protective coatings) under saline fog with repeated alternations of saline water spraying.

SAMPLE
Prélèvement; Echantillon
Building Materials
1. A sample carved in a material or taken from a material heap and intended for putting through the analyses or various tests.
2. A quantity of aggregates extracted from a batch in only once and which is intended for the analysis.
3. Representative fraction of body of product, material; removed by approved methods; guarded against accidental or fraudulent adulteration; and tested or analyzed to determine the nature, composition, percentage of specified constituents, etc., and possibly their reactivity.

SAMPLER
Carottier
Equipment and Tools
Syn. with CORE BIT; CORE CUTTER; CORE DRILL; CORE (CUTTING) MACHINE; CORER

SAMPLER CUTTING EDGE
Trousse
Equipment and Tools
A tool of trial boring made up of a fluted metal cylinder carried by rods or the core drill tube, and intended for wearing away the rock to be come through rubbing it with granular metal or a suitable abrasive.

SAMPLING
Echantillonnage
Building Materials
Syn. with FRACTIONAL SAMPLING

SAMPLING SPOON
Cuillère
Equipment and Tools
Syn. with BALLER; SOIL SAMPLER

S-ANCHOR; T-ANCHOR, etc.
Ancre
Buildings Materials
Syn. with ANCHOR; CRAMP IRON; TIE

SAMPLING SPOON
Cuillère
Equipment and Tools
Syn. with BALLER; SOIL SAMPLER

SAND
Sable; Arène; Sablonner
Geology; Work
1. A sedimentary material formed by grains, mostly quartzose, which settled and gathered from distances further to their origin according to their dimensions. The carrying of the sand is ensured by water or wind.
This material represents a stage in the disintegration cycle of the parent rocks. The grain-size analysis and morphoscopic study allows to specify practices of sedimentation; there are several types of sands:
- **fluviatile sands *or* river sands** *(les sables fluviatiles),* which meet in the fluviatile alluvia, sometimes in terraces form; they are badly classified (heterogeneous), with subangular grains;
- **sea sands** *(les sables marins),* which include littoral sands as former sea sands (Beauchamp's sands are sea sands). Deposits are very wide. They are well classified (homogeneous), with subangular grains with worn (blunted), shining;
- **eolian sands *or* wind-borne sands *or* windblown sands** *(les sables éoliens),* which are carried by winds and which meet to shape sea or continental dunes. They are well classified granulometrically, have dull and round grains, tarnish in the aftermath of the shocks between grains;
- **glacial sands** *(les sables glaciaires),* whose grains show an angular form;
- **residual sands *or* arenas** *(les sables résiduels ou arènes),* a product of the fragmentation on the spot of a favrable parent rock.

According to the size of the grains, one speaks about coarse, medium, fine or very fine sand. The nomenclature also takes account of the presence of other elements: feldspathic sand (or arkose), mica-tinted (psammite), gold bearing, glauconitic, phosphatic, bituminous, ferruginous (colored by iron oxides), clayey. Some sands can be made by accumulation of dolomite or limestone grains, partly of a detrital origin. Lastly, there are volcanic sands, related to explosive eruptions, whose elements were then altered by water.
In the sedimentary series, sands consist, either of the accumulations of a fluviocontinental origin (Devonian, Permo-triassic, wealden), or of sea deposits, mostly coastal, which carry the trace of

many sedimentary faces (oblique stratifications, ripple marks, and so on). Sands deposited to the continental slope foot are often granulometrically classified
Sands, same compacted, have important porosity and permeability. In the Parisian basin, one can quote Fontainebleau's sands (99.5% silica) and, more deeply, albian's sands that contain an artesian aquifer, improperly named green sands layer.
Syn. with GRIT
2. A pulverulent and cohesiveless material, to least at the dry state, and therefore not resistant to tensile strengths.
3. A material stemming from the decomposition of granitoid rocks (granite and gneiss) formed by coarse sands sometimes coated with clay.
4. To spread out superficially a bed of sand.

SAND ABRASION TEST
Essai de résistance à l'abrasion par chute de sable
Test of Materials (Painting)
A test that allows to determine the abrasion resistance of a paint film. It consists in placing a test specimen covered with a paint film according to an angle of 45° then, to subject it to the action of a gauged sand blast falling from a given height through a pilot tube. Abrasion resistance is determined by the quantity of sand necessary to wear out the coating (stripping on a spot of 4 mm diameter).

SAND BOX
Boîte à sable; Boîte à sable pour décintrement
Civil Engineering Structure
1. Syn. with SAND HOLDER
2. Syn. with REMOVAL OF CENTERING SAND HOLDER

SAND COLUMN INJECT ABILITY TEST
Essai d'injectabilité à la colonne de sable
Polymers
To test the ability of penetration of polymers intended to the injection of cracks or cavities of concrete.
The injection in laboratory of artificially cracked or porous concrete test specimens cannot be a criterion of selection of the products, the type of crack or porosity having served to a study cannot be reproduced in another test. Morever, a fissured or porous test specimen of laboratory is not representative in many cases of building site. The only practice that enables to estimate the penetration ability, in a granulous matter, grouting products is the one known using a sand column. One can thus obtain a comparative classification of the products tested under identical conditions. This test consists in making penetrate under pressure (0.075 MPa), upward of a column filled with calibrated sand, the product intended for the injections. The capacity of penetration of this one is determined by the time that it puts to reach in the sand column levels 5, 10, 15, 20, 20 and 25 cm. Besides the penetration speed of the product, the test enables to consider the pot life, characteristic which conditions the success of the injections:
- *if the total 500 g polymers present inside the pot of injection make one's way through the sand column, one can estimate that the pot life is satisfactory;*
- *if the column is completely injected but only with part of the product placed into the pot, this one is likely to gel during injections in the building site. Its pot life does not enable errors of handling or injections of too long duration;*
- *if the column is only partially filled and the velocity of furtherance of the polymer decrease (< 3 cm/min), its pot life is not enough to enable its injection, except special precautions or particular cases.*

One can know thanks to this test the opportunities of injectability of the products at a variable temperature and in the wet medium. It is enough to place for that the sand column and device of injection in an air-conditioned enclosure, or to make circulate water in the sand column before the injection of the product to be studied. Moreover, this test allows to know the strength of the injection product. For that it is enough to let harden the sand column after filling by the product for 28 days and to carry out tests of splitting (Brazilian tests) on cylinders of a slenderness ratio 2, achieved by cutting of the aforementioned column. **See Figures 3 and 3a**

SAND CORRECTION
Correction de sable
Building Materials
A servicing intended to determine the quantity of moist sand going into the proportions of the concrete according to the quantity of dry sand

given by the laboratory during the mix design of this concrete. We can distinguish two practices: the volumetric practice and weight practice.

SAND CRUST
Bousin
Defects (Building Materials)
A slightly strong earthy matter of a few centimeters thick, that adheres to the top or the bottom of a stone bench. Generally, the sand crust borders natural faces.

SAND EQUIVALENT (S.E.)
Equivalent de sable (E.S.)
Geotechnics
A test for determining the sand content by comparison with clays and ultrafines of a ground. *The operative mode is the following: a flocculant solution was poured into a tube containing a moist ground sample. After an inhibition, the tube is energetically shaked next one leaves the solution to settle. With a dip stick the total height* H *(sediment + flocculat) and height of the sediment* h *is measured. A tared piston is used to measure the height* h'.
By definition one has :
- visual sand equivalent:

$$S.E. = \frac{h \times 100}{H}$$

- sand equivalent with the piston:

$$S.E.p = \frac{h' \times 100}{H}$$

See Figure 4

SAND FLOW
Débourrage
Defects (Civil Engineering Structure)
Damage that occurs in the material falls category. It is characterized by massive sand or earth arrival by an orifice of the covering of an underground work. This type of disorder is ordinary from fillings of the karstic cavities. Syn. with EARTHFLOW

SAND HOLDER
Boîte à sable
Civil Engineering Structure
1. A lowering system of work onto its bearings.
2. A slab pouring system onto in situ elastomer bearing.
The method consists in filling with fine sand the space between the bearing and the intrados of the slab up to the top level of the bearing, minus the thickness of a plywood. A plywood is put on this sand, and it is then carved to come surrounding the bridge-support apparatus. The formwork of the concrete deck rest on the whole. After form striking of the concrete deck, the sand holder is demolished.
Syn. with SAND BOX

SAND MILIOLITH STONE
Lambourde
Building Materials
A lean, porous stone, more or less fine and that is constituted by a calcareous sand aggregation appearing that seams to be especially made of milioliths. Its mass is often mixed with conchiferous mussel remains. The sand miliolith stone is softer and marlier than the limestone with mold shell.

SAND PIT
Sablière; Sablonnière
Building Materials
1. A pit from where sand is extracted.
2. A pit of exploitation of ultra-fine sand.

SAND ROCK
Arénite
Geology
Syn. with ARENITE

SAND RUNOUT
Coulure de sable
Defects (Construction of R.C. and P.C.)
A type of segregation of the concrete that appears on a facing and brings about by runs where only sand is seen.

SAND SPRAYING MACHINE
Sableuse
Equipment and Tools
Syn. with SANDBLASTING MACHINE

SAND TRAP
Dessableur
Sanitary Engineering and Drainage
A construction or device intended for the sanding off. Syn. with GRIT CHAMBER

SANDBAG METHOD
Méthode des sacs à sable
Temporary Construction
A former process of vault decenter constituted by bags in strong fabric filled with dry sand, girthed

and strongly tightened between soles of bearing by wedges, the centering being posed on provisional bearings. To decenter, one removed with the axe provisional bearings then one gradually emptied bags. It was a very complex system which was slightly used.

SANDBANK
Grévière; Allaise
Building Materials; Hydrology
1. Syn. with STRAND PIT
2. Syn. with DEPOSITS; INCREASE

SANDBLAST
Jet de sable; Sabler
Work
1. A pressurized throwing of sand used to clean a facing, a metal part, etc.
We can distinguish:
- **dry sandblast** *(le jet de sable sec),* sandblasting using a flow of compressed air on the material to be cleaned;
- **wet sandblast *or* moist sandblast** *(le jet de sable humide)* that consists in accompanying by water the sand blast. Parameters and results are similar to those of the dry jet but water softens and homogenizes the effect of sand.

2. To clean a surface by sandblasting.

SANDBLASTED
Sablé
Building Materials
Of a state of a surface having undergone a sandblasting.

SANDBLASTING
Sablage
Work
A method of cleaning metal and masonry surfaces with sand sprayed over them through a nozzle at high velocity.
In metallurgy, the sandblasting is designed to clean mechanically rusted surfaces or covered by smithsonite, before a secondary processing. It is carried out by means of an abrasive substance swept along and threw with a high speed by a compressed air blast. There are several types of sandblasting:
- **hydropneumatic sandblasting** *(le sablage hydropneumatique),* which consists in throwing on a facing of a water and sand mixture to low pressure. Sand uses the surface of materials to be cleaned and water softens and carries stains;
- **dry sandblasting** *(le sablage à sec),* which consists of a projection under low pressure of a dry sand blast on a facing.

SANDBLASTING MACHINE
Sableuse
Equipment and Tools
Air-driven throwing machine of granular substances. It is made up of a pressure lock into which is put the sand; this last one is then carried, always under pressure, in a flexible pipe up to a nozzle with adjustable flow from where it is threw against the surface to be cleaned. Syn. with SAND SPRAYING MACHINE

SAND/CEMENT PROPORTIONING
Dosage ciment/sable
Building Materials
Syn. with SAND/CEMENT RATIO

SAND/CEMENT RATIO
Dosage ciment/sable
Building Materials
An operation intended for checking the proper proportion of the mortar. To determine the ratio mortar weight/aggregates weight, on then separates the cement from the sand by sedimentation in a machine designed for this purpose. Syn. with SAND/CEMENT PROPORTIONING

SAND-GRAVEL MIXTURE
Grave
Building Materials
A dredging product made up of pebbles, gravels and sand; it can be mixed with various products such as a bitumen or cement to endow particular properties to it. Syn. with GRAVEL SAND

SANDING
Grenage; Ponçage
Work; Painting
1. An action that consists in making granular (by sanding or blast cleaning in particular) the smooth surface of a material. Syn. with SHOTBLASTING
2. Syn. with SANDING DOWN

SANDING DOWN
Ponçage
Painting
A surface cleaning process intended to give to a substrate the aspect of a perfectly smooth surface, deprived of undulations, harshnesses and grains. Syn. with PUMICING; SANDING; SANDPAPERING; RUBBING DOWN

SAND-INTERCEPTING GROIN
Epi
Construction
A dwarf masonry wall erected along the banks of a waterway to regularize some the sandbank. (This dwarf wall can be replaced by fascines, cribs, enrockments, etc.).

SANDPAPERING
Ponçage
Painting
Syn. with PUMICING; SANDING; SANDING DOWN; RUBBING DOWN

SANDPIT
Arénière; Sablonnière
Building Materials
A pit from where the sand or ultrafine sand is extracted.

SANDSKIN
Grippure
Defects (Metallurgy)
Syn. with FURROW; RUT

SANDSTONE
Grès; Taille douce
Geology; Masonry
1. A medium-grained clastic sedimentary rock composed of fragments of sand size set in a fine-grained matrix (silt or clay) and more or less firmly united by a cementing material (commonly silica, iron oxide, or calcium carbonate); the consolidated equivalent of sand. The sand particles usually consist of quartz, and the term sandstone, when used without qualification, indicates a rock containing about 85% to 90% quartz. The rock varies in color, may be deposited by water or wind, and contains numerous primary features (sedimentary structures and fossils). Sandstones may be classified according to composition of particles, mineralogic or textural maturity, fluidity index, diastrophism, primary structures, and type of cement. Mainly sandstones are distinguished: quartzose, ferruginous, quartzose argillaceous, quartzose clayey-calcariferous, clayey-marly little or not mica-tinted or with mica-tinted beds, quartzose feldspathic and marly, arkoses, greywackes. Syn. with GRITSTONE
2. A regional name of a fine-grained sandstone.

SANDSTONE FORMING
Grésification
Geology
The cementing of the sand grains that gives sandstone.

SANDSTONE PIT
Grésière; Gresserie
Building Materials
A pit where sandstone is exploited. Syn. with FREESTONE PIT

SANDY
Sableux; Sablier; Sablonneux
Geology
1. Of a ground that contains sand (example: sandy clay).
2. Of any that is in relation with sand.
3. Of a place covered by sand; whose ground is solely made up of sand.
4. Says itself what contains sand or ultrafine sand.

SANDY CLAY
Argile maigre
Geology
A clay that contains much silica, which makes it little plastic.

SANDY DISINTEGRATION
Désagrégation sableuse
Defects (Masonry)
A damage affecting stones that appears by a superficial loss of matter in pulverulent form that leaves no zone in relief.

SANDY ELEMENTS
Eléments sableux
Construction and Geotechnics
Granular and nonflocculable particles that deposit sediment at the bottom of the test specimen during the determination of the sand equivalent test.

SANDY INSERT
Dartre
Defects (Metallurgy)
Syn. with SORE

SANITATION
Assainissement
Sanitary Engineering and Drainage
Syn. with DRAINAGE; SWEETENING

SAP
Sapement; Miner
Hydrology
1. Erosion by water of the base of banks, causing the collapse of the upper part of the bank. This damage is due to the flow that gnaws the base of the banks, in particular in the windings. Syn. with UNDERCUTTING
2. To gnaw banks, speaking of a river.

SAP STAIN
Bleuissement
Defectss (Building Materials)
Syn. with BLUE FUNGUS; BLUE STAIN

SAPELE
Sapelli
Building Materials
An exotic tree of rain forests that provides a brown-red wood very appreciated in joinery.

SAPROXYLIC
Saproxylique
Defects (Building Materials)
Of the decomposition of the wood whose there only remains a spongy mass, resulting from the attack by fungi and insects.

SAPWOOD
Lard du bois; Aubier; Aubour
Nomenclature ofMaterials
Zone of soft wood (in formation) located between the heart and the bark which is unsuitable to the work because liable to rot and open to attack by woodworms. Sapwood is covered by bark, soft substance including numerous cracks, formed by the bast which is its inside part, and of the epidermis, which is its outside envelope. Syn. with ALBURNUM

SAPWOOD REMOVAL
Désaubiérage
Building Materials
The removal of the sapwood covering a timber piece.

SATURATED SPECIFIC WEIGHT
Poids spécifique saturé sat.
Building Materials and Geotechnics
The weight of the volume unit of grains of a material supposed voidless, after saturation with water.

SATURATION TEST
Essai d'imbibition
Test of Materials (Building Materials)
A test that consists in immersing materials for a given time to deduce the volume of water which they are able to absorb; their coefficient of imbibition is thus determined.

SAW
Scier
Work
To cut with a saw.

SAW ALONG THE BED
Moyer
Building Materials
To saw a stone according to its bedding plane.

SAW IN DIMINISHING
Scier en mourant
Work
To cut a wooden piece so that its thickness is decreasing.

SAW OFF
Recéper
Work
To do a trimming. Syn. with CUT BACK

SAW ROUND
Chantourner
Materials
To give a curved profile to the outside face of a wooden or metal piece.

SAW ROUND TIMBER
Chantourne
Carpentry
A wooden piece carved following warped surfaces.

SAW ROUNDLY
Chantournement
Materials
The cutting or cutting out of materials following curved lines.

SAW WITH RETURNS
Scier à contre-passe
Work
To cut up a stone perpendicularly to its bedding plane.

SAWDUST CONCRETE
Béton de sciure
Building Materials
A material whose aggregate is composed of wood sawdust.

SAWING
Sciage
Work
A technique of rock, concrete and masonry working. Sawing was known a few years ago for its application in quarry where one used it for the cutting of very narrow and regular channels and to the shaping of ashlars. Techniques of sawing were mainly wires, blades, and ribbons. For work on permanent structures, the circular saw is used. We mainly can distinguish:

- **sawing by blades made up of abrasives agglomerated on fiber core** *(le sciage par lames constituées d'abrasifs agglomérés sur âme textile),* which can find its application, using light tools, for cutting up channels in hard stone;
- **sawing using circular saws reinforced of tungsten carbide tips or set with diamonds** *(le sciage à l'aide de scies circulaires armées de pastilles de carbure de tungstène ou diamantées),* which is used for splitting, carrying out of channels, etc.

Syn. with CUTTING

SAWN FACE
Parement scié
Masonry
The visible face of a quarry stone or an ashlar, obtained by sawing.

SAWN STONE
Moyée; Pierre débitée
Building Materials
1. Of an ashlar sawn into two parts to eliminate earthy insertion.
2. A sawn or recleaving rock.

SAWN TIMBER
Bois de sciage
Building Materials
An element coming from a stouter riped piece. Syn. with CONVERTED TIMBER; QUARTERED TIMBER

SCABBING
Repiquage
Masonry
Syn. with LOOSENING

SCABBLED
Smillé; Simblé
Masonry
Of quarry stones whose facings are tooled with a comb hammer. A scabbled facing shows a succession of small streaks mostly directed and separated by small spalls.

SCABBLER *or* SCABBLING HAMMER
Smille
Equipment and Tools
A hammer with two pointed ends used by quarry workers or stonecutters to dress quarry stones or ashlars facings. **See Figure 5**

SCABBLING
Smillage
Masonry
Stone cutting to give it a scabbled facing.

SCAFFOLD
Echafaud
Temporary Construction
The floor of the scaffolding on which workers work and move about. Syn. with SCAFFOLDING; STAGE

SCAFFOLD TIE
Boulin
Temporary Construction
Syn. with PUTLOG

SCAFFOLDING
Echafaudage; Cintre
Temporary Construction; Equipment and Tools
1. A temporary construction of frame (timber or metal tube) mounted to build or to repair a construction; it is reserved for the movement of employees and for supporting needed materials. There are several types of scaffoldings:
- **projecting scaffold** *(l'échafaudage en bascule)* established separately in cantilever; **See Figure 6**
- **independent scaffolding** ***or*** **light scaffolding** (*l'échafaudage léger de pied)* distinguished by:
  - *ladder scaffold (l'échafaud formé d'échelles simples)* or to an extension and stairs with floor, **See Figure 6a**
  - *fixed scaffolding (l'échafaudage fixe),* formed by a floor supported by a console and a contiguous guarantee partition,
  - *bracket scaffold (l'échafaud en éventail),* supported by a rank of cantilevered uprights;
- **light scaffolding** *(l'échafaudage rapide):* see INDEPENDENT SCAFFOLDING;
- **trestle scaffold** *(l'échafaudage sur tréteaux)* constituted by trestles on a floorbase that is used for small elevations above the ground; **See Figure 6b**
- **flying scaffold** ***or*** **swinging scaffold** *or* **boat scaffold** *(l'échafaudage volant)* formed by a gangway comprising a butt-jointed floor carried by cross and main beams resting on two or three stirrups suspended each if the suspension is made by ropes or to a winch in the case of suspension by metallic cables. Winches with metallic cables have two cranks, which ensures a regular raising and lowering along the wall. **See Figure 6c**

2. A formwork support resting on the ground or on parts of already achieved works and that is used in the construction of prestressed or reinforced concrete bridge decks.
3. A structure formed by metallic beams supporting the formwork of a span of bridge and picking up on the ground or on a part of the already achieved work (pier or span). When the centering moves a span to the following under one's own power, it is called *moving construction girder.* A such centering can be located above or below the deck. Syn. with CENTERING.

SCAFFOLDING FLOORING
Plancher d'échafaudage
Temporary Construction
A work and traffic area of a scaffolding. The floor rests on the putlogs; it can consist of boards, balks or metal panels to open work.

SCAFFOLDING POLE
Perche; Echasse d'échafaudage
Temporary Construction
In a scaffolding, syn. with STANDARD; STILT; UPRIGHT

SCAFFOLD(ING) STANDARD
Baliveau
Temporary Constructions
A pole used in a scaffolding.

SCAFFOLDING TIE
Moise
Temporary Construction
In a scaffolding, horizontal wooden or metal piece fixed on the standards inside the scaffolding and supporting putlogs. Syn. with CROSS BAR

SCALE
Echelle; Ecaille; Purger; Paille; Barbure; Bavure
Drawing; Construction; Work; Defects
1. The ratio that exists between the dimension of a line representing a part of the piece on a drawing and the real dimension of this part of the piece.
2. The continuation of divisions on an abacus or a nomogram with aligned points.
3. A reinforced concrete plate being of use as facing and stop to the reinforced earth constructions. **See Figure 7**
4. To make fall with a scaling bar, a point tool, etc., of unstable blocks, a taken off rendering, a foliated stone, etc.
5. Syn. with FLAW (IN METAL)
6. Syn. with BARB; BURR; SMUDGE

SCALER
Purgeuse
Equipment and Tools
A machine equipped with a special tool fixed at the end of an adjustable hydraulic arm, and used for significant work purging.

SCALING
Desquamation; Ecaillage; Purge
Geomorphology; Defects; Work
1. Syn. with PEELING
2. Syn. with DESQUAMATION; PEELING
3. A fine bed of hardened mortar, separated from the surface of the concrete, leaving the aggregates naked. Syn. with PITTING
4. An operation consisting in causing with simple means the fall of shaken blocks, plates of renderings, leafed or ungrained materials, undermined, or splited blocks.

SCALING BAR
Pince à purger
Equipment and Tools
A long rod of light metal ended by a steel pick used to purge manually masonries, a rock face, for instance.

SCALING OFF
Ecaillage
Geology
The facies of decompression of the terrain under important cover, in such a manner that the rock is pushed to the levels of its compressive strength. This stress effects superficial alterations in the form of scales of more or less great extent.

SCALPER
Scalpeur
Equipment and Tools
A screen placed in front of a crusher selecting the cut of the rock blocks according to the possibilities of the crusher.

SCANNER
Scanner
Equipment for Measure and Control
An equipment for sounding structures by infrared thermography; it measures the infrared radiation emitted by met materials, then allows to visualize under various forms (pictures, cards, listings) the data obtained in this way.

SCANNING ELECTRON MICROSCOPE
Microscope électronique à balayage (M.E.B.)
Equipment for Measure and Control
An optical instrument of observation whose basic principle consists in using electrons emitted by the surface of a solid when it is bombarded by electrons beam. This beam, emitted by a tungsten filament, is accelerated then concentrated. With two lenses, a condenser and an objective, deflecting bobbins allow to scan the surface to be examined. At the point of impact, several radiations are emitted, but only the secondary and retrodiffused electrons contribute to the formation of the picture of the sample topography. They are collected by a scintillator associated with a photomultiplier. The electronic picture is obtained on the screen of a cathode ray tube whose brightness is modulated by the stream of the electrons coming from the object. This apparatus is used in laboratory to determine the pollution of sands, to analyze the connections binder-aggregates, etc. **See Figure 8**

SCANT
Maigre
Building Materials
Syn. with BARE

SCANTLING
Bois équarri; Volige
Building Materials
1. Syn. with SQUARED TIMBER; SQUARE-SAWN TIMBER
2. A board of small thickness. Syn. with BATTEN

SCAPE
Escape
Architecture
A softening for linking and connecting, with the shafts of columns, fillets by which these ones ending.

SCAPUS
Escape
Construction
The shaft of a column or lower part of this shaft.

SCARCEMENT
Retraite; En retraite
Construction
1. Syn. with INTAKE; SET BACK
2. Syn. with INTAKE; OFFSET.

SCARF
Abuter
Construction
Syn. with ABUT

SCARF (JOINT)
Enture; Raboutage
Foundation
Syn. with HEADING JOINT; SPLICE; SPLICING

SCARF-JOINTED BEAM
Bécheret
Carpentry
Structural member made up of two joined, very long wedge-shaped elements and having the same thickness on its entire length. Syn. with SCARF JOINT. **See Figure 9**

SCARFING
Encastrement; Endentement
Carpentry
1. Syn. with BUILDING-IN; ENCASED
2. An assembly constituted by a succession of teeth fitting together the ones into the others.

SCARFING PLATE
Appendice
Welding
Syn. with STRIKING PLATE; TAIL

SCARIFICATION
Scarification
Earthwork
The loosening of a ground with a scarifier.

SCARIFIER
Scarificateur
Equipment and Tools
An earthmoving plant with downward projecting teeth for breaking hard soil at quarries and opencast pits, before the passage of bulldozers or scrapers. It is frequently equipped in front of a grader and has similar teeth to those of a rooter, which one can notice or low using a mechanical servomotor or hydraulic actuating cylinders. It may be self-propelled or attached to another vehicle.

SCHEDULE OF PRICES
Bordereau de prix
Contract
Syn. with PRICE LIST; SCHEDULE OF RATES

SCHEDULE OF RATES
Bordereau de prix
Contract
Syn. with PRICE LIST; SCHEDULE OF PRICES

SCHIST
Schiste
Geology
A strongly foliated crystalline rock, formed by dynamic metamorphism, that can be readily split into thin flakes or slabs due to the well-developed parallelism of more than 50% of the minerals present, particularly those of lamellar or elongate prismatic habit, e.g., mica and hornblende. The mineral composition is not an essential factor in its definition unless specifically included in the rock name, e.g., quartz-muscovite schist. Varieties may also be based on general composition, e.g., calc-silicate schist, amphibole schist; or on texture, e.g., spotted schist.

SCHISTOSITY
Schistosité
Geology
The foliation in schist or other coarse-grained, crystalline rock due to the parallel, planar arrangement of mineral grains of the platy, prismatic, or ellipsoidal types, usually mica. It is considered by some to be a type of cleavage.Syn. with CLEAVAGE. **See Figure 10**

***SCHMÜCKLER* PROCESS**
Procédé *Schmückler*
Test of Materials (Welding)
An internal and destructive sounding method of a weld bead that consists in carrying out into this one a lengthened notch with a small milling cutter. The milling cutter is ordered by a small electric engine to which it is connected by a flexible device, and is kept in an invariable orientation by appropriate supports.
Thus, it is possible to examine the structure of the bead and to observe with the naked eye the defects such as blowholes, cinders, lack of penetration.

***SCHOOP* PROCESS**
Schoopage
Metallurgy
The pulverization onto a given metal of a molten filler metal with intent to protect the first from corrosion.

SCIENCE OF MATERIALS
Science des matériaux
Building Materials
A discipline which aims to interprete and possibly to envisage the macroscopic properties of materials (ductility, brittleness, etc.) by having recourse to the theoretical knowledges of physics, chemistry and solids mechanics (types of connection, crystalline or amorphous structure, defects, etc.).

SCISSION
Cission
Metallurgy; Strength of Materials
1. A slipping that represents the fundamental character of deformations and ductile structural failures in tension or compression, tells *to fibrous,* of a dull aspect.
2. Syn. with SHEAR

SCLEROMETER
Scléromètre
Equipment for Measure and Control
An instrument intended for the nondestructive testing of hardened concrete and founded on the principle of elasticity. The measurement of the revival of a mass thrown against the facing of the concrete is used to deduce the degree of hardness of this one.

SCLEROMETRIC MEASUREMENT
Mesure sclérométrique
Test of Materials (Concrete)
The measurement of the strength of a hardened concrete with a sclerometer.

SCLEROSCOPE
Scléroscope
Equipment for Measure and Control
A hardness testing instrument of a metal that measures the rebounding height of a steel ball, after having struk the surface of the body to be tried.

SCOOP
Ecope; Godet; Pelle
Equipment and Tools
1. A kind of hollow spade used to exhaust the water of an excavation.
2. Syn. with BUCKET; DIPPER; DREDGE BUCKET
3. Syn. with SHOVEL; SPADE

SCOOP DRILL
Sonde de *Palissy*
Assaying Equipment
See MINER'S AUGER; MISER

SCOOPING OUT
Evidement
Masonry
A reentrant corner forming step, carried out on the edge of a toother jamb, of an archstone with branches, on the joint of a shouldered voussoir.

SCORE
Eraflure
Defects
A defect affecting the apparent parts of a work characterized by a superficial and accidental removal of the constitutive material. Syn. with SLIGHT SCRATCH

SCOTCH BLOCK
Cale
Equipment and Tools
An adjustment part for centerings, props or scaffoldings, used by couples and constituted by two slanted timber pieces that bring together.

SCOTIA
Scotie
Architecture
A concave molding whose profile is formed by several curves with different radii curvature, usually two arcs of circle, included between two reglets. The scotia has a profile lengthened downward and makes up the base of some posts. This widening ensures a better base. See **Figure 11**

SCOUR
Dégrader; Dégravoyer
Defects (Foundation)
1. To attack by the underside a construction.
2. To sap, to undermine, to erode, speaking of the bed or bank of a river by the action of running waters and waves.

SCOURING
Affouillement
Defects (Foundation)
Syn. with BLOWING UP; UNDERMINING; UNDERWASHING; WASHING AWAY

SCRAPE
Ravaler; Riper; Regratter; Repiquer
Work; Masonry; Earthwork
1. To carry out a roughcasting (or restoration, etc.). Syn. with CLEAN; REDRESS
2. Syn. with DRAG; POLISH
3. Syn. with REGRATE
4. To excavate on a small depth.

SCRAPER
Décapeuse; Scraper
Earthwork
A towed or motorized earthmoving plant that extracts materials or fillings on a relatively weak thickness, load, transport and pour them by the driving of articulated arms. Syn. with SCRAPER-LOADER; TRIMMER

SCRAPER (OF TUNNELER)
Rabot; Racleur
Equipment and Tools
A pulling down device of the rock by removal of shavings along a digging face and constituted by a heavy symmetrical steel part furnished by picks which can work in the two directions along the digging face. The scraper is drawn in slow to and fro by an endless chain sued by one or two powerful engines. It is pressed against the rock solid mass by pneumatic pushers distributed along the face and that operate the armored conveyor on the other side whose is the scraper. Picks of the scraper bite in the rock which they pull down and the plowshare pours the excavated materials on the armored conveyor. The use of the scraper is limited to the soft and fissured rocks, on a maximum height about than 1 m. Syn. with SCRAPER.

SCRAPER-LOADER
Pousseur; Décapeuse; Scraper
Equipment and Tools; Earthwork
1. Syn. with PUSHER; PUSHER TRACTOR; PUSHLOADER
2. Syn. with SCRAPER; TRIMMER

SCRAPING
Décrottage; Ravalement; Ripage; Grattage
Masonry; Painting
1. The removal of the adherent mortar on materials coming from demolitions with intent to reuse them.
2. Correcting the small irregularities of a facing.
3. Syn. with DRAGGING; POLISHING
4. An operation that consists in taking off oxides (rust, smithsonite) before painting and that is carried out with hand-driven or pneumatic tools. Syn. with STRIPPING

SCRAPING
Rabotage; Ripage; Décapage; Repiquage
Earthwork
1. An operation that consists in tearing off scales or shavings using teeth or blades slightly sloping to the surface to be excavated. Many machines can be used to execute scraping work; we can mainly distinguish: scrapers, (drag) scrapers, scraper planes, various shovel loaders, rippers, bulldozers, graders.
2. Syn. with STRIPPING
3. Scouring any soil less than 0.25 m deep.

SCRAPS
Riblons
Materials
Syn. with STEEL SCRAPS

SCRATCH
Ribber
Masonry
To streak the facing of a stone.

SCRATCH HARDNESS
Dureté des pierres
Building Materials
The relative ease or difficulty with which stone may be scratched or nicked by a hard body. To determine their hardness, one measures the width of a scratch made on a test specimen under specified conditions. Another test establishes a classification according to the strength under crushing. Stones are then graded: very soft, soft, semifirm, firm, hard, very hard.

SCRATCH HARDNESS TEST
Essai de dureté à la rayure
Test ofMaterials (Building Materials)
A test by scratching a groove, under constant load, with a Vickers diamond.

SCRATCH TEST
Essai de rayure
Test of Materials (Building Materials)
A determination test of the superficial hardness of ashlars generally supplemented by a sound

velocity measurement, and a compactness measurement.

SCREE
Eboulis; Pierrier
Geomorphology
1. Fragments of rock that accumulate at the foot of a slope by forming a cone-shaped heap. The hard rock's cracking can liberate blocks, falling or rolling down the slope reaching high speeds. It is called debris if blocks detach separately, which happens if the rock is initially fissured. Syn. with DEBRIS; MASS OF FALLEN EARTH
2. A natural concentration of stones; mass of fallen rocks.

SCREE CHAMBER
Chambre d'éboulis
Construction
1. An excavation dug at the foot of a slope or a cliff, intended for collecting materials coming from a landslide, a collapse or an earth slide (or landslide). It is usually associated with a wall, barrage, or a merlon.
2. A cavity of variable shape dug in the country rock nearby of a tunnel and, generally, communicating with it. It is intended for collecting the materials coming from a landslide, a collapse, or earth slide.
3. A built or concreted space located at the back of the tympanum wall and intended for collecting materials that can hurtle down the slopes located above the head.

SCREED
Chape; Chemin
Construction; Masonry
1. A mortar coat carried out onto the ground, onto a reinforced concrete slab or the extrados of a vault, intended for serving as bed or for remaining apparent.
There are several types of screed:
- **adhesion made coping** *(les chapes rapportées adhérentes en mortier)* [see MORTAR MADE (WATERTIGHTNESS) COPING];
- **adhesion built-in screeds** *or* **monolithic toppings** *or* **monolithic screeds** *(les chapes incorporées adhérentes en mortier)* (see MORTAR BUILT-IN SCREED);
- **floating screeds** *or* **unbonded screeds** *(les chapes flottantes),* fully dissociated of the vertical walls and works onto which they rest, through the agency of a dissociation or slipping layer. These screeds are carried out of cement mortar with or without reinforcement and can be intended for serving as support for a watertightness complex.

Syn. with CEMENT SCREED; COVERING; FLOOR SCREED; TOPPING
2. Set of rules or plaster or cement fillets which are arranged onto a surface to guide a builder in the carrying out of a dressed rendering, a screed, a dressed surface in general.

(FLOATING) SCREED
Cueillie; Cueillée
Masonry
A dressed string on the face of a wall, serving as mark for rendering, roughcasting. Syn. with SCREED STRIP

SCREED BOARD
Règle
Equipment and Tools
A wooden or metal small board perfectly dressed used by the builder to do layouts of straight line, to check arrays, to postpone levels, to dress edges or surfaces (rendering) or to smooth a concreted surface. Syn. with RULE

SCREED STRIP
Cueillie; Cueillée
Masonry
Syn. with (FLOATING) SCREED

SCREEDING
Finissage à la règle
Construction of R. C. and P. C.
The levelling of a fresh concrete surface with a strike-off.

SCREEN
Crible
Equipment and Tools
A large sieve for grading or sizing aggregate comprising calibrated openings. It may be flat or cylindrical, horizontal or inclined, stationary, shaking or vibratory, and either wet or dry operation.
There are several types of screen:
- **disk** *(le crible à disques)* which is intended for mechanical classification of aggregates and that is formed by vertical disks stalled on a (or several) horizontal axle turning to low speed;

these disks are spaced in function of the sizes of the product to be eliminated;

- **vibrating** (*le crible à plans vibrants*) which takes the mechanical classification of aggregates with superposed plane sieves driven of a jigging alternative movement or vibrations that bring about the progress of the material passing from a sieve to another follows their dimensions. Does not remain in each screen that the material of a diameter *d* greater than mesh *d* of the sieve. Syn. with SIFTER. **See Figure 12**

SCREEN
Cribler; Ecran
Building Materials; Geotechnics; Construction
1. To sift, to sieve a material such as aggregates.
2. In the study of earth pressure and passive earth pressure: thin and rigid fictitious surface that is introduced in the calculations to study the effects of pressure and thrust forces that the earth might undergo.
3. A construction or part of a construction for hiding another.

SCREEN ANALYSIS
Classement granulométrique
Geotechnics and Building Materials
Determination of the particle-size distribution of a soil, sediment, or aggregate by measuring the percentage of the particles that will pass through standard screens of various sizes.

SCREEN GRADING
Classement par grille
Building Materials
A rudimentary method of the unidimensional mechanical classification of natural or artificial aggregates.

SCREENING
Refus d'un tamis; Criblage; Blutage
Building Materials
1. Syn. with OVERSIZE AGGREGATE ; RESIDUE
2. Syn. with SIFTING
3. Syn. with SIFTING

SCREENING PANEL
Claie
Equipment and Tools
A lattice for sieving sand.

SCREENINGS
Criblure
Building Materials
Elements of a matter to be screened or sieved that pass through the meshes of a screen.

SCREW
Vis
Materials
A part made up of a round rod threaded throughout or on part of its length, with or without head, but including a device of immobilization or drive.
We can distinguish the slotted screws (round, cylindrical or countersunk) and prismatic head screws (hexagonal or square).
If the screw comprises a head, it can be intended:
- either to the drive (screw ensuring, as the headless screws, an immobilization, a pressure, etc.);
- either for ensuring a tightening between the bearing face of the head and that of a nut screwed at the end of the screw (metal screw part of a bolt);
- either for ensuring the assembly of two parts with or without tightening, the part opposing the head being used as a nut (wood screw or metal screw).

SCREW HEAD
Tête de vis
Nomenclature of Materials
The part of a screw located at the one of its ends and whose shape allows the tightening.

SCREW JACK
Vérin à vis
Equipment and Tools
A device consisting of a steel screw of large diameter with square or trapezoidal threading. Generally it is screwed into a free nut rotating outside the tube it penetrates. The movement of the nut using a simple arm, a lever or cone-shaped form controlled by a crank, or a cone-shaped torque controlled by a crank which ejects the screw, and, as a result, removes the screw from the ends of both screw and tube. They are supported by skates on adjustable surfaces. Because the pitch is low, the system is irreversible, and does not need a overtightening system. In other kinds of screw jacks the nuts are fixed and the screw is turned; some are

telescopic, hollowed out screws fitting one into the other, and thus enabling forcefull piston impact in relation to the height of the apparatus. Screw jacks are generally used to lift and provide temporary support of gallery walls, masonry works, etc.

SCREWING OF PILES
Vissage de pieux
Civil Engineering
The implementation of piles by rotation into the ground; concerning a certain type of steel or precast reinforced concrete piles. The sinking is done by simple rotation, the piles being provided at their base with a shoe ground auger.

SCRIBING AXIS
Trusquinage
Metal Construction
An axis showed by a line drawn on a steel part and used as guide to set up and bore the holes which will receive the bolts or rivets of an assembly. **See Figure 13**

SCRIBING LINE
Ligne *ou* Axe de trusquinage
Metal Construction
A line on which is set, according to the diameters and overlaps to be respected, the center of each hole of bolts or rivets carried out in a piece. A piece can comprise, according to its dimensions, one or several scribing lines. **See Figure 14**

SCROLL
Cartouche; Crosse; Marche en volute
Drawing; Construction
1. The framed part on a drawing in which appear the names of the main contractor, designer, auditor, and owner, as well as the scale, the name of the project and the possible modifications given before or under execution. Syn. with TITLE BLOCK; TITLE PANEL
2. The hook-shaped part located at the extremity of the top handrail of a guardrail. Syn. with MONKEY TAIL
3. The starting step of a staircase prolonged in arc of circle around the start of the handrail. Syn. with TREAD; VOLUTE

SCUPPER
Dalot
Civil Engineering Structure
Syn. with BOX CULVERT; WATER CHANNEL; WATER DUCT

SEA WORM
Pelouse
Defects (Building Materials)
A white woodworm which attacks the heartwood and that only lives in clean seawater.

SEAL
Imprimer
Painting
To cover a substrate with a first coat of paint.

SEAL
Etancher; Etanchéifier; Joint d'étanchéité; Dispositif d'étanchéité
Tightness
1. Syn. with STANCH; STOP; STOP A LEAK
2. Syn. with MAKE IMPERVIOUS
3. Syn. with GASKET; WATER BAR; WATER STOP
4. Syn. with TIGHTNESS DEVICE

SEALED CONCRETE
Béton verni
Building Materials
A material having undergone a cure by application of a curing membrane (thermosetting resin) on its facing in order to decrease the harmful effects of the shrinkage, due to a too-fast evaporation of the combined water in the beginning of the hardening phase.

SEALED POROSITY
Porosité fermée
Building Materials
The ratio of the volume of closed pores to the apparent volume of the product, rated in percentage.

SEALING
Etanchement; Garniture; Calfeutrage; Calfeutrement
Tightness: Materials; Construction
1. Syn. with PACKING
2. Mortar or sand used to fill up the joints of a paving.

3. Syn. with BLOCKING UP; JOINT FILLER; PACKING; STOPPING UP

SEALING
Cachetage; Colmatage; Scellement
Construction of R.C. and P.C.; Welding; Work
1. The surface treatment of a freshly poured concrete by application of a thin coat of pure cement coating on the surface of the concrete. The purpose of this treatment is to protect the surface of the concrete from washing out during the work breaks. This coating is pulled off at the time of the resumption of the work. This method is mainly used for works on sea-based site.
2. An operation which, by absorption, chemical reaction, or any other process, allowing to clog open porosities and to give a coating other wanted properties.
3. The fastening of a metal or a wooden piece into a masonry, concrete, etc. The sealing can be carried out:
- at the time of the erection of the construction, or
- (and it is mostly the case) afterward.

The operation consists in carrying out a cavity into which the part to be bedded is set. The cavity is then filled in with mortar or special sealing products. **See Figure 15**

SEALING BATCH
Charge de scellement
Materials
A resin or cement-based product intended for setting in the rock, masonry or concrete, bolts, anchor bars, or all kinds of fixings. The batch is usually designed for the in situ mixing of its constituents contained inside an envelope. The principle of the sealing consists in inserting the batch into an appropriate drilling, then the bar to be sealed is driven by force to perforate the envelope containing the sealing product; thus the anchorage is carried out.

SEALING CARTRIDGE
Cartouche de scellement
Materials
A cylindrical wrapping containing the mortar or the resin which is inserted into a drilling to carry out anchorages of bolts, ties, etc. **See Figure 16**

SEALING COAT
Enduit; Imbue
Tightness; Painting
1. An organic product film (bituminous or resinous) applied on a vertical, horizontal, or sloping support.
2. The first application of a paint film on the substrate of a material and which is more or less absorbed by this last.

SEALING JOINT
Joint
Construction
A fitting made of various matters ensuring the tightness of an assembly. Syn. with LIQUID-TIGHT JOINT

SEALING ROD
Tige à scellement
Building Materials
A bar threaded at an end and bearing a sealing device at the other end. **See Figure 17**

SEALING STRIP
Garniture d'étanchéité
Tightness
A device formed by a rather flexible and elastic bead or strip of tight matter (bituminous putty, silicone, etc.), placed in a joint, at the back of a filled deck, etc., to avoid unwanted water infiltrations. Syn. with PACKING MATERIAL (WATERPROOF)

SEAM WELD
Soudure
Welding
A weld bead (or whole of beads) complete with the heat-affected metal zone by operation of welding and which regards the assembly of two metal parts.

SEATING
Mise en fiche
Foundation
Syn. with PLACING

SECONDARY BLASTING
Pétardage
Explosives
The cutting up of rock by means of explosives by drilling holes to insert there explosive charges or

by simply resting the charges on the block (English blasting).

SECONDARY BRANCH
Antenne
Topography
The secondary traversing interconnected on a main traversing whose particularity is to not shutting on any known point.

SECONDARY ERA
Secondaire; Mésozoïque
Geology
Syn. with MESOZOIC.

SECONDARY ESCARPMENT
Escarpement secondaire
Geomorphology
In a landslide, scar similar to the main escarpment, but visible in the modified mass. These escarpments endow to the mass in movement a stepped structure.

SECONDARY REINFORCEMENT
Etrier
Building Materials
Syn. with BINDER BAR; BINDING; LINK; STIRRUP; TIE

SECONDARY STRUCTURE
Ouvrage de détail
Civil Engineering Structure
The secondary part of the whole of a construction.

SECONDARY UPRIGHT OF LATTICE GIRDER
Bretelle
Construction
A vertical secondary piece connecting the bottom boom of a lattice beam to a panel point. By extension, short piece of weak inertia transmitting tensile forces between two parts of a structure. **See Figure 18**

SECOND-ORDER STRESS
Sollicitation du second ordre
Strength of Materials
Stress from the taking into account of the deformations due to actions.

SECTION
Fer; Demi-produit
Metallurgy
1. The general designation given to laminated products of soft steel presenting either a round, square or flat section (merchant bars), either a section in I, U, in L, or simple T (special irons, or sections), or a special section (Zorès section).
2. A product obtained by forging or lamination of the rough products and which is to be transformed into a finished product. Its straight section is mostly square, rectangular with angles approximately rounded; of constant dimensions along the same piece but with large tolerances. Lateral faces are more or less convex or concave, they can show imprints from the lamination or forging, be partially or fully ridden of its crust by turning, planning, chiseling, grinding, flaming, etc. We can distinguish: (actual) sections, from roughcast semifinished products and packet irons. Syn. with SEMIFINISHED PRODUCT

SECTION
Plot; Profilé
Construction; Building Materials
1. The part of a wall contained between two vertical or horizontal resumption or expansion joints. The length of the sections is usually determined during the timing of the works according to various criteria (constraints of building site, positioning of the expansion joints, etc.).
2. Zone of masonry of a sidewall, a vault, etc., of determined length at the time of the study, and (with)in which one carries out the work of splitting, felling of facing, etc.
The work by sections, often alternated, enables the reduction of hazardous general disorganization of masonry.
3. A metallurgical product of great length, whose transverse profile is obtained by rolling, draw plating or drawing. They are the U, I, T, etc. Syn. with EXTRUDED SECTION; ROLLED SECTION. **See Figure 19**

SECTION
Profil; Coupe
Drawing
1. A section carried out in a body, a ground, a work; the external shape of the section.
2. Syn. with PROFILE

SECTION WIRE
Fil profilé
Metallurgy
A wire whose section shows a noncircular shape. Example, Z-wire, trapezoidal wire.

SECTIONAL IRON
Profilés dit poutrelles et analogues
Building Materials
A range of laminated products in straight bars whose section, at the axis of symmetry, recalls the shapes of I, H, U or O. They share the following characteristics:
- their height is higher than or equal than 80 mm;
- the surface of the webs is connected by radius with the internal faces of the flanges;
- the external faces of the flanges are parallel;
- the edge of the flanges is sharp-angled on the external side and, either sharp, or rounded on the internal side;
- the flanges themselves are, either of decreasing thickness (of the web) towards the edge, or of constant thickness and, in the second case, the corresponding section is known as with *parallel flanges.*

The sections are subdivided into: I- or H-shaped universal beams (universal beams with narrow or medium flanges and universal beams with large or very large flanges), U-shaped universal beams.
Among the sections, it is necessary to also take in:
- I or U with unequal or dissymmetrical flanges;
- sections for supporting.

We can distinguish the following:
- **I-section** (*le petit profile* I), standard section whose cross section is I- or H-shaped; the height, lower than 80 mm, is at least equal to 40 mm;
- **channel bar *or* U-section** (*le petit profilé* U), standard section with a U-shaped cross section. The height, lower than 80 mm, is at least equal to 30mm;
- **Zorès section** *(le profilé Zorès),* with Ω-shaped cross section;
- **special sections** *(les profilés spéciaux),* which represent a subclass of rolled-iron products including: the standard sections, flat-rolled products out of bars, mostly of a weak section or very particular shape, which are only rolled in limited quantities. Here are particularly included the trapezoids, grid bars, hollow borers for jumper bars, etc.

Syn. with CONSTRUCTIONAL STEEL; ROLLED STEEL SECTION;. **See Figures 20 to 20b**

SEDIGRAPH ™
Sédigraph
Assaying Equipment
An instrument intended for the tests of particle-size distribution and density. The principle is as follows: the sedigraph gives, according to time, the concentration of the panicles held in suspension at different height of sedimentation. The determination is carried out by a finest X-ray beam, which goes through the suspension. The suspended particles absorb a certain quantity of X-rays from which the resulting intensity is recorded, then automatically presented in cumulative percentages on the *Y* axis of an *XY* recorder. To decrease the time required for the analysis, the suspension cell (where the suspension stands) is moving in the same direction as the sedimentation, so that the cell's depth of investigation is conversely proportional to time. The movement is synchronized to the *X* axis of the recorder to directly give the equivalent diameter reflecting the run time from a given depth of sedimentation.

SEDIMENT
Dépôt; Alluvion
Hydrology and Materials; Geomorphology
1. Accumulated and abandoned matters on the bottom of a container, a tank, etc., by a liquid at rest.
2. Syn. with ALLUVIAL DEPOSITS; ALLUVIUM; FLUVIAL OUTWASH

SEDIMENT
Sédiment; Sédimenter
Geology and Building Materials: Test of Materials
1. A deposit formed during a sedimentation process.
2. All the particles suspended or dissolved into a liquid and which settle by precipitation.
3. Solid fragmental material that originates from weathering of rocks and is carried or deposited by air, water, or ice, or that accumulates by other natural agents, such as chemical precipitation from solution or secretion by organisms, and that

forms in layers on the Earth's surface at ordinary temperatures in a loose, unconsolidated form; e.g., sand, gravel, silt, mud, alluvium. We can distinguish:

- **wind *or* eolian deposit** (*le sédiment éolien*), carried by winds;
- **fluviatile sediment *or* river sediment** (*le sédiment fluviatile*), carried and deposited by waterway water;
- **lacustrian and fluvial deposit** (*le sédiment fluvio-lacustre*), of fluvial and lacustrian origin;
- **organogenous sediment** (*le sédiment organogène*), deposit constituted by remainders of sea living organisms: chalky seaweeds, foraminifera, diatoms, etc.

Syn. with DEPOSIT

4. To agglomerate, speaking in relation with sediments. Syn. with DEPOSIT

5. To accrete at the bottom, speaking in relation with particles in suspension. Syn. with DEPOSIT

SEDIMENTARY
Sédimentaire
Geology
Pertaining to or containing sediment; e.g., sedimentary deposit or a sedimentary complex. **See Figure 21**

SEDIMENTARY BASIN
Bassin sédimentaire
Geomorphology
A region which is or has been suffering progressively from light settlement and that has been gradually or intermittently filled with layers of sediment.

SEDIMENTARY CLAY
Argile sédimentaire
Geology
A material formed by sedimentation whose origin is triple:

- *argillaceous particles* come from the continent and settle without transformation: it will be the heritage, or allochton origin or detrital origin;
- *particles* come from the continent, but they are degraded and the medium of sedimentation can modify them, transform them: it will be the origin by positive transformation or aggradations;
- *argillaceous particles* are born and crystallize *de novo* in the sedimentary basin: it will be the neoformation or authigeny or neosynthesis.

SEDIMENTATION
Sédimentation; Décantation
Geotechnics; Geology; Sanitary Engineering and Drainage
1. A grain-size analysis method of a soil containing grains smaller than 0.1 mm; it is based on Stokes' law, which determines the free-falling speed of a spherical particle into a liquid at rest.
One carries out a suspension of a certain quantity of soil in water after agitation and addition of a deflocculating product. The density of this suspension is measured at various times with a special densimeter, the dimension of the particles can be calculated at any given moment following Stokes' law. This analysis enables the separation of the grains as small as 0.5 µm.
2. All the processes leading to the formation of sediment stratums. Syn. with DEPOSITION
3. A phenomenon of particle-in-suspension deposit, by the action of gravity or sometimes by a centrifugal force.
4. Syn. with DECANTATION; SETTLING

SEDIMENTATION BALANCE
Balance de sédimentation
Equipment for Measure and Control
An instrument being a modern alternative to the mainline sedimentometers. This apparatus is used to measure settling rate of small particles dispersed in liquid. Fines accrete on a tray, which records in accreted the deposited mass, starting with the largest particles.

SEDIMENTATION TANK
Décanteur; Bassin de décantation
Sanitary Engineering and Drainage; Hydrology
Syn. with SETTLING BASIN; SETTLING LAY; SETTLING TANK

SEDIMENTATION TEST
Essai de sédimentation
Test of Materials
A test used when selecting materials for stabilized road construction and concrete. Soil, aggregate, after pretreatment, is shaken up in water and allowed to settle out. The change in specific gravity of the suspended matter with time is measured, and the equivalent diameter is calculated from Stokes' law.

SEDIMENTATION VELOCITY
Vitesse de sédimentation
Test of Materials
Syn. with SETTLING VELOCITY

SEDIMENTOLOGY
Sédimentologie
Geology
The field of geology that studies all the phenomena related to sedimentation (genesis, nature, configuration, etc.).

SEDIMENTOMETRIC PROBE TO ULTRASOUNDS
Sonde sédimentométrique à ultrasons
Equipment for Measure and Control
An instrument for measuring the depth of water and whose principle consists in characterizing the attenuation of a monochromatic ultrasonic wave on a determined course in the sludge cream by taking as reference the attenuation of the same signal in water. The measuring device comprises two piezoelectric transducers between which wave trains are returned.

***SEEMANN-BOHLIN* PRACTICE**
Méthode *Seeman-Bohlin*
Metallography
A method of identification of the crystalline phases of metals (nondestructive test) which uses the technique of the curved crystal and focusing monochromating.

SEEPAGE
Suintement
Defects
A defect observed in concrete and masonry works characterized by a water exudation sometimes salt-laden after percolation through the concrete or masonry.

SEEPAGE WATER
Eau d'infiltration
Hydrology
The water that rejoins a nappe through the ground. The seepage is a function of the degree of permeability of the rock, abundance of fissures or joints, and the quantity of water. Seepages are originally landslides. Syn. with PERCOLATING WATER

SEGMENT (PRECAST UNIT)
Voussoir
Construction
The element of a prestressed concrete bridge forming a slice of the final work, and which is assembled by key. We can distinguish the:
- **hinge segment** (*le voussoir d'articulation*), which is made up of a load-bearing element and a supported element, each one being stiffened by a diaphragm carried out according to a sloping plan to constitute a taut diagonal balancing the bearing reaction of the deck;
- **abutment segment** (*le voussoir sur culée*), which usually comprises a diaphragm (contrary to the standard segments);
- **pillar segment *or* pier segment** (*le voussoir sur pile*), which, when it rests in restrained bridge bearing, generally comprises two diaphragms laid out, either vertically, or in incline. (When the segment rests in simple bearing, its design is identical to the abutment segment).

Syn. with PRECAST CONCRETE SEGMENT. **See figures 22 to 22c**

SEGMENT PLACING
Pose de voussoirs
Civil Engineering Structure
The putting into place of segments of prestressed concrete bridges through various means such as gantry, crane, etc.

SEGMENTAL RING
Voussoir
Construction
1. A precast piece of cast iron or concrete used as provisional or final lining on the vault of a tunnel. **See Figures 23 and 23a**
2. A 2- to-4-m long cast-steel piece, part of a metal arch and which shows an I-section whose web is strengthened by stiffeners. The segmental rings are assembled together by means of bolts. (Generally these segments are covered in edge by decorative cast-iron parts.) Syn. with CAST-STEEL SEGMENT. **See Figure 23b**

SEGREGABLE
Ségrégabilité
Geology and Building Materials
A character of selective dissociation affecting some matter made up of elements of different densities; it is the case of concrete, for example.

SEGREGATED
Ségrégé
Building Materials
Of a material having undergone a segregation.

SEGREGATED CONCRETE
Béton ségrégé
Defects (Building Materials)
Any concrete presenting honeycombings following a segregation.

SEGREGATION
Ségrégation
Metallurgy; Building Materials
1. An imbalance in the chemical composition of the different components of an alloy.
2. A preferential aggregation of the chemically alike components between them during the solidification phase of an alloy; this separation results in a chemically heterogeneous structure.
3. A selective dissociation, in distinct heaps, of different previously mixed bodies as a result of vibration, brewing, etc.
4. A phenomenon of dissociation of the concrete ingredients that can be due to various causes (excessive vibration, carriage, falls from critical height, etc.). Elements are divided and rearranged by order of density. The heaviest aggregates go down to the bottom while conversely, the mortar goes up to the surface.
Segregation can occur:
- inside the concrete mixer (malaxation was too long);
- at the time of the emptying of the vat or placing (too important brutal free falls of the concrete (*too distant from unloading point*));
- during the transport (shakes, etc.);
- during the pouring (lateral projections and important falls, too long vibration of concrete, etc.).

SEISM
Séisme
Geology
Syn. with EARTHQUAKE

SEISMIC PARALLEL TEST
Essai de sismique parallèle (S.P.L.)
Test of Materials
A test aimed at determining the length of a foundation pit, piles, sheeting piles or a length of anchoring and which allows the detection of cracks or pile breakings.
The implementation of this practice is possible on existing works without it being necessary to get access to the head of the foundation pit or pile. The principle is as follows: a shock is brought about at the head of the pile, or of an interdependent element of the pile, and the shock is propagated along the work onto the ground. The process consists in carrying out a destructive drilling, parallel to the pile and as close as possible to this last, and a few meters deeper than the supposed depth of the pile. This drilling is equipped throughout its height with a rigid plastic nearing 60-mm-diameter tube, is sealed at the base and is filled with water before the tests. A reception probe of is set down the tube. At each depth landing, a mallet blow is dealt as close as possible to the head of the pile. The propagation time is measured. A point-by-point dromochronicle is reconstituted. When the probe comes past the bottom of the pile or a cut, the speed calculated using the dromochronicle goes from a speed close to that of the concrete to a ground speed. This phenomenon is shown on the recording by a break of the dromochronicle one.
Apart from the equipment described above, it includes a reception probe coupled to a storage unit with oscilloscope visualization and a plotting table for the restitution of the signals.
See Figure 24

SEISMIC PROSPECTING
Prospection sismique
Geophysics
A geophysical research based on the reflection property (seismic reflection) or refraction (seismic refraction) of the sound waves (brought about by an explosion near ground surface) in the basement, on the contact surface of lithologically different grounds.

SEISMIC REFRACTION
Réfraction sismique
Geophysics
A process of survey using the property of sounds to refract on the various stratums they come through. Variations in the measured propagation speed indicate changes in the nature of the encountered grounds, their thickness, cavities, etc.

SEISMIC SOUNDING
Sismique-réfraction; Sondage sismique
Test of Materials; Geophysics
1. A mainline process used to determine the geometry of the various interfaces separating the underground beds, as well as the speed of the *P* waves in these beds. The technique consists in measuring and interpreting the first-arrival times of mechanical shakings being propagated through materials from a source of mechanical waves to geophones aligned on the ground surface. It plays a complementary role to the techniques aiming at describing the distribution of the basement rsistivity, as the electrical prospecting for a direct current, or the electromagnetic practices as the M.T.A.
Through this process, one can establish seismic sections in which various beds are characterized by a seismic velocity varying according to the compactness of the ground. As for every geophysical practice, the interpretation of the seismic section into a geological section must be based on mechanical trial borings. **See Figure 25**
2. A geophysical practice of soil survey.

SEISMOGRAM
Sismogramme
Drawing
A graph established by a seismograph, indicating the differences in intensity of seismic waves.

SEISMOGRAPH
Sismographe
Equipment for Measure and Control
Instrument for recording parameters of natural seismic waves or during a soil test.

SEISMOMETER
Géophone
Equipment for Measure and Control
Syn. with GEOPHONE

SELECTIVE PROCESSING
Traitement sélectif
Construction of R.C. and P.C.
A technique of concrete-surface processing, which allows the making of a facing with apparent intact aggregates. The practice consists in pulling the bond mortar by various processes among which one can cite: washing, the use of chemical admixtures delaying or preventing the set through a certain depth, etc.

SELECTIVE WEATHERING
Erosion sélective
Defects (Masonry)
A type of damage unevenly affecting the various quarry stones and/or contiguous joints and creating disflushings and frostliftings.

SELECTIVE WORKING
Abattage par attaque ponctuelle
Earthwork
A process of gallery or tunnel boring, with a drilling machine directly inspired from the coalminer's working practice, wielding his main tool: the pick. The drilling head, of reduced size, comprises a pick-driving system with which it is furnished: it is located at the end of a mobile arm which allows the picks to work successively over the surface of the section.

SELENETIC WATER
Eau séléniteuse
Defects (Building Materials)
Syn. with CALCAREOUS WATER

SELENITE
Sélénite
Geology
A clear, colorless variety of gypsum, occurring (esp. in clays) in distinct, transparent monoclinic crystals or in large crystalline masses that cleave easily into broad folia

SELF-ANCHOR
Auto-ancrer
Construction
To carry out a self-anchorage.

SELF-ANCHORAGE
Auto-ancrage
Construction
Cables of a suspension bridge tied through a special device at the ends of the tie beams absorbing the horizontal compressive forces.

SELF-ANCHORED
Auto-ancré
Construction
Of a bridge provided with a self-anchorage device.

SELF-BEARER
Autoporteur
Civil Engineering Structure
Of a device, a material, an equipment designed to get borne under its own power.

SELF-BORING
Autofonçage
Earthwork
See DRIVING

SELF-CEMENTING
Autocimentation
Geology
Process of rock formation whose grains were cemented together without any other binder. It is the case of limestones and siliceous rocks.

SELF-CURING
Autoétuvage
Hydraulic Binders
Syn. with ISOTHERMAL CURING

SELF-DRILL VANE
Scissomètre autoforeur
Equipment for Measure and Control
A soil-testing equipment whose unit consists of a rigid steel cylinder, possibly provided with blades, which is twist-solicited at the chosen level after its setting by self-drilling. It contains precision instruments to measure the rotation and moment applied (hence shearing).

SELF-DRILLING
Autoforage
Geotechnics
A process intended for carrying out soil surveys on sunken ground.
The self-boring process ensures the penetration into the ground of an in situ measuring probe, under conditions of minimal remolding of the ground. The hollow probe is provided with a cutting shoe within which a tool disaggregates the ground. Sediments are brought back up from the surface by means of a circulation fluid. The measurement module consists of a pressure gauge, which is set above and in the continuation of the cutting shoe.

SELF-EQUILIBRIUM
Autostable
Civil Engineering Structure
Of a structure ensuring its own stability, without support from other works.

SELF-EXCITATION MODULUS
Coefficient de self-excitation
Explosives
A ratio regarding explosives and designed to determine the sensitivity to the explosive wave, which is the distance transmission property of a cartridge's detonation to another one, placed in its continuation.

SELF-HARDENING
Autodurcissable
Polymers
Of a resin which does not require hardener to bring about its reticulation.

SELF-LEVELING LEVEL
Niveau automatique
Equipment for measure and Control
A level in which the horizontal direction is marked by a suspended optical device, or compensation pendulum, in the center of the telescope field.

SELF-PATINATING
Autopatinable
Metallurgy
Of steel which is spontaneously covered with a protective coating from atmospheric corrosion.

SELF-PROPELLED DRILLING RIG
Autofonceuse
Equipment and Tools
A machine used to drill piles. This process uses the vibrations properties allowing the decrease in frictions. The self-propelled *DB-Loire* drilling rig uses a machine consisted of a circular ring which one can couple with the drilling metal tube by means of a pneumatic belt. The ring carries unbalanced flywheels producing centrifugal forces, whose resultants can be directed. It particularly produces vertical or combined oscillations in any direction.

SELF-PROPELLING WHEEL-BARROW
Brouette automotrice
Equipment and Tools
A small three- or four-wheeled carrier propelled by a 4- to 45-horsepower engine and of a maximal $3\text{-}m^3$ capacity. Syn. with BUGGY; MOTORIZED BARROW; POWER BARROW

SELF-READING STAFF
Mire
Topography
A leveling staff, marked with graduations so that an observer looking through the telescope of a level can read the elevation at which his or her line of sight intersects the staff.

SELF-REDUCING
Autoréducteur
Topography
Of a topographic instrument which functions according to the following principle: to measure an *AB* distance on the ground, we place a leveling self-reading (leveling) rod in *B,* held vertically, and a stadiameter in *A.* The optical axis of our telescope should be directed following two successive inclines whose $p' - p$ difference in slope we can measure. The readings of the leveling staff are performed in *B* and *C;* i.e., x length *BC,* we have:

$$p = \frac{bB}{Ab} \quad p' = \frac{bC}{Ab} \quad p' - p = \frac{BC}{Ab}$$

The reduced length to the horizon is :

$$Ah:1 = \frac{BC}{p' - p} = \frac{X}{p' - p}$$

See Figure 26

SELF-SETTING SLURRY
Coulis auto-durcissant
Materials
A special drilling mud used to construct precast walls and to support the walls of trenches. This drilling mud also serves as sealing grout.

SELF-SINKING
Havage
Earthwork
A driving method used to put into place a caisson, a curbing of well, etc., and following which one uses the weight of the caisson acting on its base made up of a cutting shoe, limiting a working chamber. **See Figure 27**

SELF-STABILITY
Autostabilité
Civil Engineering Structure
The ability of a vault, masonry, etc., to be self-balanced.

SELF-STRESSED
Autocontraint
Building Materials
Of a material subjected to self-stressing (concrete in general terms).

SELF-STRESSING
Autocontrainte
Building Materials
A compression process of concrete. It consists in using expansive cements, which, by their swelling bring about the required compressive stress.

SELF-SUPPORTED
Autoporté
Civil Engineering Structure
Of a device able to bear its own weight without the help of a support frame (such as some materials in broadly large plates, or other temporary reinforcements).

SELF-SUPPORTING
Autoportante
Civil Engineering Structure
Of a vault made of reinforced concrete or metal when its rigidity alone ensures its stability, without the help of any stiffening arch.

SELF-SUPPORTING WALL
Mur autoporteur
Construction
A construction ensuring its own stability by itself.

SEMIAUTOMATIC OPERATION
Marche semi-automatique
Welding
Operating mode of a welding machine following which one part of the operations is carried out automatically and the other part manually.

SEMICIRCULAR (ARCH)
Plein-cintre
Construction Term
A flawless half-circle whose diameter is equal to the distance separating the sidewalls (example: semicircular vault).

SEMICIRCULAR CELL
Cellule gabionnée
Foundation
An enclosure formed by two lines of sheet piles driven in opposite in arc of circle form and whose ends are connected by lines of rectilinear sheet piles. The interval between the two rows of sheet piles is generally filled up with clay. This process is used on aquatic site or on grounds where the aquifer is very active.

SEMICIRCULAR TROWEL
Demi-lune
Equipment and Tools
A kind of rounded plate trowel used to damage joints or smooth them.

SEMIFINISHED PRODUCT
Demi-produit
Metallurgy
Syn. with SECTION

SEMIGANTRY CRANE
Semi-portique roulant
Equipment and Tools
A lifting gear made of one or two beams resting on a bearing piling and aerial runway.

SEMIOLOGY
Sémiologie
Civil Engineering Structure
In the pathology of civil engineering structures, science concerned with the knowledge and recognition of the symptoms related to the primary evils which can strike the works (sicknesses or injuries).

SEMISTEEL
Fonte aciérée
Metallurgy
A gray (cast) iron having undergone a partial decarburization.

SENSITIVITY
Sensibilité
Metallurgy
Character of a type of steel, sensitive to the corrosion or brittleness.

SENSOR
Capteur, Organe traducteur
Equipment for Measure and Control
Syn. with CELL

SEPARATE SCREED
Chape en mortier rapportée
Tightness
Syn. with MORTAR-MADE (WATERTIGHTNESS) COPING

SEPARATOR
Distancier
Equipment and Tools
Syn. with DISTANCE PIECE; SPACER

SEQUENCE POLYMERIZATION
Polymérisation en chaîne
Polymers
A chemical reaction leading to the creation of a polymer and occurring on active centers brought up by compounds called *primers* (or *catalysts*) which successively tack many molecules of monomer. They turn into homopolymers if the monomer is of only one type, or into copolymers if the monomers are of different types.

SERAYA
Méranti
Building Materials
Syn. with LAUAN

SERIES
Série
Stratigraphy
A conventional stratigraphic unit that is a division of a system. A series commonly constitutes a major unit of chronostratigraphic correlation within a province, between provinces, or between continents.

SERPENTINE
Serpentine
Geology
Term indicating at once a green mineral, magnesian silicates formed by alteration of

peridotites, and an ultrabasic metamorphic rock resulting from the transformation of peridotites.

SERPULA LACRYMANS
Mérulus lacrymans; Mérule pleureur
Defects (Building Materials)
A saprophyte fungus that feeds of the water that it takes in the woody cells of the wood by destroying it as a carbonization. Wood, of burned aspect, cracks into small cubes producing the finest brown dust.

SERRATED ROLLER
Molette
Equipment and Tools
Syn. with CUTTING WHEEL

SERVICE
Service
Handling
The supplying and arrangement of materials on a building site.

SERVICE DUCT
Gaine technique
Construction
Syn. with PIPE DUCT

SERVICE FLOOR
Plancher de service
Temporary Construction
A provisional horizontal construction carried out of balks or battens, built on a building site and that allows to the workers to circulate and work at the height necessary to complete their job without the help of ladders or other similar means. The service floor covers usually a relatively important surface area and is made up that of only one level.

SERVICE LIFE
Durée de service
Strength of Materials
The space of time during which a work adequately fulfills its function(s), which often depends on its surrounding environment.

SERVICE LOAD
Sollicitation de service; Charge d'exploitation
Strength of Materials
1. A stress resulting from the simultaneous action of the service overloads, climatic overloads (temperature and shrinkage action), other than these which have the character of extreme stress and without increase except, if necessary, the increase for the dynamic effect of the overloads.
2. Syn. with OPERATING LOAD

SERVICE STANDARD
Niveau de service
Civil Engineering Structure
The ability of a construction that brings about the use that his user can make it. It mostly expresses a bearing capacity relating to the service loads but it can also express durability, sealing, and arguably under certain circumstances, aesthetic aspect.

SERVICE STRESS
Tension de service
Strength of Materials
Tension to which is subjected a cable, a strand, a tie rod, after its jamming. This service stress is determined from the effective initial stress taking account of all causes of decrease: stress relaxation of the steel, shortenings, etc.

SERVICE WALKWAY
Passage de service
Civil Engineering Structure
The part of a work reserved for services of maintenance or inspection located inside, on or under a work.

SERVOTACHOMETER
Servo-ouvrabilimètre
Equipment for Measure and Control
An apparatus for measuring the workability of a concrete; its principle is based on the measurement of the rotational velocity of the engine of mixers. For a volume of concrete given, the rotational velocity is all the more weak as the concrete shows a more high consistency. Following the rotational velocity, it is possible to take account of the variable moisture brought by aggregates, major causes of the difficulty to obtain a quite regular concrete. The experiment shows that there is a relation between the rotational velocity of the mixer and subsidence to the slump cone. The correlation is very net for the concretes ranging between 0 and 10 cm subsidence with the cone. **See Figure 28**

SET
Gaie; Pavé; Indurer
Construction; Building Materials; Hydraulic Binders
1. Syn. with FREE
2. Syn. with COBBLE; COBBLESTONE; PAVING BLOCK; PAVING STONE
3. Syn. with TO HARDEN

SET
Cadre; Enfoncement
Temporary Construction; Foundation
1. All the wooden or metal constructed works arranged following the cross section of a gallery during the digging and used to support the sides of an excavation, shaft, or tunnel. The spacing of frameworks varies following the nature of the ground to be supported. Between each set, the ground is supported by a boarding that picks up on the frameworks. Syn. with FRAME
2. The distance a pile or a sheet-pile penetrates into the ground with one blow from a driving hammer.

SET
Palifier
Foundation
To strengthen a ground by piles sinking.

SET HAMMER
Chasse
Equipment and Tools
Syn. with FLATTENER; FLATTER

SET NUT
Contre-écrou
Materials
Syn. with BACK-NUT; CHECKED NUT COUNTER NUT; LOCK-NUT; SAFETY-NUT

SET OF SHEET PILE
Fiche d'une palplanche
Foundation
The part of the sheet pile that is restrained in the ground. This sinking length is calculated in order to guarantee the stability of the sheet pile under the influence of thrusts and to satisfy the blow condition (water or ground leak in the excavation bottom).

SET ON EDGE
Posée de can
Various
Of a timber piece laid on edge. Syn. with EDGEWISE

SET WITHOUT BINDER
Poser à sec
Masonry
To erect a masonry construction without binder. Syn. with DRY SET

SETBACK
Retraite
Construction
1. The break in faces of a wall that results from the disflushing of the main plane of two superimposed walls whose one has a less thickness. Syn. with INTAKE; SCARCEMENT. **See Figure 29**
2. The part of a construction slightly in setback with regard to the main plane of the other one adjacent. **See Figure 29a**

SETSCREW
Goujon
Building Materials
Syn. with COCK; DOWEL

SETT
Tranche
Equipment and Tools
A wedge-shaped tool of quarry worker on which one strikes using a sledge hammer to take down large blocks of stone.

SETTING
Prise; Induration; Durcissement
Hydraulic Binders
1. The phenomenon of crystallization by which hydraulic binders retain the water to which they are mixed, by taking a pasty consistency then solid which, at the time of the mixing with the other ingredients of the mortar or concrete (sands, gravels, etc.) allows to form a homogeneous and strong unit.
The setting of the cement is the phase that starts from the stiffening of the paste until the beginning of the hardening phase. The initial set is determined with the Vicat needle or setting

tester. Hydraulic binders are classified by their setting time; they are known as:
- **quick setting** (*à prise rapide*), if their initial set appears less than 8 min. after the batching;
- **half-slow setting** (*à prise demi-lente*), if their initial set appears between 8 and 30 min;
- **slow setting** *(à prise lente),* if their initial set appears with more than 30 min.

See Figures 30 to 30d

2. The moment where cements and limes begin to make setting.

3. The progressive hydration of anhydrous constituents of a binder. The hardening itself follows without discontinuity the final set and lasts months.

SETTING
Tranchage; Palification
Building Materials; Foundation
1. A stone cutting up process that consists in carrying out chases in a block to place wedges there that one will insert in force to cause a fracture.
2. Syn. with PILE DRIVING

SETTING (OF PILE, SHEETPILE)
Fichage
Foundation
The length of the ultimate set of a pile, a sheet pile, etc. **See Figure 31**

SETTING AGENT
Accélérateur de prise
Hydraulic Binders
A chemical admixture (often a calcium chloride) which, mixed into fresh concrete or mortar, causes accelerating of the speed of cement hydration, therefore the speed of set of the concrete or mortar. Syn. with ACCELERATING ADMIXTURE; ACCELERATOR

SETTING BLOCK
Cale
Carpentry
Syn. with SHIM

SETTING BY GROUT
Pose par coulis
Masonry
A type of masonry construction, in which the block is posed on shims, joints being then sealed outside overall a course with a plaster bead into which vents are accommodated. The grout is then introduced by gravity since the top of stones. This grout can be made of plaster or a very fluid mixture of cement and fine sand.

SETTING BY POINTING
Pose avec fichage
Masonry
A method of masonry construction that consists in posing the blocks on shims or slate battens having the thickness of the finished joint; this last is then filled with mortar using the teeth pointer. Shims then are removed.

SETTING EXPANSION
Gonflement en cours de prise et de durcissement
Defects (Building Materials)
The relative increase in the apparent volume of the concrete or the mortar due to certain chemical reactions whose one of most common is that bringing about to the formation of the calcium sulfoaluminate (hydrated trisulfoaluminate). This swelling must be distinguished from that which accompanies the hydration with an immersed test specimen whatever the chemical nature of cement; in practice, these two causes of swelling can get drawn.

SETTING INDICATOR
Prisomètre
Assaying Equipment
Syn. with SETTING METER; SETTING TESTER

SETTING METER
Prisomètre
Assaying Equipment
Syn. with SETTING INDICATOR; SETTING TESTER

SETTING ON BED
Pose sur lit
Masonry
The setting of a stone parallel to its bedding plane in the case of a course, perpendicularly to the curve in the case of an archstone.

SETTING RATE OF PORTLAND CEMENTS
Vitesse de prise des ciments Portland
Hydraulic Binders
The period between the end of the mixing of the cement and the initial set. This waiting time is conditioned by the hydration velocity of the aluminates contained by these cements. (The presence in Portland cement of an aluminate little or very calcic determines a rapid or slow set of the cement.)

SETTING RETARDER
Retardateur de prise
Hydraulic Binders
An admixture which, mixed in low dose with mixing water, delays the cement's hydration and initial setting without concerning its later hardening and without harming the mechanical strength. Syn. with RETARDER; RETARDING ADMIXTURE

SETTING ROD
Canne à scellement
Materials
Syn. with BEDDING ROD; FIXING ROD

SETTING SHRINKAGE
Retrait
Hydraulic Binders
Property that the cement paste possesses to contract drying and which is under the narrow dependence of moisture: volume increases when the mortar resumes the water.
The importance of the shrinkage is proportional with the fineness of the cement, proportion of mixing water, batching, rise in temperature and the dryness of the air. The shrinkage of cement (and of course also of the mortars or concrete) can get conveyed in the appearance of hairline cracking on the surface or in depth or again of visible external cracking. We can distinguish various types of shrinkage:
- **hydraulic shrinkage before setting *or* first setting shrinkage** (*le retrait hydraulique avant prise*) (also called *first shrinkage, shrinkage of evaporation, tightening shrinkage or plastic shrinkage*), which is due to the fast loss of a part of the mixing water; it is all the more important since the air drier, hotter and is ventilated more; it brings about characteristic cracks that appear at the end of a few hours. Thin pieces having an open face, like the renderings, screeds, slabs, are very sensitive there;
- **hydraulic shrinkage after set** (*le retrait hydraulique après prise*), due to the slow loss of water in the hardened concrete; it is added the carbonation shrinkage to it;
- **thermal shrinkage** (*le retrait thermique*), mediated the difference between the temperature, sometimes high, reached by the concrete during its setting (heat of hydration) and the lowest later atmospheric temperatures;
- **creeping** (*le retrait sous charge ou fluage*);
- **differential shrinkage** (*le retrait différentiel*), due to the thermal differences (for example: if two faces of a concrete part are subjected by their exposure and the nature of their formwork at different temperatures, there is differential shrinkage).

SETTING TEST
Essai de prise
Hydraulic Binders
A test carried out on a standard mortar to determine the initial and final set. This test is carried out with the Vicat needle or the setting tester.

SETTING TESTER
Prisomètre
Assaying Equipment
An instrument for measuring setting times (initial and final set) of materials made with hydraulic binders. Syn. with SETTING INDICATOR; SETTING METER

SETTING TIME
Temps de prise
Hydraulic Binders
The time between the end of mixing and initial set of a material made with a hydraulic binder or the hydraulic binder itself.

SETTING UP PIPES BY HORIZONTAL DRILLING
Mise en place de tuyaux par forage horizontal
Earthwork
Pipes laying process to go through embankments. The device is mainly made up of an auger formed by elements of endless screws This unit is fixed on the axle of an engine which can itself move into the boring axis.

The drilling can be carried out in two different ways:

- *the advance of the auger and that of the pipe are done simultaneously, the pipe being keyed with the back of the screw and being thus driven by the progression of this one. At the end of the drilling, one disunites them, then the auger is withdrawn whereas the pipe remains in the ground;*
- *the auger is introduced into the embankment up to the complete boring. The tube is then fixed at the opposed side, on the head of the endless screw, then this one is withdrawn, bringing about the pipe with it.*

SETTING WATER
Eau d'hydratation *ou* de prise
Building Materials
Syn. with HYDRATION WATER; WATER OF HYDRATION

SETTLE
Tasser
Civil Engineering Structure
Syn. with SUBSIDE

SETTLEMENT
Affaissement
Geomorphology
Syn. with SINKING; SUBSIDENCE

SETTLEMENT
Affaissement
Defects (Foundation); Geomorphology
1. Modification of the static balance state of a construction which can lead its partial or total ruin following an important resistance reduction of one or several bearings (example: differential settlements). Syn. with YIELDING. **See Figure 32**
2. Deformation or downward move of an element or a part of work (vault, parapet, etc.). Syn. with CAVE-IN. **See Figure 32**
3. Syn. with SINKING; SUBSIDENCE

SETTLEMENT GAUGE
Tassomètre
Equipment for Measure and Control
Syn. with SETTLEMENT METER; SPREAD RECORDER

SETTLEMENT JOINT
Joint de tassement
Construction
A cut accommodated between two parts of a construction so that the relative movements due to the differential settlements of the subgrade can establish.

SETTLEMENT MEASUREMENT (SOILS)
Mesure des tassements (des sols)
Geotechnics
Settlements or heaves at various levels within a soil or rock mass may be assessed by accurately monitoring the location of magnetic targets. These targets may be positioned during construction or by subsequently introducing them into a borehole. The targets are located at various points over a near vertical access tube, through which a reed switch probe is lowered. When the probe enters the magnetic field produced by a target, an audible signal is emitted at ground level. Measurement made on a steel tape or a graduated cable may then be related to any convenient datum. Targets can either move independently of the tube or be fixed to tubing which is allowed to compress or extend vertically.

SETTLEMENT METER
Tassomètre
Equipment for Measure and Control
Syn. with SETTLEMENT GAUGE; SPREAD RECORDER

SETTLING
Fontis; Décantation
Geology; Sanitary Engineering and Drainage
1. Truncated or cylindrical local ground subsidence with steep edges or formed by broad-split with open lips, in the wake of the sudden collapse of an underground space. A settling is *open* when the underground space goes up and opens the surface of the ground. The settling is in the wake of the decay of some grounds in the presence of underground waters (example: the settling often appear above the former underground gypsum pits that are overcame of marls and sand).
2. The deposit of solid matters in suspension into a liquid when this one is found at rest. Syn. with DECANTATION; SEDIMENTATION

SETTLING
Tassement; Lisage; Champbord
Civil Engineering
1. The vertical sinking of a construction under the compression and deformation effect of the ground which bears it; indeed often the load then transmitted to the ground is directed according to the vertical, and the deformations which result from it are in major part directed in this direction.
2. A material compacting operation during the construction of a dike or an earth levee.
3. Earth extracted from a ditch during its cleaning and accumulated on its edges.

SETTLING BASIN
Décanteur; Bassin de décantation
Sanitary Engineering and Drainage and Hydrology
Syn. with SEDIMENTATION TANK; SETTLING LAY; SETTLING PONDS; SETTLING TANK

SETTLING LAY
Bassin de décantation
Hydrology
Syn. with SEDIMENTATION TANK; SETTLING BASIN; SETTLING POND; SETTLING TANK.

SETTLING OUT
Débourbage
Hydrology
Syn. with CLEARING OF MUD; CLEANING-OUT

SETTLING POND
Bassin de décantation
Hydrology
A structure in which inlet and outlet water pipes are located above the level of the weir so as to enable suspended particles in the water to settle or precipitate to the bottom. Syn. with SEDIMENTATION TANK; SETTLING BASIN; SETTLING LAY; SETTLING TANK. **See Figure 33**

SETTLING ROCK
Roche tassante
Defects (Construction)
In tunnel not covered, rock that advances slowly towards the inside of the tunnel without perceptible increase of volume; the cause of the settlement is due to the high percentage of microscopic mica-tinted mineral particles or of clay, to low ability of swelling, going into the composition of the rock.

SETTLING TANK
Décanteur; Bassin de décantation
Sanitary Engineering and Drainage; Hydrology
A basin or manhole in which come to deposit the particles in suspension which contain mud-laden waters (mud, sand, etc.). Syn. with SEDIMENTATION TANK; SETTLING BASIN; SETTLING LAY; SETTLING POND

SETTLING VELOCITY
Vitesse de sédimentation
Test of Materials
The time put by suspended particles into a fluid to settle onto the bottom of a test tube during a sedimentation test. Syn. with SEDIMENTATION VELOCITY

SETTLINGS
Atterrissement
Geohydrology
A sand and/or silt deposit which is formed onto the bed and banks of a river for various reasons (mud-laden water decantation, aftermath of a flood, etc.). Syn. with ACCRETION; DRIFT

SEWER
Egoût
Sanitary Engineering and Drainage
Generally an underground gallery (built or precast) for the draining of sewage, rainwater, or both. Syn. with DRAIN

SEWING REINFORCEMENTS
Armatures de couture
Construction of R.C. and P.C.
Concerning the reinforced concrete constructions, reinforcements intended for ensuring the continuity by recovery of two reinforcements in the case of junction by tying; for the sewing of fastener, it is about the recovery of two reinforcements.

SHACKLE
Manille
Equipment and Tools
A U-shaped ring whose each branch is endowed with an eye to the through which pass an axle

which can be screwed, keyed, etc., and that is designed to join two rings or to lift up a load. **See Figure 34**

SHADING
Nuançage
Painting
Low-coloring of a white paint (or almost white) in a bid to shade it. Syn. with TINTING

SHAFT
Puits; Fût d'une colonne ou d'une pile; Cheminée ; Vif de colonne
Construction
1. Usually, work having been used as access to the intermediate attacks during the heading of a long tunnel (ventilation and dewatering) and which is embanked or preserved for the ventilation. There are hydraulic shafts, either vertical or sloping, which do not emerge obligatorily to the open air.
2. Access drift bored vertically or showing an important sloping (loaded shaft, ventilation shaft, etc).
3. The part of a column or a pier included between the base and the transverse head beam or what it supports. Syn. with TRUNK
4. The sloping access of a pit or a window.
5. The trunk of a column. Syn. with DRUM

SHAFT FOR DESCENT
Chemin
Pit
A sloping well or gallery used to come out the stone from a quarry.

SHAFT SET
Moise
Temporary Construction
Supporting frame of timber, masonry, or steel that supports the sides of a shaft and the gear. Composed of two wallplates, two end plates, and dividers that form shaft compartments.

SHAFT SINKING
Enfoncement; Fonçage
Earthwork
1. The boring of a well at a lower level than low waters.
2. Syn. with DRIVING; PIPE JACKING; PUSHING

SHAKE
Gerçure; Gerce
Defects (Building Materials)
For a wood, syn. with CRACK.

SHALE
Shale
Geology
A fine-grained detrital sedimentary rock which is formed by the consolidation of clay, silt, or mud.

SHALLOW FOUNDATION
Fondation superficielle ou directe
Foundation
A work characterized by a small ratio depth/width of the foundation body.
Two definitions are usually retained to this subject:
- consider a foundation posed directly on the surface of the ground or weakly restrained. When the force of the load applied onto the ground varies until its value limits, one can observe that the breaking of the ground is accompanied by important surface deformations of the ground (rolls). One says while it is about a *shallow foundation*. (It concerns there the official definition of the shallow foundation, but as often as not it is the quoted definition hereafter that is taking in account, notably when one recalls former foundations);
- when the geotechnical design has determined in surface or at small depth (in the order of 2.50 m maximum) a sufficiently strong foundation, the foundation that leans there is said *shallow* or *direct* and it is characterized by a ratio depth/width of the body of foundation in the order from 0.25 to 1 and by the elimination of the lateral friction in the calculation of the bearing capacity.

Shallow foundations are two types:
- *footing* (continuous or single);
- *rafts.*

See Figure 35

SHALLOWS
Maigres; Etiage
Hydrology
Syn. with LOW WATER.

SHANK
Tige
Nomenclature of Materials
A thin and lengthened part generally of a circular section (example, shank of a bolt).

SHAPE
Forme
Civil Engineering
A leveling ground aera intended for receiving the road foundation.

SHAPING
Façonnage
Building Materials
In a quarry, the process of forming and dimensioning blocks of stone into ashlars or quarry stones.

SHARP POINTED BIT
Chasse-pointe
Equipment and Tools
1. A tool used by carpenters or the formwork carpenters to drive the head of a nail deeper than the face of the wood. Syn. with BRAD PUNCH; NAIL PUNCH; NAIL SET
2. The long needle of exploration which, when one drills a masonry, is used to recognize obstacles that stand in the way to the action of drilling machines.

SHARP-EDGING
Délignage
Carpentry
The removal of the wany edge of a wooden piece obtained by rectilinear sawing carried out perpendicularly to its faces.

SHARPEN
Affiler
Equipment and Tools
To give an edge to a tool.

SHATTERING
Abattage par éclatement
Earthwork and Masonry
A method used to pull down a masonry or rock by preliminary drilling of a hole and by bursting thanks to a mechanical or physicochemical process.
Mechanical processes:
- *set of splitting wedges* (*les jeux de coins éclateurs*) inserted by percussion with a sledge hammer or with rock-breaker provided with a flat needle;
- the *rock-jack buster* (*l'éclateur rock-jack*), cylinder provided with a set of small side hydraulic cylinders;
- the *Darda buster* (*l'éclateur Darda*), set of wedges powered by a hydraulic press.

Physicochemical processes:
- *expansion of gas under pressure* (*détente de gaz sous pression*) (Airdox, Cardox, etc.);
- *shot firing* (*tir à l'explosif*).

SHAVE HOOK
Ebarboir; Violon
Equipment and Tools
1. A kind of chipping chisel used to burr.
2. A triangular scraper used by painters.

SHEAR
Cisaillement
Geology; Strength of Materials
1. A failure often flat (shear plan) affecting a heterogeneous or homogeneous rocky unit, in response to tangential stresses. Syn. with SHEARING
2. Syn. with SHEARING. **See Figure 36**

SHEAR BOX
Boîte de cisaillement
Assaying Equipment
An equipment for testing the shear strength of soils. This machine works by transfer and breaks the sample according to a determined plan. At the moment of breaking, one obtains the value of the shear t as a function of the normal stress n. Syn. with SHEAR BOX APPARATUS

SHEAR BOX APPARATUS
Boîte de cisaillement
Assaying Equipment
Syn. with SHEAR BOX

SHEAR BOX APPARATUS TEST
Essai de cisaillement à la boîte de Casagrande
Geotechnics
A test carried out on a soil sample that consists in subjecting it to a uniaxial compressive force crescent up to the breaking.
The machine is formed by two half boxes filled of ground to be studied. The bottom box moves

to constant speed and on the upper box by reaction of a dynamometric ring the shear force is recorded. During all the duration of the test, one notes down the horizontal movements of the bottom box in comparison with the upper box and vertical movement of the piston that indicate either decrease of volume, or an increase of volume.
It is a simple compression testing that only addresses to the coherent samples. The environment behaves as if the angle of internal friction φ *was nil: the unit breaking strength worth then twice of the cohesion. To obtain results more complete than refer with the drainage conditions, different test types are carried out. One determines some couples of value of* c *and* φ *that for the same ground are variable with the conditions of the test.*
For each test to constant normal stress, the curve of medium shear stress/deformation and the curve height variation of the sample/deformation are plotted. Syn. with *CASAGRANDE'S* BOX SHEARING TEST. **See Figure 38**

SHEAR CRACK
Fissure en casquette
Defects
See CRACK. **See Figure 37**

SHEAR(ING) FORCE
Effort tranchant
Strength of Materials
The vertical result of all forces applied to the left section of a beam. The shearing force is generally counted positive when this resultant is directed upwards.
To study what happens in a long beam section, it suffices to cut the beam according to the considered section, to suppress the situated part of a side and to calculate in comparison with a point of the section of the resultant and the moment resulting all forces, including reactions that exert on the part suppressed. One obtains thus a resultant R *and a moment* M *by comparison to the centre* G *of the section. The force* R *can be broken down into two forces: one* N, *normal to the section (normal strain), and the other,* T, *located in the plan of the section (shearing force). The shearing force* T *can produce a twist of the beam if it does not pass by a particular point of the section called shear center, or flexural center. By studying the buckling of beams one shows that the shearing force decreases the buckling critical load. This diminishing effect, while negligible for solid web girders, is important for truss girders. The shearing force provokes at the same time tensions and compressions inclined to 45° on the direction of the middle fiber and of similar intensity to the shear. (An inadequately strong beam for the applied shearing force will show fissures inclined to 45° on its axis; these fissures appear in regions where the shearing force is maximum, namely in the vicinity of bearings).* Syn. with SHEARING STRESS; TRANSVERSE FORCE

SHEAR LEGS
Chèvre
Equipment and Tools
Syn. with BOOMLESS DERRICK; HORSE; LIFTING JACK; TRACK LIFTING JACK

SHEARER
Haveur
Earthwork
The driver of a cutting machine or labour who carries out manually a shearing. Syn. with CUTTER

SHEARER TOOL
Outil haveur
Equipment and Tools
A tool used to carry out a shearing.

SHEARING
Cisaillement; Cisaillage; Havage
Strength of Materials; Metal Construction; Earthwork
1. The shear force that undergoes a body when it is subjected at two equal forces acting in the plan of a section and having tendency to make slip this section on itself. Syn. with SHEAR
2. The cutting of a sheet metal following a drawing perpendicular to its surface and that mostly takes with shears.
3. An earthwork process that consists in carrying out in the walls of an excavation perpendicular vertical grooves and one horizontal lower groove, then to detach, with wedges, the ground prism contained between these grooves. Syn. with (UNDER) CUTTING

SHEARING MACHINE
Cisaille
Equipment and Tools
Syn. with SHEARS

SHEARING STRENGTH OF A GROUND
Résistance au cisaillement d'un sol
Geotechnics
The opposition to the decohesion of a soil, due, either to the cohesion between its particles, either to the internal friction, or with both at once. It is defined as being the shearing stress in the plan of the breaking, at the moment of this one.

SHEARING STRENGTH TEST OF A MATERIAL
Essai de résistance au cisaillement d'un matériau
Test of Materials (Building Materials)
A test for determining the ability of a product to resist to the shearing phenomenon. It is usually determined with a triaxial compression apparatus (tests called *under triple embraced*); for the grounds, the shear box is used.

SHEARING STRESS
Effort tranchant
Strength of Materials
Syn. with SHEARING FORCE; TRANSVERSE FORCE

SHEARING-COMPRESSION TEST
Essai de compression-cisaillement
Polymers
A test intended for testing the efficiency of resins used to glue fresh concrete on hardened concrete or hardened concrete on hardened concrete.
The shearing-compression test is carried out on prism 10 x 10 x 30 cm sawed following an oblique plane making an angle of 30° following the longitudinal axis and reconstituted either by fresh concrete supply, or by sticking of a prism sawed at 30° of hardened concrete. Test specimens are subjected to direct tensile tests or compression-shear tests 28 days after their reconstitution by sticking. These tests are carried out at 20°C but can be carried out either at 5°C in the case of formulations for winter, or at 35°C to test a formulation for summer. The efficiency of the product is judged according to the breaking form of the test specimens and the strength obtained. Next cases can occur:

- *breaking in old or brought back full concrete for a strength similar or higher than the pilot test concrete,*
- *breaking of the sticking joint or semidetachment for a strength higher from 20% to 25% to that the pilot test concrete,*
- *mixed breaking concrete - joint of glue, or detachment for similar strengths to these of the pilot test concrete. One can then estimate that the product only cannot be used in some reserves and for feebly solicited repairs,*
- detachment of the concrete for lower strengths than of the pilot test concrete: it is the case it most unfavorable, the product does not be suitable for this kind of repair.

See Figure 39

SHEARS
Cisaille
Equipment and Tools
A cutting tool functioning as scissors used to cut sheet metals, sections, bars, etc., that can be manual or sued by an engine. Syn. with SHEARING MACHINE

SHEATH
Lardoire; Chemise; Gaine
Construction; Foundation
1. Syn. with LARDING
2. Syn. with LINING; SLEEVE
3. Syn. with SLEEVE

SHEATH CLAY-CEMENT GROUT
Coulis de gaine
Materials
A preparation used during injection with tube à manchette. This grouting is done before the injected grouting, between the tube and the drilling wall. It is a clay-cement grout which is both friable and plastic. Syn. with CLAQUAGE GROUTING; SLEEVE GROUTING

SHEATHING
Chemisage; Garnissage; Blindage, Gainage
Construction: Temporary Construction; Foundation
1. A metal cladding surrounding wooden poles setting up in maritime aquatic site to preserve them from attack of sea animals.
2. Syn. with BOARDING
3. Syn. with SHEETING; TIMBERING.
4. Syn. with CASING; SLEEVING

SHEATHING
Doublage; Revêtement; Peau de coffrage
Building Materials; Equipment and Tools
1. A protective method of foundation timbers from attack by teredoes that consists in covering the surface to protect with zinc or copper sheets.
2. Syn. with CLADDING; COATING; FACING; LINING; REVETMENT; SHEETING
3. Syn. with FORM ; FORM LINING; SHEETING

SHEATHING BY PLATING
Revêtement par placage
Metallurgy
Syn. with COATING BY PLATING; LINING BY PLATING

SHEAVE
Réa
Equipment and Tools
A grooved pulley wheel intended for receiving a cable, a rope or a chain.

SHED
Baraque
Temporary Constructions
A small provisional building of light construction, usually of wood or corrugated sheet, intended for the storage space of the tools and materials on a building site. Syn. with HUT; SITE HUT

SHEEPSFOOT ROLLER
Rouleau à pieds-de-mouton
Equipment and Tools
A tamping roller equipped of a steel cylinder supplied at its periphery by radial tampers acting as rammers and transmitting to the materials the pressure of the machine. The compacting is carried out by penetration of the feet which, through the superficial layer, act on the subjacent layer; the layers of the top are then compacted by leaning on the already penetrated and compacted parts.

SHEEPSFOOT ROLLER WITH MOBILE TEETH
Rouleau tournepieds
Equipment and Tools
Identical to the sheepsfoot roller, but possesses mobile teeth adjustable in three positions according to the degree of progress of the compacting.

SHEER LEG
Bigue
Handling
A lifting appliance not waited for the rotation. A sheer leg is essentially made up of a mast articulated at its foot and of two systems one enabling the incline of the mast, what enables a variation of the chord, the other the lifting of the load. Sheer legs are frequently fixed on barge or hulk (floating sheer leg). Syn. with GIN; SHEARS

SHEET
Feuille; Plaque
Building Materials, Strength of Materials
1. A thin plate of material or product (prefabricated implication); (example: a sheet of plywood). Syn. with VENEER
2. Syn. with PLATE

SHEET
Bancher; Blinder
Equipment and Tools; Temporary Construction
1. To form concrete using wall forms.
2. To put in place wall forms.
3. To perform the sheeting of an excavation.

SHEET BAR
Larget
Metallurgy
A semifinished product rolling mill being appeared as flat bars of a rectangular section, width ranging between 150 and 250 mm for a minimal thickness of 40 mm.

SHEET METAL
Tôle
Metallurgy
A flat product, rolled leaving free the deformation of edges, delivered in plane sheets, mostly of quadrangular shape (square or rectangle) but also of every other form according to a sketch (circle or other); its edges are rough of rolling or sheared (a sheet metal can arise of the cutting from the sheet or string resulting by rolling from the initial semifinished product, sheet bar or slab). We can distinguish:

- **hot-rolled sheets** (*les tôles à chaud*), hot-rolled flat products, delivered in form of sheets, of thickness ranging between 3 and 10 mm and of widths ranging between 600 and 2000 mm in the qualities expressly indicated in the tables of the iron and steel companies;
- **thin hot-rolled sheets** (*les tôles minces à chaud*), products delivered in similarly sheets width than hot sheets, but a thickness ranging from 1.5 to 3 mm;
- **plates** (*les plaques),* hot rolled flat products, which do not come into dimensions or qualities of the earlier categories. Their thicknesses arz included between 3 and 120 mm, and arguably more;
- **cold rolled sheets** (*les tôles laminées à froid*), iron and steel products whose thickness is included between 0.3 and 3 mm and their width between 500 and 1,930 mm.

SHEET METAL FLASHING
Bavette
Construction
A putting out of shape element of a bridge deck joint that collects surface waters.

SHEET METAL WORKSHOP
Tôlerie
Metallurgy
1. A specialized workshop where sheet metal is worked.
2. A factory where sheet metals are manufactured.

SHEET PILE
Palplanche
Building Materials
A metal section, wooden or reinforced concrete piece vertically sunk into the ground by various means such as driving, launching or vibropiling, in order to constitute a more or less tight enclosure.
Sheet piles are assembled between them in various ways (according to the manufacturing process) and the curtains thus made allow the digging of foundations on watery sites (construction of cofferdams, support curtains, etc.). The most commonly used are metal sheet piles, which are assembled by longitudinal sliding (interlocking). We can distinguish in particular:

- **rectilinear core sheet piles** (*les palplanches à âme rectiligne*) (Lackawanna, Universal, Carnegie);
- **U-core sheet piles** (*les palplanches à âme en U*) (Larssen, De Wendel, Ransome);
- **double U-core sheet piles** (*les palplanches à âme en double U ou en onde*) (Terres Rouges);
- **Z-core sheet piles** (*les palplanches à âme en Z*) (Rombas, Belval);
- **tubular sheet piles** (*les palplanches tubulaires*) (Belval, Ougrée).

Temporary structures of sheet piles are conventionally classified into three categories:
- *category I:* grade of temporary structures (sheetings and cofferdams of relatively simple form, possibly supported by frames and stays) of small and medium size (clearance not exceeding about 6 to 8 m), located in zones closed to the public traffic and more than about 15 m from constructions or existing channels of communication (railway in particular). This category concerns many common sheetings and cofferdams built to allow the construction of bridge pier foundations, in basically nonurban sites;
- *category II:* grade identical to structures in those of category I, built, however, near existing constructions or to road, railway or fluvial channels of communication, and possibly anchored using provisional active tie rods (prestressed);
- *category III:* grade identical to structures in those of category II, but of greater size (strong clearance in particular), as well as exceptional or special structures (circular cofferdams of a larger diameter, cofferdams and deep telescopic sheetings, etc), even if they do not concern zones open to the public traffic.

Syn. with SHEET PILING. **See Figure 40**

SHEET PILES WALL
Rideau de palplanches
Civil Engineering
Syn. with SHEET PILING

SHEET PILING
Rideau de palplanches; Palplanche; Palée
Civil Engineering; Building Materials; Construction
1. A screen formed by sheet piles which may be of cantilever design, or anchored back at once or

two level and which can provide three essential functions:
- the provisional function of support; they are mainly cofferdams and sheetings which can be carried out in simple curtains without shores, in plane curtains with shores or fasteners, in circular curtains or double curtains;
- the function of watertight screen and protective structures such as cut-off walls, curtain of piles and sheetings, protection of riverbanks, etc
- the function of final support with regard to permanent structures (bridge abutments, retaining walls, etc).

Syn. with SHEET-PILE WALL
2. Syn. with SHEET PILE.
3. Syn. with PILE WORK

SHEETER
Palfeuille
Building Materials
A metal section virtually identical to that of a sheet pile but whose thickness and inertia are much lower; it is used in the sheetings of excavations (timbered excavation, Berliner sheeting, etc.) in place of boards or balks, formworks, protection masks, etc.

SHEETING
Peau du coffrage; Revêtement
Equipment and Tools; Building Materials
See SHEATHING

SHEETING
Blindage; Bardage
Temporary Construction; Construction
1. A means of support consisting of boards (covering boards, slabs) more or less butt-jointed, applied horizontally against the walls of an excavation and that are supported by vertical timber pieces (soles or sole pieces tightened by transverse pieces (trench brace) that buttress, across the excavation, the two opposite soles. The principle consists in buttressing the thrust of earth and postponing the aforementioned thrust on the opposite wall or on the bottom of the excavation. This standard sheeting includes several variants and the commonest sheetings currently are the Berlin wall, Parisian wall, hurpinoise process and nailed walls. The sheeting is adapted to the nature of the met terrain. Syn. with EARTHWORK SUPPORT; SHEATHING; TIMBERING. **See Figures 41 and 41a**
2. Syn. with BOARDING; WEATHERBOARDING

SHEETING PANEL
Plat-bord
Temporary Construction
In the sheeting of an excavation, a timber panel laid flat against the vertical walls of a trench and that consists of boards and baulks. **See Figure 42**

SHEET-PILE CAISSON
Pieu-palplanche; Palpieu
Foundation
See PILE-CAISSON

SHEET-PILE-DRIVING HAMMER
Marteau
Equipment and Tools
Syn. with HAMMER; PILE-DRIVING HAMMER

SHEET-PILING ENCLOSURE
Enceinte de palplanches
Temporary Construction and Hydraulic Work
A closed construction of sheet piles driven individually to form an obstruction from seepage, to support earth, etc.. The sheetpiling enclosure is used for the erection of cofferdams, sheetings, cribs or artificial islands and that can be circular, quadrangular, polygonal form, etc.

SHEETWASH
Ruissellement diffus
Geomorphology and Hydrology
Syn. with DIFFUSE RUNNING

SHELL
Chape; Recharge; Voile; Coque
Equipment and Tools; Hydraulic Construction; Construction
1. A U-shaped metal piece with a hole at the end of each sidepiece by which pass an axle intended for supporting a pulley.
2. A revetment formed by rocks or earth covering the tight solid newel of a barrage, a riprap, or earth-fill cofferdam. **See Figure 43.**
3. A vertical structure of reinforced concrete, of large surface and small thickness, which may be ribbed or not.
4. Syn. with CONCRETE HULL.

SHELL OF BUILDING
Gros-oeuvre
Syn. with CARCASS; SHELL; STRUCTURE

SHELLING DRUM
Bac de décantation
Sanitary Engineering and Drainage
A small settling tank. See BASIN.

SHELTER ARCH
Cagnard
Construction
1. A corner, bridge arch, etc., serving as shelter.
2. An interval vault built forwards of a harbour.
Syn. with SHELTER EDGE

SHELTER EDGE
Cagnard
Construction
Syn. with SHELTER ARCH

SHERARDIZE
Shérardiser
Metallurgy
To coat a piece of iron or steel with zinc by covering with zinc dust in a tightly closed drum and heating for several hours at 300 to 420°C so that a zinc-iron alloy is formed at the surface through the action of zinc vapor. The metal is heated, with or whitout tumbling, in contact with zinc powder. This process is comparable to galvanization. It consists in laying out the parts to be processed inside boxes containing cement constituted in major part by zinc powder.
The boxes are then placed in furnaces at a temperature between 300 to 420°C for several hours. A dull gray coating is obtained the thickness of which depends on the duration of the processing. This process confers an excellent corrosion resistance.

SHIELD
Bouclier; Masque; Parapluie
Temporary Construction; Equipment and Tools; Construction
1. A very strong close metal or wooden formwork which supports the face during the performing of an excavation in loose ground.
Syn. with BREASTING OF THE FACE
2. A formwork applied against the face during interruptions in underground driving or boring, to avoid crumbling.
3. A metallic shell with a diameter greater than the work to perform, used during the boring of an underground structure in unconsolidated grounds.
One carries out under its cover earthmovings and the covering of the tunnel.
Generally circular-shaped, it contains three parts:
- *the hood on which the cutting edge that carves the ground is adapted;*
- *the skin. It is divided into octagonal partitions forming stiffener beams and work platform, and contains hydraulic jacks which push the shield forwards;*
- *the back, under cover of which are assembled segments made of metal or reinforced concrete which form the tunnel or the lining.*

Syn. with BUCKLE. **See Figure 44**
4. Syn. with UMBRELLA.

SHIFT
Riper
Handling
To move laterally a block, a course, etc.

SHIFT COURSE
Divaguer
Hydrology
To overflow banks, with reference to a waterway.

SHIFTER
Ripeur; Mange-rail; Vérin-ripeur
Equipment and Tools
1. A sliding or shifting hydraulic device made up of a frame that includes a device for clamping with jaws embedded on a rail and two hydraulic actuating cylinders, the device is controlled from a power station.
The principle is as follows: after blocking the jaws on the rail, the jacks push the work to be shifted. At the end of the stroke, the jacks retract and the jaws loosen; the shifter advances to regain contact with the work and the operation starts over. Syn. with HYDRAULIC SHIFTER. **See Figure 45**
2. A device used for moving heavy slabs, etc. along rails with a jack. It is designed for lateral or transversal movements of decks prefabricated on a landing stage for placement in its final position.

SHIFTING
Ripement; Ripage
Handling
Syn. with SLIDING ALONG

SHIFTING (or MOVEMENT) OF EARTH
Mouvement de terre
Earthwork
1. Determination before the beginning of the work, of the distribution of the excavated materials to minimize the risks of haulage (distance, cubature, etc.).
2. The carting away of earths with haulage machines

SHIFTING USING ROLLERS
Chemin de ripage sur chariots
Handling
A device for installing structures by lateral moving on a track formed by guided rollers or wheels on tracks. In the case of longitudinal sliding, trolleys are mobile on steel rolls of approximately 80 mm diameter connected by rocker bars with two holes.

SHIM
Cale; Flipot
Carpentry; Construction
1. A wooden or steel piece placed to hold a piece of frame in its final position. Syn. with SETTING BLOCK
2. A thin piece usually of wood, metal, or stone used to fill in or designed to be removed to take up wear.

SHINGLE
Galet; Caillou; Caillou roulé
Geology; Building Materials and Geology
1. Coarse, loose, well-rounded waterworn detritus or alluvial material of various sizes; esp. beach gravel, composed of smooth and spheroidal or flattened pebbles, cobbles, and sometimes small boulders, generally measuring 20 to 200 mm in diameter; found in torrential rivers or on the seashore. Their agglomeration by cementing produces conglomerate.
2. Syn. with COBBLE; PEBBLE
3. Syn. with POLISHED PEBBLE ; ROLL(ED) PEBBLE

SHIP CAISSON
Bateau-porte
Construction
A high caisson of steel, floating, used to seal the entry of a lock, a dry hold or a wet dock.

SHIP LIFT
Elévateur
Construction
A tank installed on a crane runway which is supported by an inclined plane. This installation allows barges to move up or down over large changes in altitude avoiding a great number of locks.

SHIP-GENERATED WAVES
Batillage
Hydrology
A succession of waves or undulations of water produced by the passage of boats (or the wind). Syn. with CLAPOTIS

SHIP'S BORER
Taret
Defects (Building Materials)
A marine animal that attacks submerged wood and quickly disintegrates it.
The ship's borer is a headless, elongated, vermiform mollusc, which penetrates into wood during its larval state; at this point it measures less than 0.25 mm length and bores a very small hole. Its growth is then rapid; within three months it can reach more than 12 cm length and from 5 to 12 mm diameter. It develops inside the wood without the entry hole becoming enlarged. The attacked wood keeps broadly its outward aspect at this time. The danger of attack is maximal in shallow, warm, clear water, but with a muddy bottom. The attack is particularly intense in spring and in summer, and no wood species is resistant. Syn. with SHIPWORM; TEREDO

SHIPWORM
Perce-bois
Defects (Building Materials)
The common name given to insects or larvae that attack wood by boring. Syn. with SHIP' BORER

SHOCK ABSORBER
Amortisseur
Construction
A device for dissipating energy due to a shock or movement.

SHOCK REACTION
Effet d'impact
Construction of R.C. and P.C.
A phenomenon where the fall from a height of the fresh concrete causes additional force on formworks.

SHOE
Patin; Sabot; Saboter
Construction; Foundation; Equipment and Tools; Work
The protruding part of a footing with respect to the main plane of the shell or wall, which it supports. We can distinguish the back shoe, or heel, and the front shoe. **See Figure 46**
2. A (cast) iron or steel piece fastened to the base of a pile, the primary objective of which is to protect the tip during the pile driving into the ground. Syn. with PILE SHOE; SABOT
3. In drilling, the lower end of a column of tubing. **See Figure 47**
4. To provide a pile with a shoe.

SHOE FIXING
Tasseau
Equipment and Tools
The sealing made at the base of each upright pole of scaffolding.

SHOE-NOSED SHELL WITH VALVE
Soupape; Curette
Equipment and Tools
A tubular tool having a valve at the base allowing to bring up cuttings after the use of the bore bit. **See Figure 48**

SHOOK
Merrain
Building Materials
Thin pieces of wood (boards), obtained by sawing the tree trunk in the direction of the medullar rays. Syn. with CASK WOOD

SHORE
Etançon; Chandelle; Etai; Accore; Accorer; Chevaler
Temporary Construction
1. Syn. with PROP; RIB; STAY; YIELDING PROP
2. Syn. with DEAD SHORE.; PILLAR; POST; PROP, STAY; UPRIGHT
3. Syn. with FRAME; PIT PROP; PROP; STANCHION; STRUT
4. A timber piece placed vertically for propping up or supporting. Syn. with PROP. **See Figure 49**
5. To prop up with timber pieces placed up vertically.
6. To install a headframe. Syn. with FRAME

SHORE
Appui
Strength of Materials
Syn. with BEARING; PROP; SUPPORT

SHORE (ACROSS)
Etrésillonner
Temporary Construction
Syn. with BRACE; STRUT

(CROSS) SHORE
Etrésillon; Bretelle
Temporary Construction
A horizontal or oblique piece of an earthwork support or a stay propped on the vertical wall plate in order to offset pressure (walls of trenches, two walls that side thrust). Syn. with BRACE; STRUT. **See Figure 50**

SHORE-A TEST
Essai de dureté Shore *A*
Test of Materials (Building Materials)
A method for determinating the hardness of polymer-based organic materials, notably those used in watertight or for repairing and sticking concrete structures.
The test uses a standardized spring to sink an impressor of a defined form into the material to be tested. The depth of penetration varies inversely with hardness. The displacement of the impressor is measured on a graduated scale from 0 to 100, with 100 corresponding to a null penetration and 0 to the maximum penetration permitted by the machine. Syn. with SHORE HARDNESS TEST

SHORE HARDNESS TEST
Essai de dureté Shore A
Test of Materials (Building Materials)
Syn. with SHORE-A TEST

***SHORE* PRACTICE**
Méthode *Shore*
Metallography
A measuring test of metal hardness based on the height of bounce of a small rammer equiped with a diamond tip, onto the polished surface of a metal part.

***SHORE* SCLEROSCOPE**
Scléroscope *Shore*
Equipment for Measure and Control
An instrument comprising a small diamond-shaped hammer that falls freely down a graduated tube of glass from a constant height. The hardness of the surface under test is measured by the height of the rebound. In one type of this instrument, the rebound of the hammer actuates the pointer of a scale so that the height of rebound is recorded. The scale is linear, between 0 and 140 (hardness 140 shC representing the hardest tempered steel). This test is very rapid and virtually nondestructive.

SHORE (UP)
Accoter
Temporary Construction
Syn. with BUTRESS; STAY; STRUT; UNDERPIN

SHORED RAKING WALL
Mur en l'air
Construction
A construction supported by shores.

SHORING
Etaiement; Etançonnement; Contre-fiche
Temporary Construction
1. Syn. with FALSEWORK; PROPPING; STRUTING.
2. Syn. with PROPPING; STAYING; UNDERPINNING
3. Syn. with INCLINED SHORE; RACK SHORE; RAKER; RAKING SHORE

SHORING UP
Enchevalement
Temporary Construction
A bracing built using a head frame.

SHORT SPECS REGISTRATION
Calepinage
Civil Engineering Structure
Noting dimensions and arrangements of the different elements going into a construction in order to facilitate their implementation.

SHORTFALL
Chaise
Defects (Building Materials)
A lack of material of a squared stone block in comparison with the full volume of the rectangular parallelepiped.

SHORTFIRED FIXING
Spit
Materials
Syn. with EXPLOSIVE FIXING; STUD

SHORTNESS
Fragilité
Strength of Materials
Syn. with BR1TTLENESS; FRAGILITY; FRAILTY

SHOT
Coup de mine
Explosives
Syn. with BLAST

SHOT BLASTING
Grenaillage; Grenage
Works
1. Syn. with BLAST CLEANING
2. Syn. with SANDING

SHOT FIRING
Tir
Explosives
1. The action of detonating or igniting a charge of explosive, usually in a drilled hole. We can distinguish:
- **primary blasting** (*le tir primaire*) which, in the quarry, consists in cutting down the rock;
- **secondary blasting** (*le tir secondaire*) which, in the quarry, is done break up the rocks hewed by the primary biasing.

2. The firing of an explosive charge in a drilled hole to break the material to a suitable size for loading.
Syn. with BLASTING

SHOT-BLASTING MACHINE
Grenailleuse
Equipment and Tools
Air-driven machine used to project granular metal onto metal parts or facings, which are to undergo a particular treatment.

SHOT-BLASTING PREPARATION
Préparation par jet d'abrasif
Welding
The scouring of the surface to be welded by projection of abrasives in order to clean correctly the surface and to increase the roughness of the parts to receive the weld bead, thus increasing the bond of the weld metal.

SHOTCRETE
Béton projeté; Mortier projeté; Gunite; Projeter
Building Materials; Work
1. A material implemented by repression in a conduct and spraying on a wall by a jet of compressed air. The shotcrete can be added with special steel, (cast) iron or synthetic fibers, in order to confer it a best bending tensile strength.
There exist two types of mechanical application:
- **dry shotcreting,** *a process in which the mixture cement-aggregates is dry, the water being added only by mean of concrete gun,*
- **wet shotcreting,** *a process in which the water is mixed during the mixing. We can distinguish two techniques:*
  - *diluted flow: the compressed air, such as in the dry process, is introduced into the machine. By slackening, it powers with it the wet mixture in the conduct. Therefore a more or less important quantity of air is added to the concrete during its transportation. This method is called* diluted flow wet process.
  - *dense flow: in this method the compressed air is exclusively introduced into the concrete gun.*

Syn. with AIR-PLACED CONCRETE; PNEUMATICALLY PLACED CONCRETE; SPRAYED CONCRETE
2. Syn. with GUN-APPLIED MORTAR; PNEUMATIC MORTAR
3. Syn. with GUNITE

SHOTCRETING
Projection; Gunitage
Work
1. A setting technique of building materials (mortar and concrete) projected onto the support to be covered. The principle of the shotcreting consists in homogenizing the materials in a dry or wet state, carrying them through rigid or flexible piping using mechanical pumps (screw or piston pumps) or compressed air, and projecting it more or less violently, by means of compressed air, onto the support to be covered. There are two basic methods of shotcreting: wet or dry shotcreting. By these two practices one throws:
- **mortar of hydraulic binders,** whose sand grains range from 2 to 3 mm and exceptionally up to 5 mm. Increasingly, ready-to-use mortars are used and employ the wet process. These mortars are used basically for the making of renderings (galleries, tunnels, etc.), on pointing, strengthening and repair of structures;
- **concrete,** where the maximum size of the aggregates is limited by the thickness of the layer needed, by the diameter of the piping and the process used. The dimension of the aggregates is in the order of 10 mm for the wet process and 25 mm for the dry process. Shotcreting is used in new work as well as in strengthening or protection of existing work.

Advantages of the projection technique are numerous: denser and more compact material, better adhesion on the support, better regularity of work, reduction of turn around times and suppression of certain handling, execution of work on low access sites or of complicated shapes. Syn. with MECHANICAL APPLICATION. **See Figures 51 and 51a**
2. Syn. with SPRAYING
3. Syn. with GUNITING

SHOTCRETING CAPACITY
Projectabilité
Building Materials
The faculty to a greater or lesser extent of a dry shotcreting to form a layer of greeting. Syn. with GUNITING CAPACITY

SHOTCRETING MACHINE
Guniteuse
Equipment and Tools
Syn. with GROUTING MACHINE

SHOTCRETING MOVABLE UNIT
Unité mobile de projection
Equipment and Tools
The entire device for the projection of shotcrete or pneumatic mortar set on a vehicle equipped

with wheels, caterpillar tread or circulating on railway. A unit generally includes a hopper which receives the mixture (dry or wet), a lifting belt, the projection device(s), a batcher of admixtures, a water tank, compressors, etc.

SHOULDER
Bas-côté; Crossette; Répare d'un fossé; Accotement
Civil Engineering; Construction
1. Each of the parts located on either side of a railway track (beyond the bench) prepared as an embankment.
2. Syn. with GRADUATED ARCHSTONE
3. Syn. with PLANT STRIP
4. A construction placed side by side to a railway bridge deck, independent of the latter, mostly used as a pathway and electrical cable trough. Syn. with BANK; BENCH; CESS SIDE ; ROADSIDE; SIDE PATH; VERGE. **See Figure 52 to 52b**

SHOULDER(ING) OF TENON
Epaulement
Carpentry
The salient part, on the face of a tenon, giving solidity to the assembly.

SHOULDERED
Epaulée
Masonry
A term indicating that a masonry is not raised at once nor up to level, but by successive phases.

SHOULDERED KEYSTONE
Clef à crossettes
Construction
Syn. with GRADUADED KEYSTONE

SHOULDERED WORK
Travail à l'épaulée
Foundation
An underpinning work carried out by small sections to avoid using shores or any other system of supporting.

SHOVED JOINT
Joint fait en montant
Masonry
The bonding of masonry carried out progressively during the building of courses and which will not be scabbed. Syn. with STRUCK JOINT

SHOVEL
Pelle; Pelle hydraulique; Pelleter
Equipment and Tools; Work
1. Syn. with SCOOP; SPADE;
2. Syn. with HYDRAULIC GRAB.
3. To work with a spade or shovel.

SHOVELING
Pelletage
Work
A job carried out using a spade or a power shovel.

SHRINK MARK
Retassure
Defects (Metallurgy)
Syn. with CONTRACTION CAVITY; SHRINKAGE HOLE (CASTING)

SHRINK WRAP
Pelliplacage
Materials
Syn. with SKIN PACKING

SHRINKAGE
Retrait; Shrinkage
Building Materials
1. The reduction of volume accompanying the setting and hardening of a concrete or a hydraulic mortar.
2. The operating of quarries or mines in shop chambers.

SHRINKAGE CRACK
Fissure de retrait
Geology
A crack produced in fine-grained sediment or rock by the loss of contained water during drying or dehydration; e.g., a desiccation crack or a mud crack.

SHRINKAGE JOINT
Joint de retrait
Construction
A cut accommodated in a construction (slab, foundation raft, shell of R.C.), usually of trapezoidal shape, regularly distributed with the aim to prevent shrinkage cracks at the time of the setting of concrete.

SHRINKAGE OF A PAINT FILM
Rétraction d'un feuil
Defects (Painting)
A range of initial defects characterized by the appearance, with degrees of importance and variable distribution, of irregularities in thickness in the film which do not, however, expose the substrate.

SHUTED CONCRETING
Bétonnage à la goulotte
Construction of R.C. and P.C.
1. A concreting processs in which uses supple or rigid chutes, a kind of huge funnel introduced into the formworks and brought down to the wanted level. The concrete is then poured in these chutes that are progressively brought back up as the concrete advances. This method is used when the risks due to the height of the fall of the concrete become too great, notably in formworks of great height and in order to avoid the phenomenon of segregation when the presence of dense bars is necessary.
2. A concreting process on watery sites. Chutes are constituted by metal tubes from 25 to 45 cm diameter supported by scaffolding with a service floor. A movable bridge with a mobile winch supports the chutes and allows them to be lifted or lowered. Concrete is poured into the chutes that are brought back up as the concreting progress.

SHUTTER
Obturateur
Equipment and Tools
Syn. with BLOW OUT PREVENTER; CLOSING DEVICE; OBTURATOR; STOPPER

SHUTTERED CONCRETE
Béton banché
Building Materials
A wall of concrete poured in formworks at its definitive site in the work. It is a cast concrete that uses wall forms as formwork. Syn. with FORMED CONCRETE; WALLED CONCRETE

SHUTTERING
Coffrage; Banchage
Temporary Construction
1. Syn. with CASING; CONCRETE FORMING; FORM; FORMWORK; MOLD
2. The set of wall forms forming the formwork.

SHUTTERING CELL
Cellule coffrante
Equipment and Tools
A formwork intended for the precasting of segments of a work built by successive cantilevers.
We can distinguish:
- **horizontal precasting cell** (la *cellule à préfabrication horizontale*) in which concrete segments are arranged one beside the other;
- **vertical precasting cell** (la *cellule a préfabrication verticale*) in which segments are arranged one above the other.

SHUTTERING FLOOR SLAB
Prédalle
Construction
Syn. with PRESLAB; SLAB FORM

SHUTTERING PANEL
Banche
Equipment and Tools
Syn. with FORM PANEL; WALL FORM

SIDE
Pan; Face
Nomenclature of Materials
1. Syn. with FACE
2. Largest surface of a wooden piece.

SIDE
Flanc; Joue; Lèvre; Joue; Jouée
Geomorphology; Construction; Architecture
1. Syn. with FLANK
2. A lateral surface longer than wide of a part, a work; example: the side of a slab.
3. The side of a plate.
4. The side face of a part whose transverse section is rather thick (example: the cheek of a caisson, a trapezoidal rib, etc). Syn. with CHEEK
5. A visible surface limited by the profile of a molding and the wall on which it is cut. **See Figure 53**

SIDE CORE SAMPLING
Carottage latéral
Geotechnics
A sample taken from a borehole by means of a small core drill pushed to the bottom of the hole by small blasting charges.

SIDE FACE
Chant plat
Construction
The edge of a string course without molding.

SIDE FACING
Parement; Paroi
Earthwork
1. Concerning tunneling, side parts (sidewalls and haunches) dug with the explosive in the third operation, after the cut and the clearing.
2. The side face of an excavation, a trench.

SIDE PATH
Accotement
Construction
Syn. with BANK; BENCH; CESS SIDE; ROADSIDE; SHOULDER; VERGE.

SIDE POST
Jambette
Carpentry
A vertical or oblique structural member that supports or relieves a strongly solicited tie beam for example. Syn. with PRINCESS POST

SIDE RAIL (BRIDGE)
Garde-fou
Construction
Syn. with HANDRAIL; GUARD; GUARD RAIL; RAILING; SAFETY RAIL

SIDE ROOFING
Couverture latérale
Construction
In the case of a work built on a small distance of a slope, the shortest distance between the surface of the terrain and the extrados of a work.

SIDE STIFFENING RIB
Nervure latérale
Metal Construction
An upright overhanging on the web of a prestressed concrete segment connecting the top and bottom concrete slabs. The purpose of this rib is to stiffen the web. **See Figure 54**

SIDE THRUST
Poussée au vide
Construction of R.C. and P.C.
The stress exerted by steels or cables in a R.C. or P.C. structure:

- **reinforced concrete:** thrust exerted inside the concrete, in its plan and toward its concavity, by a curved or taut reinforcement, and whose the intensity, per unit of length, is equal to *F/R, F* being the tractive effort in the bar and *R* its radius of curve. If the thrust is carried out near a wall, the bar solicits to the tension the concrete cover: there is side thrust; **See Figure 54a**
- **prestressed concrete:** stress exerted by steel prestressing cables in a curve concrete slab, resulting from the subtraction of two terms, one coming from the compression of the concrete, the other of the tension of steels.

Syn. with OUTWARD PRESSURE

SIDE TRACKING
Garage
Construction
A subsidiary device of a tunnel that consists of a widening of the common section of sizes such as it allows to park one or several vehicles (either during the boring, or in the final phase). Generally, this device is stopped in the hydraulic galleries.

SIDE-JACKING TEST
Essai au vérin
Geotechnics
A static test method of soil loading that is similar to the table test and which gradually allows loading of the ground and without jerk. The jack can lean on a rigid platform beforehand loaded of a sufficient weight to reach the breaking of the ground. This platform can be rested on the undisturbed soil through the channel of four temporary bearings placed at the angles; the internal main plane must be at 1.50 m from the rigid test plate. Any other means ensuring the stability and rigidity can be used, on the condition that the main plane of the test plate supports anchored into solid ground are at least 1.50 m from the test plate. The jack lean on a rigid shaft of wood, concrete or steel-laminated wood with inflexible arms controlling the flexigraphs. Before the test, the jack and pressure gauge must be calibrated. All others considerations described in the ground testing tables apply to the side-jacking test. **See figures 55 to 55b**

SIDESLAB
Joue
Construction
The interior or exterior face of the vertical side parts of a R.C. or P.C. slab of a bridge deck. **See Figure 56**

SIDEWALK
Trottoir
Construction
The lateral part of a roadway, a road bridge, raised with regard to the roadway, generally supplied with a curb (stone) and reserved for the movement of pedestrians.

SIDEWALL
Piédroit; Mur en retour
Construction
1. A vertical lateral wall which can be slightly inclined or slightly curved, located between the foundations and the springings of the vault of a tunnel, an aqueduct, or a bridge. Syn. with JAMB ; PIER
2. Syn. with RETURN WALL

SIDEWALL OF LOCK
Bajoyer d'écluse
Construction
Syn. with CHAMBER WALL; LOCK WALL

SIENNA
Terre de *Sienne*
Geology
A brownish orange-yellow clay colored by iron and manganese oxides; used as pigment.

SIEVE
Tamis; Blutoir
Equipment and Tools
1. A type of strainer, generally circular, formed by a wooden or metal framework at the base whose stands a small square meshes lattice intended for selecting granulometrically or sifting sand, cement, soil samples, etc. Syn. with SIFTER. **See Figure 57**
2. Syn. with BOLTING MACHINE.

SIEVE
Tamiser; Sasser; Cribler
Building Materials
To pass to the sieve. Syn. SIFT

SIEVE ANALYSIS
Analyse granulométrique
Test of Materials (Buildings Materials) and Geotechnics
Syn. with GRADING PARTICLE-SIZE DISTRIBUTION; GRAIN-SIZE ANALYSIS; PARTICLE SIZE ANALYSIS;

SIFTER
Crible; Sasseur
Equipment and Tools
1. Syn. with SCREEN
2. Syn. with JIGGER

SIFTING
Tamisage
Test of Materials
An operation of a grading classification of a soil, aggregates sample, etc, which is carried out with standardized sieve or round-hole sieve. Sifting consists in distributing the grains of a sample in a number of increasingly small dimensional classes, by going through increasingly narrow openings. Openings are formed by square meshes of metal cloth or sometimes, for the diameters higher than 3 mm, by round holes fitted in the sheets (metal).

SIFTING
Sassage; Criblage; Blutage
Building Materials; Materials
1. The operation of shaking loose materials in a sieve so that the finer particles pass through the mesh bottom. By using a number of sieves with different meshes, the particles can be graded according to size.
2. The sifting of aggregates of which one wants eliminate or select a certain granular range.
3. The sifting, screening of a pulverulent material with a screen. Syn. with SCREENING
4. The sifting of beforehand ground substances. Syn. with SCREENING

SIFTING MACHINE
Tamiseuse
Equipment and Tools
A laboratory equipment which allows to vibrate a group of stacked sieves.

SIGHT RULE
Alidade
Topography
Syn. with ALIDADE; AZIMUTH READING DEVICE

SIGHTING
Balise
Topography
A leveling staff installed at the peak of a tripod, which permits the sights of triangulation to be determined.

SIGHTING BOARD
Mire
Equipment and Tools
A rule used by topographers to carry out leveling operations.
We can distinguish:
- **self-reading staff** (*la mire parlante*), a large graduated rule that one successively moves on the points to be leveled and on which the topographer, through the channel of its sighting instrument (tacheometer, etc.), can read successive altitudes which it will attach on its skeleton mark to a bench mark;
- **target staff** (*la mire à voyant*), constituted by two rules with centimetric division sliding one on the other and a square target of sheet metal, whose two medians are painted in white on a black background, the horizontal median being the reliable line. The observer makes mark the intersection of its sight with the leveling staff by means of the target, that on its indications, moves and fixes the holder-leveling staff.

Syn. with LEVELING STAFF; SURVEYING POLE

SIGHTING MARK
Balise; Jalon
Topography
1. Stake embedded into the soil that marks the alignment of a channel of communication. (Generally, it is the longitudinal axis that is marked.)
2. Syn. with MARKER; (RANGE) POLE; (SURVEYOR'S) STAFF

SIGN
Chiffre
Masonry
A conventional sign focused on an ashlar, and which by its site or its form indicates at the stonecutter the job to be executed.

SIGNIFICANT SURFACE
Surface significative
Metallurgy
The part of the surface which must be covered by a metal covering and that is essential for the aspect or competence for the use of the piece.

SIGNPOST
Signaliser
Civil Engineering
To equip an obstacle of devices attracting the attention of peoples likely to evolve in its environment.

***SILACSOL* ™**
Silacsol
Materials
A nonpolluting sealing off and consolidation grout whose main compound is a special silica liquor.

SILANES
Silanes
Materials
Hydrogenated compounds of tetravalent silicon on which organic groupings are linked; they are products used in the strengthening treatments for stones.

SILICA
Silice
Geology
A substance formed by the combination of a metal, silicon, with oxygen. Silica is very widespread in the nature; the quartz consists of silica in a pure state.

SILICA FUME
Fumée de silice; Microsilice; Silice micronique
Building Materials
Syn. with CONDENSED SILICA FUME; MICROSILICA

SILICA GEL
Gel de silice
Building Materials
Grout generally used to inject the ground obtained from a colloidal soda silicate solution into water.

SILICATATION
Silicatisation
Work
To carry out a silicate injection or silicatization

SILICATE
Silicate
Mineralogy: Hydraulic Binders; Painting; Construction of R.C. and P.C. and Masonry
1. A mineral whose crystal structure contains SiO_4 tetrahedra, either isolated or joined through one or more of the oxygen atoms to form groups, chains, sheets, or three-dimensional structures with metallic elements.
2. A constituent of the artificial cement resulting from the cinderization and which appreciably represents the three quarters of the weight of cement. They are the dicalcium and tricalcium silicates; the other constituents resulting from this operation being the tricalcium aluminate.
3. A complex mineral binder going into the composition of certain antirust paints.
4. A mineral product in aqueous solution able to react with the ions calcium of the concrete (or the stone) to form insoluble systems or with organic hardeners.

SILICATE
Silicater
Building Materials
To apply to materials a silicate-based processing.

SILICATE INJECTION
Silicatage
Masonry
The superficial impregnation of the stone or concrete using silicates to endow more resistance to it toward external aggressive agents. The goal of silicate injection is to mitigate the inadequacy or disappearance of the natural cullet.

SILICATE OF ALUMINA
Argile
Hydraulic Binders and Mineralogy
Syn. with CLAY

SILICATIZATION
Silicatation
Construction of R.C. and P.C.; Civil Engineering
1. Concrete waterproofing on dry surface using a hot potash or a soda silicate solution. The lime of cement is transformed into hard and insoluble calcium silicate having for effect to make tighter and harder the surface of concrete.
2. A ground treatment process that consists in injecting there, by means of a tube, a sodium silicate solution. When the wanted quantity is reached, the tube is gradually gone back up while injecting a reactive solution (example: calcium chloride). The mixture turns into calcium silicate; this last seals the pores of the ground, thus increasing its compressive strength (*Joosten* process).
An alternative method consists in injecting a preparation formed by a silicate mixture and reactive which, once introduced into the soil, will turn into gel.

SILICEOUS CONCRETE
Béton de diatomées; Béton de kieselguhr
Building Materials
A light material whose main aggregate is diatomaceous earth (porous silica). Syn. with KIESELGUHR CONCRETE

SILICEOUS CONCRETION
Chaille. Chert
Geology
Syn. with CHERT

SILICEOUS STONE
Pierre siliceuse
Geology
See BUILDING STONE

SILICON CARBIDE
Carbure de silicium; Carborundum
Materials
Syn. with CARBORUNDUM.

SILICONATE
Siliconate
Materials
An alkaline salt of silicone in aqueous solution, used as a protective product of stone.

SILICONE RUBBER
Caoutchouc aux silicones
Materials
A synthesis material resisting to high temperatures.

SILICONES
Silicones
Polymers
Polymers that contain in the main chain a repetition of the grouping SiO with organic lateral groupings. These products going into the composition of admixtures such as the mass and surface water repellents, demolding products, etc.

SILKING
Nuançage
Defects (Painting)
A variety of color deterioration of a paintwork constituted by appearance of colored streaks on the surface of the film.

SILL
Sole; Plate-forme; Patin; Longrine; Pied-de-chèvre; Semelle
Temporary Construction; Construction: Equipment and Tools
1. A timber piece placed under the raking shores of the shores of a sheeting. Syn. with SLEEPER
2. Syn. with DISTRIBUTION BEAM OF FOUNDATION; WALL PLATE
3. A timber piece on which rest the legs of a shear legs.

SILO
Silo
Construction
A cylindrical tall tower usually of reinforced concrete or metal, into which pulverulent materials are stored such as cement, sand, ashes, etc., except liquid or fizzy products.
We can distinguish two great families of silos:
- **tower silo** (*les silo-tours ou capacités de stockage*) with tremendous capacity. They are basically used to keep products for long periods: grains, sugar, fertilizer silos, etc.;
- **bins** (*les accumulateurs)* whose volume is more reduced than the earlier and whose essential role is to keep in reserve a stock buffer of a material which is often supplied in a discontinuous way and usually used continuously: cement bins, ashes bins, etc.

SILT
Limon; Silt
Geology
1. Soil particles whose dimensions are included between 2 and 20 micrometers. The silt is largely formed by quartz. We can distinguish:
- **eluvial silts** (*les limons éluviaux*), formed by deterioration on the spot of a favorable substratum;
- **silts of streaming and flood** (*les limons de ruissellement et d'inondation*), occurring in strata;
- **silts of piedmont** (*les limons de piedmont*), which are torrential deposits.

2. A fine ground of mineral or organomineral origin of low plasticity and with continuous grading.

SILT UP
Alluvionner
Geomorphology
To deposit alluviums (a waterway deposits alluvium).

SILTING
Remblaiement
Hydrology
1. A deposit of alluvia given up on its bed or its banks by a waterway.
2. The deposition or accumulation of silt that is suspended throughout a body of standing water or in some considerable portion of it; especially the choking, filling, or covering with stream-deposited silt behind a dam or other place of retarded flow, or in a reservoir. The term often includes sedimentary particles ranging in size from colloidal clay to sand.

SILTING UP
Alluvionnement
Geomorphology
1. Syn. with ALLUVIATION
2. The filling, or partial filling, with silt, as of a reservoir that receives fine-grained sediment brought in by streams and surface runoff. The term has been used synonymously with sedimentation without regard to any specific grain size.

SILVER GRAIN
Maille du bois
Nomenclature of Materials
The arrangement of the wooden grains that appear on a piece cut longways on.

SIMPLE BEARING
Appui simple
Construction; Strength of Materials
1. A simple juxtaposition of parts of an assembly (i.e.: a wooden beam rested on its ends on masonries). This connection remains as long as the forces applied keep the contact between they and the parts which can under certain conditions be disunited.
2. A bearing which cannot develop reactions that in only one direction.

SIMPLE CRACKING TEST
Essai de fissuration simple
Test of Materials (Tightness)
A test intended for testing the flexible (watertightness) coping resistance to cracking.
Test schedule: on two blocks of mortar cement juxtaposed, a test specimen of width 5 cm and 30 cm long is stuck. One of the blocks being fixed one aside draws the second at the speed of 30 mm/h. The strain plot according to the spacing of the crack is recorded. The temperature of the test is - 10° C. Two test specimens are tested in the direction of calendering and two test specimens in the perpendicular direction. So that the test is regarded as positive, test specimens must support a spacing of the two blocks of 2.5 mm without shearing of the bitumen.

SIMPLE DRAINAGE
Drainage simple
Metallurgy
Protection of steel from electrolytic corrosion due to the stray currents wherein corrosion is transferred to a degradable earth connection called *safety outlet* that can be controlled and renewed if necessary.

SIMPLE PRESTRESSING
Simple précontrainte
Construction of R.C. and P.C.
Of a slab or a part of concrete slab, prestressed in all points when the two following conditions are concurently fulfilled:
- the ratio of the two main strains of compression is at least 20;
- no tendon deviates of more than 20 grades of the direction of the greatest main compressive force.

In the slabs with simple prestressing it is basically the passive bar setting that ensures the tensile strength in the transverse direction to the prestressing.

SIMPLE PROP
Etai simple
Temporary Construction
A device for supporting slabs, formworks, walls, and taking reactions. These props that can be of wood or metal therefore take compression forces.

SIMPLE RETICULATED SYSTEM
Système réticulé simple
Strength of Materials
A reticulated system is known as *simple* if it is formed by applying for the following rule: from a system comprising three panel points and three bars forming a triangle; every new panel point mixed to the system is fastened by two new bars to the existing panel points. Forces in the bars of a simple reticulated system are gradually calculated by the panel points method.

SIMPLE TENSION
Traction simple
Strength of Materials
The stress to which is subjected the straight section of a beam when the external force which prompts it is a force of normal tension to the section and passing by its center of gravity. (In simple tension, the section undergoes solely normal stresses uniformly distributed.)

SIMPLIFIED PREPARATION
Préparation simplifiée
Welding
A U, J, double-U, double-J preparation, in which the profile of the joint is constituted by a broken line instead of a continuous curve, the bottom of the joint being flat.

***S.I.M.R.U.P.* APPARATUS**
Machine *S.I.M.R.U.P.*
Assaying Equipment
An apparatus for performing bending tests on concrete cube molds.

SINGLE-BEAM *or* GIRDER
Monopoutre
Construction
A work made up of a single beam.

SINGLE BEARING
Tympan
Strength of Materials
A simple bearing of a thin shell constituted by a beam having a great bending strength in a direction, and a very low strength in the perpendicular direction.

SINGLE J PREPARATION
Préparation en J
Welding
A preparation in which the edge of a single piece is prepared so that the profile of the corresponding face to be welded forms a J, more or less opened, with a plane or a heel not exceeding 3 mm.

SINGLE PART
Monocomposant
Polymers
An organic binder presented in a single component, having generally a thermoplastic character. Syn. wit ONE-PART

SINGLE U PREPARATION
Préparation en U
Welding
A preparation in which the edge of the two pieces is prepared so that the profile of the joint forms a U more or less opened, with a plane or heel not exceeding 3 mm. The U can be symmetrical or dissymmetrical.

SINGLE U PREPARATION (WITH SLOPING SIDES)
Préparation en tulipe
Welding
A U-preparation in the case of widened edges.

SINGLE V PREPARATION
Préparation en V
Welding
A preparation in which the edge of the two pieces is chamfered so that the profile of the joint forms a symmetrical or dissymmetrical V and not comprising any plane or heel, or only a plane or heel not exceeding 3 mm.

SINGLE V PREPARATION WITH BACKING
Préparation en V avec support à l'envers
Welding
A V-preparation with a remaining support or not, on the side of the root of the weld.

SINGLE-BEVEL PREPARATION
Préparation en demi V
Welding
A preparation in which the edge of only one of the elements is chamfered, forming a flat face, and the plane or the possible heel does not exceed 3 mm.

SINGLE-BEVEL PREPARATION WITH BACKING
Préparation en demi V avec support à l'envers
Welding
A half-V preparation with a remaining support or not, on the side of the root of weld.

SINGLE- *or* DOUBLE-EXPANSION BOLT
Boulon à double ou simple expansion
Materials
A split cone in which a bolt is screwed. During the tightening, the walls of the cone part and get blocked against the walls of the hole.

SINGLE-GIRDER CRANE
Monopoutre
Equipment and Tools
A travelling crane evolving only on a single beam.

SINGLE-GROOVE PREPARATION
Préparation à simple ouverture
Welding
A preparation in which faces to be welded open of a single side.

SINGLE-SPAN BRIDGE
Pont à une travée
Civil Engineering Structure
A work of which beams or deck rest only on their ends.

SINK
Farder; Aven; Foncer
Defects (Civil Engineering Structure); Geology; Foundation and Earthwork
1. To subside under its own weight evoking a construction, a wall. Syn. with YIELD

2. Syn. with AVEN; SWALLET; SWALLOWHOLE
3. Syn. with DRIVE; PUSH

SINKHOLE
Doline
Geomorphology
Syn. with DOLINE

SINKING
Affaissement
Geomorphology
Syn. with SETTLEMENT; SUBSIDENCE

SINKING BUCKET
Cuffat
Equipment and Tools
A steel cask fitted with lifting rings and being designed to come back up excavated materials (of a well, etc.) or to supply concrete or other materials (capacity from 6 to 8 m^3).

CUFFAT n.m.
Sinking bucket
Matériel et Outillage
Tonneau en acier, muni d'anneaux de levage et servant à remonter les déblais (d'un puits, etc.) ou à approvisionner du béton ou autres matériaux (contenance de 6 à 8 m^3).

SINKING OF GROUNDWATER
Rabattement de nappe; Rabaissement de nappe aquifère
Foundation
A process that consists in lowering the pressure of the groundwaters, inside a volume of given ground, underneath of the outside surface of the considered volume.
The sinking is obtained by a suitable number of collectings laid out around the volume to be sunk and into which a permanent pumping is ensured. The purpose is to allow the performance of excavations out of water. The sinking is carried out by filter wells, wellpoints, soakaway lowering method or by drainage trenches:

- **soakaway lowering** (*le rabattement à pleine fouille*) consists in pumping water in a soakaway on the bottom of the excavation. This simple and economic technique, involve in the case of unlined excavations an important bank sloping because of the hydrodynamic forces that develop in the ground. It is enabled to eliminate the water without removal of materials;
- **sinking by filter wells** (le rabattement par puits filtrants): see FILTER WELL;
- **wellpointing *or* wellpoint lowering** (*le rabattement par pointes filtrantes*): see WELLPOINT;
- **sinking by drainage trenches** (*le rabattement par tranchées drainantes*) consists in trenching into which semiflexible drains made of PVC are laid out. The trench enables to drain the grounds from fine to medium grading, on a depth about than 5 m. Ends of draining tubes are connected on pumps which can be spaced about 80 m apart.

Syn. with GROUNDWATER LOWERING

SIPHON
Siphon
Geology; Civil Engineering
1. Concerning the underground water circulation in a karst, reverse gradient being able to be cleared only by water under pressure.
2. A buried hydraulic piping passing under an obstacle (road, railway track, hillock, etc).

SIPO
Sipo
Building Materials
A tree of the rain forests with red-brown wood, of a density ranging from 0.55 to 0.70.

SIPOREX CONCRETE
Béton de siporex
Building Materials
Any foam concrete whose main aggregate is very fine quartz sand. This concrete is, after mixing, hardened to the steam.

SIREX BEETLE
Sirex
Defects (Building Materials)
A xylophage hymenoptera insect of the moderate and cold regions that attacks softwoods.

S-IRON (PLATE)
Esse
Materials
An S-shaped sheet metal piece driven at the end of a wooden piece to avoid the formation of splits.

SITE
Chantier
Work
Syn. with BUILDING SITE; JOB SITE

SITE HUT
Baraque
Temporary Construction
Syn. with HUT; SHED

SITE PLAN
Plan des lieux
Topography
In a construction project, document on which appears the site of the planned work, access points, axis of the bridge to be built.

SITE STONE
Pierre de chantier
Building Materials
A wedged rock ready to be cut.

SITTING
Vacation
Work
The given time to carry out a task, a job; and the fee paid for it.

SITUATION
Bilan
Mineralogy
In mineralogical analysis, the sum of oxide or minerals species contents in a quantitative composition. The statement applies to the chemical composition as well as to the quantitative mineralogical composition and must be next than 100. Syn. with CHECKUP

SIX-NEEDLE PENETROMETER
Pénétromètre à 6 aiguilles
Assaying Equipment
A laboratory equipment that measures the time, that a cement paste needs to reach a given consistency. This apparatus is programmable to detect, at choice, the initial set, the final set or any other stage of consistency. When one of the six test-specimens reaches the required consistency, the apparatus notes the time passed by to reach that moment and emits a resonant and optical signal.

SIZE
Dimension; Echantillon
Metrology; Building Materials
1. A number which expresses, in the chosen unit, the numerical value of a length. The size is called *dimension* when it is registered on a drawing. Syn. with DIMENSION
2. Syn. with SAMPLE; SPECIMEN

SKELETON
Squelette; Ossature; Squelette
Building Materials; Civil Engineering Structure; Construction
1. All inert materials (aggregates) which are added to compose concrete.
2. Syn. with CARCASS; STRUCTURE
3. The frame of a construction. Syn. with FRAMEWORK

SKELETON CONSTRUCTION
Ossature
Construction
Syn. with FRAME; METAL STRUCTURE; STRUCTURE; ETC.

SKELETON TRIANGULATION
Canevas; Polygone topographique
Topography
All the lines that allow to execute a drawing of the survey. This method is particularly used for ground containing many details. One chooses a number of fixed and remarkable points on the ground, that will be fastened by ideal straight lines. By the magnitude and its entirety, these straight lines constitute the skeleton triangulation. Syn. with CONTROL POINTS

SKETCH
Relevé; Ebaucher
Drawing
1. A dimensioned sketch plotted on the spot free-hand; it is intended for the drawn representation of existing works. Syn. with DIMENSIONAL SKETCH
2. To draw, to make the outline of a work (one also says TO OUTLINE).

SKETCHING
Traçage; Dessin; Plan de calepinage
Metal Construction; Drawing
1. An operation which consists in postponing in natural size using a scriber, on the thin sheet or zinc templates, the points of the axes of the rivets

or bolts according to the drawings. Each point then gives place to the drilling into the template of a hole of a small diameter allowing the marking with the center punch of sheets or bars for their definitive drilling.
2. Syn. with DRAWING
3. Syn. with WORKS DRAWING

SKEW
Biais
Civil Engineering Structure
The part of a work or a bar that is neither parallel nor perpendicular to the alignment or to the reference axis of the considered element. Syn. with SLANT

SKEW BRIDGE
Pont biais
Civil Engineering Structure
A bridge of which axis is not perpendicular to the axis of the cleared obstacle (river, road, railroad way). **See Figure 58**

SKEW CUT
Biaiser
Civil Engineering Structure
To cut obliquely

SKEW EDGE
Rive biaise
Construction
Edge of a part cut or machined out of square.

SKEW NOTCH
Embrèvement
Carpentry
Syn. with COG; JOGGLE JOINT

SKEW PAST
Biais passé
Masonry
Arrangement for bonding a vault when the passage to be vaulted is oblique compared with facings.

SKEW STONE
Pierre gauche
Defects (Masonry)
A stone badly cut, opposite facings and sides being not parallel.

SKEW SURFACE
Surface gauche
Strength of Materials
An area generated by a straight line, but nondevelopable on a plan, such as a paraboloid.

SKEW WALL
Mur biais
Construction
Syn. with WALL AT AN ANGLE

SKEWBACK
Sommier
Construction
In tunnel, running lengthways beam resting onto corbels or sidewalls, built into the rock (when it is set in springing, it can be used as bearing for the vault).

SKID
Cale
Masonry
A wooden piece, mostly beveled, used by the stonemasons to position correctly ashlars before the pointing.

SKIDS
Cales de stockage ; Patin
Equipment and Tools
Wooden pieces (rafters, balks, etc.) regularly spaced and laid down on the ground and onto which are stored bars, girders, etc., to isolate them from the ground.

SKI-JUMP SPILLWAY
Déversoir en saut-de-ski
Hydraulic Works
A spillway ended by a banked beak or a spoon to distance from the foot of a barrage the water flowing at high speed by the spillway and to absorb at distance the tremendous energy of this water, avoiding in this way dangerous underwashings.

SKIM COAT
Couche de finition
Masonry
Syn. with FINISHING CEMENT RENDERING

SKIN
Epiderme; Peau
Construction; Painting
1. Syn. with EPIDERM
2. The visible surface of any concrete or a mortar rendering.
3. A solidified paint film more or less thick, often wrinkled, that forms on the surface inside a storage container and that results of a prolonged exposure to the air.

SKIN PACKING
Pelliplacage
Materials
An operation that consists in applying onto a piece a film of another matter with an aim either decorative, or protective. Syn. with SHRINK WRAP; SKIN PACKAGING

SKIP
Omission
Defects (Painting)
A zone, portion of a work not painted following a voluntary lapse of memory or not. Usually this defect is noticed in the unseen parts or parts hardly accessible.

SKIRT
Ecobue; Parafouille
Equipment and Tools; Construction
1. A pickaxe or plow that serves to detach a superficial layer of earth.
2. Syn. with CUTOFF; CUTOFF WALL

SLAB
Dalle; Brame
Construction; Metallurgy
1. An element generally parallelepipedic of small thickness in comparison with its surface, used as inspection cover, in pavement, cover of box culvert, deck of bridge, etc.
The slab can be of stone or concrete.
Among the main types of slabs are:
- **surface-mounted reinforced concrete slab** (*la dalle en B.A. plaquée*), made up of reinforced concrete panels anchored in a natural slope using prestressing tie rods. This whole of panels covering all the surface of a slope, constitutes a supporting; **See Figure 59**
- **floating slab** *(la dalle flottante),* a work completely disunited from the vertical walls of the works on which it rests through the agency of a dissociation or slip layer; the floating slab can be made of reinforced concrete or not;
- **deck** (*la dalle de pont*), a R.C. or P.C. slab which allows the traffic and transmits on the bearings the loads that it directly supports; it can be solid, elegy or ribbed;
- **mixed slab** (*la dalle mixte*) made up of sheet metal covered with a concrete slab (the integral union between sheet iron and the slab is ensured by connectors) which constitutes the cover of a bridge;
- **orthotropic slab *or* orthotropic plate floor *or* orthotropic plate deck** (*la dalle orthotrope*) for the mixed metal-concrete deck formed by a sheet steel stiffened by orthogonal stiffener welded onto the bottom face and covered with a concrete slab. The longitudinal stiffeners of the slab are perpendicular to the bridging pieces and with the distance pieces which form transverse stiffening and these two kinds of stiffeners do not have the same inertia. The longitudinal stiffeners have very varied forms: flat irons, bulb flat irons, angle sections, etc. The orthotropic slab presents inertia of bending, most great in the direction of the stiffeners than in the perpendicular direction. The concrete slab plays the role of top chord of the main beams, of frame of the bridging pieces and traffic area; **See Figure 59a**
- **participating slab (of R.C. or P.C.)** (*la dalle participante* (*en B.A. ou B.P.*)) interdependent of the frame in a mixed metal-concrete deck. In this type of work, the slab takes part in the general resistance;
- ***Robinson* slab** *(la dalle S.C.E.T. ou dalle Robinson),* a reinforced concrete element of small thickness (approximately 8 cm) for the mixed metal-concrete deck and which is poured in place on a covering deck sheet metal which is used at the same time as bottom reinforcement. The connectors consist in flat irons folded at 45° and connected on head by main bars;
- **transition slab *or* access road slab** *(la dalle de trannsition*) which constitutes an intermediate element between a bridge and the surrounding embankment. This slab rests on the one hand on the embankment, and on the other hand, on the abutment; it has the role to ensure the transition between the work and the embankment without risk of unevenness in the event of settlement of this last. **See Figure 59b**

2. A semifinished product at least 50 mm thick and which ratio width out of thickness is 2 or

more. It is a metal piece intermediate between ingot and plate.

SLAB (BOARD)
Dosse
Carpentry
A thick board used to carry out laggings placed onto centerings of frame.

SLAB FORM
Prédalle
Construction
Syn. with PRESLAB; SHUTTERING FLOOR SLAB

SLAB WOOD
Dosse
Nomenclature of Materials
First and last boards cut up from a log and that comprise the sapwood and the good wood.

SLAG
Laitier; Mâchefer
Welding: Materials
1. During a welding operation, deposit which settles onto the weld bead. This deposit arises from the molten of the coating of the electrode.
2. Syn. with CINDER

SLAG CAVITY
Doublure
Metal Construction
A defect resulting from the incorporation of cinders during casting due to the insufficient working during forging or rolling operations. This is characterized by internal cavities filled with cinders from old iron.

SLAG CONCRETE
Béton de laitier; Béton de mâchefer ; Béton de scorie
Building Materials
1. A light material whose main aggregate consists of slag expanded or not.
2. Syn. with CINDER CONCRETE

SLAG INCLUSION
Inclusion de laitier
Defects (Welding)
A three-dimensional defect of a weld bead characterized by the accidental presence of slag whose effect is similar to that of porosities; its presence in a welded joint decreases the duration of beginning of fatigue cracks in a way more serious than the blowholes.

SLAG SAND
Sable laitier; Claine
Hydraulic Binders; Abrasive
1. A hydraulic material of slow set whose mechanical characteristics are rather different from the characteristics of the mainline hydraulic concretes; it is formed by a primary sand (from 60% to 90% of the mixture), a corrective grain-size sand (from 0% to 20% of the mixture), granulated slag from blast furnace and a set catalyst of the slag. The slag sand is mostly manufactured in a continuous or discontinuous mixing plant (according to the importance of the building site); it is used to form the subgrades of roadway, foundations of structures, construction of retaining walls, etc.
2. An abrasive coming from hard slag of blast furnace and that is used to scour facings. Syn. with FINE SLAG

SLAG TARMACADAM
Tarmacadam de laitier
Building Materials
A material formed by crushed blast-furnace slag, coated when it is still warm with coal tar of special quality or of mixture tar bitumen, whose viscosity is variable according to the season. The tarmacadam is cold-implemented.

SLAKE
Eteindre la chaux
Hydraulic Binders
To mix with water, so that a chemical combination takes place, as in the slaking of lime.

SLAKED LIME
Chaux éteinte
Building Materials
A product obtained by water pouring on the burnt lime which has for effect to cause an important heating of the mass. The water is absorbed, then the lime cracks, foliates and one obtains finally a paste. After evaporation of water and grinding, a fine white powder is obtained. Mixed with sand, it gives the air-hardening mortar.

SLANT
Biseauter; Biais
Materials, Construction and Building Materials: Civil Engineering Structure
1. Syn. with BEVEL; CHAMFER
2. Syn. with SKEW

SLANT (OF ARCHSTONE)
Coupe
Construction
The incline of wedge-shaped arch stones in an arch or voussoirs in a flat arch.

SLANT TIMBER
Costière
Building Materials
Wooden piece snapped away.

SLANT WALL
Mur biais
Construction
Syn. with WALL AT AN ANGLE

SLASHED INJECTION PIPE
Tube à brocher
Foundation
A salvaged plastic tube equipping a drilling overall its height and used to inject ground cavities. At the time of the injection, the stand of drill pipe provided with knives which tear the tube is gone back up; the grout flows out by splits thus carried out.

SLATE
Ardoise
Geology
A gray, bluish, or mauve fine-grained metamorphic rock, easy to split into thin folias or slabs.

SLED TRANSPORTATION
Lissage
Handling
A transportation way of quarry stones from the location of storage to the building site by means of a kind of wooden sled. Syn. with HAULING

SLEDGEHAMMER
Masse; Mail
Equipment and Tools
1. A tool formed by a heavy head (wood or steel) provided of a long handle, being designed to strike, break, drive in, etc. Syn. with BEETLE
2. A large steel mass used by quarry workers to cut up roughly the rock

SLEEPER
Sommier; Vanne
Construction; Foundation
1. A frame formed by close or very neared universal beams, interposed between a large-sized metal part or heavily loaded, and its foundation block, intended for ensuring a regular distribution of the load to be transmitted to the block. Syn. with CAP; END CARRIAGE
2. Cross member supporting a railings.
3. Nailed strong planks connecting the heads of wooden piles of a foundation.

SLEEPER CLIP
Crapaud
Construction
Syn. with ADJUSTING CLIP

SLEEPER PUMPING
Pumping
Defects
Syn. with MUD PUMPING

SLEEPER SCREW
Tire-fond
Materials
A large wood screw with helical wide pitch and generally square-headed.

SLEEPINESS
Ternissement
Defects (Painting)
The change of hue of a paintwork which is shown by a loss of brilliance, of brightness. Syn. with BLOOM

SLEEVE
Fourreau; Gaine; Chemise; Manchon
Construction; Foundation; Nomenclature of Materials
1. Syn. with EXPANSION SLEEVE; PIPE SLEEVE
2. An outer layer of piping to allow the dilation of a piping to the going through of a wall, or to isolate or provide it from possible shocks. Syn. with SHEATH; CASE
3. Syn. with LINING; SHEAT
4. An inside or outside tubular element ensuring the continuity of a sill, tube, sheath, bar. The

sleeve can be smooth or threaded; in this last case, it ensures a mechanical continuity. Syn. with SLEEVE NUT; THREAD UNION; SOCKET

SLEEVE COLLAR
Bride
Construction
A circlip (or half-circlip) tightened on a piece with intent to strengthen it or to join the pieces that composes it. Syn. with FLANGE

SLEEVE GROUTING
Coulis de gaine
Materials
Syn. with CLAQUAGE GROUTING; SHEATHING CLAY-CEMENT GROUT;

SLEEVE NUT
Manchon
Construction
Syn. with SLEEVE; SOCKET; THREAD UNION

SLEEVING
Gainage; Manchonnage
Foundation; Work
1. Syn. with CASING; SHEATING
2. The assembly of two tubes or bars with a sleeve. Syn. with THREADING

SLENDERNESS
Elancement
Strength of Materials
In strength of materials, we can distinguish two forms of slenderness:
- **geometrical slenderness ratio** (*l'élancement géomètrique)* that, in a compressed element, is the ratio between the free length and the smallest radius of gyration of the section;
- **mechanical slenderness ratio** (*l'élancement mécanique*) that, in a compressed element, is the ratio between the length of buckling and the radius of gyration of the section in the plan of buckling.

SLENDERNESS RATIO
Elancement
Foundation; Masonry
1. Speaking about piles, the ratio of the useful length to the width.
2. The ratio between the clear height of a wall and its thickness.

SLEWING PLATE ANCHORING
Ancrage à plaque pivotante
Work
A driven anchorage, particularly adapted to loose ground. It consists in a metal plate, of a surface ranging from 0.1 to 1 m². The plate is driven with the slice by using a special hydraulic pile driver (from 5 to 20 m depth) and with the wanted incline. The tie rod which plays the role of connection between the plate and work is fixed on the rib (plate) thanks to a fastener very offset with regard to the plate. The tensioning causes a swinging of the plate and former is placed perpendicularly to the direction of the strain. **See Figures 60 and 60a**

SLIDE WAY
Coulisse
Construction
A timber piece containing a groove which holds a moving part.

SLIDING
Translation transversale; Déplacement transversal ou Ripage; Coulissement
Handling; Temporary Construction
1. The putting into place of a bridge deck parallel to its bearing lines.
2. In underground tunnel lining, the slipping of the post into the shaft of a prop when the pressure reaches a certain level called *sliding of maximum load.*

SLIDING ALONG
Ripage; Déplacement transversal
Handling
An operation that consists in moving a structure (bridge deck) parallel to its bearing lines. The work is built beside its final site and then set up by lateral moving. It is a process routinely used to replace a former work.
The operation of sliding along can be carried out:
- **by rolling** (par roulement) on devices whose the commonest are the rollers, the balls and *rouleurs sans-cesse-Express,* moving on an especially studied runway. The moving is carried out with the help of winches, ratchet-hoist pullers and translatory jacks. In general this process requires, after sliding along, a jacking manoeuvre

to release the device of roll and the work is put down onto definitive bearings; **See figures 61 and 61a**

- **by slipping** *(par glissement),* a process which, when it is a question of moving little important loads, can be carried out by a simple greasing or lubrication of the tracks. For the sliding along of the heavy loads, the devices of slipping can be adopted. Generally, they are : either a Teflon film stuck on the lower part of a laminate elastomer plate or metal surface of the deck, or the selflubricating and antiblocking plastic plates with a slighly coefficient of friction. Another process consists in interposing, between the load and permanent support, an element slipping on an air film (air cushion);
- **by horizontal sinking** *(par fonçage),* a process that consists in equipping the ways with a metal girderage (case of a driving under railway tracks) in order to stiffen them and to allow them progressively to lean on the work itself as they advanced of pushing and scouring the slope.

SLIDING BEVEL
Fausse équerre
Equipment for Measure and Control
Syn. with BEVEL SQUARE; TEE-BEVEL

SLIDING COAT
Couche de glissement
Construction
An intermediate layer arranged between the work and the support and intended for allowing the breaking away and the slipping of floating slabs with regard to their support.

SLIDING CURVE
Courbe de glissement
Geotechnics
The breaking line of a ground.

SLIDING MAXIMUM LOAD
Charge de coulissement
Temporary Construction
The limit pressure that can bear a supporting from the ground and beyond which it decreases in length by sliding of the punch in the shaft (metal friction props) or of the piston in the cylinder (hydraulic props).

SLIDING WAY ON PLASTIC SKATES
Chemin de ripage sur patins en produits plastiques
Handling
A setting device of works by lateral moving on self-lubricating and non-stick plastic square tips, to with lower coefficient of friction, or on plates of reinforced neoprene supplied on their bottom face by a sheet of Teflon.

SLIGHT SCRATCH
Eraflure
Defects
Syn. with SCORE

SLIM HOLE
Filiforage
Work
A drilling of a smaller diameter (Ø 60 mm maximum) carried out in the ground or a masonry.

SLING
Echarpe; Echarper; Brider une pierre; Elinguer; Elingue
Handling; Equipment and Tools
1. Syn. with LIFTING ROPE (FOR ASHLAR)
2. To hoist materials with sling.
3. To fasten a stone at the end of a cable or a rope to pull it out of its pit bench.
4. To surround a load to be handled with slings to hoist it by means of a lifting device.
5. A steel or hemp cable, weak-lengthed, used to surround or hang a load to lift up and to lift with an appropriated device. Slings are generally supplied to their extremities with fixing devices appropriate to lifting such as buckles, rings, hooks, etc. Syn. with BROTHERS

SLING ROPE
Brayer; Braye; Elingue
Equipment and Tools
1. A bundle of ropes used by builders to raise quarry stones, ashlars.
2. A rope that grips tightly an ashlar and that allows to raise it.

SLINGING
Elingage
Handling
A prehension device intended for “taking hold” a load, which is constituted by one or several

slings and by the shackle or ring enabling the seizing by a lifting hook.

SLINGING ROPE
Brayage
Handling
The fixing of sling ropes around an ashlar that must be lifted up.

SLIP
Cale à joint; Glissement
Masonry; Strength of Materials
1. Syn. with FIXING FILLET; FIXING SLIP; PAD; PALLET
2. The movement by friction of two surfaces in intimate contact, one with regard to the other and without absolute detachment.

SLIP AGGREGATE
Plaquette
Building Materials
A flat-shaped aggregate.

SLIP LINING
Doublage
Sanitary Engineering and Drainage
The replacement of an existing piping by insertion of substitution pipes of a diameter slightly lower than those in service to compensate their outdated state or fault.

SLIP OF CABLE IN THE BOTTOM CABLE
Glissement de câble dans le culot
Defects (Construction)
Concerning the cables bridges, damage characterized by the movement of the cable with regard to the cable bottom. It can get appeared by:
- the detachment of the sealant;
- appearance of a zone of cable not painted at the exit of the bottom cable;
- extension of fuse alloy;
- deformation and/or the movement of the fuse alloy at the other end of the bottom cable.

SLIP OF FASTENING
Glissement de pièces d'attache
Defects (Construction)
Concerning the cables bridges, defect characterized by the movement of fastener pieces of suspenders on the carrying cable and which can result:
- of a shortcoming of tightening of these pieces on the cable;
- of a bad design of these pieces that prohibits tightening of it;
- of the rupture of the cable.

This defect is detectable because the slip leaves generally marks on cables.

SLIPHEAD
Fourche
Equipment and Tools
The U-shaped top part of metal shores where rest the balks supporting the floor of a horizontal formwork.

SLIPPERINESS TEST
Essai de glissance
Test of Materials
A test for determining the degree of adhesion on the roadway pavements.

SLIPPING METAL BEARING APPARATUS
Appareil d'appui métallique à glissement
Construction
A metal device of connection and transmission of actions to the bearing elements, whose we can distinguish:
- **slipping bearing plate** *(la plaque de glissement)* which is used for cased composite beams bridges and reinforced concrete slab bridges of length lower than 20 m. This bearing is formed by two plane plates of rolled steel each 20 mm thick. One is fixed at the end of the pier cap and another to the deck and being able to slip the one on the other;
- **cast-steel bearing** *(l'appui en acier moulé)* which is used for reinforced concrete bridges and for metalic deck bridges. Concerning reinforced concrete bridges this bearing is formed by two blocks of cast steel with a cylindrical knuckle joint for the bottom block, the upper equalizer being anchored in the concrete. Lateral stops head off any transverse displacement. For bridges with metallic deck, this bearing is formed by a block of cast steel with a cylindrical knuckle joint supporting the metal beam.

SLIPPING PLATE FOR BRIDGE-SUPPORT APPARATUS
Plaque de glissement en élastomère fretté pour appareils d'appui
Construction
Plates made of a block of reinforced elastomer which is inserted between two metal platinums. The upper platinum linked to the work comprises stop blocks which come to butt against the corresponding stop blocks of the lower platinum embedded into the pier cap.

SLOPE
Rampe; Dévers; Taluter
Civil Engineering; Work
1. Syn. with GRADIENT; FALL
2. Syn. with INCLINATION; OUT OF PLUMB
3. To build in slope.

SLOPE
Glacis: Délarder; Berge
Construction; Building Materialsand Metal Construction; Hydrology
1. Syn. with BANK; GRADIENT
2. Syn. with BEVEL
3. Syn. with BANK; EMBANKMENT

SLOPE LEVEL
Niveau de pente
Equipment for Measure and Control
A mason's level whose horizontal bar bears a graduation thus allowing to measure or to check the angle of a slope. Syn. with BATTER LEVEL

SLOPE LINE
Ligne de pente
Masonry
Concerning a bonding of masonry, aspect of courses which is sloping according to a given slope.

SLOPE REVERSE WATER
Revers d'eau
Construction
The sloping part of some masonry in contact with the ground intended for facilitating the seepage waters draining toward the drainage.
The water reverse mostly equips the abutments, the wing or return walls, the retaining walls. For the abutments, this constructive arrangement shows its top at the base of the breastsummer and for the other walls, at the base of their cap. The slope reverse water is always covered with a tight screed.

(SINGLE) SLOPE (CHANNEL) TRIMMER
Taluteuse
Equipment and Tools
Earthmover plant for shaping slopes.

SLOPE WATERSPOUT
Descente d'eau
Sanitary Engineering and Drainage
Work established on slope by cutting or filling, intended for collecting crest waters toward a longitudinal device of platform or foot of embankment.
We can distinguish:
- **toboggan slope waterspout** *(la descente d'eau sur remblai dite en toboggan),* made up of a pipe built along the profile of the embankment and intended for canalizing water;
- **incline cascade waterspout** *(la descente d'eau sur remblai dite en cascade),* constituted by a built pipe whose raft forms steps with the purpose of slowing down the flowing speed of waters.

Syn. with INCLINE WATERSPOUT

SLOPED FOOTING
Semelle conique
Foundation
Isolated foundation used for the foundations of poles, which assumes the shape of a hollow dome leaning on the undisturbed soil. This type of footing is made of reinforced concrete. **See Figure 62**

SLOPER
Taluteur
Earthwork
Navvy laborer that carries out the incline of embankment slopes according to the plans.

SLOPING
Délardage; Zone délardée; Pentu
Metal Construction ; Topography ; *Defects*
1. Lengthened chamfer allowing the gradual reduction of the sheet metal's thickness at its end in order to assemble it with a sheet metal of lower thickness and to obtain a satisfactory assembly. Syn. with BEVELING. **See Figure 63**
2. Of grounds showing a declivity.

SLOPING WALL
Naissance; Mur en aile; Mur taluté; Mur déversé
Construction; Defects
1. Slope (covered or not) of the bank included between the foot and the keystone of the opening of a cut retaining wall. **See Figure 64**
2. Syn. with ABUTMENT WALL; RAMP WALL; WING WALL
3. A work showing a very accentuated incline, as a slope. **See Figures 64a and 64b**
4. Construction out of plumb.

SLOPING WORK
Règlement d'un talus
Earthwork
Job that consists in giving to the cutting slopes or embankments regular shape and the required slope.

SLOT
Entaille; Rainure
Nomenclature of Materials: Construction
1. Syn. with DADO; NICK; NOTCH
2. Syn. with CHANNEL; FURROW; GROOVE; RABBET

SLOT BORER
Esseret
Equipment and Tools
Syn. with LONG BORER; SLOT DRILLER

SLOT DRILLER
Esseret
Equipment and Tools
Syn. with LONG BORER; SLOT BORER

SLOT-AND-WEDGE BOLT
Boulon à fente et à coin
Materials
A special bolt used to anchor the ground; particularly in rocky grounds. The bolt has a longitudinal split to one of its ends. With a wedge placed in the split, one sinks the bolt and one pushes on the wedge to the bottom of the drilling. One hits then on the free extremity of the bolt, the split opens and the bolt anchors into the rock. A metal plate is then placed and kept by a nut. **See Figure 65**

SLOUGH
Bourbier
Earthwork
Thick mud covering the bottom of an excavation or a trench due to the presence of surplus waters that dilute the particles of the soil. The transformation into slough generally follows strong rainfalls or thawing.

SLUDGE
Vase
Hydrologie
An organic earth sediment beneath water caused by the decomposition of vegetable, animal and microorganisms. It is often mixed with sand, clay or limestone. It is a greenish (but sometimes ochre, blue-black, dark brown), elastic and spongy material. Sludge has viscous or thixotropic properties.

SLUDGE HOLDING TANK
Bassin à boue
Earthwork and Foundation
Syn. with SLUSH PIT

SLUDGER
Débourroir
Equipment and Tools
A tool used to take off the wade subsisting inside a blast hole.

SLUICE
Pertuis; Ecluse
Construction; Hydraulic Work
1. Each span of an aqueduct originated from a single opening and which, in a place on its course, is divided into two or several spans. By extension, each span of an aqueduct that comprises several of them on all its course. Syn. with PASSAGE WAY. **See Figure 66**
2. Syn. with LOCK

SLUMP CONE MOLD
Cône d'Abrams
Equipment for Measure and Control
Truncated mold used to carry out the slump test of fresh concrete.
The equipment of the slump cone mold is the following:
- A square plate serving as base equipped with fixing devices for the truncated cone,

- A truncated cone of 20-cm diameter at the base, 10-cm diameter at the top and 30-cm tall,
- A measuring frame whose crosspiece is equipped with a sliding graduated ruler,
- A rodding rod of 16-mm diameter and 60-cm length.

See Figure 67

SLUMP TEST
Essai d'*Abrams*
Test of Materials (Concrete)
Syn. with *ABRAMS* SLUMP TEST

SLURRY
Bouillie explosive *ou* Explosif en bouillie; Coulis
Explosives; Materials
1. A solution, the most often sodium nitrate, in which are in suspension grains of tolite or aluminum.
2. Syn. with GROUT(ING)

SLURRY IN BULK
Bouillie en vrac
Explosives
An explosive used in earthmoving or demolition works but which is not conditioned in envelopes, contrarily to the cartridged slurry.

SLURRY MIXER
Malaxeur pour coulis
Equipment and Tools
Syn. with GROUT MIXER

SLURRY SHIELD
Bouclier à pression de boue
Earthwork
Syn. with MUD-PRESSURE SHIELD.

SLUSH PIT
Bassin à boue
Earthwork and Foundation
A watertight basin, excavated next to a drilling site, used to collect unusable drilling fluids, cuttings, washwater and drippings. Syn. with DRILL SUMP; MUD PIT; SLUDGE HOLDING TANK; SLUDGE PIT; SLUSH POND; SUMP

SMALL ASHLAR
Moellonaille
Building Materials
Syn. with SNECK

SMALL BAR
Balustre
Construction
In a railing, vertical element other than a vertical rod. Balusters are the filling of the railing panel.

SMALL BEAM
Poutrelle
Buildings Materials
Syn. with JOIST; ROLLED STEEL JOIST; UNIVERSAL BEAM SECTION

SMALL BOARD
Planchette
Building Materials
Small board which generally has the thickness and width identical to an ordinary board, but whose length is slightly bigger than its width. Syn. with PLANE TABLE; PLANK

SMALL COLUMN
Colonnette
Construction
Column of small dimensions, notably in height.

SMALL COURSE
Petit appareil
Masonry
Bond of masonry in which the height of each course remains lower than 20 cm. Syn. with COURSED RUBBLE

SMALL GATE
Vannette
Construction
A small dike or sluice.

SMALL PAVING STONE
Cadette
Building Materials
Syn. with COBBLESTONE CUT

SMALL PILASTER
Bande lombarde
Construction
Pilaster of small thickness, which stands out on the main plane of a wall and serves as buttress.

SMALL PILE
Pilette
Construction
In the masonry bridges with several transverse galleries, small pile of small height receiving the springing of the facing arches. **See Figure 45**

SMALL POST
Potelet
Construction
Syn. with DWARF STUD

SMALL RETURN WALL
Petit mur en retour
Construction
Arrangement of the end of a wing wall to support the grounds of filling in the outside part of the space and below the banks or undisturbed soil. Small return walls are generally ended on their upper part by a coping of ashlars connected to the rampant of the wing wall.

SMALL ROD
Biellette
Construction
Syn. with ROCKER BAR

SMALL SLAB
Dallette; Dallot
Construction; Nomenclature of Materials
1. A slab of small dimensions with regard to the other parts of the work (example: the small slab of gutter, the small slab of sidewalk).
2. Slab of reduced dimensions.

SMALL STONE
Petite pierre
Building Materials
Material formed by stone fragments each having the double of a squared rubble's surface.

SMALL TIE BEAM
Petit entrait
Carpentry
The horizontal piece of a truss joining the principal rafters at an upper level than their bases.

SMALL TONGUE
Languette
Carpentry
Syn. with TONGUE

SMALL TORUS
Baguette
Architecture
Half-round small molding also called *small tore* in ashlar masonry. Syn. with ROUND BATTEN (MOLDING). **See Figure 69**

SMALL TROUGH
Auget
Metal Construction; Construction
1. A U-shaped steel part assembled or not, fixed on the beams of steel decks and which is designed to keep the sleepers or longitudinal sleepers of a railway track crossing a steel deck.
2. In an orthotropic slab, trapezoidal-shaped closed stiffening rib normally made up by a folded flat iron

SMALLER WORKS
Menus ouvrages
Civil Engineering Structure
Achievements of the finishings, such as equipments.

SMALL-SCALE DRAWING
Plan-relief
Drawing
Representation of a work on a reduced scale.

SMECTITE
Smectite
Geology
A variety of clay, which inflates in the presence of water.

SMITHING
Forgeage
Metallurgy
Syn. with FORGING

SMITHING CAVITY
Travers
Defects (Metallurgy)
Hollow spaces more or less important existing inside former irons. This defect resulted from insufficient work of the metal during the operations of forging or rolling. Syn. with ROLLING CAVITY

SMITHSONITE
Calamine
Defects (Metallurgy)
A parasitic layer that forms on the surface of steels, notably owing to rolling operations.
The carbon (deposit) is formed by wüstite (FeO), magnetite and hematite. Its forming is brought about by chemical reactions due to the complex constitution of the steel, and its structure is modified by the action of rolling and forging process themselves. Syn. with MILL SCALE

SMOOTH
Epanner; Radoucir; Unie; Eteindre
Masonry; Work; Painting
1. To correct one of the sides of a gritstone tile; to form there a flat surface.
2. To make disappear the irregularities of a facing, a surface, by removing the excess matter.
3. Of the regular surface of a ground, a roadway, or any other support. Syn. with LEVEL
4. To make less aggressive, to soften the colors of a paint.

SMOOTH FACING
Parement fin
Construction of R.C. and P.C.
The face of a concrete structure which was the object of particular requirements for evenness and consistency with respect to the shape, texture, and hue. Generally of smooth aspect, the smooth facing is reserved in principle for the visible parts and is achieved by metal, plywood, plastic, or even wooden formworks.

SMOOTH OFF (A JOINT)
Adoucir
Masonry
To flush two course joints whose main plane is not exactly of the same plumb.

SMOOTHER
Lisse; Epanneur
Equipment and Tools; Masonry
1. Syn. with SMOOTHING TROWEL
2. Worker who smoothes.

SMOOTHING
Ragrément; Adoucissage; Décor d'architecture; Lissage
Masonry; Construction of R.C. and P.C.
1. The recutting in situ of the superficial projections and irregularities that would result from the flaws in the cutting or bonding of the facing stones.
2. Overfinishing applied especially to the hard and half-hard stones, that consists in leveling the whole facing in particular at the level of the joints of surface, lines, moldings. This operation is carried out with chips. (Surfaces can be polished by rubbing them by means of pads impregnated with pulverulent matter of increasing fineness: sandstone and water (grinding), emery, pumice, etc.).
3. The attenuation of the irregularities of an ashlar facing.
4. Smoothing of an ashlar.
5. The meticulous finishing of a facing coated with mortar, of a screed's surface or concrete slab. Smoothing can be carried out manually or mechanically: float, smoother, vibrating screed, helicopter, etc. Syn. with TROWELING

SMOOTHING TROWEL
Lisse
Equipment and Tools
A builder's tool used to perform the smoothing of renderings. Syn. with SMOOTHER

SMUDGE
Noircissure; Barbure; Bavure
Defects
1. Syn. with BLACK SPOT
2. Syn. with BARB; BURR; SCALE

SNAKE
Couleuvre
Defects (Masonry)
In a vault, large break in the masonry due to a defect in construction, so named because the break is wide enough for a snake to pass through.

SNAP
Bouterolle
Equipment and Tools
A steel tool with a hemispheric hollow, used to form the second head of rivets. The snap can be manual or pneumatic. Syn. with SNAP TOOL; RIVET SET; RIVETING TOOL

SNAP A LINE
Ligner; Cingler
Masonry
Syn. with CHALK A LINE

SNAP TOOL
Bouterolle
Equipment and Tools
Syn. with SNAP; RIVET SET; RIVETING TOOL

SNAPPING AWAY
En sifflet
Work
Of a slanted cut or slanted section.

SNAPPING LINE
Cingleau; Ligne
Construction and Equipment and Tools
Line impregnated with a coloring matter (chalk powder) that is tightened against a facing after which it is lashed. This operation has the effect of figuring a line on the facing.
Also said of the result of this operation, namely the line itself. One also says "Line to the blue". Syn. with CHALK LINE

SNECK
Moellonaille
Building Materials
Set of small quarry stones. Syn. with SMALL ASHLAR

SNECK WORK
Moellonaille
Masonry
Any masonry carried out with identical quarry stones (even source, even cut, etc.).

SNOW SHED
Galerie couverte; Galerie pare-avalanche
Civil Engineering Structure
Covered work built over of a channel of communication and that borders a rock face, so as to protect the way from the risks of stonefalls, rockfalls, landslides, or avalanches. **See Figure 70**

SOAKAWAY
Puits perdu; Puisard
Sanitary Engineering and Drainage
Covered well, dug into the ground at relative depth and generally filled with large stones creating important hollow spaces between them; it is designed to collect black water or rainwater. Syn. with CATCH PIT; DRAINAGE WELL; SUMP

SOAKING
Trempage
Painting
Painting process of metal parts that consists in immersing them into a bath of paint and in pulling them out gradually in order to cause the surplus of product to flow down.

SOAPSTONE
Pierre ollaire
Buildings Materials
1. Syn. with POTSTONE
2. A metamorphic rock of massive, schistose, or interlaced fibrous or flaky texture and soft, greasy feel; composed essentially of talc with variable amounts of mica, chlorite, amphibole, and pyroxene; alteration product of ultramafic rock; may be carved into art objects or sawn into dimension stone for use where chemical resistance or high heat capacity is needed.

SOCK
Chaussette
Construction of R.C. and P.C.
System that allows the installation of steel prestressing cables into their respective cable ducts.

SOCKET
Crapaudine;Manchon
Construction
1. Fixed piece supporting and guiding the lower pivot of a mobile organ (example: gin pole, crane hoist, etc.). Syn. with GUDGEON
2. Syn. with SLEEVE; SLEEVE NUT; THREAD UNION

SODOSPUN™
Sodospun
Sanitary Engineering and Drainage
Nonwoven geotextiles used in drainage, whose manufacturing process is similar to that of the *bidim;* the difference resides in the fibre used that in this case is a polypropylene of 39 micrometers diameter. The *sodospun* is a nonwoven lashed material of which there are different weight varieties.

SOFFIT
Soffite; Douelle; Coquille; Intrados
Construction
1. The undersurface of a corbeled construction or of a part of overhanging construction. Syn. with INTRADOS
2. Syn. with BOTTOM FACE; INTRADOS
3. Syn. with VAULT
4. Syn. with BOTTOM FACE ; INNER FACE; INTRADOS

SOFT
Doux
Metallurgy
Of a ductile, malleable metal of little hardness and not fragile.

SOFT or CRUMBLY ROCK
Roche meuble
Geology
Syn. with FRIABLE ROCK

SOFT QUARRY STONE
Cairon
Building Materials
Syn. with CAIRON

SOFT ROCK
Pierre tendre *ou* très tendre
Building Materials
A limestone of low density (1.4 to 1.85) and weak compressive strength (up to 1.2 MPa). This quality of stone covers the first three numbers on the hardness scale.

SOFT ROT
Pourriture molle
Defects (Building Materials)
Wood alteration characterized by superficial softening of the wood that acquires a grayish dye and often has longitudinal and transverse crazing, also.

SOFT STEEL
Acier doux
Metallurgy
Syn. with LOW STEEL; MILDSTEEL

SOFT STONE
Pierre grasse
Building Materials
Damp rock sensitive to the frost.

SOFT VEIN
Terrasse
Nomenclature of Materials
Friable stone fraction which breaks up with moisture; this defect is caused either by a softer vein, or by a vein filled with clay.

SOFTEN
Assourdir; Détremper
Painting; Metallurgy
1. Action of making a dye less vivid. Syn. with TONE DOWN
2. Syn. with ANNEAL

SOFTENING
Ramollissement
Painting
Diminishing of the initial hardness of a paint film due to chemical modifications of the binder.

SOFTSTONE PICK
Pioche à pierre tendre
Equipment and Tools
A stonecutter's tool that takes the shape of a steel hammer made up on one side of a sharp peen from 3 to 4 cm wide and on the other side of an adze of similar width.

SOFTWOOD
Bois tendre; Bois résineux
Building Materials
1. In the international trade, wood of the resinous, as opposed to wood of the deciduous told *hard.*
2. A wood sample whose texture is weak; that is to say where the rate of summer wood in the annual rings is tiny compared with spring wood. (Summer wood is harder and more compact than spring wood.)
3. Syn. with CONIFEROUS WOOD

SOIL
Sol
Geology
All unconsolidated materials above ledge rock.

SOIL AGGREGATE
Agrégat
Pedology
The relatively stable assembly of the ground particles.

SOIL BEARING CAPACITY
Force portante d'un sol
Foundation
Load that the ground is able to bear without visible deformation.

SOIL CLASSIFICATION OF GRANULOMETRIC GRADATION
Classification granulométrique des sols
Geotechnics
Category distribution whose oldest practice is called *the Atterberg classification* that follows a geometrical progression of reason 1/10 from the coarsest elements to the finest. The modified Atterberg classification includes under the sand denomination all elements between 2 and 20 mm. In fact, under 50 micrometers, elements are no longer visible to the naked eye, and their properties relate more to those of silts than to those of sands. The frontier is also often changed between sand and silt to 50 micrometers. This classification is often used in France; it is in fact an adaptation of the M.I.T (USA), adopted by German standards, based on the numbers 20 and 63 that both belong to the same Renard series. Syn. with GRAIN-SIZE CLASSIFICATION OF SOILS

SOIL CORE DRILLING
Sondage
Geotechnics
Recognition process of the ground nature by extraction of disturbed or intact samples which will enable the identification of grounds or study in laboratory of their geotechnical properties.
We can distinguish the drillings carried out by percussion from drillings carried out by rotation.
See Figure 71

SOIL FREEZING REINFORCEMENT
Renforcement par congélation du sol
Foundation
See GROUND FREEZING.

SOIL GROUTING
Injection de sol
Works
Syn. with ARTIFICIAL CEMENTING; CEMENTATION; GROUTING; SOIL INJECTION.

SOIL MECHANICS
Mécanique des sols
Geotechnics
Field of geotechnics dedicated to the study of the behavior of low strength, compressible, loose sediments that make up the ground (sands, sludge, clays, etc.). The soil mechanics is dedicated to analyzing the properties of the grounds included in the achievements of civil engineering (physical, hydraulical, mechanical properties).

SOIL PRELIMINARY PACKING
Tassement préalable du sol
Civil Engineering
Method of improvement of low cohesion grounds that consists in extracting from a given depth a sample of compressible ground and replacing it with a sandy material input. In the aftermath of overload, this input will penetrate the subjacent ground thus conferring it a better cohesion and improving its bearing capacity.

SOIL RESISTANCE
Résistivité d'un sol
Geophysics
Electrical conductibility capacity of a soil, generally considered as factor of aggressiveness towards buried metal structures because of the numerous factors of corrosion characteristic of it. A soil having a pH lower than 7 (acidic mediums) has a weak resistance; alternatively, a ground having a pH higher than 7 (alkaline mediums) has a resistance more high.

SOIL SAMPLER
Cuillère
Equipment and Tools
Syn. with BALLER; SAMPLING SPOON

SOIL SPECIFIC SURFACE
Surface spécifique d'un sol
Geotechnics
The total surface of the grains contained in the unit of weight.

SOIL SURVEY
Reconnaissance des sols
Geotechnics
Syn. with GROUND INVESTIGATION

SOIL TEST
Essai de sol
Geotechnics
Tests intended for knowing certain characteristics (mechanical or different) of soil among which we can distinguish:
- **K_1 soil test** (*l'essai* K_0) is carried out by means of triaxial equipment and intended to determine, on the one hand the coefficient of earth pressure at the rest, on the other hand the stress deformation curve of the ground in a constant section. This drained test is carried out at a speed of deformation of 0.024%/h that is 0.6 micrometer, in which the stress is varied, in order to preserve the section of test specimen constant;
- **undrained soil tests** *(les essais non drainés)* are carried out by means of a triaxial cell machine. The purpose of tests is to determine the stress-deformation curves at a constant volume, to characterize the anisotropy of the ground and to establish the influence of the speed of deformation on the behavior of the ground. The stress-deformation curves are obtained from *CAU* compression testing (the undrained shear test in compression on test specimens reconsolidated anisotropically) and in *EAU* constriction (undrained shear test in constriction on reconsolidated test specimens anisotropically), carried out at the speed of constant deformation;
- **drained soil tests** *(les essais drainés CAD)* (shear drained compression testing on anisotropically reconsolidated test specimens) are completed with a triaxial cell machine. The purpose of these tests is to study the drained behavior of the soil at constant side pressure.

SOIL VOLUMETRIC MASS
Masse volumique du sol
Geotechnics
Mass equal to the quotient of the total mass of ground by its volume.

SOIL-CEMENT METHOD
Méthode sol-ciment
Civil Engineering
Syn. with GROUTING; HIGH-PRESSURE SOIL; JET GROUTING

SOIL-MOLDED CONCRETE
Béton moulé dans le sol
Building Materials
A material placed in an excavation whose walls behave like formwork.

SOILS SHEARING
Cisaillement des sols
Geotechnics
A breaking that occurs by slipping along privileged surfaces.

SOL
Sol
Polymers
Soluble part of a partially cross-linked polymer, where the gel is the insoluble part.

SOLDERED SEAMS
Soudure
Welding
All the welded joints of a steel construction (framework for example).

SOLDERER
Soudeur
Welding
Professional worker specialized in manual or automatic welding operations. Syn. with WELDER

SOLDERING
Soudure; Joint soudé
Welding
The result of welding operation.
Weldings are divided by the:
- position of the joint to be carried out (flat, uphand, horizontal, vertical, overhead welds);
- shape of the joint (bun, lap, on fallen butt, fillet internal, fillet external, plug welding)
- preparation of the joint (square, of V, X, K, more rarely of broken V or broken X).

SOLDIER BEAM
Accul
Temporary Construction
Syn. with STOP

SOLE PLATE
Plaque d'assise
Construction
Syn. with BASE PLATE; WALL PLATE.

SOLE PLATE
Patin
Foundation
In a sheeting of excavation, timber piece placed on the ground, on which rest the poles, designed to avoid the punching of latter and to distribute equally their load.

SOLENOID VALVE
Electrovanne
Equipment and Tools
Regulating flow valve installed on pieces of equipment controlled by an electromagnet (example: grouting).

SOLID *or* PERFORATED WIRECUT BRICK
Brique pleine *ou* perforée filée
Building Materials
A material made of 'lehm' which is prepared in a vertical mixer; followed with a drawing plate that process a bread that is cut into a certain number of bricks that are then fired in a brick kiln.

SOLID FILTER
Filtre solide
Sanitary Engineering and Drainage
Device formed by porous elements, set up at the back of walls and abutments, or placed against or around drainage and cleansing devices annexed to the superstructure of works (collector drain, drainage channels, etc.) serving to avoid the clogging of these devices.
Their primary goal is make in contact with the ground a layer of filtering materials that must stand in the way of the passage of fine elements of the soil while letting the water pass through.

SOLID PRESSED BRICK
Brique pleine pressée
Building Materials
"Lehm" made material (high-content silica clayey material) without any water addition. This material is molded and compacted in a shelf press and then fired into bricks (size of the bricks: 6 x 11 x 22 cm).

SOLID RIB POLYGON
Polygone des vaux
Temporary Construction
A geometrical figure formed by the lower edges of the solid ribs (it is at the top of this polygon that the triangulation pieces that receive the loads on the bearings of the centering butt together).

SOLID ROCK
Pierre vive
Buildings Materials
Syn. with LIVE ROCK

SOLID WALL
Mur plein; Mur orbe
Construction
Syn. with BLANK WALL; BLIND WALL

SOLID WEB
Ame pleine
Construction
The web of a steel girder consisting of a rolled section or a plate as distinct from a lattice.

SOLIDIFICATION
Solidification
Welding
Transition of the liquid state into a solid state of the soldering's melting bath.

SOLIFLUCTION
Solifluxion
Geomorphology
Slow movement affecting the materials rich in colloidal elements and having a strong ability for water absorption (clayey or marly rocks, surface superficial formations of the loess type, silt or clayey alterite) after they crossed the liquid limit.
The plastic flow of the muddy mass begins when the pressure that it exerts on its stable base is insufficient to counterbalance the component of parallel gravity to the slope. The solifluction can take various forms: one speaks about laminar solifluction when the slipping of a thin superficial slices concerns the vast extents ones of slopes slightly sloping; if displacement is hindered by network of roots, the subcutaneous solifluction breeds one modeled embossed (whose bulges emit mud when they have suddenly burst); when the material is less easily liquefiable, the solifluction is most located and it brings about soil slip mounds limited uphill by scars of wrenching.
The saturation of clayey materials is obtained with a particular frequency under the periglacial

climates (where one speaks about gelifluction), because, during the thaw, the ice lentils release a great quantity of water. However, because of the multiple possibilities of water supply (precipitations, nival fusion, ground water table, etc), the solifluction is observed under all latitudes. Syn. with EARTHFLOW

SOLING
Hérisson
Foundation
Syn. with MATTRESS; PITCHED FOUNDATION.

SOLUBILITY
Solubilité; Demixtion
Materials
1. The property of a body to dissolve in another.
2. Syn. with COMPOUNDING

SOLUBILITY TEST
Essai de solubilité
Test of Materials
A test carried out on the admixtures and carried out in water at hydrometric 30° to determine the degree of dissolution of the addition or admixture in fairly hard water distribution and the possible appearance of flocculation after a certain period of conservation (48 h).

SOLUBLE SALT
Sel soluble
Hydraulic Binders
A cement's additive (excluding portland cement), mixed in small quantity in order to upgrade some of their properties.

SOLUTION
Solution
Materials
Speaking about of injection, stable grout or not, constituted by a homogeneous mixture of solid matter dissolved in a given quantity of solvent (example: sodium silicate solution producing silica gel used for its waterproof and firming properties). These solutions are used to consolidate and waterproof soils and concretes.

SOLUTION CAVITIES
Cavités souterraines
Geomorphology
Syn. with UNDERGROUND CAVITIES; UNDERGROUND HOLES

SOLVATATION
Solvatation
Materials
A phenomenon of combination or molecular association of a body dissolved with its solvent, or certain parts of this solvent if it is complex. The name of solvatation is mainly reserved for the phenomena produced by colloidal bodies, although its existence is also possible with true solutions.

SOLVENT
Solvant
Painting; Materials; Welding
1. A volatile liquid that evaporates completely during the paint drying period and endowed with a variable dissolving power toward the binder. The primary utility of the solvent is to enhance the binder fluidity so that it can be applied in thin layers.
Commonly used solvents are turpentine, white spirit, naphtha solvents, xylene, toluene, and water:
- **naphtha solvents** *(les solvants naphtas)* (also called *benzene solvents*) consists of a mixture of aromatic hydrocarbons in variable proportions coming from the pyrogenization of the coal. The variety of naphtha solvents available, differs by their contents in benzene and naphtenic carbides. These solvents are found in oil-alkyd paints;
- **alcoholic solvents** *(les solvants alcooliques)* are made from ethylic, butylic, or propylic alcohol.

2. A liquid constituent, simple or mixed, volatile in standard drying conditions and having the property to dissolve elements of the formulated organic binder fully or partially.
3. A nonaqueous liquid used to eliminate the penetrating fluid at the surface of the parts.

SONAR (Sound navigation and ranging)
Sonar
Equipment for Measure and Control
Detection equipment based on the reflection of ultrasonic sounds and used to detect cavities in submerged foundations, ground, etc.
This process consists in recording the echo reflected by the walls of a cavity from a

directional probe in azimuth taking down in a drilling.

SONIC DETECTOR
Détecteur acoustique
Measuring and Monitoring Instruments
A sonic instrument for determining the state of prestressing and posttensioning cable ducts, flattenings, sealings, or misalignments and to locate their distance with respect to the cable duct opening. The reading can be made on an oscilloscope. Syn. with ACOUSTIC DETECTOR

SONIC LOGGING
Carottage sonique
Test of Materials (Foundation)
A method that allows to verify the continuity of deep foundations, diaphragm walls or supporting wall units by the detection of cracks or abnormal presence along the shaft and in point.
The homogeneity and quality of the concrete are evaluated and the defects located with precision, complete with in point of pile. The principle is the following.
In homogeneous concrete, the sound velocity is constant, in the order of 4000 m/s. It rapidly falls in presence of anomalies such as inclusion of ground, fissures, segregation, etc. The sonic logging is a continuous measurement along of the pile of the sound velocity between a probe of emission and probe of reception taking down into two tubes supported with the reinforcements. The signal is transmitted to an oscilloscope that memorizes it and the log of the auscultated element is restored in a polaroid negative form as they advanced of the climb up of the probes.

SONIC TEST
Essai sonique
Test of Materials (Building Materials)
A test carried out on ashlars to determine their strength and compactness, the absence of hairline cracks, etc.

SONIC WAVE
Onde sonique
Test of Materials
An acoustic signal caused by an impetus applied on the surface of a solid, energy being irradiated in all volume. Sonic waves are used particularly to sound piles and diaphragm walls; respectively, the practice of the longitudinal waves are especially used. Tests by sonic waves allow the detection of the variations of homogeneity, the gaps, cracks and the position of reinforcements.
Generally, we can distinguish three types of waves:
- **longitudinal** *(l'onde longitudinale),* fastest, moving the material particles in the direction of the propagation;
- **transverse** *(l'onde transversale),* moving the particles perpendicularly to the direction of propagation;
- **surface *or* Raleigh** (*l'onde de surface, dite de Raleigh),* giving to the particles an ellipsoidal movement.

SOOTY
Fuligineux
Materials
Is said of what is obscure, that lacks clearness (example: sooty paint).

SORBITE
Sorbite
Metallurgy
A constituent of the structure of hardened steel showing a granular state and holding an average position in the range of the intermediate states between martensite and the perlite (transformation obtained by tempering and annealing).

SORE
Dartre
Defects (Metallurgy)
The surface roughness allocating some metallic parts [(cast) iron or steel] due to a light disintegration of the sandy wall of the mold in which they have been elaborated. It is also called *sandy encrustation.* Syn. with SANDY INSERT

SOUND MASONRY
Sonder la maçonnerie au marteau
Test of Materials (Masonry)
See AUSCULTATION.

SOUND THE WOOD
Sonder le bois
Test of Materials (Building Materials)
To carry out holes in the wood to evaluate the state of its internal structure.

SOUNDER
Sondeur
Work
1. A technician specialized in the exécution of trial borings of the basement.
2. A worker who drives drilling machines (rock drills, boring rig for soil investigation, etc.).
Syn. with BORER; DRILLER

SOUNDING
Sondage; Sonnage
Strength of Materials; Test of Materials
1. The internal probing of a material by physical techniques (ultrasonic sounds, electromagnetism, etc.).
2. A dynamic sounding of materials using a hammer to check certain parameters such as detachment of facing, shaken rivets, detachment of rendering, etc. Syn. with DYNAMIC TESTING

SOUNDING BY RADIOACTIVITY LOGGING
Sondage par diagraphie de radioactivité *ou* Radio-sondage
Geophysics
A geophysical method of soil survey. See BOREHOLE LOGGING.

SOUNDING LINE
Sonde niveau
Equipment for Measure and Control
Syn. with LEVEL PROBE

SOUNDING ROD
Perche de sondage
Equipment for Measure and Control
A rigid rod used in hydrometry to measure the depth of the waterways, ponds, lakes, etc.

SOUNDNESS TEST
Soundness test
Test of Materials
A sensitivity test exerted over aggregates that are confronted to the action of waters that are rich in mineral salts; it consists in measuring the resistance to disintegration of aggregates subjected to 5 or 10 cycles of immersion drying in magnesium or a sodium sulfate solution. Crystallization in the cracks and pores of the aggregate enables to appreciate the behavior of the aggregates confronted to bad weather. The more an aggregate is porous or fissured, the more it is sensitive to mineral waters laden with mineral salts.

SOUP
Soupe
Work
Concrete that is too fluid.

SPACE FRAMES
Structures spatiales
Strength of Materials
Reticulated modulated structures (in systems), constituted by several layers, or grids, usually parallel linked by plans of diagonals. Constructive arrangements are also known as *multidirectional structures with several grids.* Space frames are mostly plane or curved such as they endure important bendings. Bars are overwhelmingly solicited in tension or compression.

SPACE OF LINE
Jeu de ligne
Masonry
A space delimited by two parallel and horizontally taut lines. This space is used to build a wall. Syn. with CLEARANCE OF LINE

SPACER
Ecarteur; Espaçateur; Distancier
Equipment and Tools;
1. A device for centering the reinforcement cages of cast-in-place concrete pile, composed of plain bar reinforcements that are soldered on longitudinal reinforcements. Considering their configuration, they are sometimes called *skis.* There are four placed on a level, eight at the first level in the case of a pile of large diameter; the spacing of levels being 2 m approximately.
2. A small piece of concrete, plastic, metal or again of mortar used to keep the reinforcement of a bar setting from the required distance of the wall of the formwork. This arrangement ensures a flawless coating of the reinforcement together with its protection from the aggression of external agents. Syn. with BAR CHAIR; BAR SPACER. **See Figure 72**
3. Syn. with DISTANCE PIECE; SEPARATOR

SPACER OF SAFETY RAIL
Ecarteur de glissière
Civil Engineering
A piece of wood or galvanized sheet metal, interposed between the support and the safety rail, to allow this one to go back up at the beginning of its deformation under the influence of the shock of a vehicle.

SPADE
Bêche; Pelle
Equipment and Tools
1. A type of iron shovel designed to excavate loose grounds.
2. A navvy or handling tool made of steel sheet metal, thinly curved and fixed at the end of a long handle. Syn. with SCOOP; SHOVEL

SPALL
Miroir; S'épaufrer
Nomenclature of Materials; Building Materials
1. A large spall which can occur during the cut of a stone. Syn. with FRAGMENT
2. Syn. with CHIP

SPALLING
Eclatement; Scheidage
Defects (Masonry); Earthwork
1. A defect affecting the bricks characterized by a loss of matter showing up in the form of a crater formed by the expansion of a lime or (iron) pyrites grain. The dimension of the crater is defined by its average diameter, that is equal to the average between the greatest and the smallest dimension of the crater.
2. The separation of fragments from a mass of concrete, generally in form of slats or spangles, due to the action of frost or pressure stress.
3. Small stone falls which occur a few hours or a few days after a shot blasting in an underground excavation and carried out in rocky ground. Spalling is due to a phenomenon of cracking or internal fracture of the rock, without any external apparent sign, which leads one to suppose that the rock is intact.

SPALLING STRAIN
Effort d'éclatement
Defects (Masonry and Construction of R.C. and P.C.)
Action which causes prestressed concrete to burst into pieces, due essentially to the swelling of reinforcements by Poisson's effect.

SPAN
Travée
Construction
1. The part of a work located between two consecutive bearings in the case of work with deck. We can distinguish:
- **structures with continuous spans** *(les ouvrages à travées continues)* (not stopped at the right of each bearing);
- **structures with simple spans** *(les ouvrages à travées simples)* (stopped at the right of each bearing). They can also be called *independent spans.*

2. Syn. with BEARING DISTANCE; BRIDGE SPAN; SPAN WIDTH

SPAN OF ARCH
Archée
Construction
The chord of an arch.

SPAN TYING
Attelage de travées
Construction
A connection intended for heading off the relative translatory movement of two adjacent spans while preserving their isostatic character. Syn. with INDEPENDENT GIRDER FASTENING

SPAN WIDTH
Ouverture; Portée
Construction
1. The horizontal distance separating the main plane of two piles or two bridge bents (opening of a span) or of two abutments or sidewalls (opening of a bridge). The opening can be straight or oblique.
We can distinguish:
- **straight clear opening** *(l'ouverture droite),* horizontal distance measured perpendicularly to the direction of piles or abutments;
- **slanting clear span** *(l'ouverture biaise (cas d'un pont biais)),* horizontal distance measured parallel to the axis of the work (the axis of a supported line). Syn. with BRIDGE SPAN; CLEAR SPAN; OPENING. **See Figure 73a**

2. The horizontal distance between the supports of a bridge, arch, beam or similar structural member. Syn. with BEARING DISTANCE; BRIDGE SPAN; SPAN. **See Figure 73**

SPANDREL
Ecoinçon
Construction
The part of a step of staircase beyond 0.35 m, when the width of this one is higher than 0.35 m.
2. The wall caging a staircase and supporting the steps. Syn. with STRING WALL

SPANDREL STEP
Marche délardée
Construction
The step of a staircase whose bottom face is carved following to the pitch line to create under the flight a continuous and pitch surface.

SPANDREL WALL
Mur de tête; Mur tympan
Construction
A construction intended for supporting laterally the filling on the head of a work and located in the plan of the facing of this last one and above it. Its internal facing can be vertical, sloping (batter) or with steps. The external facing is usually vertical and bonded (bridge of rubble walling) in horizontal courses or to opus incertum with stones of lower size than those bonding the string course.
In important bridges, to avoid excessive thrusts on the tympanums and for esthetic reasons, sometimes one performs recesses which can be parallel or perpendicular to the axis of the vault. These recesses (or openings) appear as facing arches leaning on the extrados of the main vault, facing arches which, if they are parallel to this last can be apparent on the heads or masked by a tympan wall of reduced thickness. The headwall is surmounted by a capping that includes a course of stones or plinth carrying a railing or parapet. The headwall is also called tympanum *in particular in the bridges with several arches.* Syn. with HEADWALL; TYMPANUM; FRONT WALL. **See Figure 77**

SPAN-TO-DEPTH RATIO
Flèche
Strength of Materials
Syn. with DEFLECTION; SAG

SPAR MEASURING
Baculométrie
Equipment for Measure and Control
The art to measure heights with poles.

SPARAGMITE
Sparagmite
Geology
A detrital sedimentary rock, member of the sandstone family.

SPATULA
Spatule
Equipment and Tools
A small trowel used to perform repointings. Syn. with POINTING TROWEL

SPEARHEAD GYPSUM
Gypse fer de lance
Geology
The name given to a gypsum made.

SPECIAL BEARING APPARATUS
Appareils d'appui spéciaux
Construction
Connection and transmission devices acting on the elements of bearing and that are often multidirectional. The most commonly used are: Néotopf™, Alvéoflons™, Demag™, Cipec™, and Tétron™.

SPECIAL BINDER FOR INJECTION
L.S.P.I. (Liant special pour injection)
Materials
A product used to inject the prestressing cable ducts. Two types exist:
- **binder B** *(le liant B),* a cinder crushed to 3000 cm^2/g Blaine, into which an epoxy resin is mixed during grinding.
- **binder C** *(le liant C),* a cinder crushed to 2300 cm^2/g Blaine, into which a lively hardener is mixed during the operation of grinding.

SPECIAL CEMENTS
Ciment spéciaux
Hydraulic Binders
Products reserved for special uses such as sursulfated cements, cements of slag with ashes, hydraulic lime, etc.

SPECIAL (FOUNDATION) PILES
Pieux spéciaux
Foundation
Elements which implementation or design differs from that of mainline precast or cast-in-place foundation piles.
Common foundation piles are:
- **ballasted** *(le pieu ballasté),* used to strengthen cohesive soils (silts, sludges, clays, peats). In order to set it up, a drilling has first to be made on the height of the grounds that need consolidating. Then ballast is inserted into the drilling after having been compacted by successive passes until refusal and up to the upmost level that needs compacting. Under the effect of the processing, one obtains a column of compacted ballast, surrounded by a sheath of ballast reversed in the country rock. The diameter of the piles thus carried out can range from 0.60 to 1.20m;
- **conical** *(le pieu conique),* mostly made of reinforced concrete, used for bad quality grounds;
- **picot *or* truncated** *(le pieu picot),* small concrete element having the aspect of a truncated shaft, with an average diameter ranging from 15 to 40 cm and a length not exceeding 6 m. The picot foundation piles are carried out using a metal tube, of a truncated aspect and closed at the base, called *punch,* which base section is not lower than half of its average section. The punch is sunk into the ground by driving or vibration, then extracted. The brought material (concrete or aggregates) is placed in the imprint thus created, immediately after the removal of the punch. Types 1 of picot foundation pile is used as a small pile, whereas type 2 is for improving the characteristics of a certain volume of ground under shallow or similar foundations; **See Figure 74**
- **joint pile** *(le pieu joint),* made of precast reinforced concrete, fitted with a special shape, which is inserted into a panel of diaphragm wall instead of the stop-end tube;
- **sand *or* vertical sand drain** *(le pieu en sable),* especially intended for the processing of the basement and that ensures the deep compacting of the wet grounds and carries out its drainage. The principle is as follows: a cone-shaped tool, suspended at the mast of a crane, with a point that is equipped with vents through which water jets will be sent. The tool is dropped and penetrates the ground. Pressurised water is sent through the vents, which brings about the reversing of the country rock. When the desired depth is reached, one pours into the drilling sand or gravel compacted by successive layers with a conical tool; **See Figure 74a**
- ***West*** *(le pieu West),* which represents a particular case of the driven cast-in-place foundation pile and which can be described as a pile with elements. It is characterized by the driving of elements called *sheaths,* made up of prefabricated tubes of reinforced concrete which also constitute a permanent tube ended by a reinforced concrete shoe. The tubular elements are set up around a steel punch resting on the shoe. Rings ensure the junction of the different elements of sheath and their tightness by use of a rock asphalt mastic. The sinking is achieved by driving using a rammer. Driving ensures at once the sinking of the point by the punch and sheaths by interposition of joints of cardboard. During the driving, one can add the number of sheaths necessary to reach the wanted level. The punch being withdrawn, the interior of the pile can be checked and the concreting is carried out directly into the sheath mostly by a tremie tube.

SPECIAL STEELS
Aciers spéciaux
Metallurgy
Alloyed or products unappropriate for precise regulations of the well-defined chemical composition and mechanical or physical properties. Syn. with ALLOY STEEL

SPECIES
Essence d'un bois
Nomenclature of Materials
The type of tree that provided the wood.

SPECIFIC GRAVITY BOTTLE
Pycnomètre
Equipment for Measure and Control
Syn. with PYCNOMETER

SPECIFIC SURFACE MEASURING APPARATUS
Perméabilimètre de *Blaine*
Equipment for Measure and Control
An apparatus for measuring the specific surface of cements.

SPECIFIC RESISTANCE
Résistivité
Metrology
Syn. with RESISTIVITY.

SPECIFIC WEIGHT OF SOIL
Poids spécifique d'une sol
Geotechnics
The weight of the unit of volume of the material grains considered without spaces, including the water residing naturally between the grains.

SPECIFICATION OF THE SECTION
Equarrissage
Metal Constructions
Syn. with DIMENSIONAL STRENGTH

SPECIFICATIONS
Cahier des charges
Contract
The basic document in a contract that defines the obligations and the way work has to be carried out by the contractors at the time of its fulfillment. Syn. with TECHNICAL SPECIFICATION AND GENERAL CONDITIONS; TENDER DOCUMENTS; TENDER SPECIFICATIONS

SPECIFIED READY-MIXED CONCRETE
Béton à caractères spécifiés (BCS)
Building Materials
Any concrete defined at the moment of the order by its proportions and possibly by particular specifications others than mechanical strength.

SPECIMEN
Echantillon
Steel Constructions
1. A term used to qualify dimensional characteristics of a compound or simple bar belonging to a frame.
2. A term used to qualify the list of parts of bars of a stock of irons.

SPECTROSCOPE OF COMPARISON
Spectroscope de comparaison
Assaying Equipment
Any hand-held equipment allowing rapid analysis of metals by visual comparison of the spectral lines of two juxtaposed spectra.

SPECULAR BRIGHT
Brillant spéculaire
Painting
A parameter to characterize quantitatively and conventionally the color's brightness of a surface and if this value is equal to the product by 1000 of the reflection factor of this surface. Measurements are made in specified lighting and observation conditions (angle of incidence and angle of reflection both equal 60°).

SPEEDY POWDER
Poudre vive
Explosives
An explosive material with a quick action.

SPELEOGENESIS
Spéléogenèse
Geohydrology
The creation and development of the underground water circulation network within a calcareous massif evolving as karst.

SPELETER
Zinc
Metallurgy
Syn. with ZINC

SPELTER YELLOW
Jaune de zinc
Painting
A pigment formed by a basic chromate of zinc and potassium having an excellent stability under light exposition. It is used as corrosion inhibitor pigment.

SPHERICAL CALLOT
Calotte
Construction
The central part of a vault as seen in a transverse section.

SPHEROIDAL GRAPHITE CAST IRON
Fonte à graphite sphéroïdal
Metallurgy
A gray (cast) iron whose graphite appears as spheres which tenacity and ductility enable to bear a high fatigue rate and permanent deformations before breaking. Syn. with DUCTILE IRON

SPIDER'S WEB
Givrage
Defects (Painting)
Defect of a paint film resulting in a beam of ridges, taking various shapes evoking a spider web.

SPILL
Lance
Earthwork
Syn. with FORE POLE; FOREPOLING BOARD

SPILLING
Allonge
Temporary Construction
In the construction of a gallery or tunnel, the support unit of the roof of the yard which is cantilevered between the supported part and face.

SPILLWAY
Déversoir; Epanchoir; Evacuateur de crue
Hydraulic Works; Civil Engineering Structure; Construction
1. A work below the flowout waters of a canal, a waterway, etc.
2. A regulating work designed to limit the height of water storages.
Syn. with OVERFLOW SHOUT; WEIR
3. A permanent structure that enables the pouring out of a canal overflow.
4. A channel ensuring the evacuation of overabundant water in a barrage. Syn. with WEIR

SPINDLE
Fuseau
Construction
The vertical rail of a metal guardrail located between the vertical rods.

SPINE MOULDING
Echine
Architecture
A molding supporting a raised table.

SPIRAL GRAINS
Fils tors; Fibre torse
Defects (Building Materials)
A wood defect characterized by the helical torsion of fibers around the axis of the tree. Syn. with INTERLOCKED GRAIN; TWISTED FIBERS

SPIRIT LEVEL
Niveau; Niveau à bulle d'air; Niveau à lunette
Equipment for measure and Control
1. An optical instrument of sight, provided with a telescope of precision and a spirit level, allowing it to define horizontal directions.
2. An optical instrument of sight used to measure various altitudes of a ground, a work, etc.
3. A instrument for the evaluation of a surface's horizontality.
4. An instrument mostly made of a parallelepiped block, of variable length, having a perfectly levelled surface. This instrument is equipped, in the longitudinal axis, of a restrained horizontal phial containing an air bubble on its top. Reference marks allow to verify the horizontality. Syn. with AIR LEVEL; BUILDER'S LEVEL
5. An instrument of sight made primarily of an horizontal telescope fixed on two horizontal clips forming an alidade.

SPLASH ZONE
Zone de marnage
Hydrology; Foundation
1. Part of the banks of a waterway where alluvia settles.
2. Space marked by the difference between the minimal and maximum levels of a water sheet. For any metal piece (pile, sheeting pile) exposed partly in fresh water or sea, it is the splash zone that presents the most aggressive conditions of corrosion.
3. The localized sector of corrosion of a pile or a sheeting pile due to the variations in level of waters.
Syn. with TIDAL ZONE

SPLASHING ANGLE
Angle de projection
Painting
The angle that must have the squirt gun or nozzle compared with the substrate in paint work, metal spraying, etc.

SPLASHING OF PRESSURIZED COLD WATER
Projection d'eau froide sous pression
Work
A cleaning method for the facing of masonry, concrete, etc, consisting in sotting the dirt by damping and elimination using a water jet under pressure.

SPLASHING OF PRESSURIZED HOT WATER
Projection d'eau chaude sous pression
Work
A cleaning technique for the facing of masonry, concrete, etc., identical with the cold water under pressure method except that the cleaner is also equiped with a burner that allows to heat the water at 95°C.

SPLASHING OF PRESSURIZED OVERHEATED WATER
Projection d'eau surchauffée sous pression
Work
A cleaning method for facing whose principle is identical to the process to pressurized hot water except that the cleaner is producing, on the level of the lance, a liquid water under pressure at 140°C which, at the exit of the nozzle, turns into vapor.

SPLAY
Flache
Building Materials
Syn. with CANT

SPLAY BRICK
Brique en coin
Building Materials
Syn. with CANT BRICK ; COMPASS BRICK

SPLAYED JOINTING
Chanfreinage
Nomenclature of Materials
Syn. with CHAMFERING; SPLAYING

SPLAYING
Chanfreinage; Evasement
Nomenclature of Materials; Construction
1. The slantwise cutting of the edge of a piece, a material. Syn. with CHAMFERING; SPLAYED JOINTING
2. Syn. with WIDENING OUT

SPLICE
Enture; Raboutage; Ligature
Foundation; Work
1. The extra length of concrete which is poured to lengthen a fashioned pile in advance when its length proves insufficient. Syn. with HEADING JOINT; SCARF (JOINT); SPLICING.
2. Concerning the cables for cable bridges, joining end to end by covering of elementary wires, in the case of a cable with parallel wires (former process).

SPLICE PLATE
Eclisse
Construction
Syn. with FISHPLATE; WEDGE

SPLICED BAR
Eclisse
Construction
Syn. with SPLICED TUBE

SPLICED TUBE
Eclisse
Construction
A piece used to align two parts of handrail of a guardrail, enabling a limited longitudinal movement. Syn. with SPLICED BAR

SPLICING
Enture; Raboutage
Foundation
Syn. with HEADING JOINT; SCARF (JOINT); SPLICE

SPLIT
Déliter; Crevasse
Masonry; Defects
1. To build a stone in the perpendicular direction to its bedding plane.
2. To saw, cut, an ashlar following its bedding plane.
Syn. with TO EXFOLIATE
3. Syn. with CHINK; CREVICE; DEEP CRACK

SPLIT PIN
Goupille
Equipment and Tools
A metal piece formed by two branches, whose the top part forms an eye and that is put in place into the hole of an axle of pulley for example. The two branches being then outspreaded to prevent its accidental withdrawal. Syn. with COTTER

SPLITTING
Délitage; Délitement; Rescindement
Defects (Masonry); Masonry
1. The exfoliation of a stone into parallel layers to quarry beds. Syn. with DISINTEGRATION; EXFOLIATION

2. The dividing of stones following the direction of layers that constitute them.
3. Damage affecting limestones, resulting from splitting.
4. Demolition of masonry in partial thickness, mostly variable in a same section of a tunnel and whose definition results from a fine geometrical study. **See Figure 75**

(STONE) SPLITTING
Refente de pierre
Building Materials
The cutting up of a block of stone in order to do a quarry stone from it.

SPLITTING BY FROST
Gélivité
Building Materials
1. The ability or not of the stone, brick, etc., to endure frost-thawing cycles
2. Unequal expansions in the stone structure during an abrupt change of temperature; stress exerted behind the little porous patina by the ice produced in the stone.
This effect does not occurs if the action of frost, instead of only being superficial, interests, by decreasing gradually of intensity, a sufficient thickness. Very hard stones, compact, with crystallized cement, that only absorb little or not water, can be deteriorated under the action of frost and divide themselves into broad bulky fragments, because of the inequality of dilations or contractions due to the abrupt changes of temperature, consequently, either of heterogeneity (hard nodules or cavities), or of the presence of strands. Stones can take on various aspects of degradations, they can:
- *drop off around their circumference; it is said that they drop off (soft stones, gritty limestones, calciferous sandstones, molasse sandstones, clayey sandstone);*
- *break into irregular fragments (oolitic limestones);*
- *break into tablets (earthy insertions, false beds or sutures filled with earthy matter, marly or clayey, chalky cement not crystallized);*
- *be divided in all directions into fragments, which can sometimes be very large (compact stones absorbing little water).*

SPLITTING TEST
Essai brésilien
Test of Materials (Construction in R.C. and P.C.)
Syn. with BRAZILIAN TEST; POINT-LOAD STRENGTH TEST

SPLITTING UP
Fragmentation
Building Materials
Syn. with CRUSHING AND GRINDING

SPLITTING WEDGE
Pommelle
Equipment and Tools
An oak wooden wedge which are useful themselves the quarry workers to detach a stone bed from its bench.

SPOIL BANK
Cavalier; Mise en cavalier
Earthwork; Materials; Civil Engineering
1. Arrangement of the extracted earths in heap or windrow along the excavation, during the execution of an excavation. Syn. with BANKING
2. A heap of materials fed by the over (line of brought or stocking) and extracted by the side (removal or destocking way). Spoil benches are found in concrete mixing plants (heap of aggregates) or again on some stocking areas of earthmoving excavated materials put in heap in wait for carting away.
3. A small rim of earth located along a road.

SPONGE ADHESIVE
Adhésif mousse
Adhesive
Syn. with ADHESIVE FROTH; FOAMED ADHESIVE

SPONGOLITE
Spongolite; Gaize
Geology
A siliceous sedimentary rock of biochemical origin which was formed at the expense of siliceous sponges.

SPONTANEOUS POTENTIAL
Potentiel spontané
Geotechnics
A phenomenon, characterized by the difference between the fixed electrical potential of a surface electrode and the variable potential of an electrode moving inside a drilling.

SPOT OF RUST
Piqûre de rouille
Defects (Metallurgy)
A small hollow resulting from the atmospheric corrosion occurring on the surface of ferrous metals.

SPOTLIGHT CORROSION
Piqûre de corrosion
Defects (Painting)
A variety of deep deteriorations of a paint film, being able to go from a simple mottling to the appearance, through the exploded film, of the corrosion products of the substrate; these deteriorations are divided into smaller surfaces of a circular aspect. Syn. with CORROSION PITTING

SPOTTINGS
Tachetures
Painting
A variety of staining characterized by low-size spots.

SPOUT
Chantepleure; Gargouille; Coulotte; Tubulure
Construction; Equipment and Tools; Sanitary Engineering and Drainage
1. A vertical narrow opening fitted at the base of a wall that ensures the flow of waters in source of country rock. Syn. with WATERING; WEEPHOLE. **See Figure 76**
2. A draining device established on a sidewalk to drain water toward the gutter. Syn. with DRAIN
3. A U-shaped duct built of nailed boards used to transport pulverulent and powdery materials (sand, gravel, etc.) from a high point to a lower one.
4. A discharge pipe of stormwaters connected to the decking of a steel deck and which directs water toward a gutter. Syn. with PIPE (-RUN); TUBULURE

SPOUT COURSE
Gargouille
Construction
A course of stone used as support to the pipes of a downpipe.

SPRAG
Bicops; Bicoq ou Bicocq
Handling
Uprights of shear legs (lifting appliance) for consolidating it.

SPRAY GUN
Pistolet
Equipment and Tools
Syn. with GUN

SPRAY NOZZLE
Pulvérisateur
Equipment and Tools
A tip fixed at the end of a lance to break a jet and to turn it into fine droplets.

SPRAY PAINTING
Pistolage
Painting
Syn. with GUN APPLICATION

SPRAYED CONCRETE
Béton projeté
Building Materials
Syn. with AIR-PLACED CONCRETE; PNEUMATICALLY PLACED CONCRETE; SHOTCRETE

SPRAYING
Arrosage; Gunitage; Aspersion
Painting; Work; Carpentry and Hydraulic Binders
1. A method of paint application by sprinkling whose most known is the *flowcoating,* which consists in sprinkling paint, inside a closed enclosure, the parts fixed on a conveyor. Syn. with SPRINKLING
2. A mortar throwing process with compressed air, used to implement renderings, protective coats, insulation layers or again waterproofing layers. Syn. with GUNITING; SHOTCRETING
3. Syn. with ASPERSION; SPRINKLING

SPRAYING GUN TO POWDER PROJECTION
Pistolet métalliseur à projection de poudre
Equipment and Tools
A device used for metal spraying, in which the fusion of metal is obtained by the phenomenon fission-fusion of the plasma of a ionizable gas.

SPRAYING MORTAR
Enduit projeté
Masonry
See PNEUMATIC MORTAR.

SPRAYING OF WETTING AGENT
Répandage
Work
The spreading of bituminous materials onto a surface. Syn. with TARRING

SPREAD
Poussarder
Work
To implement spreaders.

SPREAD AND LEVEL
Régaler
Works
Syn. with LEVEL

SPREAD RECORDER
Tassomètre
Equipment for Measure and Control
A device used for the follow up of ground movements and which enables to measure the settlement of the ground during and after construction of the works.
A cell used for taking level, placed into the ground under the work, follows all movements imposed to this one. The position in altitude of this cell in comparison with a fixed reference mark *S,* out of the zone subjected to settlement, is on a measuring panel resting on this fixed reference mark *S.* The cell being half filled with water, a P_c pressure is applied to the liquid (generally with carbon dioxide) to drive it back into the top of the reading tube *T*; one then records, after stabilization, the l_a level of the liquid on a scale graduated in millimeters. After loading of the ground (the measuring panel always resting on the bench mark *S*), one keeps in the cell the same P_a pressure; one measures the l_f level of the liquid in the tube, which enables to calculate the settlement, equal to the displacement of the cell: $W = l_0 - l_f$ (in mm)
If the settlement is too important, (level l_f being then at the bottom of tube *T*), the pressure applied in the cell is increased to become $p_1 > p_c$.
Vinyl chloride cells, lost in the ground, show a cylindrical form of 160 mm diameter and 90 mm tall. They are equipped with pipes coupling with fast tightening for the liquid and gas piping.
The measuring panel comprises the following organs:
- pressurization: reserve gas - pressure reducers - regulator;
- measuring device for the pressure: mercury pressure gauge with sight telescope;
- reading tube of settlement;
- connection between the cell and panel is ensured by two flexible tubes of an inside diameter of 4 mm provided with quick-action couplings.

We can distinguish:
- **settlement gauge with magnetic reference** *(le tassomètre à repères magnétiques),* which allows to measure the movements of several points chosen along the axis of the same drilling. This characteristic allows to know the settlements or relative swellings of various ground layers. The method consists in carrying out a sufficiently deep drilling so that one can regard the bottom of the trial boring as a fixed point. A magnetic reference mark is then installed in this point and measurements are carried out on the other points compared with that one, which allows to have relative and absolute measurements in a single operation. The spread recorder is basically made up of a magnetic ring mounted on a PVC tube and of a rubber coupler separating two magnetic rings to allow their movements the one to the other if the layers in which reference marks are installed moves. The measuring element consists of a probe that has been brought down at the end of a graduated ribbon. This probe comprises a supple blade switch which commutation is controlled by a magnetic field developed by each ring; **See Figure 78.**
- **electromagnetic settlement (standard Telemac™)** *(le tassomètre électromagnétique)* intended for measuring the settlements of the ground (around an excavation, in a landslide, etc.) or of an embankment (earth-fill dam, etc). Plastic tubes are installed into a drilling in which fine sand is injected to ensure the connection

between the ground and the tubes. (In the case of an embankment the installation can also be made as construction advances, which allows to follow the evolution of settlements as soon as the backfilling of the grounds begins). Plastic tubes consist of elements 2 m long, which are connected by sliding sockets and rubber cuffs. Each tube element is crimped of an outer metal ring. A detecting probe of position circulates inside the tubes. The electromagnetic station of location to which is connected the probe announces the flow of this one at the level of a metal ring, by deviation of a pointer and the emission of an acute sound. The sensor is mounted at the end of a cable which is rolled up on a drum winch provided with a graduated rule. The setting in comparison with the cable and of the scale indicates the distance between the mouth of drilling and the metal ring announced by the sensor. **See Figure 78a**
Syn. with SETTLEMENT GAUGE; SETTLEMENT METER

SPREADER
Epandeuse; Distributeur; Poussard
Equipment and Tools; Temporary Construction
1. Spraybars equipped plant that sprays and distributes as they advance to its furtherance liquid materials, often bitumen or tar.
2. Syn. with DISTRIBUTOR
3. Syn. with CANTILEVERED BEAM; CAPPING PIECE; STRUT

SPREADER BOX
Epandeur-niveleur; Régleur; Spreader box
Equipment and Tools
Spreading plant for coated or dry materials equipped by a tilting skip on truck, supplied at the back of a spreading, leveling, and adjustment device.

SPREADER FINISHER
Epandeur-finisseur
Equipment and Tools
A self-propelled plant, mostly crawler-mounted, intended for the implementation of bituminous-coated materials needed to constitute topping of roadways.

SPREADING
Poussardage
Temporary Construction
Bracing of a retaining structure with capping pieces.

SPREADING RATE
Rendement superficiel specifique d'une peinture
Painting
Surface that can be cover a certain quantity of paint (in liter or mass) according to the selected process of implementation.

SPRING
Naissance; Elasticité
Construction; Strength of Materials
1. Each end of an arch of a metal bridge.
2. Syn. with ELASTICITY

SPRINGER
Coussinet; Imposte; Sommier; Naissance d'une voûte
Construction
1. Concerning vaulted works of masonry, arch stone of ashlar, leaning on the sidewall (generally on the first upper element of the stone pier) and receiving the first arch stone of the stringcourse. This arch stone of special shapes (horizontal bed face and top face carved slantwise) also takes the name of *springer.*
2. Projecting stone that crowns the sidewall and on which directly rests the base of the vault of a bridge (or viaduct) of masonry. To take this name, it is necessary that the stone is projecting on the stringcourse and coin stone; otherwise it takes the name *skewback.* **See Figure 79**
3. In the vaulted works made of masonry, archstone serving as bearing to the string courses of the vault or, in certain works, parallelepipedic element of ashlar being located at the springing of the vault and on which it leans. Syn. with SPRINGING STONE. **See Figures 79a and 79b**
4. Syn. with SPRINGING OF A VAULT.

SPRINGER PLAN
Plan des naissances
Construction
Surfaces containing the two generatrixes of springings of a vault in a masonry bridge.

SPRINGING
Retombée; Abattue; Gauchissement
Construction; Defects (Building Materials)
1. The part of a vault that rests on the sidewall, sufficiently little sloping to hold in place without centering during the construction.
2. Syn. with BUCKLING; TWISTING; WARPING

SPRINGING BRICK
Coussinet
Construction
Concerning a metal bridge with jack arches, brick of special form which is laid on the bottom chord of the distance piece or on a stake. **See Figure 80**

SPRINGING LINE
Ligne de naissance
Construction
The intersection where meet the bottom part of the vault and the top part of the sidewall or abutment of an arched work (bridge, tunnel, etc.).

SPRINGING OF A VAULT
Naissance d'une voûte
Construction
The location where the generatrixes of the bottom face (intrados) and the surfaces of abutments, sidewalls or piles meet. Syn. with SPRINGER. **See Figure 81**

SPRINGING PLAN
Plan des retombées
Construction
The surface of the sidewall or an abutment onto which rests the vault of a masonry bridge.

SPRINGING STONES (OF PIER)
Tas de charge
Construction
A projection formed by several courses of superimposed stones.

SPRINGING STONE BOND
Appareil en «tas de charge»
Masonry
A type of string course bonding of stonework bridges; the beds of crossettes of the archstones correspond to the beds of courses of the facing stones of the tympanum.

SPRINKLING
Aspersion
Hydraulic Binders; Carpentry
1. The slacking process of the hydraulic lime, consisting in sprinkling with water the material up to its powder reduction.
2. The abundant watering of a wood with a preservative.
Syn. with SPRAYING

SPROCKET
Dent
Construction
Projection of guidance on the equalizer of a bridge-support apparatus with pendular roller.

SPRUCE
Epicéa
Building Materials
Syn. with PICEA

SPUN CONCRETE
Béton centrifugé
Building Materials
A process of concrete pipe manufacture. The concrete is first poured inside a cylindrical mold that runs at moderate speed around its horizontal axis. The second operation consists in compacting energetically the concrete by the action of the centrifugal force with the mold running at high speed.

SPUR
Eperon
Construction
A work with unraveled profile erected upstream from a construction to protect it from possible shocks.

SPY OF ROCK
Espion de roche; Spy of rock
Equipment for Measure and Control
Equipment used to supervise landslides and rock falls.
It is a probe intended for the precise measurement of the relative movement of two points that can be distanced from several meters. Quintessential applications are those of the fissured massif, the rocky chaos, the landslide so that the risk of instability and the direction of the movement are recognized: open fissure, overhanging block, slipping figure, etc.

The spy of rock is constituted by an inductive probe connected in series with a wire geodesic invar and spring of tensioning. The whole is tended between the two points of the massif whose one wants to measure the relative displacement. For the short bases, the wire and spring are replaced by a rigid rod connected at the nucleus of the probe. The principle of the measurement uses the differential induction variation of two coils associated with a ability of agreement to form a resonant circuit. The measured physical magnitude is the frequency of the electric signal of the probe. **See Figure 81a**

SQUARE
Equerre; Dédosser; Equarrir; D'équerre
Metallurgy; Equipment for Measure and Control; Building Materials; Masonry; Civil Engineering Structure
1. Syn. with L-IRON
2. An instrument for verifying or drawing the squaring of a piece, a work, a formwork, etc. **See Figure 82**
3. A metal piece in right angle form in its more large sizes. Syn. with BRACKET
4. To dress the slab to give it sharp edges.
5. To cut roughly a stone, a wood, etc., to shape it as a parallelepiped. Syn. with HEW
6. A work, frame, whose all elements organize themeselves at right angle.

SQUARE BUTT PREPARATION
Préparation bout à bout à bords droits
Welding
A preparation in which the faces to be welded are perpendicular to the surface of the elements to be assembled and parallels one to the other.

SQUARE BUTT PREPARATION WITH BACKING
Préparation bout à bout à bords droits avec support à l'envers
Welding
A preparation end to end with straight edges, with support, remaining or not, on the side of the root.

SQUARE LEVEL
Equerre de maçon; Equerre-niveau
Equipment and Tools
Builder's instrument made up of a wooden triangle whose two branches form on the peak a right angle. From this peak hangs a plumb line that, when it be situated in the axis of the base of the triangle, indicates the horizontal. Syn. with MASON SQUARE

SQUARE STAKE
Equerre-tasseau
Metal Construction
Syn. with SQUARE SUPPORT

SQUARE SUPPORT
Equerre-tasseau
Metal Construction
An angle section fixed on the load-bearing piece to be of use as bearing to the supported piece during the assembly. Syn. with SQUARE STAKE. **See Figure 83**

SQUARE TENON
Tenon à oulices
Nomenclature of Materials
A tenon cut squarely.

SQUARED BLOCK (STONE)
Bloc équarri
Building Materials
A stone piece fashioned as a parallelepiped (with conceivably of chamfers or chairs) and whose facings are some large cutting, such that bolstered, pointed or similar.

SQUARED TIMBER
Bois équarri
Building Materials
A piece which has a paralellepiped transverse section, whose faces are plane and are at right angles to each other. Syn. with SCANTLING; SQUARE-SAWN TIMBER

SQUARE-EDGED TIMBERS
Bois avivés
Building Materials
Syn. with RECTANGULAR TIMBERS

SQUARE-GRAPHOMETER
Equerre-graphomètre
Topography
An instrument that serves both cross staff and measuring equipment of angles.

SQUARELY
Quarrément
Nomenclature of Materials
In a right angle; in square.

SQUARE-SAWN TIMBER
Bois équarri
Building Materials
Syn. with SCANTLING; SQUARED TIMBER

SQUARING
Equarrissage; Equarrissement; Taille d'épaisseur; Equerrage
Masonry; Topography
1. A job that consists in squaring a stone block or a billet.
2. The cutting of the stone that executes in two time: squaring of the block, definitive cutting according to the profiles drawn with templates. The squaring cutting, also called *by plotting,* opposes the direct cutting, or by bevel square.
3. Execution of stone squaring.
4. The squaring adjustment of the frame parts, that is to say verification of the layout to right angle of the orthogonal elements of the construction.

SQUARING EQUATION
Equation d'équarrissage
Strength of Materials
A fundamental equation of bending by which is established the equality between the strength of a piece and the effect of stresses that solicit it (bending moment). In symbols:

$$\sigma = \frac{M}{\frac{I}{v}}$$

in every point of the section and:

$$\sigma_{max} = \frac{M}{\frac{I}{v_{min}}}$$

for most solicited fibers;
σ = stress,
M = bending moment,
$\frac{I}{v_{min}}$ = minimum inertia modulus.

***SRT* PENDULUM**
Pendule *SRT*
Equipment for Measure and Control
Equipment that gives directly the coefficient of friction of a painted surface.

ST. ANDREW'S CROSS
Croix de Saint-André
Construction
The X-assembly of two diagonals that connect the bottom booms to the top booms of a metal, concrete or wooden girder. St. Andrew's cross ensures the triangulation (rigidity) of the beam. For metal or timber beams, inclined members are jointed to the booms or to the verticals inserted between each cross. Inclined members can or cannot be interlocked in their crossing place. **See Figure 84**

STAB
Larder
Masonry
To arm a masonry facing of ties intended for keeping a reinforcement wire mesh or reinforcement mat before mortar or concrete throwing. Syn. with NEEDLE

STABILITY
Stabilité
Strength of Materials
The state in which must balance a construction throught the agency of the direct or derived, provisional, normal, or exceptional forces, which it receives. This state must place the whole of the work as well as all structural elements in sufficient security with regard to the criterion of ruin.

STABILITY DESIGNS
Calculs de stabilité
Strength of Materials
Calculations giving maximal values of the pondered stresses under loads and overloads increased in all points to be verified of the construction. These stresses must remain lower than the limit of elasticity of the material if calculations are led in the elastic field.

STABILITY OF A REVETMENT OF PREMIXED COATED MATERIALS
Stabilité d'un revêtement en matériaux enrobés
Materials
Resistance to deformation of a premixed coated materials layer of a roadway under the influence of the dynamic and static loads applied for a long period. A nonstable revetment shows dips and undulations.

STABILIZATION
Stabilisation
Civil Engineering
The transformation and improvement of an undisturbed soil by addition of a suitable binder or mechanically in order to make it suited to the required purpose (strong roll surface, weather resistance, etc.). Syn. with CONSOLIDATION

STABILIZED EARTH
Terre stabilisée
Civil Engineering
A ground whose characteristics, in particular the cohesion, are improved by various processes such as incorporation of fibers, dynamic compacting, injection (cement, silicates, etc.), change of grading by suitable materials contribution, liming, etc.

STABILIZED EARTH CONCRETE
Béton de terre stabilisée
Building Materials
A puddled earth whose durability has been increased by mixing, at the time of the preparation of a hydraulic binder or a bituminous binder.

STABILIZER
Stabilisant; Stabiliseur
Materials; Equipment and Tools
1. An admixture that upgrades the conservation of properties of a material.
2. A device installed on the drill collars that allows centering them into a drilling.

STABLE EQUILIBRIUM
Equilibre stable
Civil Engineering Structure
A body that, when it is slightly parted of its position of balance, has tendency to return there.

STABLE GROUND
Terrain stable
Geology
A ground constituted by rocks of various natures, endowed with an excellent cohesion and a great compressive strength (marls, limestones, granites).

STABLE GROUT
Coulis stable
Materials
A suspension usually obtained by mixing a combination of cement and clay, or of bentonite and possibly an admixture, in water.

STACK OF SLEEPERS
Camarteau
Temporary Construction
A temporary bearing mainly intended for supporting the temporary bridges and rails bressumers, and that can be constituted by crossed stackings of squared timber pieces or by a that will keep its shape concrete bearing, or again of metal sections.
Temporary bearings are equally used to carry out differences in level of bearing in mixed bridges or to compensate sags under dead weight during a launching operation. Syn. with TEMPORARY BEARING. **See Figure 85 and 85a**

STACK OF WOOD
Pile; Pilier de bois
Equipment and Tools
A supporting device of tunnel, galleries, etc., formed by pairs of mine timbers posed the ones on the others to form a square tower.

STACK PIPE
Descente d'eau
Sanitary Engineering and Drainage
Syn. with LEADER; RAINWATER PIPE; WATERSPOUT

STACKING
Emmètrage
Metrology
Action to pile up; the result of this action. Syn. with PILING (UP)

STADIA ANGLE
Angle stadimétrique
Topography
The position under which is seen a leveling staff.

STADIA STAFF
Stadia
Topography
A self-reading (leveling) staff carrying a centimetric graduation, which is vertically posed onto the point which one wants to know the distance in relation to an origin; at this origin is placed a tacheometer with which measurement is taken.

STADIAMETER
Stadimètre
Topography
Instrument for measuring distances by sighting a self-reading leveling staff.

STADIMETRIC COLLIMATOR
Lunette stadimétrique
Topography
An equipment whose reticle includes parallel, horizontal, or vertical thread, separated by a permanent distance, and that is designed to measure, with a stadia staff, a distance without covering it.

(SURVEYOR'S) STAFF
Jalon
Topography
Syn. with MARKER; (RANGE) POLE; SIGHTING MARK

STAFF GAUGE
Limnimètre
Equipment for Measure and Control
Syn. with LIMNIMETER; WATER LEVEL GAUGE

STAGE
Etage; Echafaud
Stratigraphy; Temporary Construction
1. Syn. with FORMATION
2. Syn. with SCAFFOLD

STAGGER
Décaler
Masonry
To remove skids having been used to point ashlars or quarry stones of a masonry during a pointing or a repointing operation.

STAGGERED JOINT
Plein-sur-joint
Masonry
A stonework or brickwork bonding appearing so that each element of a course covers two elements of the lower course.

STAIN
Tache; Salissure
Construction of R.C. and P.C.; Defects
1. A defect affecting the facing of concrete works and which appears after demolding or form striking. Stains are basically defects which harm esthetics. There are several types of stains:
- **green stains** *(les taches vertes),* due to the nature of the cement; they are transitory because they disappear at the end of a few days;
- **small black volute-shaped marks** *(les petites taches noires en forme de volutes),* due to the rise of fine elements of the cement which rise to the surface with laitance during vibration (defect due to a bad sharing out of the vibrators);
- **yellow *or* brown stains** *(les taches jaunes ou brunes),* appearing on the surface of concrete after form striking and mainly due to the form oil or again (more rarely) to the nature of sand.

2. A deposit of an outside origin without appreciable thickness, covering the facings or other parts of works (smoke, dust, corrosive substances, etc.).

STAINLESS
Inoxydable
Metallurgy
Of any steel or alloy that contains a high percentage of chromium (about 18%) and of nickel (about 8%) and that is endowed by a remarkable oxidation resistance.

STAINLESS STEEL
Acier inoxydable
Metallurgy
An iron and steel product whose name covers a set of ferrous alloys resistant to a great number of corrosive environments, in the extended limits of temperature, thanks broadly to the essential presence of chromium.

STAIR
Marche
Construction
In a staircase, degree that allows to cross the various levels; the stair is formed by a horizontal part called the *going,* and of a vertical part called the *riser.* Syn. with STEP

STAIRCASE
Escalier
Construction
A work constituted by a number of steps allowing to lead to different levels of a construction. We can mainly distinguish:
- **straight flight of stairs *or* straight stair** (*l'escalier à rampe droite*) of which steps or stairs are parallel and that one goes down without to get diverted, neither to right nor to left.
- **stairs interrupted in landings** (*l'escalier rompu en paliers*) that is mostly composed of straight parts rising in divided and different directions of each other by landings or rest.

Syn. with STAIRWAY

STAIRWAY
Escalier
Construction
Syn. with STAIRCASE

STAIR-WELL
Cage
Construction
Syn. with WELL

STAKE
Poteau; Tasseau; Palis; Fiche; Piquet
Construction; Metal Construction; Foundation; Equipment and Tools; Topography
1. A lengthened pointed piece of wood, metal, concrete, etc., of various sections, driven vertically into the ground to mark a boundary, survey station, signalling, etc. Syn. with POLE; POST
2. An angle section or square fixed on the load-bearing part to be of use as bearing to the carried part during the assembly. **See Figure 86**
3. Syn. with PALING
4. Syn. with PEG
5. Syn. with PEG; MARKER

STAKING (OUT)
Piquetage
Topography
To drive into the soil stakes or poles intended for marking axis, alignments, etc.
We can distinguish:
- **general staking** (*le piquetage général*), which is designed to postpone on the ground the axis and characteristic points of the general layout plan with stakes or reference marks;
- **complementary staking** (*le piquetage complémentaire*), intended for marking on the ground the position of the works or parts of work, from the general staking.

Syn. with PEGGING (OUT)

STAKING OUT
Bornage
Topography
Syn. with DEMARCATION

STALACTITE
Stalactite
Defects and Geology
A lengthened-shaped crystalline deposit which appears at the intrados of certain structures.
In the concrete and masonry works, water which permeates by the extrados of the decks or vaults makes its way inside the masonries and dissolves the pure lime which they met. This milk of lime turns into carbonate of lime at the touch of the carbonic acid of the air to give birth to these forms of concretions.

STALAGMITE
Stalagmite
Defects and Geology
A column from the ground, formed by chalky concretions whose chemical composition is identical to that of the stalactite.

STAMPING
Estampage; Matriçage
Metallurgy
Syn. with PUNCHING.

(DROP -) STAMPING
Emboutissage
Metal Construction
A shaping process allowing to obtain a form not developable from a plane sheet metal (flank), by making it undergo a permanent set with two

complementary tools, a punch and a mold. Syn. with PRESSING; SWAGING

STAMPING MACHINE
Poinçonneuse
Equipment and Tools
Syn. with PUNCHING MACHINE

STAMPING TOOL
Salière
Equipment and Tools
A tool intended for pressing sheet metals.

STANCH
Etancher
Tightness
Syn. with SEAL; STOP; STOP A LEAK

STANCHION
Montant; Etai; Poteau
Carpentry and Metal Construction; Temporary Construction; Construction
1. Any bar going into the composition of a frame or a metal lattice girder and joining the chords in a perpendicular direction to at least of these chords.
2. Syn. with FRAME; PIT PROP; PROP; SHORE; STRUT
3. Syn. with POLE; POST; STUD

STANCHION BASE
Pied; Plaque d'embase
Construction
1. The lower part of a restrained or pendular post, of an articulated or restrained leg of a portal frame.
2. A usually quadrangular steel piece that ensures the transmission of the stresses between a stanchion and the foundation that supports it. The stanchion base is usually equipped with stiffeners that reinforce its connection with the stanchion, especially when it is restrained into the foundation. **See Figure 87**

STAND
Hausse-pied; Chantier
Temporary Construction; Equipment and Tools
1. A small scaffolding about than 20 cm height above the ground level, formed by balks resting on ground sleepers. It is used when the height does not require the use of trestles and their employment is reserved for odd jobs (last course of a wall, etc.). **See Figure 88**
2. A wooden piece or other material onto which another piece is placed to work it.

STANDARD
Module; Jambage; Norme
Equipment and Tools; Building Materials
1. Syn. with MODULE
2. Syn. with LEG
3. Syn. with NORM

STANDARD
Potelet; Etamperche; Ecoperche; Echasse d'échafaudage
Construction
1. Syn. with RAIL POST
2. In a guardrail, syn. with VERTICAL ROD
3. A scaffolding pole. Syn. with POLE
4. Syn. with SCAFFOLDING POLE; STILT; UPRIGHT

STANDARD BODY
Organisme de normalisation
Civil Engineering Structure
An organization to normative activities recognized to the national, regional or international standard whose primary function, in the terms of its statutes, is the preparation and/or publication of standards and/or approval of standards prepared by other bodies.

STANDARD CEMENT PASTE
Pâte normale
Hydraulic Binders
A cement and water mixture mixed during a determined time and poured into a mold placed under a consistency probe. The paste is considered as normal when the thickness remaining between the bottom of the mold and the end of the probe (at the moment when this one ceases being sunk throught the agency of its own weight) is equal to 6 mm.

STANDARD DROP TABLE
Table à secousses; Table à choc normalisée
Assaying Equipment
An equipment for testing the workability of the fresh concrete and which is made up of a table on which one lays out a truncated container (bases = 10 and 7 cm, height = 4 cm) that is filled with mortar. After compacting, the mold of the

truncated cone of mortar is unmolded. A 15 shakes is imparted at the table tallying with a drop height than 1.5 cm and the diameter d_f round of mortar spread out is measured. The difference $d_f - d_0$ (between the final diameter of round of mortar and the diameter of the large basis of the truncated cone) defines the spreading out which characterizes the fluidity of the concrete or mortar. Syn. with FLOW TABLE

STANDARD MAINTENANCE
Entretien courant
Civil Engineering Structure
All the operations regularly repeated that allow to maintain a work in its service state. These operations have very high importance and have to allow satisfactory security conditions, to have a preventive character, be carried out in a regular way. Syn. with ROUTINE MAINTENANCE; USUAL MAINTENANCE;

STANDARD MORTAR
Mortier normal
Building Materials
A product made up, in weight, of a part of the binder to be tried and of three parts of standard sand of different grading (Leucate's sand, France), perfectly dry, mixed with drinking water. The standard mortar is solely laboratory-made and is intended for testing the strength qualities of the binders.

STANDARD PENETRATION TEST (S.P.T.)
Essai de pénétration au carottier
Test of Materials ; Assaying Equipment
1. Determination of the ground resistance to the dynamic penetration that consists in sinking into this one a standardized core drill driven in the bottom of a preliminary drilling. This test applies on the fine or granular soils whose medium dimension of the elements does not exceed 20 mm (see PENETROMETER).
2. A soil-sampling procedure to determine the number of blows by a drive hammer, freely falling a distance of 0.76 m per blow, needed to drive a standard sampling spoon 0.3 m. The first 15.24 to 17.78 cm of penetration is disregarded, but the blows required to drive the sample the ensuing foot are counted.

STANDARD REINFORCEMENT
Armatures standard; Ferraillage traditionnel
Construction of R.C. and P.C.; Building Materials
1. Subassembled welded elements considered as interlocked sets, whose calculation takes into account the total characteristics.
2. A bar setting composed of straight or fashioned bars, according to the expected shapes to the working drawings and that is carried out either in a workshop, or on a building site. Operations of shaping comprise the cut at the length, folding or bending, assembly, pose of ties, or the welding.

STANDARD SAND
Sable normal
Building Materials
A natural sand originating from the beach of Leucate (Aude, France). The grains are siliceous, round and well sorted. The standard sand is made up of a mix by equal masses of three sizes of grains (1; 1.5 and 2 mm). It is used to manufacture standard mortar. The absolute density of the standard sand is 2.62.

STANDARD SECTION
Laminé marchand; Barre
Metallurgy
A hot-rolled product, normally delivered in straight or bent bars. Its cross section can be circular, square, rectangular, hexagonal, octagonal, full half-round, or flat, to remind the shape of the letters L, T, Z or to present a bulge (said bulb) on an edge (flat and bulb angles). We can distinguish in this category: small I-sections, small U-sections, round bars, squares, reinforcement bars, flats, angle sections, T-bars, Z-bars, and the half-round ones.

STANDARDIZED READY-MIXED CONCRETE
Béton à caractères normalisés (BCN)
Building Materials
Any concrete designated with order by guaranteed characters (standardized designation of cement and of the possible addition composing the equivalent binder, consistency, characteristic strength and specified grain size, class of environment, type of concrete), and for which the producer can modify the proportions in the limit fixed by in force standards.

STANDARDIZED SAND EQUIVALENT
Equivalent de sable normalisé
Test of Materials (Building Materials)
Percentage of apparent volume of pure sand, in comparison with apparent volume of sandy, muddy and clayey flocculated elements of a sample. The process is identical to that describe under SAND EQUIVALENT. The sand equivalent provides very precious information on the degree of cleanness of an aggregate. A material will be accepted or refused following the value of its sand equivalent. Any good sand for concrete must present an index S.E. between 70 and 80.

STANDING ROPE
Câble de retenue
Construction
Syn. with GUY ROPE

STANDOUT
Débord
Metal Construction
A small transverse overhanging of a sheet metal, compared with another to which it is assembled.

STANDOVER
Déborder
Handling
To park provisionally a wagon, a truck or any other vehicle that cannot be immediately unloaded.

STAPLE
Injecteur plat *ou* Cavalier; Crampon; Cavalier
Equipment and Tools; Materials; Building Materials
1. An injection device made up of a stamped metal part having a slightly convex U-section. It is 10 to 15 cm long and 2 cm wide, overcame by a metal tube from 5 to 8 mm diameter that is set on the centre and is designed to the injection of polymer. The staple is posed to flat and straddles on the line of the crack. Tubes of injectors are connected between them and to the injection pot or boojee pump through the channel of flexible pipes. Syn. with FLAT INJECTOR. **See Figure 89**
2. A U-shaped nail with two points.
3. A U-shaped nail used to fix wire on stakes, boards, etc.

STAPLER GUN
Pistolet agrafeur
Equipment and Tools
A hand tool used to install hooks or nails in a wall for example.

STAR SHAKE
Cadranure; Coeur étoilé
Defects (Building Materials)
A serious wood defect due to the excessive drying of the heart and that appears in the transverse section in star splits form, wide at the heart, then getting thinner gradually to the periphery. Syn. with STAR-SHAPED

STARLING
Crèche
Foundation
Syn. with PARTITION FOR ENROCKMENT

STAR-SHAPED
Coeur étoilé; Cadranure
Defects (Building Materials)
Syn. with STAR SHAKE

START OF PIT
Ouverture d'une carrière
Pit
The release of a height of a free rocky mountain or quarry face of a length and height such as, by practical fellings, one can produce in a workstation the necessary quantity of materials.

STARTER BARS
Aciers en attente; Chevelu
Construction of R.C. and P.C.
1. Reinforcements which, at the level of a provisional stop of concreting, projecting on the already poured part, in standby of the following concreting stage. These bars are intended for ensuring the connection and continuity with the reinforcements of the following cycle.
These reinforcements consist of plain bars when they must be bent and unfolded during the various stages of concreting. Syn. with PROJECTING REINFORCEMENTS
2. Syn. with HAIRY; PENCIL BARS

STARTING STEP
Marche de départ
Construction
Syn. with BOTTOM STEP

STATICAL INDETERMINATENESS
Hyperstaticité
Strength of Materials
A phenomenon that characterizes a beam or a structure statically inderterminate.

STATICALLY DETERMINATE
Isostatique
Strength of Materials
Syn. with ISOSTATIC

STATICALLY INDETERMINATE FRAME
Structure hyperstatique
Strength of Materials
Syn. with HYPERSTATIC FRAME

STATICS
Statique
Strength of Materials
The field of the mechanics that studies the balance of the material systems in a given referential. Its purpose is to research the necessary conditions so that the forces, applied on a given body, balance each other; that is so that these forces do not exert any influence on the at-rest state (or movement) of this body.

STAUNCHING PIECE
Couvre-joint
Tightness
A strip of geomembrane that strengthens the solidity and/or tightness of a geomembrane, and placing by sticking or welding onto a joint.

STAUNCHING WALL
Murparafouille
Construction
See CUTOFF WALL.

STAUNCHNESS
Etanchéité
Tightness.
Syn. with DAMPROOFING; TIGHTNESS; WATERPROOFING

STAVE
Douve
Hydraulic Work
A retaining wall erected in a canal. Syn. with MOAT

STAVED LUMBER CORE
Latté
Building Materials
A panel formed by square or rectangular wooden boards sandwiched by sticking between two plywood sheets. Syn. with BATTENBOARD; BLOCKBOARD; COREBOARD

STAVING-IN
Enfoncement de piédroit
Defects (Civil Engineering Structure)
A defect affecting the engineering works, notably tunnels of masonry, which is characterized by movement of a sidewall toward the country rock. This defect is due to a movement of slope, to the forming of cavities under sidewalls (settlings, underwashings, etc.) or to punching.

STAY
Bracon; Arc-boutant; Barre
Carpentry
1. Syn. with BRACE; RAKER
2. Syn. with STRUT
3. A long wood or iron part used in trusses.

STAY
Jambe de force; Entretoise; Abloc; Boutant; Butonner
Construction
1. Syn. with BRACE; CORNER BRACE; PROP; STRUT
2. To carry out a bracing. Syn. with (CROSS-) BRACE; STRUT
3. A pillar for supporting a structure.
4. A ledge or mass that buttresses or shoulders a construction. Syn. with BUTTRESS
5. To set struts.

STAY
Chandelle; Buton; Etançon; Appuyer; Accoter; Bouter
Temporary Construction
1. Syn. with DEAD SHORE; PILLAR; POST; PROP; SHORE; UPRIGHT
2. Syn. with HEAD TREE; STRUT
3. Syn. with PROP; RIB; SHORE; YIELDING PROP
4. Syn. with PROP
5. Syn. with BUTTRESS; SHORE UP; STRUT
6. Syn. with SUPPORT

STAY
Tirant; Ancrer
Building Materials; Civil Engineering Structure
1. A metal element whose the aim is to transmit tensile stresses. Syn. with BRACE
2. Syn. with ANCHOR; BRACE; TIE

STAY (DISH)
Barrette; Bretelle
Metal Construction
Syn. with BATTEN (DISH)

STAY (UP)
Etayer; Etayer
Temporary Construction
Syn. with BUTTRESS; SHORE (UP); STRUT; UNDERPIN

STAY ARCH
Archine
Carpentry
An arch that forms the frame supporting the roof of an underground pit.

STAY UP
Haubaner
Work
To keep up with cables or ropes a slender structural element or a setting element pitched vertically.

STAY PLATE
Travée de liaison; Barrette; Etrésillon
Construction
Syn. with BATTEN PLATE

STAYED GANTRY
Portique haubané
Equipment and Tools
A handling device used to put in place prefabricated segments of a bridge or viaduct and of which the use is the same that the launching gantry.
The principle is as follows: the apparatus, formed by two masts (which can be with lattice) connected by a cross member at the top and articulated at the base, is installed on the last cantilever segment set up. Of the top cross member of the before and rear cables leave to the working winches. The setting of the cantilever segments is carried out by slope of the stayed gantry with stays. An alternative of this stayed gantry consists in connecting the masts at two corner braces of a variable incline. When the apparatus is not loaded, the corner braces ensure the stability of the stayed gantry. In service, on the other hand, the foot of the corner braces is unstrapped and stability is ensured by rear holding up cables.

STAYING
Ancrage; Etançonnement; Haubanage
Construction of R.C. and P.C.; Masonry; Temporary Construction; Work
1. The mooring of reinforcements in the reinforced concrete.
2. Zone of establishment of stresses at the end of a reinforcement of a reinforced concrete beam or deck. **See Figure 90**
3. The arrangement of the ends of the masonry chain bond (anchor) or of a reinforcement of reinforced concrete (crook) to ensure their role of retention in place. Syn. with BRACING
4. Syn. with PROPPING; SHORING (UP); UNDERPINNING
5. Syn. with BRACING; GUYING

STAYING BED
Couche d'étaiement
Temporary Construction
A timber piece distributing the load under a prop, or keeping up the plates of a sheeting and placed between these ones and a shore.

STEAM
Etuver
Building Materials
Syn. with DRY; STOVE

STEAM CURING
Etuvage
Building Materials
Syn. with DRYING; STEAMING; STOVING

STEAM GENERATOR
Générateur de vapeur
Equipment and Tools
A production apparatus of saturating vapor to dry concrete. Syn. with BOILER PLANT

STEAM METALLURGY
Vapométallurgie
Metallurgy
Procedures of creating thin metal deposits by heat and vacuum evaporation to cover cold walls.

(WATER) STEAM PERMEABILITY TEST
Essai de permeabilité à la vapeur d'eau
Test of Materials (Painting)
A test intended for testing the resistance of a paint to steam. The loss of weight of a cell containing water and sealed by the film of the preparation to be tried is measured at given gaps (every 24 h). This loss of weight results from the diffusion of water as steam.

STEAM PILE DRIVING PLANT
Sonnette à vapeur *ou à* air comprimé
Equipment and Tools
A pile driver whose rammer is powered by the pressure of compressed air or steam. Syn. with PNEUMATIC PILE-DRIVING PLANT

STEAM-CURED CONCRETE
Béton étuvé
Building Materials
A material whose hardening has been artificially accelerated by heat so as to obtain sufficient strengths in a reduced period.

STEAMING
Etuvage
Building Materials
Syn. with DRYING; STEAM CURING; STOVING

STEAMROOM
Etuve
Equipment and Kit
A place or hermetic enclosure into which the temperature and the hygrometry are higher. Syn. with DRYING STOVE; KILN

STEARATE
Stéarate
Materials
Salt of the stearic acid; fatty saturated acid with formula $C_{18}H_{36}O_2$ going into the composition of mass water repellents.

STEEL
Acier
Metallurgy
A nonmalleable iron and steel product usually subject to hot-shaping, and which is a combination of carbon and iron.
You cannot find steel in its natural state. It is indeed the result of the alteration of raw materials, which have been extracted from the ground. One makes steel in converters which transform the liquid cast iron into molten steel, by blowing oxygen into the molten iron bath.
Some types of steel have a high chromium content, but steel usually has a carbon content below or equal 2%, which is the limit that distincts it from other cast irons. Usually steel used for building is known as structural steel for general use. All kinds of steel can be distinguished by their chemical composition and the resulting mechanical characteristics :
- strength : tensile strength, optimum elasticity, hardness
- ductility and flexibility : elongation after parting and ability to be bent.
- impact resistence (metal tenacity): determined according to the considered usage, at room or low temperature.

STEEL BENDER
Ferrailleur; Cintreuse
Building Materials; Equipment and Tools
1. Syn. with BAR BENDER; STEEL FIXER
2. Syn. with BAR BENDER; BENDING MACHINE; ROD BENDING MACHINE; TUBE BENDING MACHINE

STEEL CENTERING
Cintre métallique
Temporary Construction
A temporary work that can be constituted :
- of rails (up to 25 m opening);
- of HEB section; or,
- of bending (out of shape) metal beams (centerings with variable curvature).

Syn. with ARCH RIB

STEEL ELECTROPLATING
Protection des aciers par électrolyse
Metallurgy
Process through which pieces of metal are covered with a protective coating, by dipping them into different solutions, containing salts of the metal to be applied. After having minutiously prepared the surface of the plates (through acidic scouring, neutralization and rinsing) the latter is placed as the cathode on the negative pole of a generator. Through the electric current issued by this generator, the piece of steel gets coated with the metal that was in the solution or the soluble anode produced, in certain circumstances. This

type of coating is usually made with chromium, copper, nickel, zinc, cadmium, or tin, and the deposit goes from 2 to 30 micrometers of thickness.

STEEL FIXER
Ferrailleur
Building Materials
Syn. with BAR BENDER; STEEL BENDER

STEEL FIXING
Ferraillage
Building Materials
Syn. with BAR BENDING; BAR SETTING; IRON FRAMEWORK; (CONCRETE) REINFORCEMENT

STEEL GRADE
Classe des aciers
Metallurgy
The organization into a hierarchy of products that can be determined of several ways:
- following their mode of manufacture (Martin's steel, to the crucible, etc.),
- following their carbon content (dead soft, mild, hard, etc.),
- following their composition and structure (alloy steels, special steels, etc.),
- following their use (structural steel, for tool, etc.).

STEEL HARDNESS
Dureté des aciers
Metallography
Syn. with HARDNESS OF STEELS

STEEL PRESTRESSING
Précontrainte de l'acier
Building Materials
Any process or system that allow, in a beam or a bar and before its being put into service, to create a stress which sign is opposed to that of the stresses normaly developped in this beam when it is put into service.
There are several ways of prestressing steel frames, but none allows the sag to drop under overloads, compared to a standard frame. There are:
- **progressive prestressing** (*la précontrainte progressive),* to be applied to latticed beams or trusses;
- **prestressing by bearings displacement** *(la précontrainte par déplacement d'appuis ou contreflèche élastique*), used in hyperstatic systems (lavering of the bearings in bridges with continuous spans, horizontal displacements of the bearings, in portal frames, etc.). This type of prestressing is almost essentially used in the combined structures (steel/concrete).
- **inner cable prestressing** (*la précontrainte par câble intérieur*), in the taut tubular chord of a lattice girder of triangular section or caisson.

STEEL PRESTRESSING CABLE
Câble pour précontrainte
Construction in P. C.
Syn. with PRESTRESSING WIRE; TENDON

STEEL REINFORCEMENT BAR
Barre
Construction of R.C. and P.C.
Reinforcements of the reinforced concrete; we can distinguish between:
- **starter bars** (*les barres d'attente*);
- **slant bars or bent-up bars** (*les barres bateaux),* used to strengthen beam sections under tension;
- **compression bars** (*les barres de compression),* reinforcements used to resist to the compressive forces;
- **longitudinal reinforcements** (*les barres filantes*), longitudinal reinforcement bars of the reinforced concrete beams or slabs. Syn. with LONGITUDINAL BARS; MAIN BARS
- **secondary bars** (*les barres de montage*), used to facilitate the placement of active bars in the bar settings;
- **additionnal reinforcement bars** (*les barres de renforcement*), often superimposed to other reinforcements, of decreasing length. These bars are used to strengthen the tension side of simply supported sections resting freely on two supports, of large span or for high loads.
- **draw bars** (*les barres de traction*), reinforcements used to resist tensile stresses.

STEEL SCRAPS
Riblons
Materials
Small metal pieces coming from falls of bars, off-drillings. Scraps are used as ballast to furnish the counterweights of certain bridges. Syn. with SCRAPS

STEEL STRIP
Feuillard
Metallurgy
Syn. with HOOP IRON; STRIP

STEEL STRUCTURE
Construction métallique
Metal Construction
A technique that applies to the construction of metal frames of buildings and structures.

STEEL STRUCTURE WORKS
Usine de constructions métalliques
Metal Construction
Establishment equipped of important machines where the various elements composing a metal structure are shaped and processed.

STEEL SUPERSTRUCTURE OF CANAL BRIDGE
Bâche
Civil Engineering Structure
The steel deck of a canal bridge

STEEL-FIBER-REINFORCED CONCRETE
Béton armé de fibres
Building Materials
A material in which steel fibers (1% to 2 % in volume), special glass or polypropylene fibers etc., are encased. Syn. with FIBRE-REINFORCED CONCRETE; GLASSFIBRE-REINFORCED CONCRETE

STEENING
Chemisage
Construction
Stones or bricks facing of the walls of a well or a cesspool.

STEMMING
Bourrage
Explosives
The filling of a blasthole with wad. Syn. with TAMPING

STENCIL
Pochoir
Equipment and Tools
A numerical or alphabetical character carved in a metal plate and which is used as template for its painted reproduction on any support.

STEP
Marche; Redan; Redent; Ressaut
Construction
1. Syn. with STAIR
2. Syn. with BENCH
3. Syn. with OFFSET

STEP
Gradin; Berme
Geomorphology; Earthwork
1. The deformation in the body of a landslide showing a step more or less high and net.
2. Syn. with BENCH; BERM ; TERRACE

STEP IRON
Echelon
Construction
A lengthened U-shaped rung with a fishtail that is embedded in a wall or an inspection chamber and is used to descend or climb. Syn. with FOOT IRON

STEP-BY-STEP HOISTING
Levage pas à pas; Vérinage alterné
Handling
Placing of a series of hydrolically-controled jacks between the supporting element and the load to be lifted. Each stroke of the pistons in the jacks is compensated with an equivalent height of shims. Those shims are usually used as permanent bearings in such a way that the support is built as the load is being lifted. **See Figure 91**

STEPPED
Redent
Construction
Masonry, slope, carried out in steps, in staircase.

STEPPED WALL
Mur à redans; Mur redenté
Construction
1. A work of which thickness changes at given levels and whose a facing comprises degrees similar to a staircase.
2. A wall of which facing in contact with the ground is built in steps as a staircase. A case in point is certain works such as the abutments, wing walls, retaining walls, etc.
See figures 92 and 92a

STEPPING
Recoupement
Construction
In a construction having a base of great footing, a progressive reduction of this width by successive gaps of the courses progressively of the elevation, forming steps. **See Figure 93**

STEREOPHOTOGRAMMETRY
Stéréophotogrammétrie
Topography
A process of photography used in topography.

STEREOTOMY
Stéréotomie
Civil Engineering Structure
Term coming from the building vocabulary and applied to the assembly of materials such as stone and wood. The aim of stereotomy is to adapt these materials (individually considered as part of a whole, such as a wall, a vault, a frame) by dressing or cutting them. Each rough element is tooled, based on a master full-scale drawing. Then they are assembled according to a geometry defined beforehand.
The making of a frame depends on the wood stereotomy. The cutting of a stone (or stone stereotomy) is particularly delicate in the building of certain architectonic shapes that have a non static stability to which each individually-cut stone contributes : vaults, cantilevers, etc.

STEROBATE
Stylobate
Construction
Syn. with BLOCKING COURSE; CONTINUOUS PEDESTAL; STYLOBATE

STICKINESS
Adhésivité
Adhesive
The adhesion property of a matter on the surface of a solid body. Syn. with TACKINESS

STICKINESS-COHESIVENESS TEST OF MASTIC, PUTTY
Essai d'adhésivité-cohésion d'un mastic
Test of Materials (Adhesive)
A test which allows to appreciate the ability of the compounds to be bent out of the shape under tension (cohesion) and to test their adhesion onto supports (tackiness).

STIFFENER
Raidisseur
Metal Construction; Hydraulic Binders
1. The part of a device designed to stiffen a framework to avoid the warp of a beam web, etc. Stiffener beams and posts mostly consist in flat or T-irons or corner iron. Among beam webs one can distinguish vertical or longitudinal beam stiffeners, from frame stiffeners (in the case of a box girder) that are longitudinal or transverse :
- **transverse web stiffeners** (*les raidisseurs d'âme transversaux*) are laid out perpendicular to the medium fiber of the beam and are meant to avoid the buckling of the girders' webs. **See Figure 94.**
- **longitudinal web stiffeners** (*les raidisseurs d'âme longitudinaux*) consist in corner irons that tighten the web of the beam. They are usually positioned at midheight.

Syn with BRACING.
2. Syn. with STIFFENING ADMIXTURE

STIFFENER OF STAYING
Brin
Carpentry
A hardly trimmed wooden piece used in a gang shore. Stiffeners of staying are placed vertically or are inclined and interlocked by transverse braced dragon ties for stiffening the whole.

STIFFENING
Renforcement
Work
Syn. with BACKING (OF A WALL); REINFORCEMENT

STIFFENING ADMIXTURE
Raidisseur
Hydraulic Binders
An admixture mixed into a mortar or concrete intended for being thrown. It brings about as early as its implementation, a premature stiffening of the mortar or concrete and in its adhesion on the support. The addition of stiffener allows to shotcrete on very sloping surfaces. Syn. with STIFFENER

STIFFENING BEAM
Corbeau
Construction
In a timber bridge, small beam that strengthens the main beam at the right of the bearing.

STIFFENING GIRDER
Poutre de rigidité
Construction
In suspension bridges, part designed to limit the flexibility of the suspended system, to ensure the stability of the work regarding the effects of the wind and to limit the alterations under load (ie, it distributes the loads among several suspenders). it is set in the cables and suspenders plan and interlocks the end of the pieces of the bridge. Syn with STRAP BEAM ; TIE BEAM

STIFFENING OF PASSIVE REINFORCEMENT
Renforcement d'une armature passive
Construction of R.C. and P.C.
The strengthening of a reinforced concrete construction by sticking metal plates (from 3 to 5 mm) on the taut face of concrete. Considered an ordinary reinforcement, these plates work at a minimized tension rate since they only intervene for loads after sticking, whereas parallel reinforcements in concrete also take the loads before sticking. The concrete/steel connection is made through the application of a paste which contains resin that only works by shearing.

STIFFENING RIB
Nervure; Nervure de renfort
Construction; Metal Construction
1. A strengthening, usually of prismatic form, forming a lengthened projection. **See Figure 95**
2. A gusset-shaped metal part, brought back and assembled on two planes or curved faces. Example: post assembled on a metal plate. (This stiffening rib can be comparable to a stiffener.) Syn. with BASE GUSSET. **See Figure 96**
3. A single fold or pertaining to a number of close parallel folds intended for endowing a certain longitudinal rigidity to a thin sheet metal plate; ribbed sheet metal for example. **See Figure 97**

STIFFNESS
Raideur;Rigidité
Strength of Materials; Metallurgy
1. The characteristic of a portion of frame or total frame expressing the ratio of the force which it receives to the obtained deformation. In elastic bending of a beam or slab, the stiffness K is written:

$$K = \frac{L}{\text{span-to-depth ratio}}$$

The stiffness depends on constant or average rigidity IE, (internal excitation), of the span L (or the chords if it is about a slab), conditions to the bearings, arrangement of the load (or loads).
2. The mechanical characteristic of a profile, that depends on the metal and inertia of the said profile. In bending, the rigidity, known as *bending,* is expressed through *EI, E* being the modulus of elasticity (Young), and *I* the moment of inertia as compared to the perpendicular axis to the plan of stress. The Saint-Venant Twist, the rigidity, known as twisting rigidity is expressed through *GJ, G* being the transverse modulus of elasticity *(Coulomb)* and *J* the moment of inertia *of Saint-Venant.*

STILT
Echasse d'échafaudage
Temporary Construction
Each of the long vertical scaffolding poles that support the putlogs. Syn. with SCAFFOLDING POLE; STANDARD; UPRIGHT

STIRRER
Agitateur
Equipment and Tools
Syn. with AGITATOR; MIXER; MIXING PADDLES

STIRRUP
Epingle; Lien; Etrier
Construction of R.C. and P.C.; Construction; Building Materials
1. A shearing force reinforcement that connects two longitudinal reinforcements of different layers or contiguous reinforcements of a bar setting. The stirrup appears in a bar form having at each end a curtailment. Ties can, in some constructive arrangements, to carry out the same role as a link. Syn. with TIE
2. Syn. with HANGER; STRAP
3. Syn. with BINDER BAR; BINDING; LINK; SECONDARY REINFORCEMENT; TIE

STIRRUP PIECE
Etrier
Equipment and Tools
A metal arch serving as suspension for flying scaffolds.

STOCKADE
Estacade
Construction
A bridge builds on piles or pilotis, to cross marshes, waterways, flooding zones. Syn. with PLATFORM (ON PILES)

STOCKING TRESTLE
Chevalet de stockage
Equipment and Tools
A device for the horizontal or vertical stocking of long loads such as tubes, bars, sections, generally of steel frame.

STOCKLIKE DIKE
Amas
Geology
A deposit extended in the three dimensions.

***STOKES'*LAW**
Loi de *Stokes*
Test of Materials
A law that determines the falling speed of a spherical particle into a liquid at the rest.

STOMPER
Dameuse; Grenouille
Equipment and Tools
Syn. with CONSOLIDATING RAMMER; FROG RAMMER; JUMPING JACK

STONE
Pierre; Gros granulat
Geology; Building Materials
1. Each block constituting the matter of the rocks. A stone is a hard and solid body, which can be extracted from the ground or detached from the slope of mountains. Understood in its general meaning, the word *stone* designates a solid mineral substance, insoluble in water, fireproof, and nonmalleable. Its composition can vary, and yet it is always made of one metal in its oxide form, combined with an acid or a substance that replaces the oxide. Calcium, silicon, carbon, and sulfur are simple bodies that, by their combination with oxygen and various metallic oxides, constitute most of the substances known as a stone.
2. A chunk of rock of variable shapes and sizes.
3. Syn. with COARSE AGGREGATE

STONE BREAKER
Concasseur
Equipment and Tools
Syn. with CRUSHER; KIBBLER; MILL. **See Fig. 98**

STONE CASEMENT
Châssis de pierre
Construction
A stone or concrete slab showing a recess of circular or quadrangular shape with back bands, allowing them to receive another slab whose thickness is equal to the height of the back band.

STONE CHIPS
Caillette
Building Materials
A small pebble also called *gravel.*

STONE CHISEL
Ciseau
Equipment and Tools
Syn. with BOLSTER; DROVE

STONE CONCRETE
Béton de pierres
Building Materials
Any ordinary concrete into which stones have been incorporated.

STONE CONSOLIDATION
Consolidation des pierres
Work
The increase of the cohesion and mechanical strength of the rock, by adhesion of the superficial altered zones with the underlying healthy layers. The consolidation takes with mineral products (alkaline silicates, fluosilicon acid salts, etc.) or organic products (epoxy resins, unsaturated polyesters, etc.).

STONE COUNTERCAMBER JIG
Cerce
Equipment and Tools.
A template used by the stonecutter to give the reverse profile of a curve.

STONE CUTOUT
Découpe de pierre
Masonry
The distance included between a vertical joint and the next vertical joint of the upper or lower course. **See Figure 99**

STONE FACING
Placage; Plaquette; Perré; Accotoir
Building Materials; Construction: Masonry
1. Rubble stone of standard surface dimensions but which is thinner (max 8cm thick). It's mostly used as a facing material on concrete constructions. Tablets are fixed with a mortar bath, stuck with resin or fastened using hooks or studs. (This term is also used for thin bricks used under the same conditions as above described). Syn of TABLET. **See Figure 100**
2. Syn. with PITCHING; RIPRAP
3. The bank of a river covered with a sloping facing masonry joining a bridge and intended for protecting the banks as well as for guiding waters. Syn. with REVETMENT WALL

STONE MASON
Poseur; Maçon
Masonry
1. A mason specializing in the bond of ashlars.
2. Syn. with MASON; WALLING MASON; WALLER; BRICKLAYER; BLOCKLAYER

STONE MINERALIZER
Minéralisateur pour pierre
Materials
A solution, mostly quartzose, conceived for the confortation of the structure of rocks, mainly with calcite connection. Treated stones acquire impermeability without obturation of the gaseous exchange as well as better indifference to the dissolving power of water.

STONE MULTIBED
Etanfiche
Building Materials
The height of several beds of stones that make mass together in a quarry.

STONE OF THIN LAYER
Pierre de bas appareil
Building Materials
A rock coming from a thin bench (thickness < 0.40 m).

STONE PACKING
Avalaison
Hydrology
Heap of stones, pebbles and other stony elements carried and settled on the shore of a river or a torrent by water.

STONE PLANER
Rabotin
Equipment and Tools
A hand tool used by the stonecutter to dress the facings of soft stones. **See figure 101**

STONE RESTORER
Ravaleur
Work
Syn. with RENOVATER

STONE RULE
Echasse
Masonry
Small rulers used by stonecutters to measure stones to be bonded.

STONE SAW
Sciotte; Scie à pierre
Equipment and Tools
1. Small hand saw used by the stonecutter
2. A stone-cutting apparatus having no teeth, being a simple iron band fed with sand and water, cutting by attrition.

STONE SAWYER
Scieur
Building Materials
A worker who cuts stone.

STONE SCOFFILA
Crocodile
Equipment and Tools
Syn. with CROCODILE SAW

STONE SCREENINGS
Criblure de pierres
Building Materials
Small stones stemming from the sorting of metalling materials having been crushed.

STONE SLAB
Dalle de pierre
Construction
Parallelepipedic element of weak thickness by comparison with the other dimensions. Flagstones are generally of chalky nature and sometimes sandstone.
Concerning civil engineering structure, this type of slab was mainly used to be of use as cover to box culverts. Syn. with FLAGSTONE PAVEMENT; PAVING SLAB

STONE SLAG
Crassin
Masonry
Earthly and disintegrated parts removed on the facing of a quarry stone during the cleaning off operation. Syn. with CINDERSTONE

STONE SPALLING
Eclatement de moellons
Defects (Masonry)
A defect allotted to chalky rubble wallings that is characterized by a cracking through their all thickness, perpendicular to the facing. One generally observes the gradual scaling of quarry stones before their spalling.

STONE SQUARER
Equarrisseur
Masonry
A worker in charge of squaring building stones.

STONE VENEER
Plaquis
Building Materials
A short quarry stone without bond.

STONECUTTER
Tailleur de pierre
Masonry
A worker specializing in shaping building stones, including putative restoration. The stonecutter executes his job in quarry, a cutting plant, or on the building site.

STONECUTTER'S SAW
Scie de tailleur de pierre
Equipment and Tools
A crosscut saw that used the stonecutters to cut blocks.

STONECUTTING COEFFICIENT
Coefficient de taille des pierres
Test of Materials (Building Materials)
A coefficient awarded to the stones according to their hardness.
This coefficient is not defined following the Mohs scale, but by the time put by a semiskilled worker to square the different stone blocks following a typical model.

STONE-LIFTING BOLT
Louve
Equipment and Tools
Syn. with DEVIL'S CLAW; LEWIS; LEWISSON

STONES
Jectisses
Masonry
Quarry stones which, because of their relatively lightness, can be set up with hand, then built.

STONESHELL
Tire-pierre
Equipment and Tools
A special tool used to pull isolated stones not being able to be extracted with the other drilling tools. **See Figure 102**

STONETAIL
Queue de pierre
Nomenclature of Materials
The size of a stone measured perpendicularly to its facing, is its length of penetration in the thickness of the wall.

STONY
Pierreux
Building Materials and Geology
1. Of a ground covered with stones.
2. Says themselves what look like stone or is of a similar nature.

STONY SOIL
Gruau
Equipment and Tools
Syn. with GRUAU

STOP
Accul; Butée; Mentonnet; Etancher
Temporary Construction; Building; Foundation; Tightness
1. A wooden piece embedded into the ground, at the base of raking shores, to avoid their slipping. Syn. with SOLDIER BEAM. **See Figure 103**
2. An object that limits the movement of any body in motion.
3. A tenon worked on the head of a wooden pile, on which becomes assembled a beam kept by studs.
4. Syn. with SEAL; STOP A LEAK

STOP A LEAK
Aveuglement; Aveugler; Etancher
Work; Tightness
1. The sealing of the inopportune water or mud inrushes through any opening. Syn. with STOPPING UP
2. To proceed to a plugging up.
3. To plug up a leak. Syn. with SEAL; STOP

STOP END AND KEY
Joint de retrait; Joint transversal de tablier
Construction
1. Syn. with CONTRACTION JOINT; JOGGLE JOINT; SHRINKAGE JOINT
2. Syn. with JOGGLE JOINT; TRANSVERSE DECK JOINT

STOP WALL
Masque
Construction
Syn. with WALL MASK

STOP-END JOINT
Joint de reprise
Construction
A space between two vertical sections of an arch dam and injected at the end of the construction. Syn. with CONSTRUCTION JOINT

STOP-END TUBES
Tubes joints
Foundation
When creating diaphragm walls, stop-end tubes are cylindrical metal tubes which diameter is amost the same as that of the tool used for excavation. They are set up before the wall is covered with concrete and are slightly embedded in the bed of the trench. They are taken out after the first rigidification of the concrete. The stop-end tubes are also called *formworks tubes for cylindrical joints.* They are meant to gather the different pannels of a diaphragm wall.

STOPPER
Butée; Clausoir; Verrou
Construction: Masonry; Nomenclature of Materials
1. A piece limiting the movement according one way of an element of a structure and allowing to resist to a force in this direction.
2. A material used to close or clog a space remained empty.
3. The discontinuous relief on the surface of high-bond steels. Syn. with FASTENER

STOPPER
Marteau stopper; Obturateur
Equipment and Tools
1. A jackhammer provided with a jack, parallel to its body and which garanties its movement forward by resting on the wall opposite to that with the hole, or by resting on a wedging, this tool is mainly used for the perforation on the intrados of constructions.
2. Syn. with BLOWOUT PREVENTER; CLOSING DEVICE; OBTURATOR; SHUTTER

STOPPING
Bourre; Rebouchage; Masticage
Explosives; Painting; Tightness
1. Syn. with TAMPING; WAD
2. Syn. with FILLING; PATCHING
3. The filling up, stopping-up with putty.

STOPPING COMPOUND
Mastic
Materials
Syn. with FILLER; MASTIC; PUTTY; STOPPING UP

STOPPING UP
Mastic; Calfeutrement
Materials; Construction
1. Syn. with FILLER; MASTIC; PUTTY; STOPPING COMPOUND
2. The sealing of a space of small width, either to fill in it fully, or to close it superficially so as to allow its injection. Syn. with BLOCKING UP; JOINT FILLER; PACKING; SEALING

STORAGE
Retenue
Construction
Syn. with PONDAGE

STORAGE RESERVOIR
Barrage-réservoir
Civil Engineering Structure
A structure whose purpose is for the accumulation of water. Syn. with DAM RESERVOIR

STORAGE TANK WITH MIXER
Cuve tampon
Equipment and Tools
A resumption tank provided with a slow agitator intended for avoiding the decantation of the cement grout in the continuous injection work. This tank is actually a stocking tank of the grout between two batches.

STORING AREA
Chantier
Work
A site reserved for stocking materials.

STOVE
Etuver
Building Materials
Syn. with DRY; STEAM

STOVING
Etuvage; Remblayage; Remblaiement
Building Materials; Earhwork
1. Syn. with DRYING; STEAMING
2. Syn. with BACKFILLING

STRAIGHT ARCH
Plate-bande
Construction
Syn. with LINTEL COURSE

STRAIGHT BARREL VAULT
Berceau
Construction
A semicircular vault that leans on two parallel walls and that is at least twice longer than wide.

STRAIGHT BRIDGE
Pont droit
Civil Engineering Structure
A structure whose axis is perpendicular to the axis of the cleared obstacle (river, road or railroad way). **See Figure 104**

STRAIGHT STEP
Marche droite
Construction
The stair of a staircase that shows a constant width overall its length. Syn. with FLYER

STRAIGHT TRACING
Tracé rectiligne
Construction of P.C.
The straight line journey that shows an additional steel prestressing cable after its implementation. This process is used to repair or strengthen the prestressed concrete works. After its setting, the cable remains apparent. Syn. with RECTILINEAR LAYOUT. **See Figure 104a**

STRAIGHT WALL
Mur droit
Construction
Wall which presents vertical and parallel facings. Syn. with PLUMB WALL. **See Figure 105**

STRAIGHTEN
Dresser; Dégauchir
Work; Metallurgy
1. Syn. with DRESS; FACE; TRIM
2. To knock out a piece that a mechanical or a heat treatment has deformed.

STRAIGHTENING
Dressage
Metallurgy
Any operation to correct or eradicate deformation of a spun or stretched metal product to render it straight and not twisted.

STRAIN
Déformation; Effort; Tension
Strength of Materials
1. Syn. with BUCKLING; DEFORMATION; DISTORSION
2. The effect of an external force on an element of structure, a test specimen, etc., which results in stresses.
3. The situation in which is an element subjected to tensile stresses. Syn. with STRESS

STRAIN GAUGE
Extensomètre; Jauge de déformation *ou* Jauge extensométrique
Equipment for Measure and Control
1. A device used to measure the variation of a solid dimensions, the opening variation of a crack. One can find different types of straingauges :
- **acoustic** (*l'extensomètre acoustique*; whose principle is based on the frequency variation of a steel wire taut between two marks that are embedded into the material to be studied. When the length of the material varies, it modifies the tension of the steel wire. Therefore it alters the

frequency of vibrations. With an electromagnet you can make the steelwire vibrate. Then you just have to compare its vibration frequency to that of a reference steelwire whose tension can be modified. The variations in length can then be read on a digital-display screen. **See Figure 23 EXTENSOMETER**

- **vibrating wire** (*l'extensomètre à corde vibrante*); it consists in a steel wire taut between two dabs that are sealed on both lips of a crack. A vibration is run into the steelwire and electromagnets allow it to be listened to. The evolution of the crack then translates into a variation of the vibration frequency, which can be measured and read on a specific display.
- **electrical** (*l'extensomètre électrique*); syn. of RESISTANCE STRAINGAUGE.
- **resistance** (*l'extensomètre à fil résistant*); it allows the evaluation of stresses (tension or compression) and translates into the measurement of an alteration (elongation or reduction) of the material of which the element to be tested is made, when the latter is suffering strains (extension or compression) when overloaded. To conduct this measurement, one uses straingauges that are made interdependent through their fastening to the element to be examined. This gauges are made of a copper nickel or platinum-iridium conductor alloy, etc., whose lengthening or shortening provokes an increase or a reduction in electrical resistance;
- **Huggenberger** (*l'extensomètre Huggenberger*); which possesses a system of amplification. It comprise a permanent point and a mobile point linked to the system of amplification, the distance L between these two points being able to vary of 20 mm;
- **incremental** (*l'extensomètre incrémental*) which allows to monitor the axial movement of several points along a borehole. Points are materialized by rings surrounding a tubing and located 1 m from each other.

The probe introduced into the tubing determines with precision the position of a ring compared to that of its follower. Readings are taken from a digital readout unit. This extensometer can be combined with an inclinometer tubing, this allowing to take measurements in the three dimensions;

- **inductance** (*l'extensomètre à inductance* ou *capteurs inductifs*), it is based on the principle according to which a rod (core) moves inside a coil and provokes an alteration of the magnetic field and the impedence of this said coil. It looks like a pen linked to a modular electronic case that amplifies the received signals and issues them as continuous tensions.
- **mechanical** (*l'extensomètre mécanique*), it is made of a bar provided with a point at each end, which is connected to a comparator. The points are set into marks that are sealed to the material to be studied (example, sealed marks on each lip of a crack). The comparator then displays the length variations between the two marks.
- **optical** (*l'extensomètre optique*): it uses mirrors, one being fixed, the other mobile. Through the length variation of the material to be tested, the mobile mirror changes its orientation. A light beam is sent on each mirror, that reflects a light spot towards a graduated strip lamp. It is then possible to deduct the lengthening of the element.

Syn. with EXTENSOMETER

2. An instrument used to measure the dimensional variations of a structural element (shortening, lengthening) with an usual aim to evaluate the corresponding stresses. Gauges the most routinely used in civil engineering are the electrical gauges by which the dimensional variations bring about variations of resistance in a wire that becomes deformed at the same time as material on the surface on which it is stuck.

STRAIN WELL
Puits déformable
Equipment for Measure and Control

An open giant inclinometer, consisting of metal cylindrical elements about 1 m in diameter and 0.5 to 0.7 m long. The base of each element comprises an annular flat. Cylinders bolted between them go down into a hole that has been drilled in advance, then disunite so that each element can move freely horizontally in the aftermath of the deformations of the ground. Inside each cylinder, four supports make possible to cross at 90° two nylon wires tended by weights. A cross brace supporting a plumb line can move on a frame installed on the surface of the ground. For each element, the plumb line is put in contact with the point of crossing of two threads of nylon and one measures the distances separating the plumb line from the four reference marks marked on the top cylinder. Horizontal absolute movements of each element are thus

given (if the element at the bottom is anchored in a stable layer or if the top element is surveyed topographically) and can be followed periodically. **See Figure 106**

STRAINER
Filtre
Sanitary Engineering and Drainage
Syn. with FILTER

STRAIN-INDICATOR APPARATUS
Bloc contraintemètre
Equipment for Measure and Control
An instrument used to weight bearing reactions. *Its functioning is based on the principle of the inclusion: inside a loaded concrete block one measures the shortening of a steel cylinder with specific characteristics. The measurement of shortening of concrete by the intermediary of the steel cylinder enables to free variations of the Young modulus of the concrete, therefore of the flow. Reactions and stresses measurement in the different sections of the work enables to measure with a minimal uncertainty the evolution of a work. In addition, all bearings being equipped with marks of precision leveling, it becomes thus possible, during of a variation of stress to know:*
- *if this variation is due to the prestressing;*
- *if it is due to the deformation or to the movement of one of bearings;*
- *to know its parameters and to appreciate the usefulness or emergency of an intervention on the work.*

STRAINING BEAM
Faux-entrait
Carpentry
The second tie beam placed above the first from a sufficient distance, so as to enable the passage of a man. It also prevents the sag of principal rafters of a framework of a certain height.

STRAND
Brin; Fil; Grève; Toron
Construction; Defects; Building Materials; Nomenclature of Materials
1. The free and nonsheathed part of a cable, a wire, or a strand. Syn. with WIRE
2. A solution of continuity or crack affecting the structure of a stone. This discontinuity is filled by a matter softer than the mass. Syn. with VEIN
3. Coarse-grained sand found in deposit and that is used in certain regions to manufacture mortar and concrete.
4. An assembly of helical-rolled wires and divided into a single layer, possibly around a central wire. There are also strands of two layers.

STRAND PIT
Grévière
Building Materials
A place where the strand is extracted. Syn. with SANDBANK

STRANDED
Filardeux
Defects (Building Materials)
Of stones crossed by softer veins or strands. Syn. with VEINED

STRANDED CABLE
Câble toronné
Materials
An assembly of helix-rolled wires and distributed in several layers possibly around a central wire.

STRANDED CAISSON
Caisson
Foundation
Syn. with AMERICAN CAISSON; BOX CAISSON

STRANDING DEFECT
Défaut de toronnage
Defects (Building Materials)
The bad arrangement of wires during their placing. This defect can be localized or general.

STRANDING WIRE
Fil hélicoïdal
Equipment and Tools
Syn. with HELICAL WIRE

STRAP
Lien
Construction
A U-shaped flat iron with lengthened branches at the end of which is carried out a drilling allowing to pass a bolt. The strap is designed to join two pieces which are perpendicular to each other or posed one on the other. Syn. with HANGER; STIRRUP

STRAP BEAM
Poutre de rigidité
Construction
Syn. with STIFFENING GIRDER; TIE BEAM

STRATA BOLTING
Boulonnage
Foundation and Earthwork
Syn. with ROOF BOLTING

STRATA CONTROL
Contrôle du toit
Earthwork
The scientific study of the behavior of rock undermined by mining operations and the most effective measures of controlling movements and failure. The subject is comprehensive, including the systematic measurement of the movement of strata and the forces and stresses involved. An attempt is made to correlate data with rock types and the type of excavation.

STRATIFICATION
Stratification
Geology
The arrangement in strata resulting from the classification of the original sediments in the course of their deposit, throught the agency of weight and of the agitation of waters which carried them.

STRATIFICATION JOINT
Joint de stratification
Geology
Mechanical heterogeneity very marked in the sedimentary formations, corresponding to a change in the conditions of deposit and has a more or less regular surface. The continuity of the joint is the fact that it is often underlined by thin clayey or schistose deposits, which then endows particularly low shear strength properties to it and makes it often more dangerous than the joints in the problems of stability.

STRATIFIED GROUND
Terrain stratifié
Geology
A ground that shows differentiated sedimentary strata, separated by joints of stratification.

STRATIFIED ROCK
Roche stratifiée
Geology
A material that presents individual beds, with little or no resistance to the separation along the border between each bed; beds can be or not weakened by transverse joints. In a such rock the spalling is common.

STRATIGRAPHY
Stratigraphie
Stratigraphy
A field of the geology which consists in studying strata that form the Earth's crust and that allows to establish:
- the synchronism of these strata, that is to determine these of similarly geological age;
- the relative age of the strata of the same region;
- the rational divisions on all strata.

For that purpose one considers the direction of the strata, their dip, thickness, appearance.

STRATUM
Strate; Banc; Couche; Gîte; Gisement
Geology
1. A tabular or sheetlike body or layer of sedimentary rock, visually separable from other layers above and below; a bed. The term is more frequently used in its plural form, strata.
Syn. with LAYER.
2. Syn. with BED; DEPOSIT

STRAY FLASH
Coup d'arc
Defects (Welding)
A superficial and local alteration of the parent metal resulting from an accidental priming nearby the welding. Syn. with ARC STRIKE

STREAK
Fusée; Fuser
Defects (Painting)
1. A defect affecting a paint film, characterized by a trail (furrow) due to the presence of a solid particle.
2. Of a paint that runs out of the site where it was applied.

STREAKED ROCK
Roche striée
Geology
A rock on the surface of which are observed strias characteristic of the glacial relief.

STREAKINGS
Fusées
Defects (Painting)
A variety of initial imperfections characterized by the appearance, in progress of application, of pigmentary trails whose colors stand out clearly with that the paint.

STREAM
Fil d'eau
Sanitary Engineering and Drainage
Gutters, ditches of hollow and lengthened form, intended for collecting on the edge of roadway, storm waters to guide them up to their outlet. Syn. with CURRENT; INVERT LEVEL. **See Figure 107**

STREAM CAPTURE
Capture
Hydrology
Syn. with BEHEADING; CAPTURE; RIVER CAPTURE

STREAMING
Ruissellement
Geomorphology and Hydrology
An instantaneous and temporary flow of water on a slope following a shower (or of a nival melting).
The streaming is explained either by a surface clogging of the ground (streaming of saturation), or by an icing effect of the surface of an unsaturated ground by destruction of the aggregates in the aftermath of the impact of the raindrops (streaming of beating). They are elementary streamings.
The concentrated elementary streaming is distinguished by a piping of the water in a single channel. Otherwise, we're dealing with a diffused streaming. In this case, the liquid can be divided into a vast number of sinuous, joined and unstable fillets, or constitute a thin film streaming on the slope. We often use the terms rill wash and sheetwash respectively to identify each one of these two types.
Every elementary streamings fulfils an activity of removal, carriage and deposit. Concentrated, it brings about the digging of a ravine, prolonged by an alluvial cone. The stiff slope batter by such open notches in the loose material determines a relief in badlands. Diffused, it causes a pellicular removal and the construction of the small glaze of accumulation at the base of the slope. Syn. with RUNNING; RUNOFF

STRENGTH
Force
Strength of Materials
Syn. with FORCE; STRESS

STRENGTH OF MATERIALS
Résistance des matériaux
Strength of Materials
The purpose of this field is to determine the dimensions of the constructions in order to resist to strains which they have to withstand, or to check if a specific construction is able to withstand certain strains (tension, compression, shearing, twist, bending). The strength of materials also gives the value of the bearing reactions of the hyperstatic structures. It enables to ensure the good performance of the beams under the permanent and service loads. Furthermore, this science studies the mechanical properties of materials used in the construction industry (elasticity, resistance limits, plasticity, fatigue).
The strength of materials it is also the study of dimensions and choice of materials to implement in a construction. To design a mechanical part, a structure, it is initially to imagine the forms and geometrical skeleton which fulfil the specific functions; then, it is to determine the quantities of matter necessary and sufficient to achieve these forms and to ensure a resistance without damage to the object with all the strains it will be subjected to during its service. This dimensioning calls upon calculations that forecast the performance of the object whose design must combine the best conditions of security, economy, and esthetics. The strength of materials is the major tool of engineering and design departments.

STRENGTHEN
Affermir; Consolider
Earthwork; Work
1. To make firmer a ground, compact, to prevent possible settlements. Syn. with CONSOLIDATE
2. To give more solidity to a construction or a structural element and to reinforce soils, slopes, fillings.

STRENGTHENING
Confortement; Consolidation
Civil Engineering Structure; Work
1. An operation allowing restoration of a structure to a condition of service comparable at its original condition or increasing the level of this condition of service. Syn. with REINFORCING (OF A STRUCTURE).
2. Syn. with CONSOLIDATION

STRENGTHENING CABLE
Câble de solidarisation
Construction in P.C.
In a prestressed concrete bridge built by successive cantilevers, cable that ensures the continuity of the work and that is tensioning after hardening of the concrete of the segment or the keying joint. Strengthening cables are mostly arranged in the bottom chord of the girders.

STRENGTHENING OF REINFORCED CONCRETE STRUCTURE BY FASTENED PLATES
Renforcement de structure en B.A. par plaques collées
Construction of R.C. and P.C.
Strengthening by glued steel plates, intended to restore (damaged reinforcements) or increasing (higher loads) the bearing capacity of a work. The strengthening is possible for the moment (horizontal plates stuck on the lower or higher sides) and for the shear force (plates stuck on the webs-stirrups). The thickness of the plates is 3 to 5 mm.

STRENGTHENING OF THE EARTH (FILL) STRUCTURE
Confortation des ouvrages en terre
Earthwork
All the works intended for consolidating the excavations by a mechanical action obtained by:
- modification of the geometry of the work,
- improvement of the characteristics of the in situ material, or
- the construction of other works.

STRENGTHENING PIECE
Renfort
Construction
An element brought back on a work or a part of work with an aim to increase its resistance or again to compensate a damage. **See Figure 108**

STRESS
Sollicitation; Force; Contrainte; Fatigue; Charge
Strength of Materials
1. All the forces (normal force, shearing force) and moments (bending moment, twisting moment) applied to a section. The stress is calculated from the actions by suitable analysis method of the structure.
To simplify, one can say that it is an action exerted by a force or a load on the part which bears it (beam, post, wind bracing, etc.). The nature of the stress varies according to the mode of action of the force (or the torque) which generates it; this action can without regard of the loads being generated by an expansion or hindered or prevented contraction. The main stresses are tension, compression (with or without buckling), bending, twist, shearing. In terms of tensile and compression stresses, we can distinguish:
- **uniaxial** (*la sollicitation uniaxiale*), tension or compression of a part along a single direction (bars of lattice for example);
- **biaxial** (*la sollicitation biaxiale*), which brings into play along two orthogonal directions, two positive or negative tensions;
- **triaxial** (*la sollicitation triaxiale*) concerning along three orthogonal directions, three negative or positive tensions.

Syn. with STRAIN. **See figures 109 to 109d**
2. Anything cause that tends to modify the state of movement, rest or deformation of a body. A force is defined by four elements: the point of application, direction, orientation of this direction, and intensity. Syn. with FORCE; STRENGTH
3. Concerning slabs, beams, etc., all the inside forces due to the action of outside forces.
4. The stress that exerts, by unit of area, on a section of a solid under the effect of loads that are applied to it.
Stresses are divided into two groups:
- **normal** (*les contraintes perpendiculaires à la section étudiée*), called *normal* that are the tension and compression;
- **sliding** (*les contraintes tangentielles, parallèles à la section étudiée*) and said *of slipping* that are shear (or transverse slipping) and longitudinal slipping.

5. Syn. with FATIGUE
6. Syn. with LOAD

STRESS CAPACITY
Portance
Temporary Construction
Stresses which can bear a prop, a supporting, or a shore.

STRESS CORROSION
Corrosion sous contrainte
Construction of R.C. and P.C.
The seeding-up of the corrosion of the reinforcements of a R.C. construction in the aftermath of latent or applied stresses.

STRESS LIMIT
Limite de fatigue ou d'endurance d'un matériau
Strength of Materials
The maximum fatigue that a material can endure without undergoing irreversible deterioration. The stress limit is given by the ordinate of the asymptote of Wöhler's curve that corresponds to the amplitude of variation of the stresses being able to be supported by material an infinite number of times without damage. It is reached for a variable number of cycles according to the materials, which is from 1 to 3 million cycles for the steels. It is generally considered to be 2 million cycles for the constitutive metal of the bridge decks. Syn. with FATIGUE LIMIT

STRESS PROBE
Contraintemètre
Equipment for Measure and Control
An instrument (gauge) often life-embedded in the concrete of a structure intended for measuring bearing pressures at the all stages of the construction and the life of the work.

STRESS RELAXATION
Relaxation
Strength of Materials
The reduction, in the time, of the stress that undergoes a body kept in a state of deformation; it is the case of the steel prestressing cables and active tie rods. This phenomenon concretely results by a drop of tension. Syn. with DESTRESSING

STRESS RELIEF TEMPERING
Revenu de détente
Metallurgy
A temper carried out at a temperature usually lower than 200°C on fully or partially martensitic structures, to minimize the peculiar stresses by a beginning of carbide precipitation and this without lowering hardness too much.

STRESS TEST
Essai de fatigue; Tension d'épreuve
Metallography; Strength of Materials
1. A test that consists in subjecting metal to cyclic stresses. For a given metal at a fixed temperature, the fatigue test is defined by the mode of deformation imposed (example: tension, compression, twist, bending), maximal and minimal values of the applied stress, the speed of deformation is characterized by the number of cycles per second and the number of cycles to the breaking point which is, in general, the conclusion of each stress test carrying on enough long. Syn. with FATIGUE TEST
2. The tension applied to a tie rod, a cable, etc., and which is higher than its allowable tension (of service).

STRESS-STRAIN CURVE
Courbe contrainte-déformation
Strength of Materials
The curve obtained by plotting unit stresses as ordinates against corresponding unit strains as abscissas.

STRETCHER
Panneresse
Nomenclature of Materials; Construction
1. A stone, brick, or parallelepiped quarry stone that shows its longest face in facing, as opposed to the header.
2. In a vault made of coursed masonry, element which shows its longest edge in facing and is bonded parallel to the generatrix of the vault. The two more large of its faces being in connection with the contiguous elements.

STRIKE THE CENTERING
Décintrer
Temporary Construction
To take off centerings having been used at the construction of a vault.

STRIKE THE SHUTTERING
Décoffrer
Temporary Construction
Syn. with REMOVE MOLDS; STRIP

STRIKE-OFF
Recépage
Foundation
Syn. with CUTTING OFF; TRIMMING

STRIKER
Frappeur
Metal Construction
In a team of riveting workers, worker who beats sheet metals around the hole to bring them closer mutually and crushes with a hammer the head of the rivet and finishes the riveting operation with a rivet setter on which he hits to shape the second head of the rivet. Syn. with HAMMERMAN

STRIKE THROUGH
Remontée
Defects (Painting)
Syn. with BLEED-THROUGH

STRIKING
Angle d'attaque, de dégagement, de dépouille, d'un outil; Désenrobage
Equipment and Tools; Defects
1. Syn. with CLEARENCE ANGLE (OF CUTTING TOOL); CUTTING ANGLE; DISENGAGEMENT
2. Syn. with DISPLACEMENT; STRIPPING

STRIKING
Décintrage
Welding
The contacting of the electrode and the part to be welded, separated at once. The continuity of the current, after separation, being ensured by the electric arc.

STRIKING AN ARC
Amorçage de l'arc
Welding
Syn. with STRIKING

STRIKING DOWN
Abattage
Earthwork and Masonry
Syn. with CUTTING; WORKING

STRIKING OF SUPPORT
Décalage
Temporary Construction
The withdrawal of shores supporting a formwork as soon as the concrete reaches a sufficient strength.

STRIKING PLATE
Appendice
Welding
A small metal piece furthering the beginning or finishing of a weld bead. Syn. with SCARFING PLATE; TAIL **See Figure 110**

STRIKING WEDGE
Picot; Coin de serrage; Détente
Equipment and Tools; Temporary Construction
1. A wooden wedge used to compress the ledger strip in the spilling of a well.
2. A wooden or metal wedge tightens to force and intended for stiffening shores.
3. Syn. with LOWERING WEDGE; PAGE

STRIKING-OFF
Régalage
Works
Syn. with FINAL GRADING; LEVELLING

STRING
Bander; Limon; Rame; Ligne
Construction; Equipment and Tools; Work
1. To put in place the archstones of an arch and to close it with the keystone.
2. The pitching piece of a staircase, supporting the step of the side of the hole. Syn. with STRINGER
3. A drilling stand of drill pipe formed by several elements screwed end to end.
4. Syn. with LINE

STRING LINE
Cordeau
Equipment and Tools
Syn. with BUILDER'S LINE; LINE

STRING MOLDING
Cordon
Architecture
A molding with a circular profile. **See Figure 112**

STRING OF CASING
Colonne
Foundation
Syn. with CASING

STRING ROT
Pourriture fibreuse
Defects (Building Materials)
A wood alteration characterized by the persistence of the fibrous structure of the wood that softens and disaggregates at the same time as its natural color changes.

STRING WALL
Echiffre
Construction
Syn. with SPANDREL

STRINGCOURSE
Bandeau; Clavage; Cordon
Construction
1. The figured line of the vault in the plan of the heads of a masonry bridge, often realized in ashlars.
Concerning the semicircular vaults, stringcourses have an uniform thickness: it is said whereas they are extradossed and are always projecting on the main plane of tympanum.
Concerning the works with an elliptic vault, stringcourses often have a variable thickness (increase in thickness since the key up to the springings). Certain stringcourses are said with crossettes if the bonding of the arch stones forms steps in the tympanum (this kind of stringcourse does not comprise any projection on the main plane of tympanum). **See Figures 111 and 111a**
2. All the arch stones forming an arch.
3. Syn. with COPING

STRINGER
Longeon; Longrine; Limon; Longeron
Construction; Metal Construction
1. Syn. with MEMBER
2. Syn. with STRING
3. Syn. with LONGITUDINAL GIRDER; STRINGER BEAM

STRINGER BEAM
Longeron
Metal Construction
Syn. with LONGITUDINAL GIRDER; STRINGER

STRINGPIECE
Longeron; Moise
Construction; Temporary Construction
In arch bridges, piece that joins the tympanum at the top end of an upright.
2. Syn. with BRACE

STRINGY STONE
Pierre filardeuse
Defects (Building Materials)
A rock which has strands in its thickness or its height.

STRIP
Feuillard; Décoffrer; Basting; Bastaing; Lé
Metallurgy; Temporary Construction; Construction; Nomenclature of Materials
1. A flat hot-rolled steel product produced in long strip form, width lower than 600 mm, thickness from 1 to 12 mm, rolled in bobbins immediately after the rolling. Syn. with HOOP IRON; STEEL STRIP
2. Syn. with REMOVE MOLDS; STRIKE THE SHUTTERING
3. Syn. with BATTEN
4. The width of production of a geomembrane, a prefabricated blanket.

STRIPPER
Décapant
Materials
Syn. with REMOVER

STRIPPING
Grattage; Décapage; Découverte
Painting; Earthwork
1.. Syn. with SCRAPING
2. Syn. with CLEANING; PICKLING
3. The superficial excavation of the ground over a large surface and a relatively small thickness (25 cm maximum). Syn. with SCRAPING
4. The capping covering the exploitable rocky mass (deposit) of pits. Syn. with OVERBURDEN

STRIPPING
Désenrobage; Dérochage
Defects (Construction of R.C. and P.C.); Metallurgy
1. The disappearance of the concrete or mortar coating a reinforcement. Syn. with DISPLACEMENT; STRIKING
2. Syn. with ACID CLEANING

STRIPPING PAINT
Peinture pelable
Painting
A product giving a dry film able to be detached from the substrate by simple peeling after incision.

STROKING
Saignée
Masonry
A blow of pickaxe or mattocks given to a stone with intent to release a part or to probe this stone.

STRONG EARTH
Terre forte
Geology
A wet matter containing stones, pebbles, clay.

STRONG IRON
Fer fort
Metallurgy
A commercial category of metal whose main quality is to be bent hot or cold.
In this category we can distinguish:
- **hard iron** (*le fer dur*), which offers a great tenacity;
- **half-hard iron** (*le fer demi-dur*), presenting intermediate qualities between hard iron and malleable iron;
- **malleable iron** (*le fer mou*), less strong than hard iron but of great ductility and whose shaping is executed as easily hot as cold.

STRUCK CAPACITY
Capacité
Equipment and Tools
The maximum volume of material that can contain the bucket of a digger, the vat of a mixer, the skip of a truck, etc., measured to close-cropped of edges of the packaging.

STRUCK JOINT
Joint fait en montant
Masonry
Syn. with SHOVED JOINT

STRUCTURAL ADHESIVE
Adhésif structural
Adhesive
The inherent part of a structure which allows assemblies whose durability is at least equal to that of the structure itself.

STRUCTURAL CONCRETE BONDING PROCESS
Procédé S.C.B.
Work
A process which consists in injecting under pressure a very strong epoxy resin into cracks of 0.2 mm of opening and more. Once the injection product reached maturation, it seals perfectly the crack and restitutes to the concrete mass its monolithic structure.
Description of the practice:
on the crack is applied a product that seals it temporarily, then one performs along the crack thus covered the openings into which the epoxy resin will be injected. If the crack crosses the concrete right through, one also seals some on the side opposed to avoid the losses;
by means of two pumps equipped with dosage devices, the various components of the epoxydic resin are brought to an injection gun equipped with a special fitting to prevent that the liquid does not run on the surface of the concrete;
the resin is injected into the first hole until resurgence by the following hole;
one blocks the first opening then and starts do fill the second hole, and so on;
once the resin is hardened, the material beforehand applied to the crack is removed.

STRUCTURAL GLUING
Collage structural
Adhesives
An assembly using a structural adhesive.

STRUCTURAL INJECTION
Injection de coeur
Work
An internal treatment (into the body of the work) by injection of cement grout or polymer to block up the cavities.

STRUCTURAL *or* INTERNAL INJECTION
Injection interne
Masonry
A penetration under pressure carried out into the body of masonry of a grout or a polymer; the purpose of it is to regenerate the masonry by blocking up joints, spaces, and cracks.

STRUCTURAL MATERIAL
Matériau structural
Building Materials
A product used to create load-bearing elements. They are resistant materials such as wood, stones, hydraulic binders, steels, etc.

STRUCTURAL POROSITY
Porosité structurale
Geotechnics
The porosity is defined by the difference between the total porosity and the textural porosity. Some variations can occur, as fast as those of the structural state of the ground which is the cause of that. Porosity is frequently big enough to be observed by eye or with a low enlargement. It constitutes, not considering the layers from the ground which have been just loosened, only a small percentage of the unit apparent volume. Although a system of porosity does not have exclusiveness to govern such or such phenomenon, its influence on the opportunities of entrenchment, the index of the loosening total of a horizonand the permeability to the water circulating by gravity, is crucial.

STRUCTURAL STEEL WITH IMPROVED STRENGTH AGAINST ATMOSPHERIC CORROSION
Acier de construction à résistance améliorée à la corrosion atmosphérique
Metallurgy
A ferrous material slightly alloyed which has the property under certain circumstances and under certain requirements, to come into an oxide coat protecting subjacent metal from the corrosion. It is sometimes called *self-weathering steel.*

STRUCTURAL STEELWORK
Acier de construction
Metallurgy
1. Rolled steel sections or other iron and steel products assembled to form structural frames by riveting, welding, bolting, or a combination of all three.
2. An iron and steel product defined by applicable standards.

STRUCTURAL TIMBER
Bois de charpente
Building Materials
Syn. with BUILDING TIMBER; LUMBER

STRUCTURAL WALL
Gros mur
Construction
Syn. with MAIN WALL

STRUCTURAL WOOD ALTERATION
Altération interne du bois
Defects (Building Materials)
The degradation in the mass after which the wood can be rotted or worm eaten.

STRUCTURE
Structure
Petrography
The shape of the grains of a rock that makes possible to differentiate them according to their origin and formation. We can describe structures as:
- **acicular** (*la structure aciculaire*), that looks like fine needles that are lengthened crystals;
- adelogenous (*la structure adélogène*), in which the grains constituting he mass are not discernible;
- **tonsiloid** (*la structure amygdaloïde*), which contains hard nodules and round parts as the tonsils;
- **arenaceous** *(la structure arénacée),* which shows the aspect of agglomerated sand grains;
- **bacillary** (*la structure bacillaire*), showing an arrangement of the grains in long streaked prisms broadly deeply and stick-shaped, which gives them a fibrous appearance;
- **breccia form** *(la structure bréchiforme*), with an arrangement of the grains formed by combination of angular fragments;
- **decayed** *(la structure cariée),* which shows a bored surface of irregular cavities similar to the tubers, giving to the rock some resemblance with a decayed bone;
- **cavernous** (*la structure caverneuse*), in which the arrangement of the grains shows cavities much larger than in the spongy structure;

- **cellular *or* vacuolar *or* honeycomb** *(la structure cellulaire ou vacuolaire),* in the arrangement of the grains shows many cavities;
- **compact** *(la structure compacte),* in the arrangement of the grains is very tight and of microscopic or submicroscopic sizes;
- **concretioned** *(la structure concretionnée),* in which the arrangement of the grains contains irregular rounded parts with very diverse shapes, often concentric and cellular or with geodes, harder than cement of connection, but without angular fragment;
- **crystalline** *(la structure cristalline):* see CRACK;
- **semi-crystalline** *(la structure demi-cristalline),* irregular mixture of crystalline coarse-grained or adelogenes parts and amorphous parts;
- **subcrystalline** *(la structure sub-cristalline),* in which various crystalline grains are arranged according to a broadly regular mixture;
- **hooked** *(la structure crochue),* in which the arrangement shows small pointed and rounded bumps; this type of structure can be met in some geodes containing crystallizations in dendritic groups;
- **fluidal** *(la structure fluidale),* affecting the vitreous and porphyritic rocks and in which elements show a general direction;
- **fibrous** *(la structure fibreuse),* which is made up of fine needles close together (example: asbestos);
- **fibrous-radiated** *(la structure fibro-rayonnée),* in which the arrangement of the grains has the shape of needles and fibers converging to a center;
- **lamellar *or* foliated** *(la structure lamellaire ou feuilletée),* in which the arrangement of the grains shows very thin folias (example: mica);
- **shaly** *(la structure lamelleuse),* in which the arrangement of the grains shows folias of a certain thickness (example: slate);
- **woody *or* ligneous** *(la structure ligneuse),* in which the arrangement of the grains reminds that of wood;
- **oolitic** *(la structure oolithique):* see OOLITIC;
- **petrosiliceous** *(la structure pétrosiliceuse),* of the porphyritic kind and where the elements are united in nebulous confused heap;
- **coarse-grained** *(la structure phanérogène),* in which the grains constituting the mass are discernible by eye;
- **pisolithic** *(la structure pisolithique),* in which the grains are larger than the ooliths;
- **porphyritic** *(la structure porphyrique),* in which, feldspar crystals or various other elements that contains the mass are disseminated in the middle of a homogeneous paste;
- **porphyroblastic** *(la structure porphyroïde),* which is made up of large crystals;
- **pudding form** *(la structure poudinguiforme),* that contains nuclei and angular fragments (aspect of the agglutinated gravel);
- **prismatic** *(la structure prismatique),* columnar, cylindrical, where the arrangement is usually made of regular prismatic columns;
- **schistose** *(la structure schisteuse),* designing a rock splitting itself easily in broadly thick sheets and tablets;
- **scoriaced *or* slaggy** *(la structure scoriacée ou bulleuse),* containing spherical spaces of all dimensions coming from bubbles of air retained in the mass when it was in a pasty state before solidification. Very frequent in lava;
- **spongy** *(la structure spongieuse),* with an arrangement of the grains looking like a sponge;
- **earthy** *(la structure terreuse),* having the appearance of the ground, that is porous or with fine cells;
- **trachytic** *(la structure trachytique),* in which a great number of elements appear like thin, small lengthened prisms without net spiking;
- **concretioned tuberculous** *(la structure tuberculeuse du genre concrétionné),* but without soft bond cement to unite the tubers;
- **tubulous** *(la structure tubuleuse),* in which the grains have the form of parallel tubulous fillets and of varied size;
- **vitreous** *(la structure vitreuse),* in wich the grains show the aspect of glass;
- **zoogenous** *(la structure zoogène),* where the arrangement results from remains of vegetable and agglutinated animals.

STRUCTURE
Structure; Gros-oeuvre; Ossature; Charpente
Construction; Civil Engineering Structure; Carpentry
1. Parts or members of any building that carry the loads and transmit them to the foundations.
2. All the main elements of a work that constitute the frame, when construction is made up of active and passive elements. Syn. with FRAME

3. An independent work of certain importance and, by extension, the set of the main elements of a construction ensuring its stability and its resistance. Syn. with CARCASS; SHELL; SHELL OF BUILDING
4. A structure made up of assembled elements (linear or curved) forming the essential of a construction, of any equipment and which, alone, fills practically all the stability and strength conditions. Syn. with CARCASS; SKELETON
5. Syn. with CARPENTRY; FRAME; FRAMEWORK

STRUCTURE ACCOUNT
Historique d'un ouvrage
(Civil) Engineering Structure
The entire gamut from design to find of a construction (tests, nature of the hydrological network, etc.) Incidents that arised during or after construction, modifications made after construction (maintenance works, etc.).

STRUCTURE GAUGE
Gabarit
Construction
Syn. with CLEARENCE

STRUCTURE OF R.C. *or* P.C. FOR MASONRY STRENGTHENING
Structure en B.A. ou en B.P. pour renforcement de maçonnerie
Construction
Traditional work, supporting or tight-lying masonries. Reinforcements are constituted either of passive steels or of active reinforcements, cables, bars, etc. The structure can be connected with the masonry by anchoring pins, by crossing tie rods or by anchored tie rods in the case of counterwall.

STRUCTURE TEST
Essai de structure; Essai de construction
Test of Materials (Civil Engineering Structure): Strength of Materials
1. Tests carried out on real work, prototype or small-scale model, which have for purpose to check to what extent a shape or type of construction or a mean of assembly resists correctly to a certain kind of stress, and also to appreciate the security, that is the gap between the stress expected from calculation and the ruin of the element checked.
Their goal can be to check the:
- similarity between a design hypothesis and behavior under real loads;
- behavior under real loads of a part difficult to design;
- behavior of a part of a construction under new loads, etc.

The examples are infinitely varied.
2. A static test that is performed by overloading the structure and measuring the deformations of each element.

STRUT
Poussard; Buton; Etrésillon; Bretelle; Etrésillonner; Etai; Accoter
Temporary Construction
1. In the supports of a gallery, stringer formed by a large timber piece placed horizontally between two posts, two head beams, in order to keep their spacing stable and to avoid that they bring together. Syn. with CAPPING PIECE; CANTILEVERED BEAM; SPREADER
2. A wooden or metal piece taking up the thrusts exerted on sheeting walls and intended for preventing these walls to get closer. Syn. with STAY; HEAD TREE
3. Syn. with BRACE.; (CROSS) SHORE
4. Syn. with BRACE; SHORE (ACROSS)
5. Syn. with FRAME; PIT PROP; PROP; SHORE; STANCHION
6. Syn. with BUTTRESS; SHORE UP; STAY (UP)

STRUT
Jambe de force; Ente; Entretoiser
Construction
1. A small beam, usually tilted to 45°, assembled between a pole and a beam and intended for relieving it by decreasing its span, thus ensuring it a better bending strength. Syn. with BRACE; CORNER BRACE; PROP; STAY;
2. Syn. with BRACE
3. Syn. with (CROSS-) BRACE; STAY

STRUT
Moiser; Arc-boutant
Work; Carpentry
1. To grip tightly a wooden piece by two other parallel parts.
2. A diagonal shore used to thwart a thrust. Syn. with STAY

STRUT (OF FORMWORK)
Roulisse
Equipment and Tools
A base plate used as support to the formwork, in particular in the concreting of well (the support of a suspended formwork). The strut is mostly anchored. After concreting of the ring, the strut is put down at the wanted height, anchored in the country rock. The formwork is putting down on the strut and the whole is concreted. **See Figure 113**

STRUTS
Moisage
Temporary Construction
All the double members in place in a well or an excavation.

STRUTTING
Etaiement
Temporary Construction
Syn. with FALSEWORK; PROPPING; SHORING.

STUB (LAND)
Essoucher
Civil Engineering
To remove the stumps that remain in a ground after the felling of trees.

STUB STONE
Pierre de souchet
Building Materials
A sedimentary rock which comes from the lowest bench.

STUD
Spit; Cheville; Plot; Poteau
Materials; Nomenclature of Materials; Construction
1. A gudgeon, screw, nail, which fixation in concrete, masonry or metal, is ensured by propulsion under the effect of a small explosive charge. Syn. with SHORTFIRED FIXING; EXPLOSIVE FIXING
2. Syn. with BOLT; PEG; PIN
3. All the trunk plates or folias obtained by sawing a log following successive parallel lines, and piled up, after sawing, in their order of origin for reconstituting the log.
4. Syn. with POLE; POST; STANCHION

STUD BOLT
Goujon
Building Materials
An element made up of a dowel screw at one of its ends or both and of a nut. The stud bolt appears projecting in comparison with a piece where it is fixed by screwing or welding.

STUD DRIVE
Spitter
Work
To insert into a material using a pneumatic gun functioning with gas cartridges, screws, studs, or nails specially designed for this tool.

STUD DRIVING
Spittage
Work
The action of stud driving or the result of this operation. Syn. with STUD SHOOTING

STUD GUN
Pistolet de scellement
Equipment and Tools
A tool using explosive cartridges used to dowel or to nail into a hard material. Syn. with CARTRIDGE GUN; FIXING GUN

STUD SHOOTING
Spittage
Work
Syn. with STUD DRIVING

STUD WELDING GUN
Pistolet pour soudage des goujons
Equipment and Tools
A tool especially designed to present and to weld studs or similar pieces.

STUDDING
Mailletage
Foundation
The nailing throughout the periphery of a submerged timber carried out with round-headed jointed nails of 15 mm in diameter, and which, while rusting, formes a continuous shell. The purpose of this process is to protect wood from attack of ship's borers.

STUDY CONCRETE TEST
Béton d'étude
Building Materials
Any concrete used to determine the composition of the concrete to be formulated according to various criteria (destination of the work, loads, density of the bar setting, span, etc.). The study has to specify the particle size curve, the nature and the batching of the cement, the amount of aggregates, the quantity of mixing water, etc. Compression and tensile testings, using standardized cylinder tests, are executed at days 7 and 28 so as to verify if the formulation that derives from the study is correct.

STUGGING
Piquage
Masonry
Syn. with PICKING

STUMP
Moignon; Souchever
Metal Construction; Building Materials
1. The start of a metal beam. **See Figure 114**
2. To remove the stump stone in a quarry in order to clear and to divide the beds.

STUMP STONE
Souchet
Building Materials
A soft stone withdrawn below the last bench of a quarry. It is a low-grade ashlar.

STUMPER
Stumper; Essoucheuse
Equipment and Tools
An earthmoving plant used to stump and comprising a steel block with three teeth which works by pushing and lifting.

STUMPING
Souchèvement
Building Materials
A notch practiced parallel to the beds of a rocky bench, under a layer, to facilitate the quarrying of the rock.

STYLOBATE
Stylobate
Construction
Syn. with BLOCKING COURSE; CONTINUOUS PEDESTAL; STEROBATE

STYRENE-BUTADIENE RUBBER PRODUCT
Produit S.B.R.
Polymers
A family of synthetic elastomers.

STYRENIC RESIN
Résine styrénique
Polymers
A vinyl resin (with the chemical meaning of the term) characterized by the presence of one or several aromatic radicals fixed on the chain.

SUBAQUATIC TELEVISION
Télévision subaquatique
Equipment for Measure and Control
A system of video recording that makes possible to view ashore films achieved in aquatic site, foundations, piles, etc., in order to detect putative damage there.

SUBASSEMBLED PREFABRICATED REINFORCEMENTS
Armatures préfabriquées préassemblées
Construction of R. C. and P. C.
Reinforcements carried out in factory or in an itinerant workshop by assembling by welding or tie wiring the elements made up of varied profiles; plain bars or to high bond, wire and under certain circumstances, small sections.
These products are delivered ready for use, namely generally without any need for complementary shapings on the building sites.

SUBBASE
Couche de base; Couche de roulement
Civil Engineering
Syn. with BASE; BASE COURSE; SURFACING

SUBCONTRACT
Sous-traiter
Contract
To perform or to put out to contract.

SUBCONTRACTING
Sous-traitance
Contract
A contract by which a contractor links with another company to entrust to it the whole or part of work it is responsible for. The contractor has responsibility for completing the work. (When

the work is completed for an administration, the contractor has to declare the subcontractor.)

SUBCONTRACTING OF SPECIALITY
Sous-traitance de spécialité
Contract
Contract by which a successful contractor of work does not possess the required qualifications to carry out a certain job (example: metal spraying, paint, tightness, etc.) calls upon and links himself with a specialized enterprise.

SUBCONTRACTOR
Sous-traitant
Contract
Builder that does a work put out to contract.

SUBFLOORING
Gîte
Construction
Syn. with SUPPORT

SUBGRADE
Plate-forme; Fond de forme
Foundation; Tightness
1. A layer, stratum, or material immediately beneath some principal surface; specifically a layer of earth or rock that is graded to receive the foundation of an engineering structure. Often it is the soil or natural ground that is prepared and compacted to support, and that lies directly below, a road, pavement, building, airfield, or railway.
2. A surface on which rests the geomembrane tightness layer.

SUBLYING
Sus-jacent
Various
Is said of what just extends above.

SUBMERGED FORMWORK
Coffrage immergé
Temporary Construction
A temporary construction used to concrete under water. Its essential characteristics are:
- to give the wanted shapes to the work or to its secondary elements;
- to protect the concrete from the washing out due to the action of waters until it reaches its maturation.

SUBMISSION
Soumission
Contract
A contractual document in which a successful contractor of work commits himself respecting the clauses and general conditions, according to the prices which he accepted. Syn. with TENDER

SUBPLATE
Embase
Construction
An element of support leaning on another piece.

SUBSIDE
Tasser
Civil Engineering Structure
To settle; to get compressed, to sink into, speaking about a construction or ground. Syn. with SETTLE

SUBSIDENCE
Effondrement; Subsidence
Geomorphology; Geology
1. The sudden sinking or gradual downward settling of the Earth's surface with little or no horizontal motion. The movement is not restricted in rate, magnitude, or area involved. Subsidence may be caused by natural geologic processes, such as solution, thawing, compaction, slow crustal warping, or withdrawal of fluid lava from beneath a solid crust; or by human activity, such as subsurface mining or the pumping of oil or groundwater.
2. The depression of a platform under the influence of a thick sedimentation. (By extension, any ground that subsides is labeled *subsident*.)

SUBSIDENCE
Tassement
Civil Engineering Structure
The vertical movement directed toward the bottom of a ground in the aftermath of a load or its own weight. The subsidence supporting a foundation can have various origins such as a shortfall of foundation, excessive overloads, underwashing of the ground by water, collapse of cavities or underground galleries (old mines, pits, caves, etc.), earthquake, landslide, etc.

SUBSIDIARY WORKS
Ouvrages annexes
Sanitary engineering and Drainage
Devices that ensure the transition and junction of the various systems of purification and moreover enable a control of the correct functioning of the system in place. These works are either poured in place of concrete thinly reinforced or prefabricated. They are manholes with grating for gutter curbs, extruded curbs of coated materials, etc.

SUBSTITUTE
Lancis; Relancis; Relancer
Masonry
1. Implementation of the new replacement materials to fill a space in any scoured masonry. The substitute term is used for the operation of blocking up as well as for materials used for this purpose.
2. An operation of repair of masonry that consists in removing from the facing the defective quarry stones or bricks and to replace them with new materials.

SUBSTRATE
Subjectile; Substrar
Construction
1. The surface on which is applied a coat of product (paint, varnish or comparable preparations) of any rank. (Term usually used in a restrictive way to identify the surface of a metal part to be protected.)
2. The surface of a material intended for receiving a coating.
Syn. with GROUND

SUBSTRATUM
Substratum
Geology
A geological formation underlying a sedimentary cover

SUBSTRUCTURE
Infrastructure
Civil Engineering Structure and Civil Engineering
All the works constituting the foundation and the layout on the ground of a construction or of a more or less vast set of installations (example: roads, railway tracks, etc.).

SUBSURFACE WATER
Eau souterraine
Geohydrology
Syn. with SUBTERRANEAN WATER; UNDERGROUND WATER

SUBTERRANEAN PASSAGE
Souterrain
Civil Engineering Structure
Syn. with SUBWAY

SUBTERRANEAN WATER
Eau souterraine
Geohydrology
Syn. with SUBSURFACE WATER; UNDERGROUND WATER

SUBUNITS
Eléments constitutifs
Construction
All the elements composing a permanent structure.
Subunits of a work divided into two main categories :
- **main elements *or* capes** *(les éléments principaux),* which ensure the clearing of the breach and which are called *bearing units,* the main beams or main trusses which transmit to the bearings the stresses due to the permanent loads and overloads. Also comprising the leave decks, which ensure the support of the communication routes and are generally constituted from distance pieces leaning on beams and stringers connecting distance pieces to bear the element intended to receive either the railway track or the roadway. This element or frame can be either metallic or in concrete or mixed (metal-concrete);
- **secondary sections** *(les éléments secondaires),* which are:
  - *junction elements* between the extremity of the bridge and the undisturbed soil: gravel guard, wing and return walls, approach span, joints,
  - *bearings,* junctions between bearing units and bearing elements, enabling a relative movement of one or the other,
  - *wind braces,* which increase the rigidity of the whole and sometimes the decking,
  - *catwalk ways,*
  - *guardrails* fixing the lateral limits of the way and ensuring the protection of the personnel and pedestrians,

- *refuges* to protect personnel,
- *gutters,* etc.

SUBWAY
Souterrain; Passage souterrain
Civil Engineering Structure
A underground passage enabling circulations (or traffic) (people, vehicles, water) from point A to point B and which, contrary to the tunnel, does not obligatorily emerge to the open air. A subway can be established to open cut and covered after execution; it is then named a gallery. By extension, the subway became synonymous with TUNNEL. Syn. with SUBTERRANEAN PASSAGE
2. A work located under a channel of communication or under right-of-way to be preserved, and which ensures pedestrian traffic or light cars. In the stations, the underpasses enable the traffic of travelers and luggage. Syn. with PLATFORM SUBWAY; UNDERGROUND PASSAGE; UNDERPASS.
See Figure 115

SUCCESSFUL BIDDER
Adjudicataire
Contract
The beneficiary of an invitation to tender. Syn. with SUCCESSFUL TENDER

SUCCESSIVE BUTTON CONCRETING
Bétonnage par plots successifs
Construction of R.C. and P.C.
Concreting by panels included between two successive joints or two construction joints.

SUCKING UP
Aspiration
Equipment and Tools
Syn. with ASPIRATION; SUCTION

SUCTION
Aspiration
Equipment and Tools
Syn. with ASPIRATION; SUCKING UP

SUCTION BOOM
Elinde
Earthwork
Syn. with LIVE BOOM

SUCTION DREDGER
Suceuse
Equipment and Tools
A vacuum cleaner of great power used to clear out sludges and other matters of a certain fluidity or pulverulent, deposited in the sewers, aqueducts, manhole, and decantation pits. The suction dredger equips mostly the tankers especially designed for the collection of this kind of matters. Syn. with PUMP DREDGER; SAND PUMP DREDGER

SUDDEN SAG
Cassis
Civil Engineering
A major irregularity of the longitudinal profile whose concavity is directed upward.

SUFFUSION
Suffusion
Geomorphology
A surface settlement of a ground by levigation (due to underground waters) of the soluble components as well as by movement of the colloidal particles that constitute crumbly rock.

***SULFINUZ* PROCESS**
Sulfinuzation
Metallurgy
A superficial treatment for steel or cast-iron pieces, in a molten salt bath of mark Sulfinuz. This treatment allows to upgrade the superficial qualities of pieces of friction such as hardness, wear resistance, corrosion, fatigue, and seizing.

SULFOALUMINATE CEMENT
Ciment expansif
Hydraulic Binders
Syn. with EXPANDING CEMENT; EXPANSIVE CEMENT

SULFURIZATION
Sulfuration
Metallurgy
A superficial heat treatment for metals during which the pieces to be processed are immersed into baths that contain sulfurated components and carburized or carbonitrided components which decompose to the contact with metal. The coating obtained in this way is formed by a superposition of thin coats of sulfides covering

the metal whose superficial zones are nitrided or carbonitrided.

SULFURIZED COAL TAR PITCH
Ciment volcanique
Tightness
A hot-mixing of pitch, coal tar, sulfur, resins and anthracenic oils for fluxing. This product was used formerly as tightness covering.

SUMP
Puisard; Albraque
Construction
1. The part of a work, lower than the unit, where collect the water or the most concentrated muds. Syn. with GRIT TRAP
2. Syn. with DRIFT FOR COLLECTING WATER

SUNK DRAFT
Refend
Masonry
A groove of small dimensions cut along of the edges of a stone to simulate a joint or putting in prominently a bossage. **See Figure 116**

SUNK PANEL
Table défoncée
Construction
A surface of masonry forming setback.

SUPERFICIAL COVER
Masque de protection superficiel
Construction
A revetment of small thickness carried out in noble materials intended for protecting the body of an embankment.

SUPERFICIAL EXCAVATION
Excavation superficielle
Earthwork
An excavation whose width l and the depth h satisfy $l \geq 2$ m and $h \leq \frac{1}{2}$. (The depth h is measured from the level of the ground such that it is delivered for the execution of excavations. This level can be, either, the undisturbed soil, or the one which results from the preliminary carrying out of bulk excavations.)

SUPERFICIAL STATIC LOADING TEST
Essai statique de chargement en surface
Geotechnics
A strength test of a ground notably carried out in road technique, and whose principle is the following. The loading is centered on a rigid circular plate of radius 0.75 m. Of this loading test one deduce a modulus of reaction that is the ratio P/W of the pressure P exerted onto the ground to the sinking W of the plate under a given load. This test presents the disadvantage to be accompanied, as early as the first loads, of plastic slippings in the peripheral zone, slippings that modify the natural cohesion of the ground. **See Figure 117**

SUPERFICIAL VOID
Bullage
Defects (Construction of R.C. and P.C.)
Syn. with BLOWHOLES; FORMATION OF BUBBLES;

SUPERFICIAL WATERPROOFING
Hydrofugation superficielle; Silicatation
Construction of R.C. and P.C.
Syn. with SILICATATION.

SUPERFLUOUS LENGTH
Regain
Masonry
In a wall, the surplus of a too long stone (opposite of setback).

SUPERPLASTICIZER
Superfluidifiant
Materials
An admixture which, mixed into concrete, allows to decrease appreciably the quantity of mixing water by increasing considerably its plasticity without harming its qualities of strength and homogeneity.

SUPERSONIC SOUNDING MACHINE
Sondeur à ultrasons
Equipment for Measure and Control
An instrument used in particular to measure the depths of water, whose principle consists in giving off during a very short time, an ultrasonic signal near surface. At the end of a certain time t, the resonant wave, after having been propagated toward the bottom and is reflected on itself there, it goes back up towards surface where it is detected. Knowing the propagation velocity of the sound in water (in the range than 1500 m/s) one deduces the depth $h = Vt/2$

SUPERSTRUCTURE
Superstructure
Construction
1. The part of a construction set up above the main construction and that consists of all elements which do not play a part in the mechanical strength of the work. For a bridge deck they are the roadways, sidewalks, guardrails, etc.
2. The part of a work set above the level of the ground (unlike the infrastructure that is set below).
3. All the devices which, in a vaulted masonry work, ensure the connection between the vault and the carried way.

SUPERSTRUCTURE JOINT
Joint de superstructure
Construction
A connection that ensures for the superstructure of the supported way (road or rail), on the one hand, its continuity and, on the other hand, the freedom of relative movements between the superstructure on the work and out of the work.

SUPERSULFATED CEMENT
Ciment sursulfaté (C.S.S.)
Hydraulic Binders
Syn. with SURSULFATED CEMENT

SUPERVISOR
Conducteur de travaux
Works
Syn. with WORK FOREMAN

SUPPLENESS TEST
Essai de souplesse
Test of Materials (Tightness)
A test intended for testing the flexibility of the prefabricated dampproof membrane, which proceed as follows: a test specimen 5 cm wide and 30 cm long is cooled at 0°C by a station for 2 h in an enclosure kept at this temperature. As early as its exit from the enclosure, the test specimen is set on an also conditioned cylinder at 0°C, the length being positioned in the direction of the curve. One pushes regularly and slowly on the two ends of the test specimen in such a way that it carries in all points of the roundness. Two test specimens are tested in the direction of calendering, two in the perpendicular direction. The duration of the rolling up is for 10 s on a cylinder than 10 cm diameter, for 15 s on a cylinder than 5 cm diameter and for 20 s on the cylinder than 2 cm diameter. One notes, if necessary, the roundness on which there is cracking of the reinforced bitumen. The test is considered positive if the test specimens endure the three tests of suppleness without fissuring.

SUPPLYING
Fourniture; Alimentation
Building Materials; Hydrology
1. The quantity of aggregates corresponding to a sole and even order, constituted by a number of batches.
2. Syn. with FEEDING

SUPPORT
Gîte; Pile; Berceau; Colonne; Soutènement; Support
Construction
1. Each metal or wooden beam that supports the thick planks of a platform. Syn. with SUBFLOORING
2. Syn. with PIER; PILE
3. Syn. with CRADLE
4. Syn. with COLUMN; PILLAR
5. Element that supports, reinforces. **See Figures 22 and 22 c** under RETAINING - SUPPORT
6. The role of a work or element that supports.
7. A device, surface, able to withstand without failure to the application of a material or a brought back product. Syn. with BEARING
8. A piece that supports other.

SUPPORT
Arc-bouter; Chevalet; Appui
Civil Engineering Structure; Temporary Construction; Strength of Materials
1. To place a strut.
2. To support by means of stays.
Syn. with BUTTRESS; PROP UP
3. Syn. with HORSE; HORSEHEAD; TRESTLE
4. Syn. with BEARING; PROP; SHORE

SUPPORT (HEAVY WEIGHT)
Porter charge
Construction
Of a wall when it must bear a weight of a certain importance.

SUPPORT BAR
Chaise
Construction
The part of work being of use to support the cables, guys, or reinforcements. Syn. with SUPPORT CABLE

SUPPORT CABLE
Chaise
Construction
Syn. with SUPPORT BAR

SUPPORT FORM
Couche support
Sanitary Engineering and Drainage
The surface of the support on which rests the tightness or the geomembrane.

SUPPORT LINE
Ligned'appui
Construction
Syn. with BEARING LINE

SUPPORT STRUCTURE
Structure support
Tightness
All the elements placed between the bed bottom and a geomembrane, constituted by the:
- improved subgrade,
- bearing bed,
- possible devices of drainage (water and gas).

SUPPORTING ARCH
Cintre de soutènement
Temporary Construction
A temporary construction intended for strengthening tunnels or vaulted bridges waiting for repair or to compensate momentary weakenings due to some types of works. The use of metal centering is the most usual. There exists all kinds of centerings, of section and variable resistance, that are classified as:
- **light** *(cintres légers),* formed by simple elements of sections or rails joined end to end. In this category one can quote standard centerings that are constituted of HEB 180;
- **heavy** *(cintres lourds),* formed by elements in frame, very resistant and that can support important load of ground. They are constituted of HEB 300. **See Figure 118**

SUPPORTING DEVICE
Appareil d'appui
Construction
Syn. with BEARING; BRIDGE-SUPPORT APPARATUS

SUPPORTING-WALL UNIT
Barrette
Foundation
A wall cast in the ground, generally of oblong form and excavated using drilling mud (bentonite). Combining elements enables for forming section in a cross, T, H, etc.
A barrette is a deep foundation with a morphology intermediate between a diaphragm wall and a cast-in-situ pile. Syn. with BARRETTE. **See Figure 119**

SURBASEMENT
Surbaissement
Construction
The level difference between the high part of a surbased arch and that of an arch with a similar opening which would be semicircular. Syn. with HEIGHT TO SPAN RATIO. **See Figure 120**

SURFACE
Aire; Dégauchir
Construction; Topography; Building Materials
1. The surface of a structure reserved for traffics. Syn. with FLOOR
2. A surface of ground. Syn. with AREA; FLOOR
3. To level perfectly the faces of a wooden or metal piece.

SURFACE ACTIVE AGENT
Agent de Surface
Hydraulic Binders
Syn. with SURFACTANT

SURFACE BARS
Armatures de peau
Construction of R.C. and P.C.
Passive reinforcements distributed and laid out along two orthogonal directions over all the periphery of prismatic parts. They are broadly aimed for limiting premature crackings likely to occur before tensioning through the agency of phenomena such as differential shrinkage and thermal gradient.

SURFACE BLEMISH
Défaut de surface
Defects (Civil Engineering Structure)
Syn. with FACE BLEMISH; FACE DEFECT; SURFACE DEFECT

SURFACE CLEANING
Préparation de surface
Painting; Welding
1. All the physical, chemical, and/or physicochemical treatments to which every surface to be painted must be subjected before the application of the first paint coat which it is intended to receive.
2. An operation or continuation of operations consisting in obtaining a wanted physicochemical surface quality of the piece to be coated (geometry, ruggedness, and cleanliness of surface).

SURFACE COVERING POWER
Pouvoir couvrant en surface
Painting
The weight of paint necessary to form a continuous coat on a given surface of the support.

SURFACE DAMPPROOF COURSE
Support d'étanchéité *ou* Support
Tightness
Syn. with SURFACE DAMPPROOF MEMBRANE

SURFACE DAMPPROOF MEMBRANE
Support d'étanchéité *ou* Support
Tightness
A bed, surface, bearing a waterproof blanket.
Syn. with SURFACE DAMPPROOF COURSE

SURFACE DEFECT
Défaut de surface
Defects (Civil Engineering Structure)
Syn. with FACE BLEMISH; FACE DEFECT; SURFACE BLEMISH

SURFACE DRESSING
Enduisage; Enduit superficiel
Painting; Public Works
1. In painting, generic name concentrating on implementation of all forms of coating being able to be made on all substrates. The surface dressing has for purpose to correct the slight defects in a complete and continuous manner so the surface dressing once done, the substrate will show a compatible uniform surface with the state of finish wanted. Based on the wanted fineness we can distinguish:
- **surface dressing of raking** *(l'enduisage de ratissage),* consisting of a summary surface cleaning and constituted by a single superficial pass;
- **nonrepassed surface dressing** *(l'enduisage non repassé),* including a continuous coat of coating applied in a single pass;
- **repassed surface dressing** *(l'enduisage repassé),* executed in two passes with sanding between each pass to get a state of a well-dressed surface. This type of surface dressing leads to a complete opacification of the substrate;
- **structured surface repassing** *(l'enduisage structuré),* which gives features of variable aspects depending the process of implementation.

Syn. with COATING
2. The road surface of a roadway carried out by successive spreading of binders and gravels or sand.

SURFACE EROSION
Aréolaire
Geomorphology
Of a surface erosion affecting some rocks.

SURFACE HARDENER
Durcisseur de surface
Construction of R.C. and P.C.
A product sprayed on the surface of any concrete to somewhat upgrade its wear resistance.

SURFACE HARDNESS
Dureté superficielle
Metallurgy
The ability of a metal to resist penetration by other bodies.

SURFACE LINEAR VARIATION
Baboche
Defects (Painting)
A surface linear irregularity produced around of the brush-painted surfaces.

SURFACE OF JOINT
Surface de joint; Face de joint
Masonry
The vertical face of a quarry stone or a brick in contact with others.

SURFACE PIT
Piqûre
Defects (Metallurgy)
Small blowholes affecting the surface of some cast pieces. Syn. with PITTING

SURFACE PLANING
Dégauchissage
Building Materials
Syn. with SURFACING

SURFACE PLATE
Marbre
Equipment and Tools
A surface of assembly, perfectly plane and horizontal, used in the workshops of steel construction and coppersmithing to carry out work requesting minimal tolerances. The large-sized surface plates are often carried out with I, H or rails laid out in parallel and embedded in a concrete platform, the gap between the bars making possible for fastening the parts to be assembled. Syn. with FACEPLATE

SURFACE PORE
Piqûre
Welding
A small blowhole emerging in surface.

SURFACE STATE
Etat de surface
Work
The nature and ruggedness of the surface of a body.

SURFACE SUBSIDENCE
Affaissement
Geomorphology
The movement of lowering of the ground in the aftermath of tectonic movements or the influence of external forces (collapse of natural or artificial cavities). This term applies to a slow phenomenon; that of *collapse* identifies an abrupt demonstration. We can distinguish:

- **fallaway** *(l'affaissement spontané),* which is characterized by an abrupt lowering of the surface of the ground which is due to a partial or total collapse of an underground excavation;
- **surface subsidence** *(l'affaissement de surface),* which is characterized by a collapse of the surface of the ground and is due to the presence of underground cavities whose roof crumbles. **See Figure 121**

Syn. with SETTLEMENT; SINKING

SURFACE TREATMENT
Traitement de surface
Building Materials
All the mechanical, chemical, electrochemical, or physical operations, which have for consequences to modify the aspect or structure of the surface of materials to adapt them to the given conditions of use. The purpose of the surface treatments is extremely variable: they can tend to upgrade the optical properties (or the esthetic aspect), dry or wet corrosion resistance, behavior of welded surfaces, mechanical properties, friction and wear resistance.

SURFACE WELD
Recharger
Welding
To execute a recharging.

SURFACED REINFORCED ASPHALT
Bitume armé surfacé ou auto-protégé
Tightness
A reinforced bitumen sheet covered in factory with a thin copper or aluminum sheet about 0.1 mm thick.

SURFACED TIMBER
Bois corroyé
Building Materials
Syn. with DRESSED TIMBER; ROUGH-PLANED WOOD;

SURFACING
Couche de surface; Traitement superficiel; Couche de base; Couche de roulement
Civil Engineering; Construction
1. A protective layer formed by aggregates and bituminous binder that coats the base course, and whose role is to withstand the shear, to absorb the horizontal stresses, and to ensure the impermeability of the roadway.
2. The spreading on the surface of a roadway of a liquid binder followed by a chipping.
3. Syn. with BASE; BASE COURSE; SUBBASE.
4. The part of the work in contact with wheels of vehicles. Syn. with CARPET; SURFACING COURSE; TOPPING

SURFACING
Surfaçage; Dégauchissage
Test of Materials; Construction of R.C. and P.C.; Building Materials
1. An operation that consists in applying a plane and unite coat of a suitable material that adheres on the surface of contact of a concrete cylinder test and which the role is to ensure a uniform distribution of the load in the course of the compressive strength testings.
2. A finishing-off treatment of a concrete surface by operations such as sanding, washing, bush hammer finish, etc. Syn. with FACING
3. The planishing (or planing) or dressing of a piece by machining or straightening out. Syn. with SURFACE PLANING

SURFACING COURSE
Couche de roulement
Construction
Syn. with CARPET; SURFACING; TOPPING

SURFACING OF A CONCRETE ROADWAY
Surfaçage d'une chaussée en béton
Civil Engineering
An operation intended, after placing of the fresh concrete, for giving a regular surface and microrelief to obtain a permanent ruggedness. (The surfacing is carried out by a finishing machine comprising blades which scour the concrete allowances and consolidate the surface by pressure, of longitudinal finishing blades, and a broom which streaks the surface to obtain ruggedness.)

SURFACING WELD
Rechargement; Building-up
Welding
Syn. with BUILDING-UP WELD; RECHARGING

SURFACTANT
Agent de Surface
Hydraulic Binders
Chemical compound that modifies physical, electrical, or chemical characteristics of surface of solid, also surface tensions of solids or liquids. Syn. with SURFACE ACTIVE AGENT

SURGE
Fouetter
Defects (Civil Engineering Structure)
To oscillate and swing dangerously; is said of a cable of a suspension bridge.

SURGING
Pistonnage
Building Materials
The alternative vertical movement printed to a concreting chute in order to facilitate the flow of the concrete and its placing (diaphragm wall, cast-in-place pile, and so on). Syn. with SWABBING

SURROUND WITH WIRE NETTING
Grillager
Work
To pose a wire netting, to close with a wire netting. Syn. with PUT WIRE NETTING AROUND

SURSULFATED CEMENT
Ciment sursulfaté (C.S.S.)
Hydraulic Binders
A product obtained by mixing a large proportion of basic and hardened blast-furnace slags, with sulfate of calcium and a small quantity of lime or Portland serving as catalyst. Syn. with SUPERSULFATED CEMENT

SURVEY
Métrer; Faire un métré
Contract
1. To notice the dimensions with measuring equipment (tape measure or folding rule, decameter, etc.).
2. To measure a work, a part of work, earthwork quantities, and so on, in view of the financial work payment.

SURVEY
Levé; Lever; Relever; Arpenter
Topography
1. All operations carried out in the field, with a view to establish the plan or map of a part of the ground, that is to say:
- to determine the relative positions of the agglomerations and constructions, transport links, waterways, glaciers and water tables, crests and talweg, woods and forests, etc, (planimetry);

:: to represent, according to certain conventions, the relief of the ground (leveling). The writing of the survey leads to establish on paper a drawing that represents the reduced horizontal projection of the ground. Each operation of survey is divided into two phases: the determination of the skeleton map and the survey of details. The skeleton map surveys by calculated triangulation or by graphic and traversings; it provides the position of a number of very precise points which one is reproduced on the map before to each operation, by bringing them to a system axes of rectangular coordinates and which one calculates altitudes. The survey of details depends essentially on the scale; it is designed to represent the planimetry and possibly the altimetry. We can distinguish several types of surveys:

▪ **topometrical** *(les levés topométriques),* or on a large scale and of small extent and that relate to the urban plans, cadastral, detailed projects and working drawings of civil engineering and public works;

▪ **topographical** *(les levés topographiques),* or on medium scale, relating to certain cadastral maps, front projects for work of civil engineering or public works;

▪ **small scale cartographical** ***or*** **topographical** *(les levés cartographiques ou topographiques à petite échelle),* for drawing up general maps, known as chorographic, less precise and detailed less than the earlier ones.

2. Syn. with PLAN

3. To take note of dimensions using measuring equipment (tape measure or folding rule, decameter, etc.).

4. To measure surface area of land. Syn. with MEASURE THE GROUND

SURVEY BY ALIGNMENT
Lever par alignement
Topography
A topographic process being designed to locate planimetrically an unavailable point from points of the common periphery.

SURVEYING CHAIN
Chaîne d'arpenteur
Topography
Syn. with CHAIN MEASURE; LAND CHAIN

SURVEYING OF BEARINGS, OF FOUNDATIONS
Nivellement d'appuis, de fondations
Topography
A periodic checking with gauges (level, spirit level, and leveling staff, and so on) of the stability of the bearings of a work, a pile, a foundation, etc.

SURVEYING MAP
Plan topographique; Carte
Topography
1. Syn. with TOPOGRAPHIC PLAN
2. Syn. with MAP; TOPOGRAPHIC MAP

SURVEYING POLE
Mire
Equipment and Tools
Syn. with LEVELLING STAFF; SIGHTING BOARD

SURVEYOR
Géomètre; Géomètre-expert
Topography
1. A specialist in surveys of ground. Syn. with GEOMETER; GEOMETRICIAN; LAND SURVEYOR
2. A senior technician whose role is to measure, delimit, and calculate the capacity of the plots (of land) by topographical means.

SUSPENDED SPAN
Travée cantilever; Travée suspendue
Construction
1. A span of a bridge independent from the viewpoint of its mechanical functioning and resting on restrained spans ends or overhangs of spans exceeding the piles, etc. Syn. with CANTILEVER SPAN
2. Concerning a prestressed concrete work built by successive cantilevers, deck detached from segments, forming corbel and posed in cantilever while forming the key span.

SUSPENDER
Suspension; Suspente
Construction
1. Set of cables, suspenders, and their annex organs in a suspension bridge or a cable-stayed bridge.
In the cable-stayed bridges we can distinguish two types of suspenders:

- **axial** *(la suspension axiale),* in which guys are transversely laid out according to a single layer located in the axis of the deck;
- **side** *(la suspension latérale),* in which guys are transversely laid out according to two parallel or convergent lateral layers, located in the axis of the deck.

2. A vertical reinforcement located at the crossing of R.C. beams

3. A vertical piece or appreciably vertical making possible the support of the deck by cables in the case of a suspension bridge, or by the arch or part of the arch surmounting it in the case of an arch with lower or intermediate deck or in the case of a bowstring (in the latter case one also says *needles)* or again carriage of an aerial ferry.

In a suspension bridge, the suspenders are made up of three elements:

- at the base, the device of connection suspender-stiffening girder,
- at the high part, a circlip of the cable ensures the connection suspender-cable,
- the actual suspender, which can be a suspension rod or again a cable. Syn. with HANGER. **See Figure 122**

SUSPENDER CONNECTION
Chevalet
Construction
A piece allowing, in the suspension bridges, the fastener of suspenders by bearing on the carrying cables arranged in layer. **See Figure 123**

SUSPENDER LAYER
Nappe de suspentes
Construction
Group of suspenders of the same span that are part of the same truss of a suspension bridge.

SUSPENSION CABLE
Câble porteur ou parabolique
Construction
Syn. with PARABOLIC CABLE; CARRYING CABLE

SUSPENSION COLLAR
Collier de suspension
Construction
Organ to which a suspender is hooked and that encircles a suspension bridge cable.

SUSPENSION ROD
Bretelle
Construction
Fastening system of the central span to the consoles of some cantilever beams. Also called *suspension rod* this system replaces the bridge-support apparatus of the span.

SWABBING
Pistonnage
Buildings Materials
Syn. with SURGING.

SWAGING
Emboutissage
Metal Construction
Syn. with (DROP-) STAMPING; PRESSING

SWAGING TEST WITH LOCKED SIDES
Essai d'emboutissage à flancs bloqués
Test of Materials (Metallurgy)
Test consisting of embossing a test specimen of metal locked between a flank grip and a mold by means of a punch ended in a spherical cap, until an opening appears. Except explicit opposite prescription, this test applies to flat products with thickness ranging from 0.5 to 2 mm.

SWALLET
Aven
Geology
Syn. with AVEN; SINK; SWALLOWHOLE

SWALLOWHOLE
Aven
Geology
Natural well of truncated shape, communicating with the surface through a narrow opening which is built in the calcareous area by dissolution of rock or collapse of a karstic cavity vault. Syn. with AVEN; SINK; SWALLET

SWANNECK
Crosse d'échelon
Construction
Syn. with GOOSENECK

SWAY FRAME
Palée de stabilité
Construction
Portal frame or wind bracing in X, K, or broken K shape placed between two stanchions,

receiving all the horizontal strains applied to the frame of these stanchions plan. **See Figure 124**

SWEATING
Exsudation; Ressuage; Ressuée
Building Materials; Materials
1. Syn. with BLEEDING; BLEED-THROUGH; WATER GAIN
2. The rise of water at the surface of a suspension after sedimentation of the solid grains.

SWEEP
Galbe
Metallurgy
Syn. with OUTLINE

SWEEPING GUIDE
Guide-balayage
Equipment for Measure and Control
Syn. with AREA GUIDE OF COMPACTION

SWEETENING
Assainissement
Sanitary engineering and Drainage
Syn. with DRAINAGE; SANITATION

SWELL
Bombement
Civil Engineering Structure
Syn. with BULGE

SWELLING
Bouffement; Foisonnement; Crue
Defects (Civil Engineering Structure); Earthwork; Hydrology
1. A convex deformation of a wall whose facing gets separated from the mass.
2. Syn. with BULKING; INCREASE IN VOLUME
3. Syn. with FLOOD

SWELLING
Gonflement
Metal Construction; Masonry
1. Local deformation following the expansion, when this one occurs between two pieces in contact (assembled or not).
2. Volume increase of a stone, brick, bonding element or structural element generally due to great absorption of water.

SWELLING CLAY
Argile gonflante
Geology
Syn. with EXPANDING CLAY; INFLATED CLAY

SWELLING OF CABLE
Gonflement de câble
Defects (Building Materials)
Diameter increase in the aftermath of the expansion of the corrosive products inside a cable.

SWELLING-SHRINKAGE TEST
Essai de retrait-gonflement
Test of Materials
Test designed to check the linear variations of a standard mortar and carried out on three cube molds with a square base of 4 x 4 x 16 cm. Measurements are taken at the demolding in the seventh, fourtheenth, and twenty-eighth days.

SWING (OF BEARING)
Pendule
Construction
Central part equipping certain bridge-bearing apparatuses enabling the rotation and translation of the deck in comparison with the bearing. **See Figure 125**

SWIVEL
Emerillon; Rotule
Construction
1. Piece comprising an annular element at the extremity of a rod and generally used to attach a suspender on a stirrup, a trimmer, or an axis. This device is an articulation. **See Figure 126**
2. Syn. with HINGE; KNUCKLE

SWOTTED FACE
Parement bûché
Construction
Surface obtained by reducing the thickness of a wall.

SYENITE
Syénite
Geology
Plutonic eruptive rock whose volcanic forms correspond to the trachytes. Its silica content does not exceed 70%.

SYMMETRICAL PREPARATION
Préparation symétrique
Welding
Preparation in which the profile of the joint and that of the adjacent parent metal have a common axis of symmetry passing between the two elements.

SYMPTOMATOLOGY
Symptomatologie
Civil Engineering Structure
Science dealing with the works sounding that permits to detect possible premonitory symptoms of failure or syndromes.

SYNERESIS
Synérèse
Polymers
The progressive transformation of an inflated gel, after a change in its physical conditions that pushes it to expel its solvent (aging phenomenon affecting resin gels).

SYNTHESIS BINDER-BASED MATERIAL
Matériau à base de liant de synthèse
Building Materials
Product solely made up of aggregates and a synthesis binder and possibly of additions and/or reinforcements (fibers).

SYNTHETIC (WATERTIGHTNESS) COPING
Chape synthétique
Tightness
Imperviousness device made up of a PVC pitch support, rubber butyl, bitumen ethylene copolymer, etc., covered with a layer of graveled asphalt. Syn. with SYNTHETIC SCREED

SYNTHETIC DESIGN
Calcul synthétique
Strength of Materials
Method designed to determine the most suitable characteristics to give to a beam section in order to resist at a given moment or to the action of an external force *N,* by making the best use of the materials.

SYNTHETIC FIBER
Fibre synthétique
Building Materials
A synthesis product to basis of by-products, polymers, etc. We can distinguish synthetic mineral fibers (slag of blast furnace, rock wool, carbon, steel, ceramics, special glasses, boron, carbide of silicon); synthetic organic fibers (viscose, acetate of cellulose, nylon, polyester, acrylic, polyamide, Kevlar, aramide).

SYNTHETIC RESIN
Résine artificielle
Polymers
Product resulting from a chemical modification of fatty oils, natural resins, or a mixture of these products, or again of synthetic resins when the modifying agent contains natural resins (i.e.: styrene linseed oils; gum ester). Among the main types of resins, we can distinguish:
- **coumarone indene resin** *(la résine de coumarone),* obtained from the distillation of the coal by means of catalyst treatment of naphthalene oils. This type of resin is particularly used in the formulation of the anticorrosive paints;
- **chlorinated rubber *or* resin** *(le caoutchouc chloré):* see CHLORINATED RUBBER;
- **alkyd resins modified with fatty acids** *(les résines alkydes modifiées aux acides gras),* which result from the modification by fatty acids of an alkyd resin originating in a polycondensation.

Syn. with ARTIFICIAL RESIN

SYNTHETIC RESIN
Résine synthétique
Polymers and Painting
Product resulting from the controlled chemical reactions, starting from perfectly defined bodies, which do not themselves have resin characteristics.
Among the main synthetic resins used in paint manufacturing, we can distinguish the:
- **acrylic** *(les résines acryliques),* characterized by the presence of the following substitute radicals: carboxylic, esters, and amides;
- **polyurethane** *(les résines polyuréthanes),* made up of polyalcohol polycarbonates;
- **formaphenolic** *(les résines formo-phénoliques),* obtained by a formalin/phenol reaction in the presence of rosin;
- **alkyd** *(les résines glycérophtaliques),* that constitute one of the categories of alkyd resins

and that are obtained by polycondensation between glycerol and phthallic anhydride;

- **oil-alkyd** *(les résines oléoglycérophtalliques),* alkyd products modified with siccative oils fatty acids of and, moreover, comprising non-chemically-combined siccative oils;
- **vinyl** *(les résines vinyliques),* based on polyvinyl chloride or polyvinyl acetate.

SYNTHETIC RUBBER
Caoutchouc de synthèse *ou* artificiel
Materials
Elastomer whose physical properties (impermeability, plasticity, elasticity, etc.) resemble those of the rubber, and that can be manufactured by synthesis.
In order to manufacture an artificial rubber, hydrodrocarbons such as butadiene, isoprene, piperylene, chloroprene, ethylene, propylene, isobutene, acrylic nitril, chloride of vinyl, etc. are polymerized through suitable processing.
Among the most important products are:
- *bunas,* butadiene polymers, achieved in the presence of sodium,
- *buna-S,* butadiene-styrolene copolymer, designated by SBR (S = styrene, B = butadiene, R = rubber),
- *polymers of the isoprene* (coral rubber),
- *polymers of chloroprene* (neoprene),
- *products of polycondensation* (Thiokol, Silastic, etc.).

Syn. with ELASTOMER

SYNTHETIC SCREED
Chape synthétique
Tightness
Syn. with SYNTHETIC (WATERTIGHTNESS) COPING

SYPHON AQUEDUCT
Aqueduc sur syphon inversé
Civil Engineering Structure
Work consisting in watercourse crossing in which the irrigation channel passes over the waterway, but its bed is lowered below its natural or normal level in the passage below the ceiling of channel.

Figures of the letter



Fig. 1

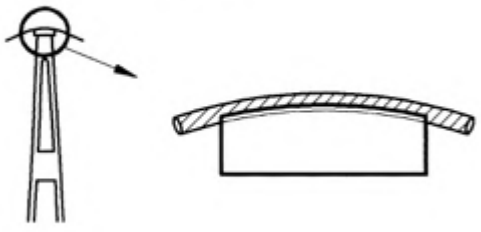
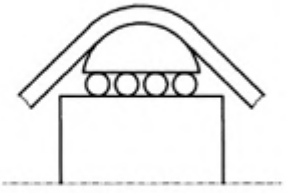
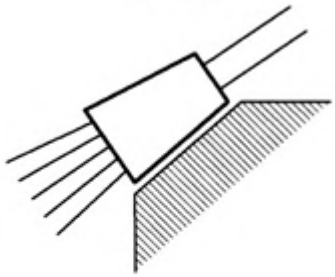


Fig. 1a



Bearing saddles in pylon head

Fig. 1b



Flowering saddle

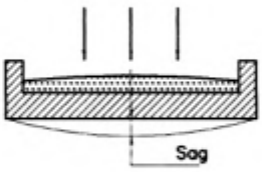
Fig. 1c



Bending saddle

SADDLE

Fig. 2



SAG

Fig. 3

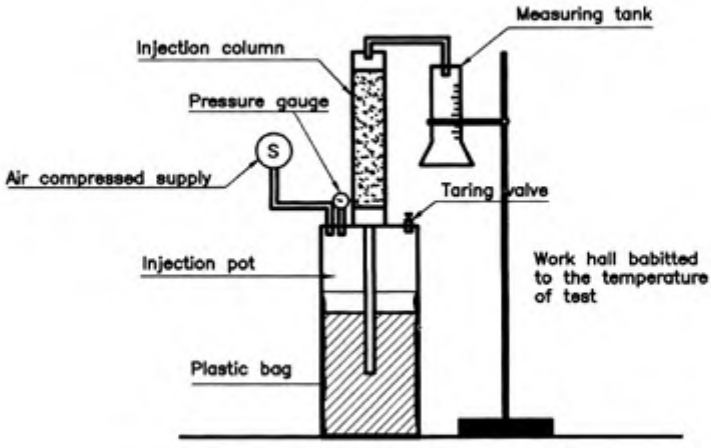
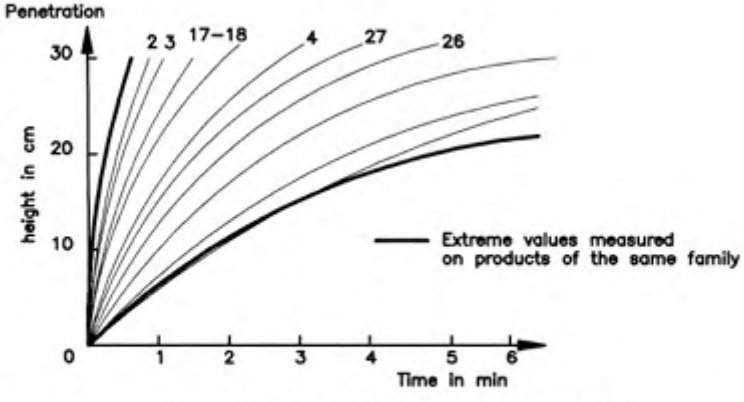


Diagram of principle of the equipment

SAND COLUMN INJECTABILITY TEST

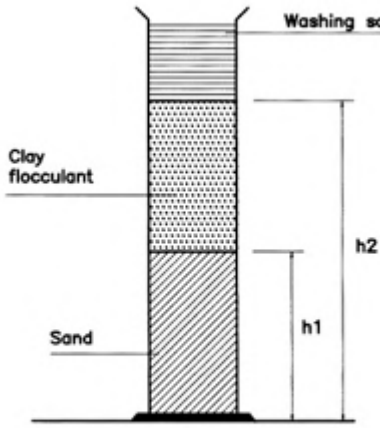
Fig.3a



Curve of injectability to the sand column at 20°C

SAND COLUMN INJECTABILITY TEST

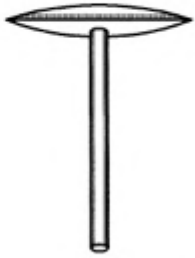
Fig. 4



$$SE = 100 \frac{h2}{h1}$$

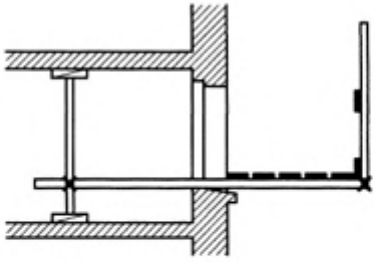
SAND EQUIVALENT

Fig. 5



SCABBLER

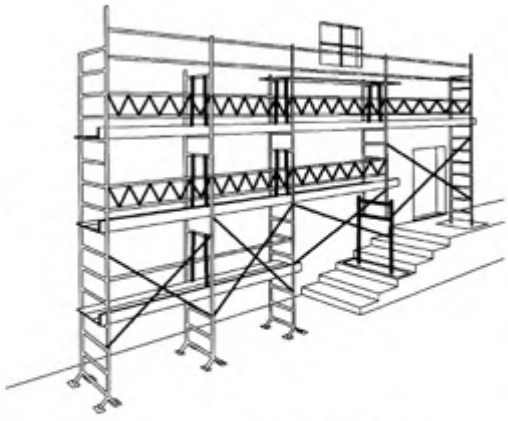
Fig. 6



Projecting or Bracket scaffold

SCAFFOLDING

Fig.6a



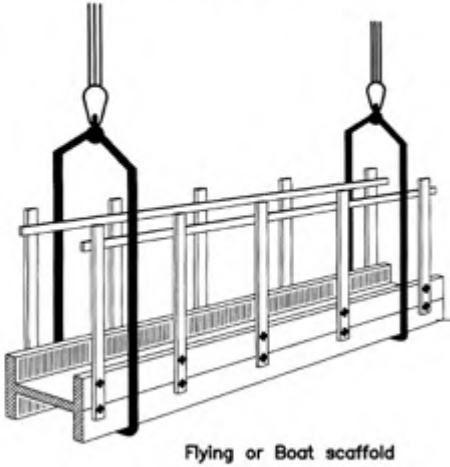
Independent scaffolding

Fig.6b



Trestle scaffold

Fig.6c

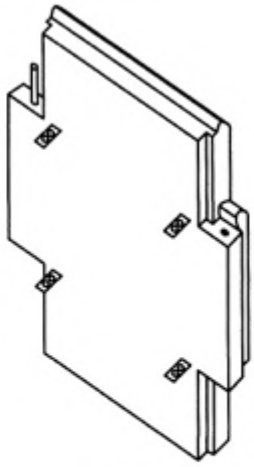


Cradle or Gondola

Flying or Boat scaffold

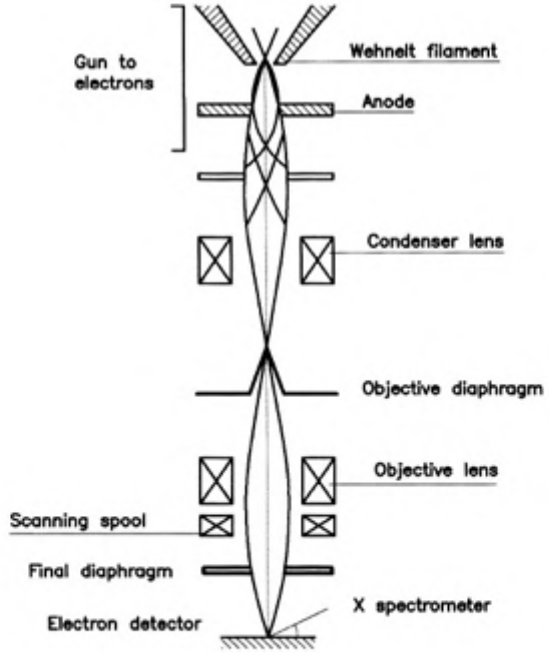
SCAFFOLDING

Fig. 7



SCALE

Fig. 8



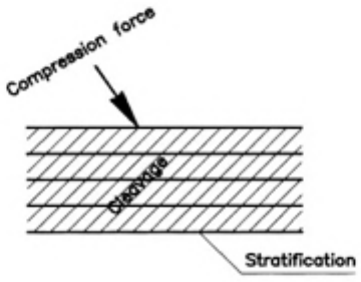
SCANNING ELECTRON MICROSCOPE

Fig. 9



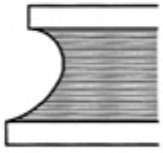
SCARF–JOINTED BEAM

Fig.10



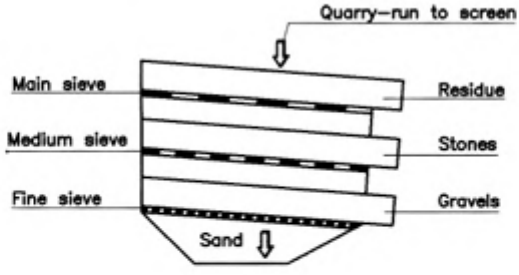
SCHISTOSITY

Fig.11



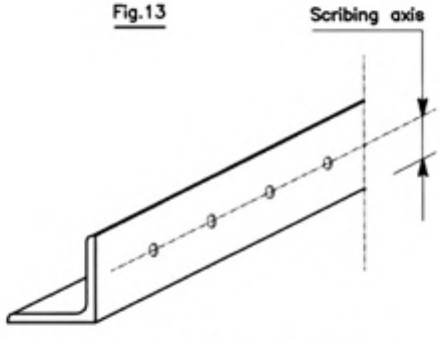
SCOTIA

Fig.12



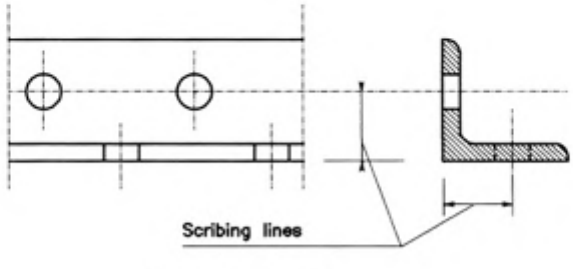
SCREEN

Fig.13



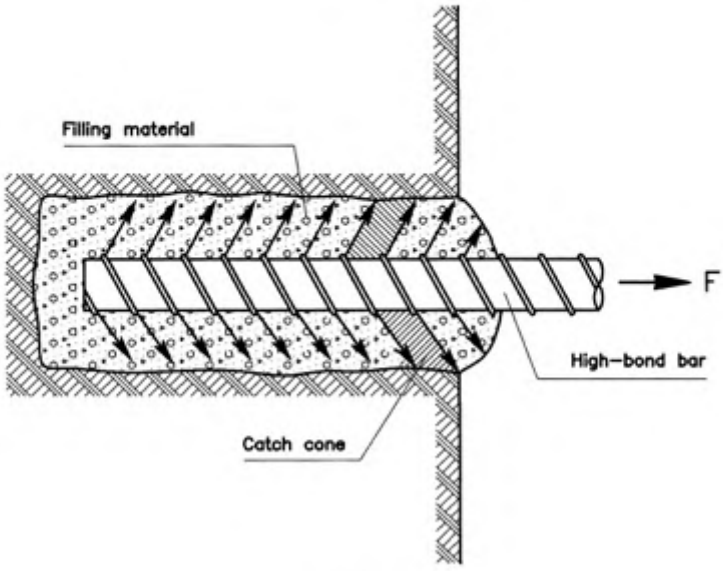
SCRIBING AXIS

Fig.14



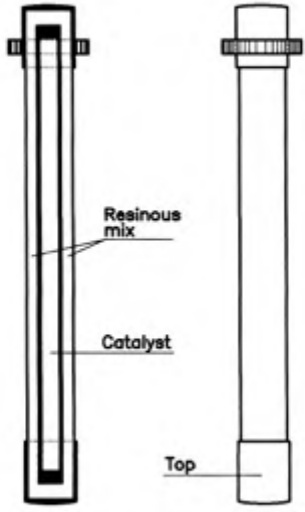
SCRIBING LINE

Fig.15



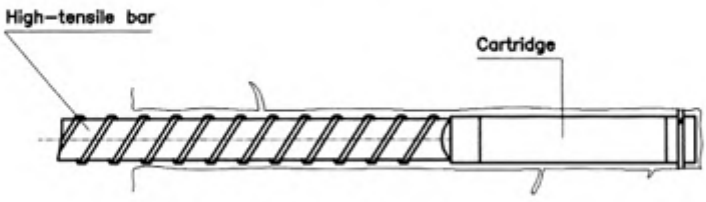
SEALING

Fig.16



SEALING CARTRIDGE

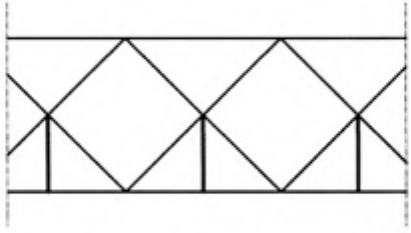
Fig.17



Sealing rod with polymer cartridge

SEALING ROD

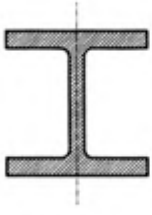
Fig.18



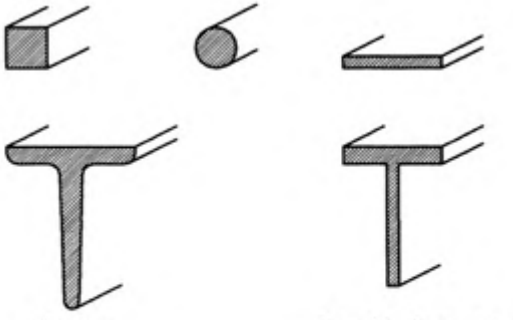
SECONDARY UPRIGHT OF LATTICE GIRDER

Fig. 20

Fig.19

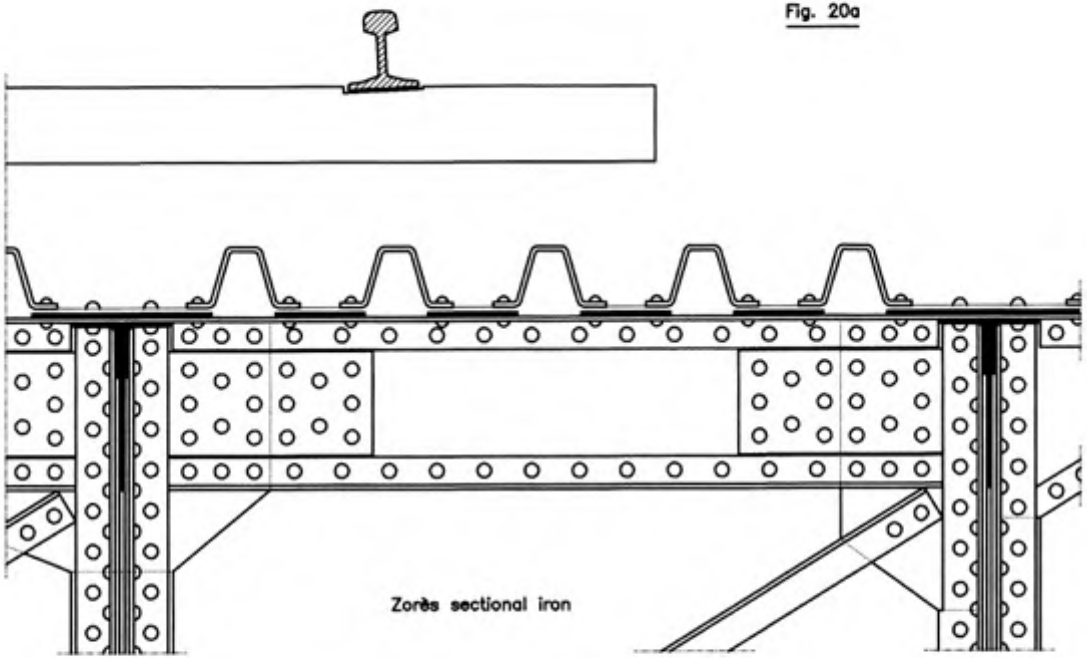


SECTION



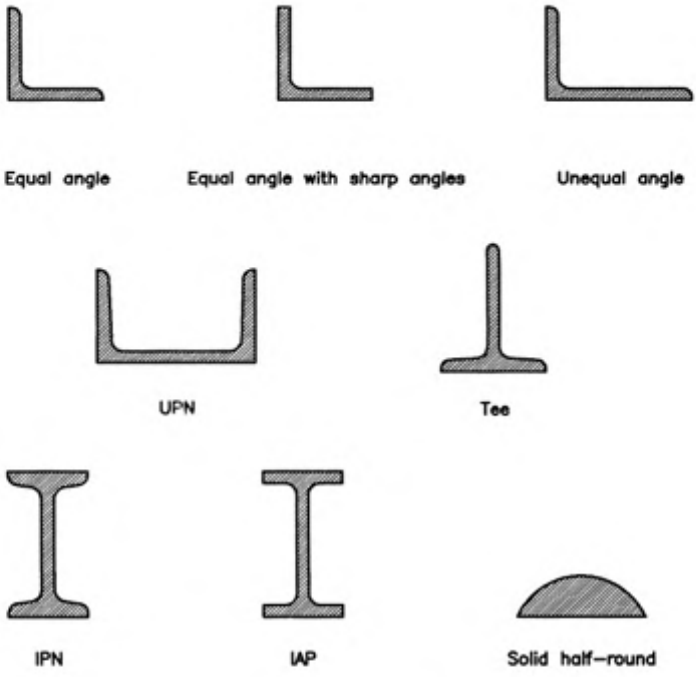
SECTIONAL IRON

Fig. 20a



SECTIONAL IRON

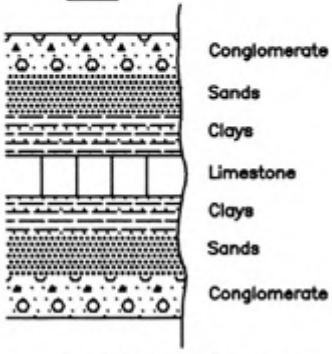
Fig. 20b



Usual sectional irons

SECTIONAL IRON

Fig.21



SEDIMENTARY (Cycle)

Fig.22

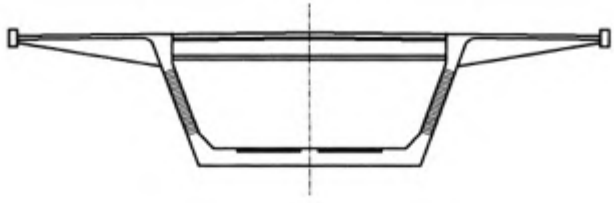


Fig.22a

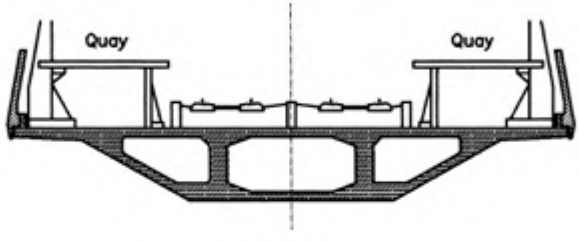


Fig.22b

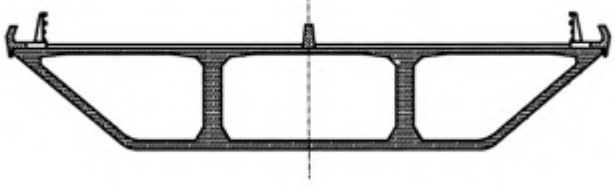
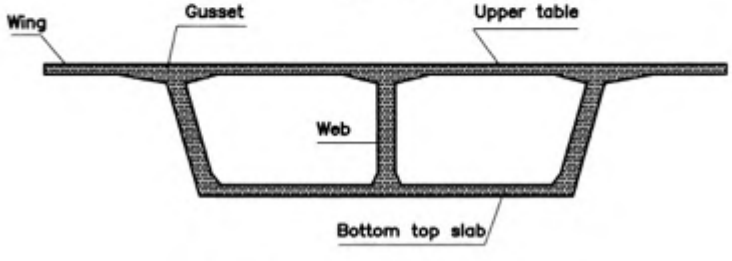


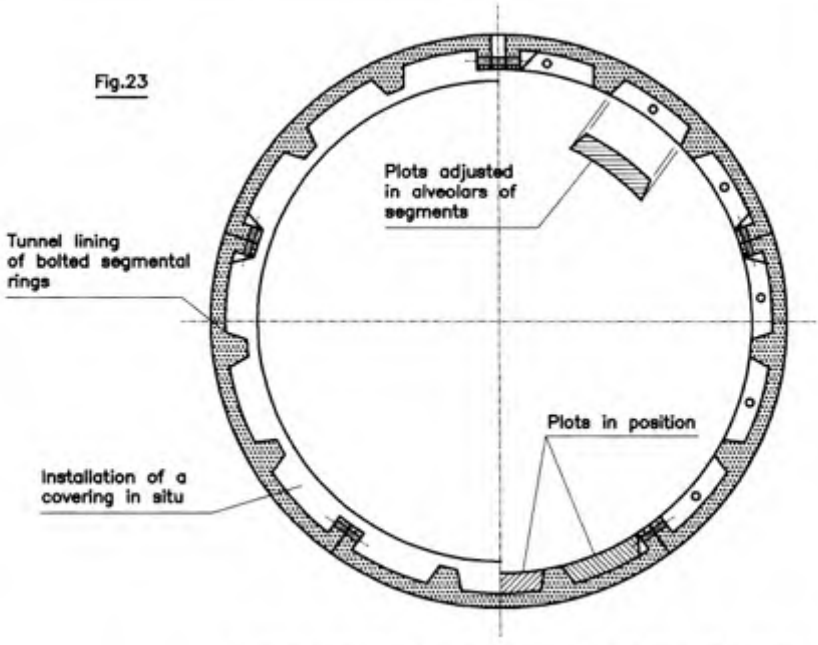
Fig.22c



Segments for prestressed concrete bridge

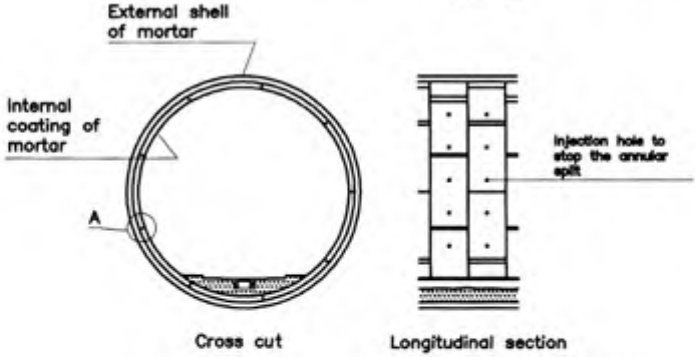
SEGMENT (Precast unit)

Fig.23



Precast segmental ring of concrete (Section type of tunnel)

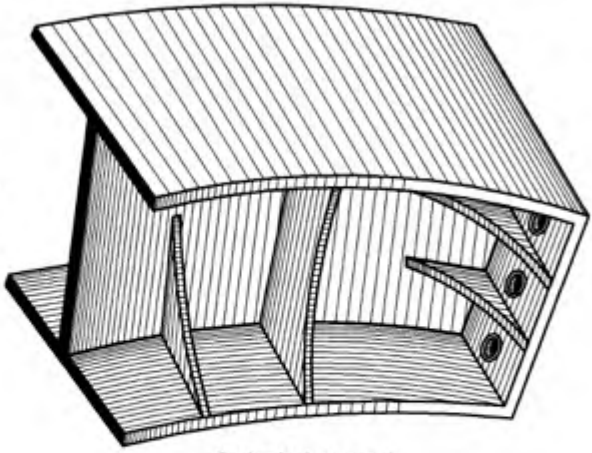
Fig.23a



Iron segmental ring with concrete coating

SEGMENTAL RING

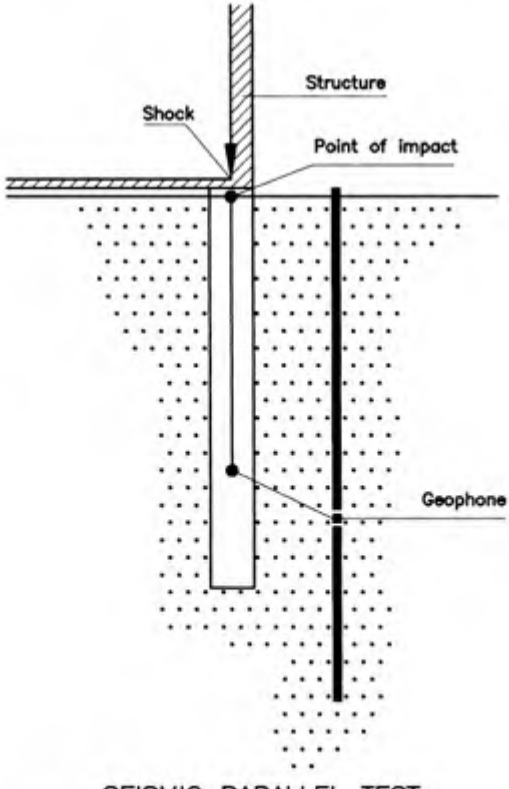
Fig.23b



Cast-steel segment

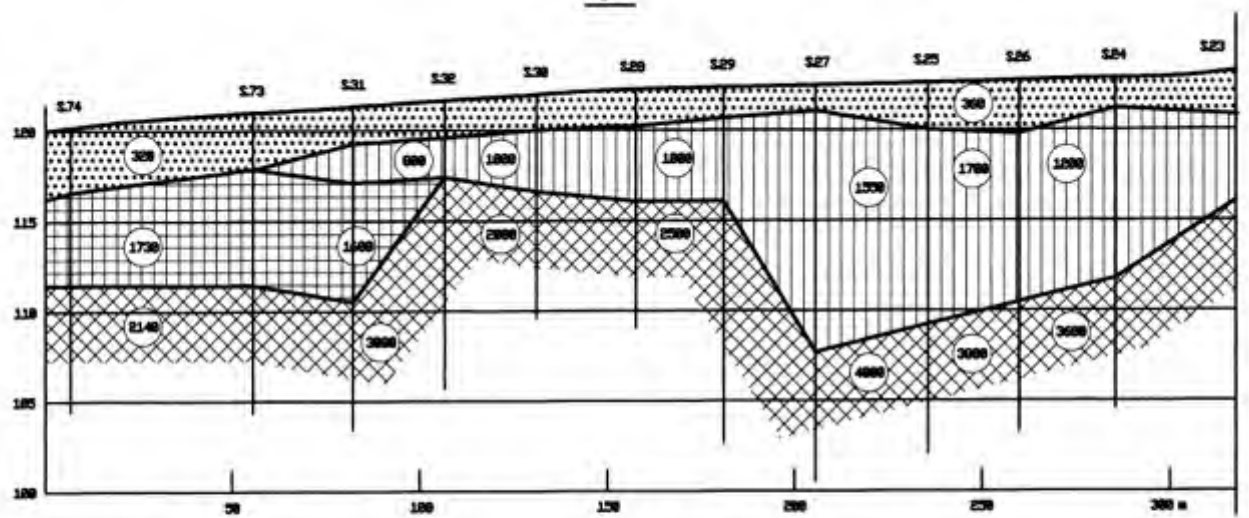
SEGMENTAL RING

Fig.24



SEISMIC PARALLEL TEST

Fig.25



Seismic speed from 1600 to 2000 m/s

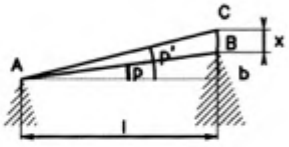
Seismic speed from 2000 to 4000 m/s

Seismic speed from 300 to 700 m/s

Seismic speed from 700 to 1600 m/s

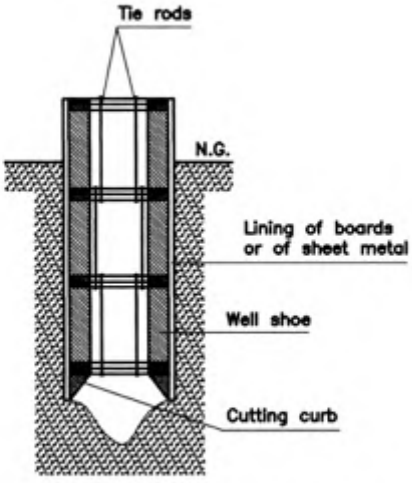
SEISMIC SOUNDING (Example of seismic section)

Fig. 26



SELF–REDUCING

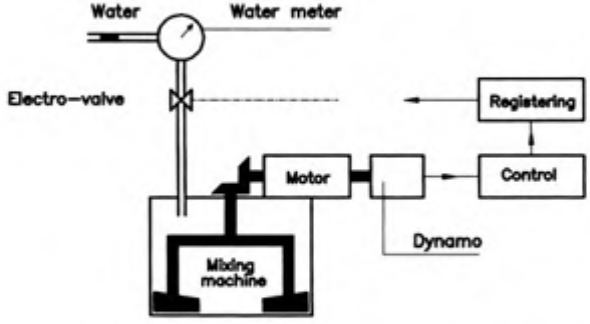
Fig.27



Carrying out of a foundation by self–sinking

SELF–SINKING

Fig.28



SERVOTACHOMETER (Diagram of principle)

Fig.29

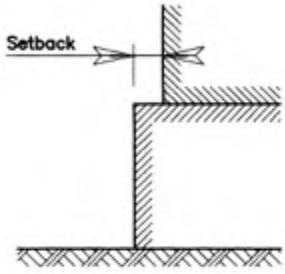
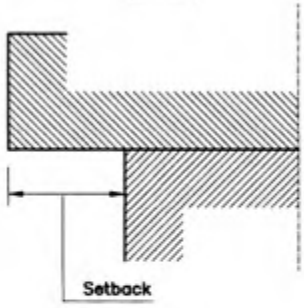


Fig.29a



SETBACK

Fig. 30

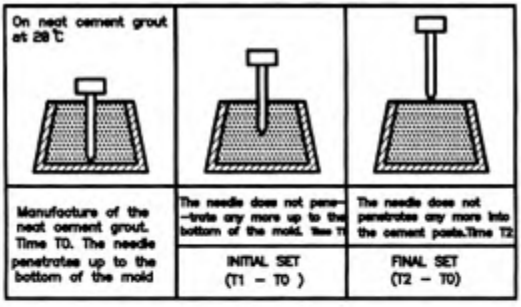
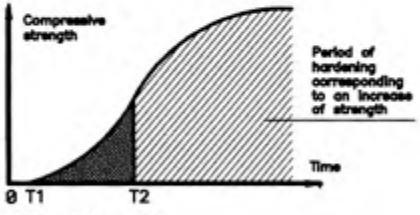


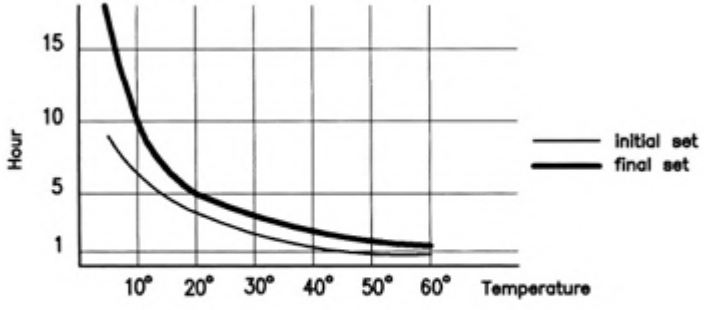
Fig. 30a



T1 = initial set
T2 = final set

Diagram of the phenomenon of hardening

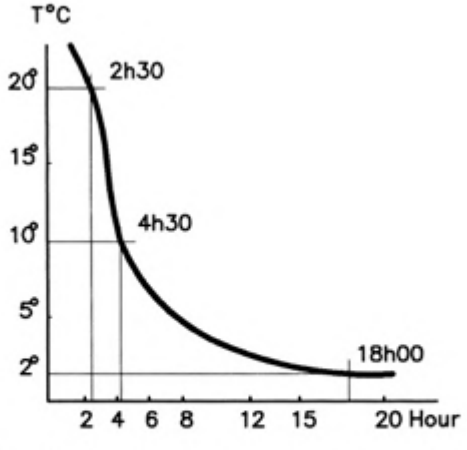
Fig. 30b



Influence of temperature on set of cement

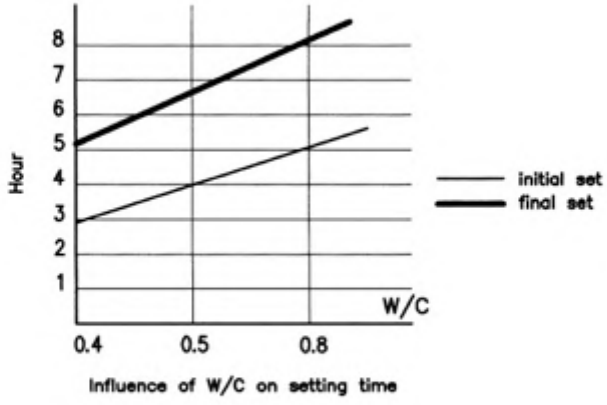
SETTING

Fig. 30c



Evolution of setting time according to temperature

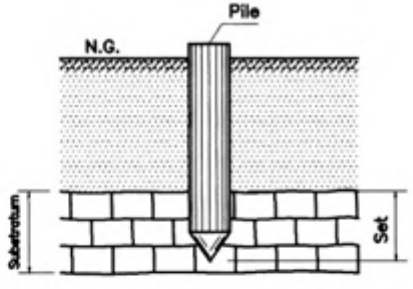
Fig. 30d



Influence of W/C on setting time

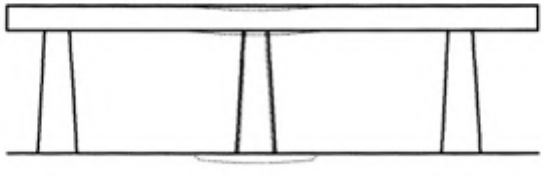
SETTING

Fig.31



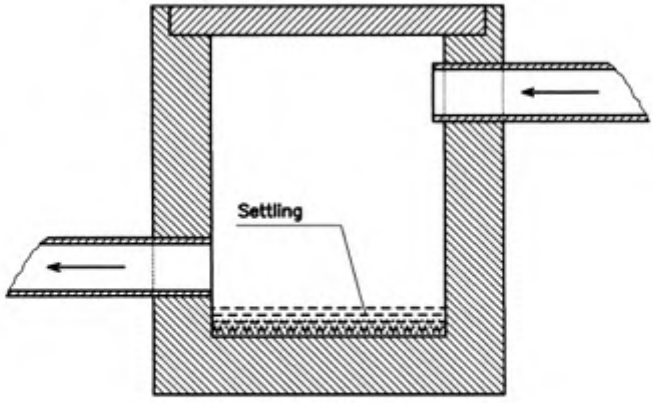
SETTING

Fig.32



SETTLEMENT

Fig.33



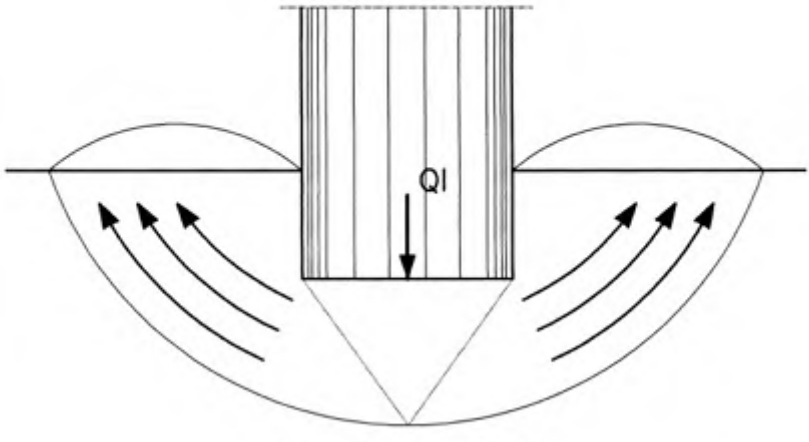
SETTLING POND

Fig.34



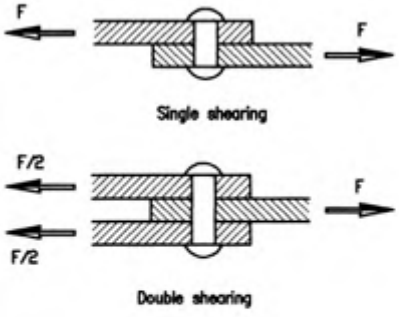
SHACKLE

Fig.35



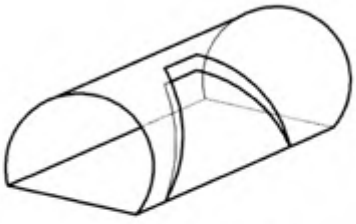
SHALLOW FOUNDATION

Fig.36



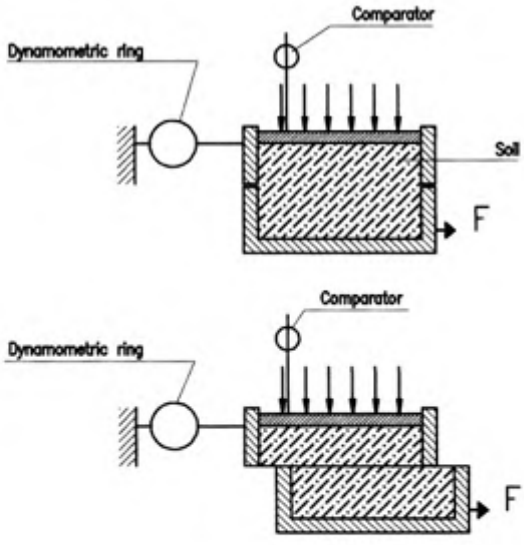
SHEAR

Fig.37



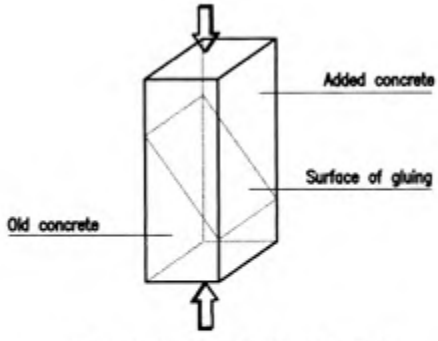
SHEAR CRACK

Fig.38



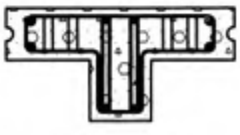
SHEAR BOX APPARATUS TEST

Fig.39

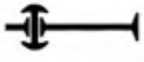


SHEARING–COMPRESSION TEST

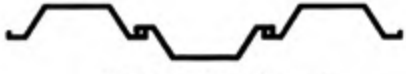
Fig.40



Sheet pile of R.C.



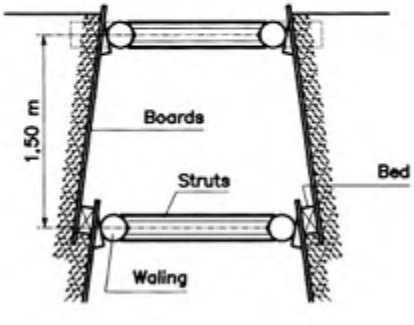
Steel sheet pile (Universal)

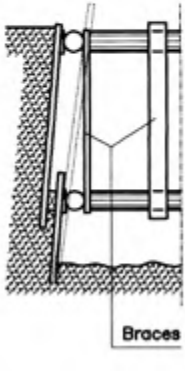


Steel sheet pile (Larsen)

SHEET PILE (different types)

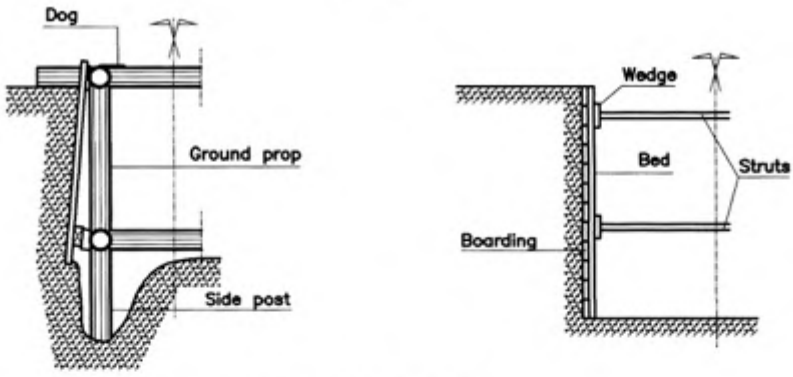
Fig.41





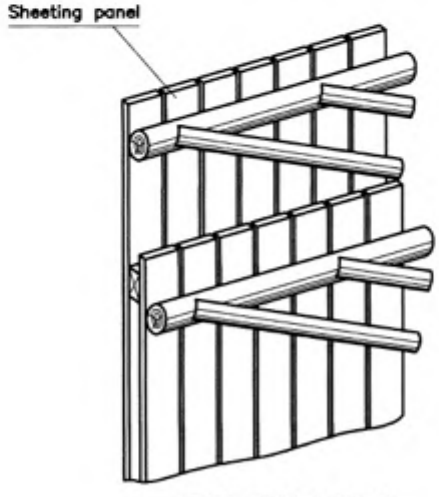
SHEETING (Details)

Fig.41a



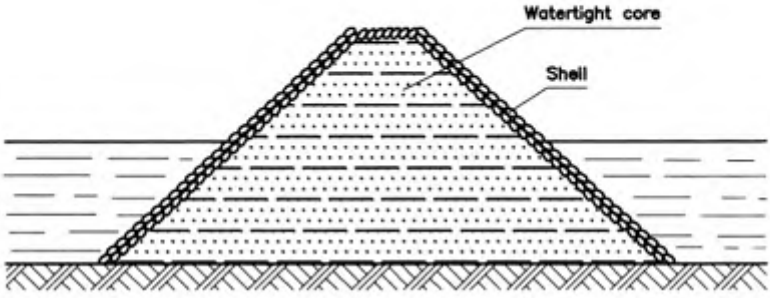
SHEETING (Details)

Fig.42



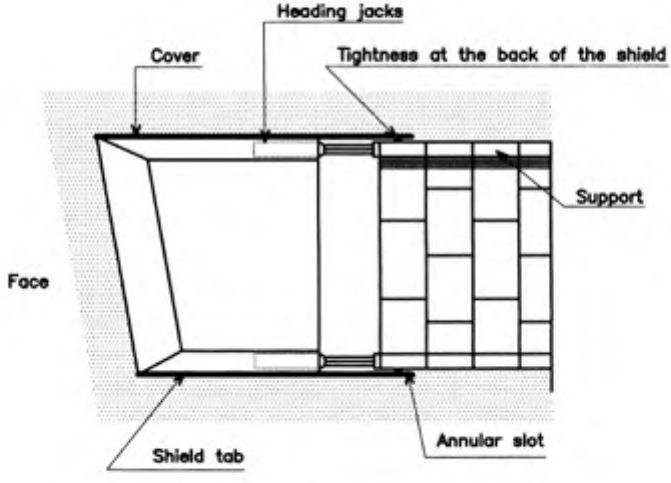
SHEETING PANEL

Fig.43



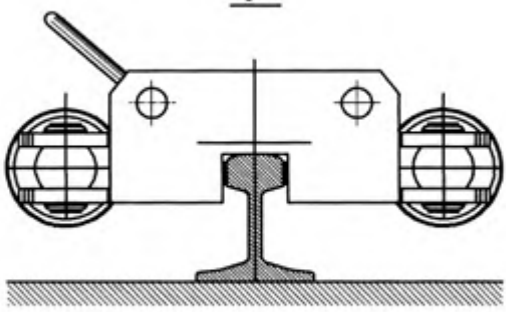
SHELL

Fig.44



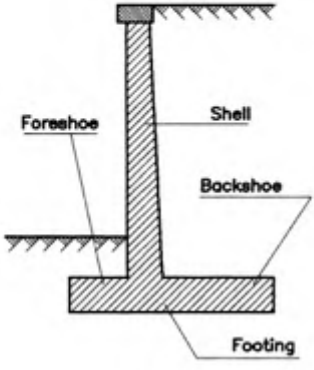
SHIELD (Principle of heading)

Fig.45



SHIFTER

Fig.46



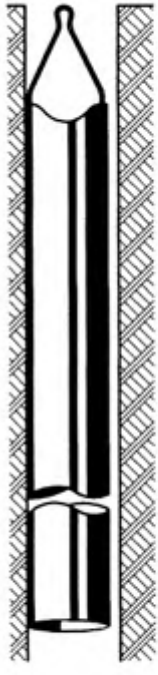
SHOE

Fig.47



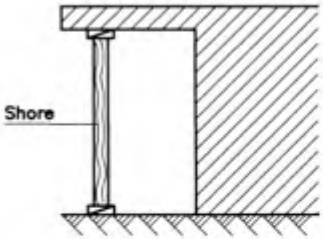
SHOE

Fig.48



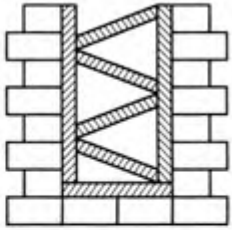
SHOE–NOSED SHELL
WITH VALVE

Fig.49



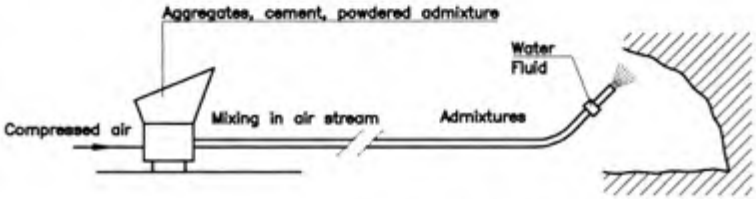
SHORE

Fig.50

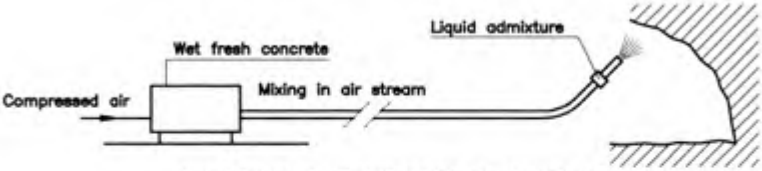


(CROSS) SHORE

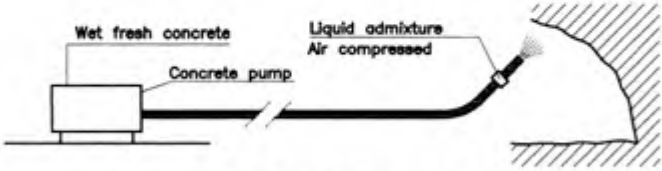
Fig. 51



SHOTCRETING BY DRY PROCESS



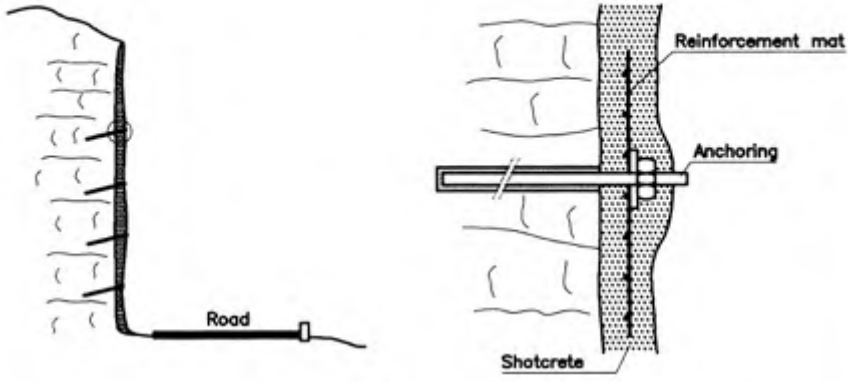
SHOTCRETING BY WET PROCESS TO DILUTED FLOW



SHOTCRETING BY WET PROCESS TO THICK FLOW

SHOTCRETING

Fig. 51a



Protection by lining of shotcrete

SHOTCRETING

Fig.52

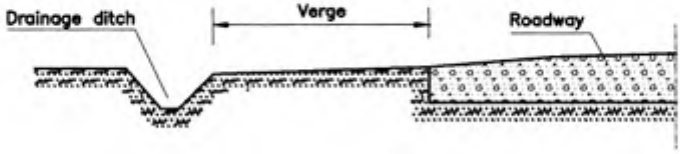
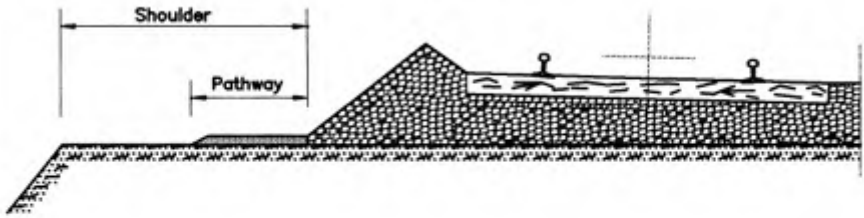
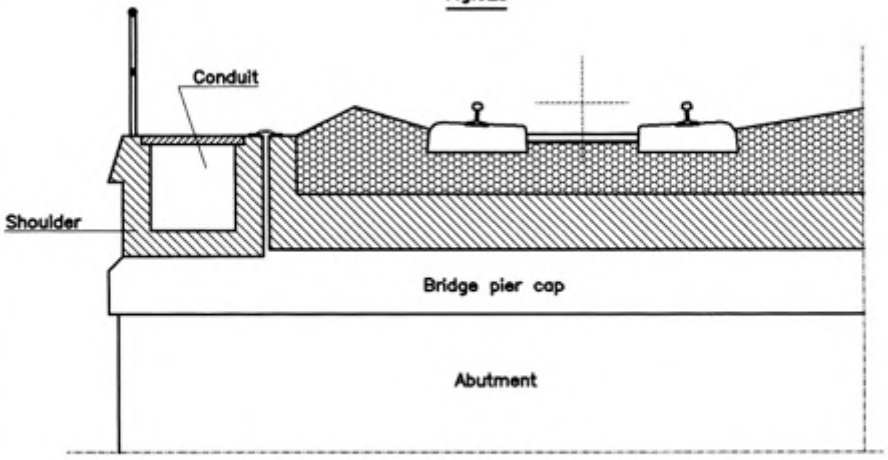


Fig.52a



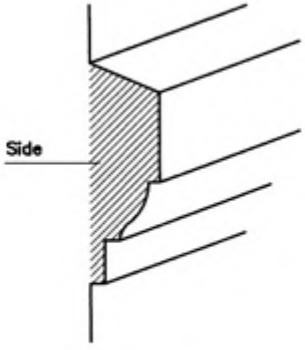
SHOULDER

Fig.52b



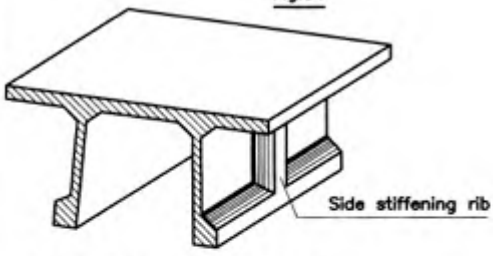
SHOULDER

Fig.53



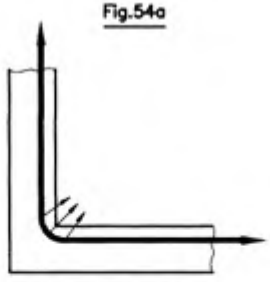
SIDE

Fig.54



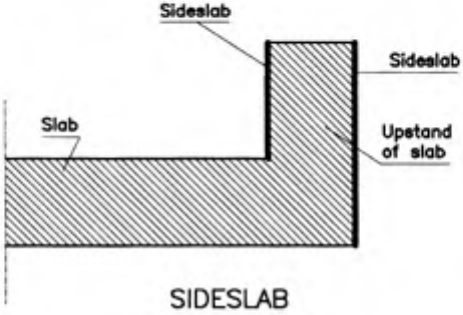
SIDE STIFFENING RIB

Fig.54a



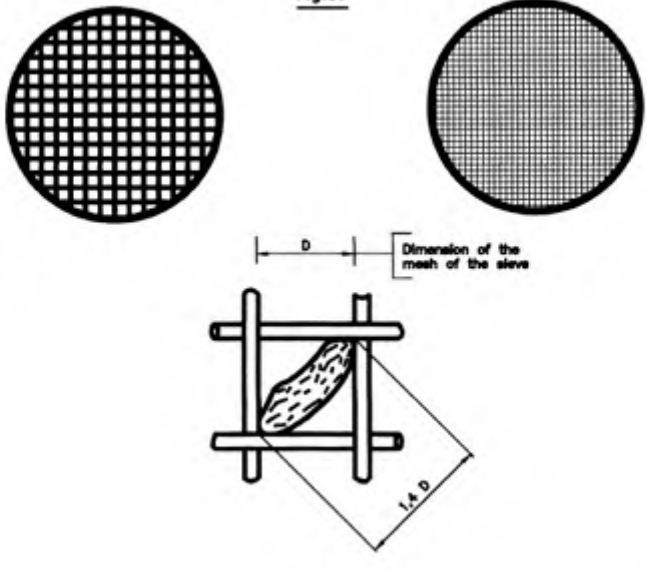
SIDE THRUST

Fig.56



SIDESLAB

Fig.57



SIEVE

Fig.55

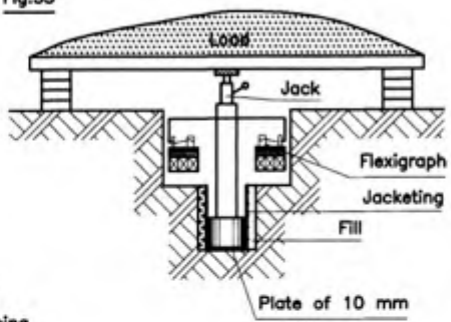
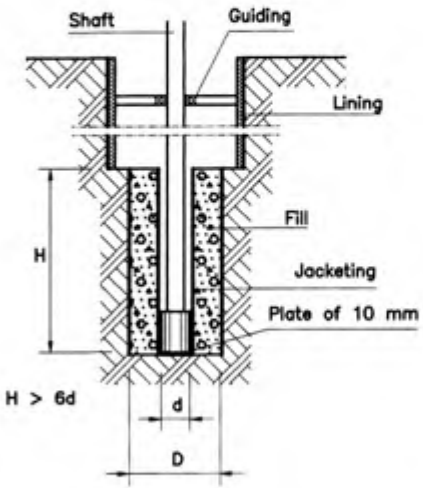


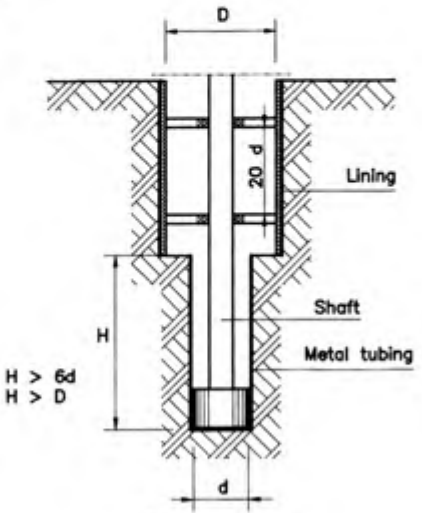
Fig.55a



Test in the pits
(First process)

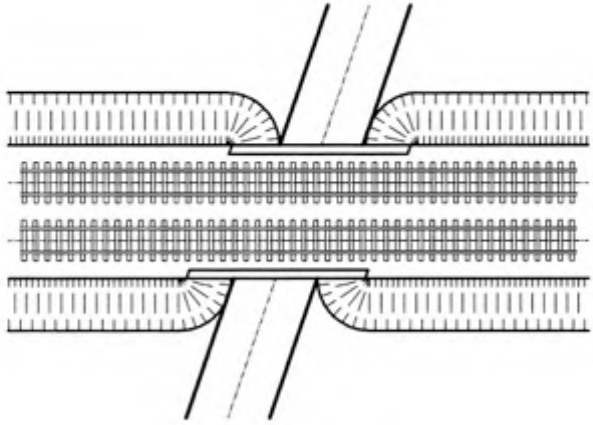
SIDE–JACKING TEST

Fig.55b



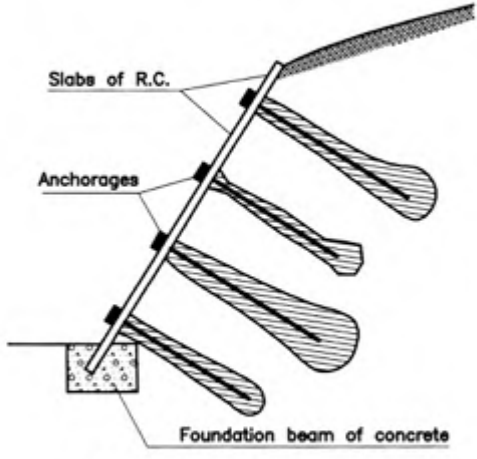
Test in the pits
(Second process)

Fig.58



SKEW BRIDGE

Fig.59



Surface–mounted reinforced concrete slab

SLAB

Fig.59a

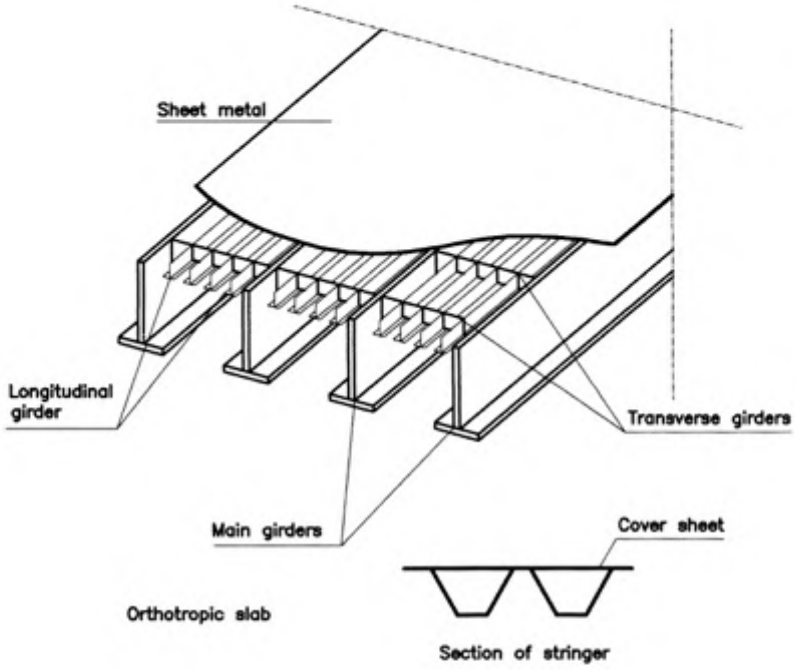
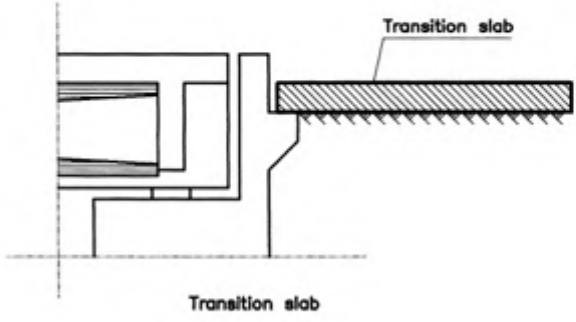
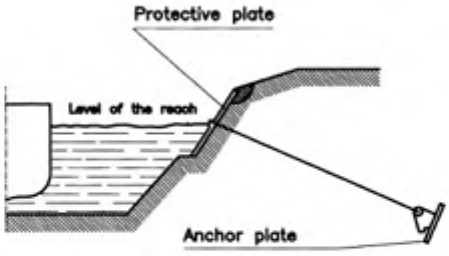


Fig.59b



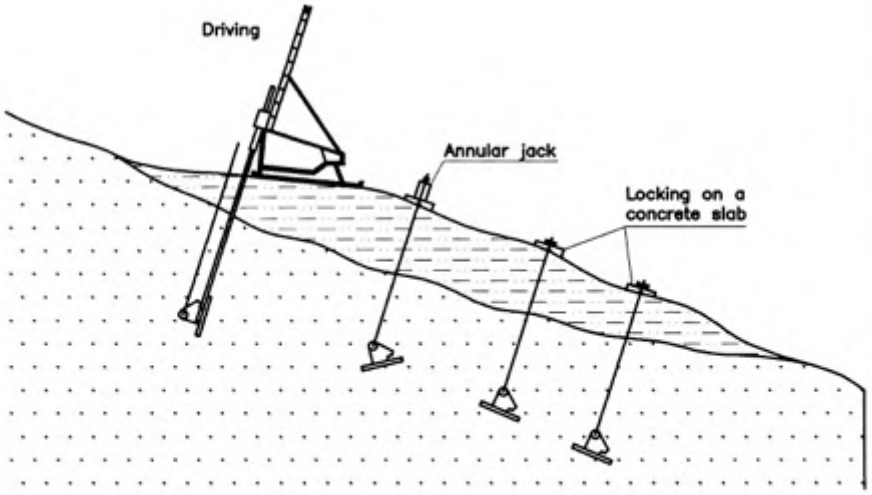
SLAB

Fig.60



Protection of bank

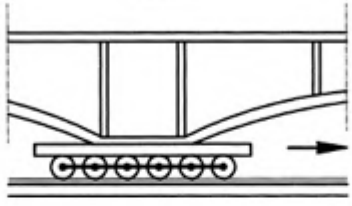
Fig.60a



Landslide stabilization

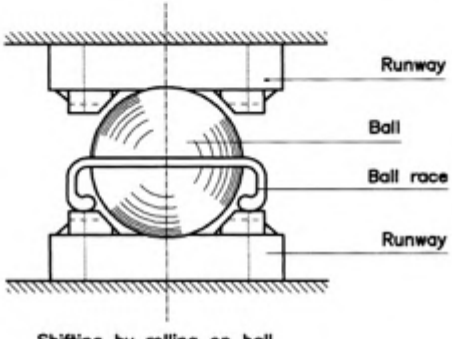
SLEWING PLATE ANCHORING

Fig.61



Shifting by rolling on rollers

Fig.61a



Shifting by rolling on ball

SLIDING ALONG

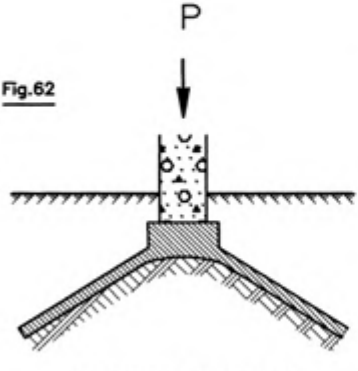
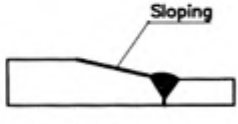


Fig.62

SLOPED FOOTING

Fig.63



SLOPING

Fig.64

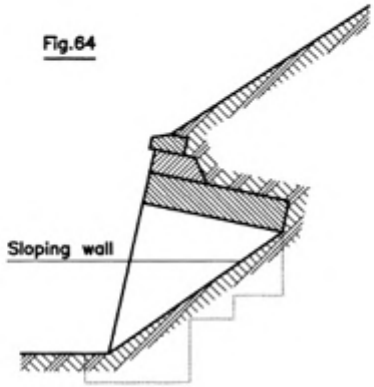
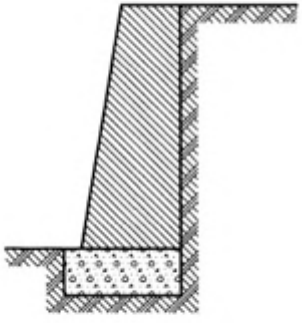
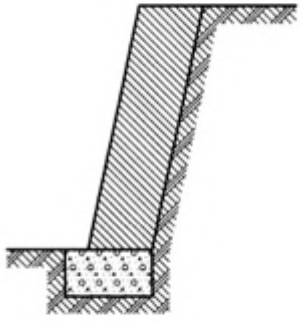


Fig.64a



Talus wall

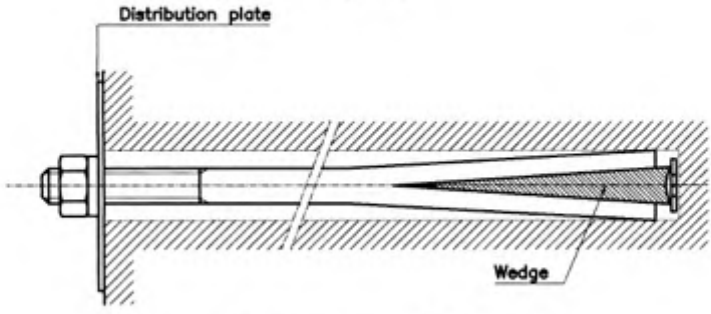
Fig.64b



Sloping wall

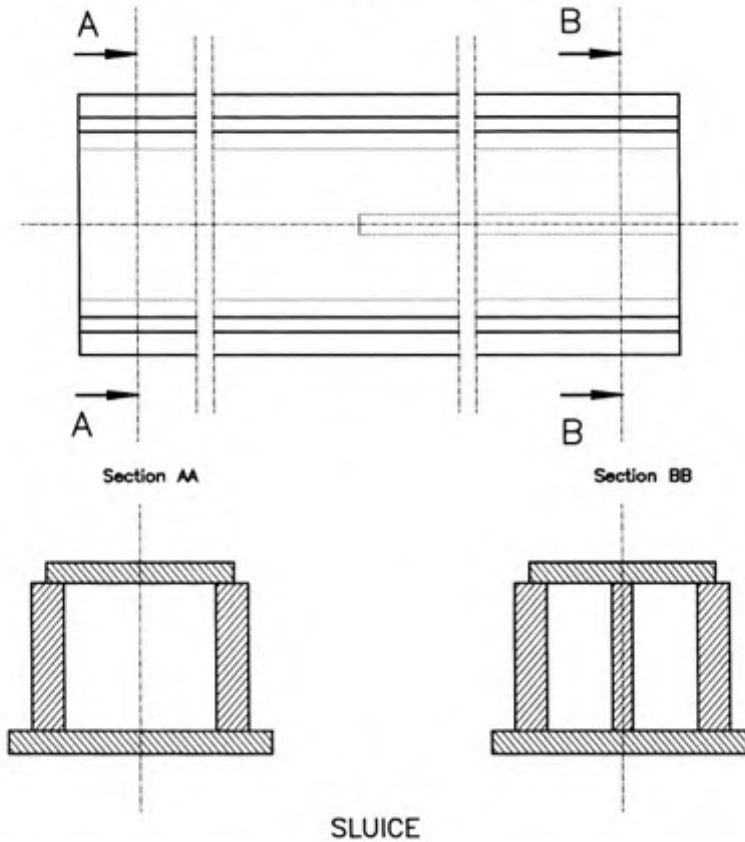
SLOPING WALL

Fig.65



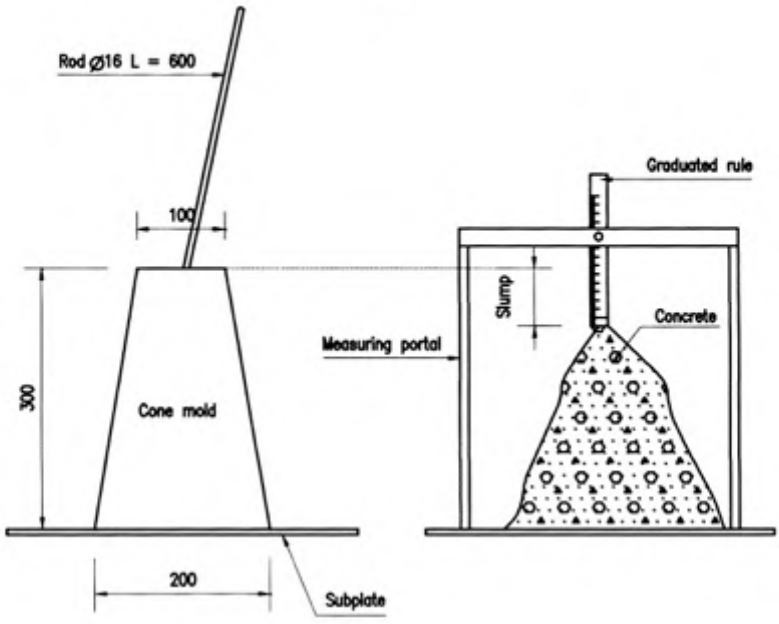
SLOT–AND–WEDGE BOLT

Fig.66



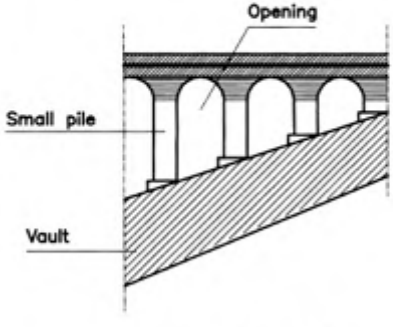
SLUICE

Fig.67



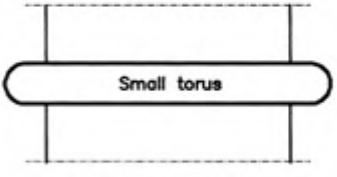
SLUMP CONE MOLD

Fig.68



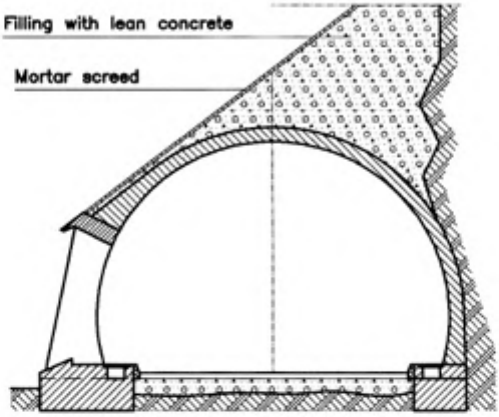
SMALL PILE

Fig.69



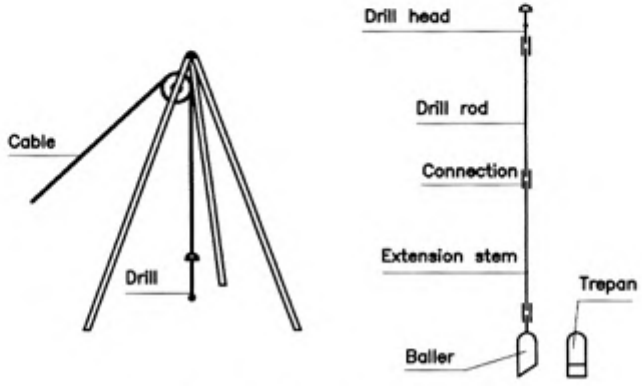
SMALL TORUS

Fig.70



SNOW SHED

Fig.71



Core drilling with tripod

SOIL CORE DRILLING

Fig.72



SPACER

Fig.73

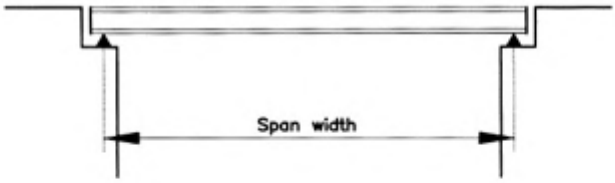
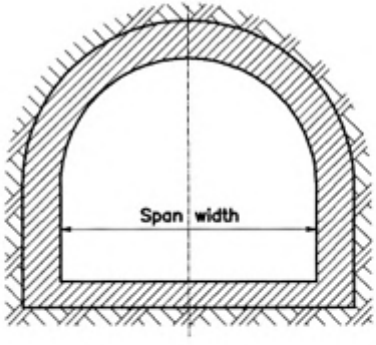
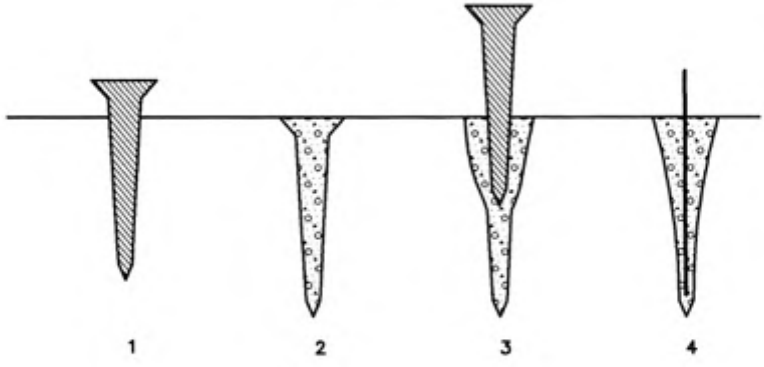


Fig.73a



SPAN WIDTH

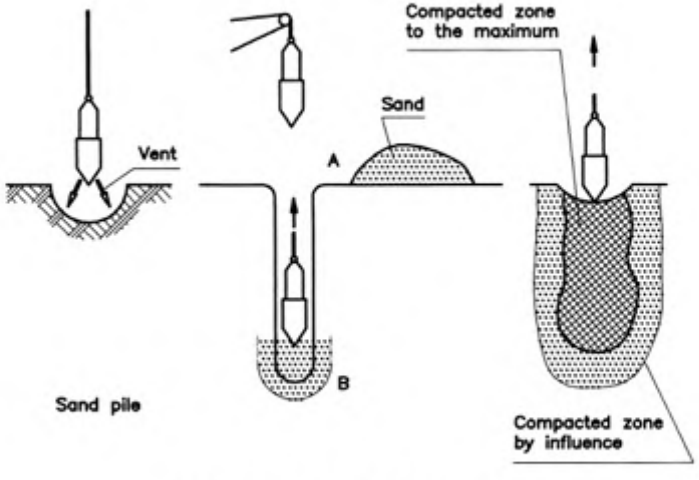
Fig.74



1 – Sinking of the cone
2 – First concreting
3 – Compaction and expansion
4 – Picot ended

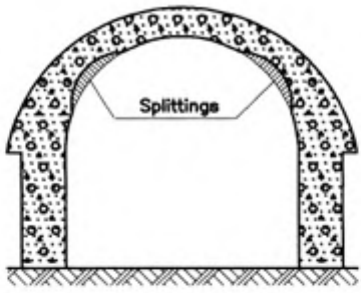
Picot foundation pile

Fig.74a



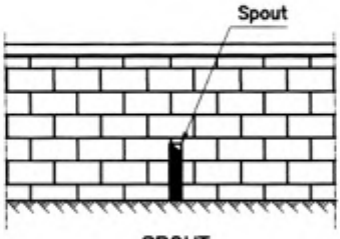
SPECIAL FOUNDATION PILES

Fig.75



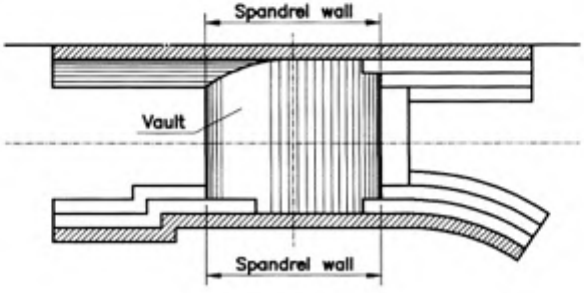
SPLITTING

Fig.76



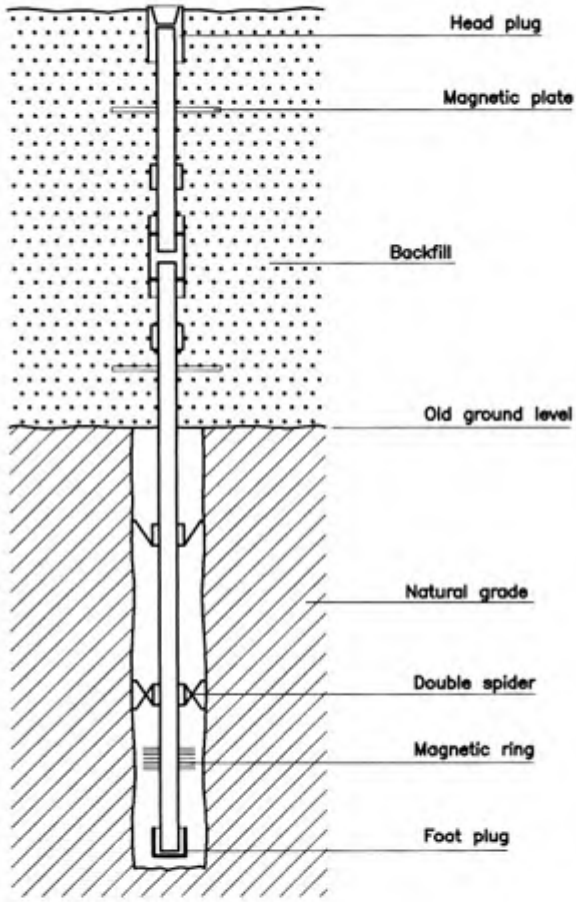
SPOUT

Fig.77



SPANDREL WALL

Fig.78



Settlement gauge with magnetic reference

SPREAD RECORDER

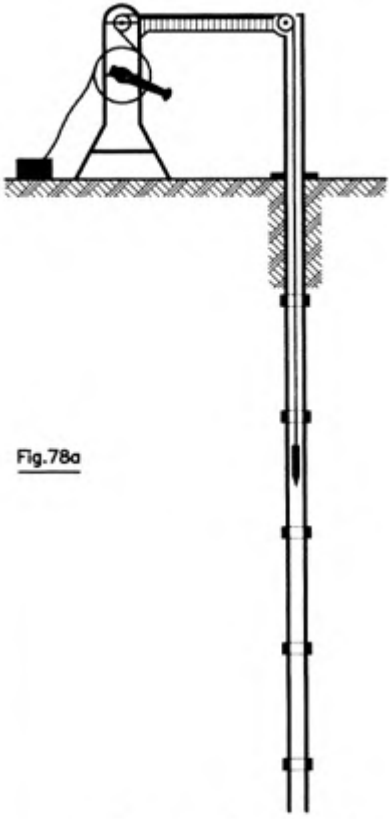
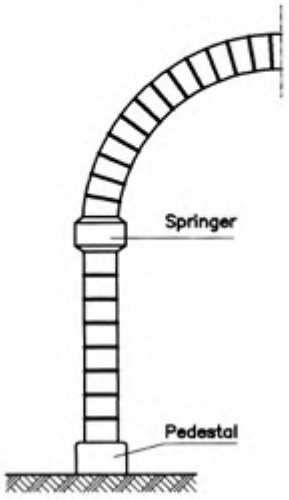


Fig.78a

Electromagnetic settlement

SPREAD RECORDER

Fig.79



SPRINGER

Fig.79a

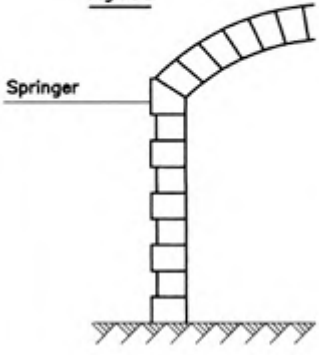
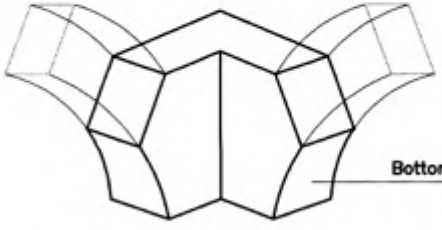


Fig.79b



Springer forming an angle at 2 springings

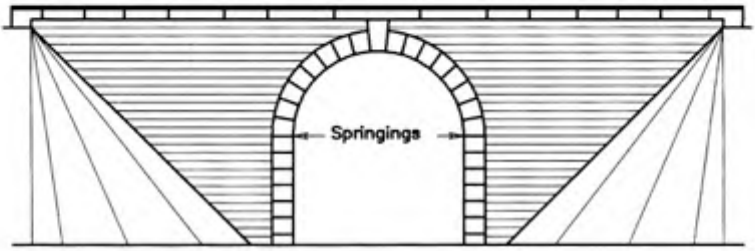
SPRINGER

Fig.80



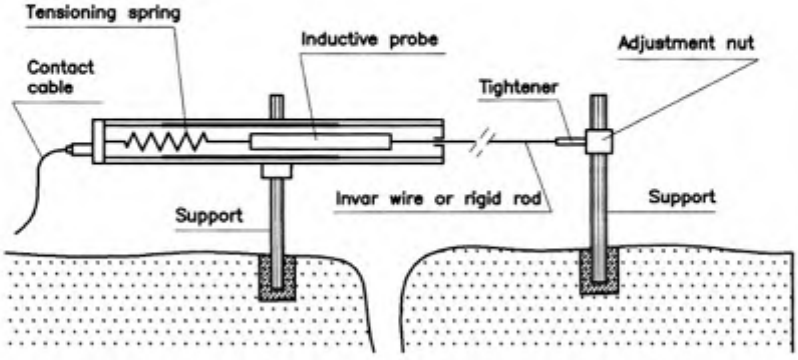
SPRINGING BRICK

Fig.81



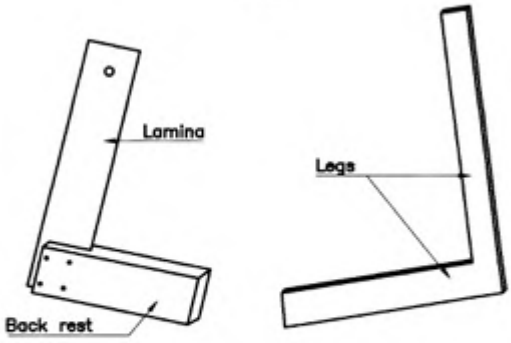
SPRINGING OF A VAULT

Fig.81a



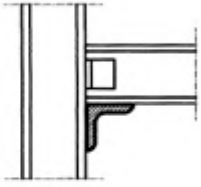
SPY OF ROCK

Fig.82



SQUARE

Fig.83



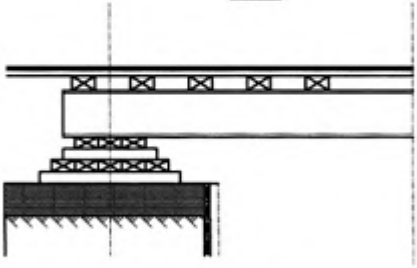
SQUARE SUPPORT

Fig.84



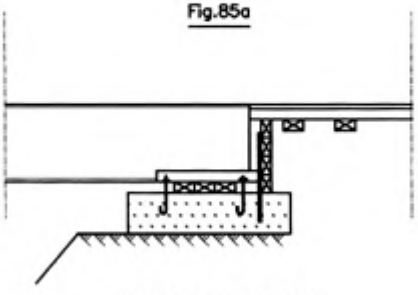
St ANDREW'S CROSS

Fig.85



Timber temporary bearing

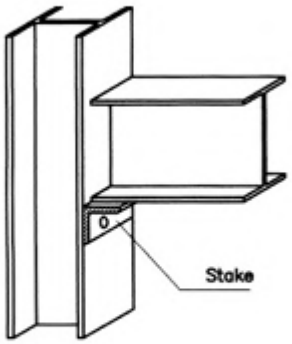
Fig.85a



Concrete temporary bearing

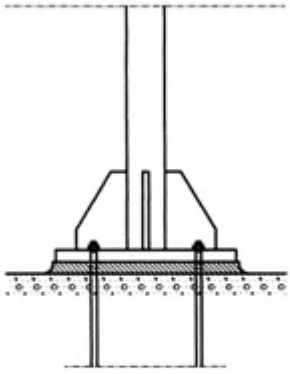
STACK OF SLEEPERS

Fig.86



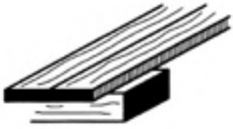
STAKE

Fig.87



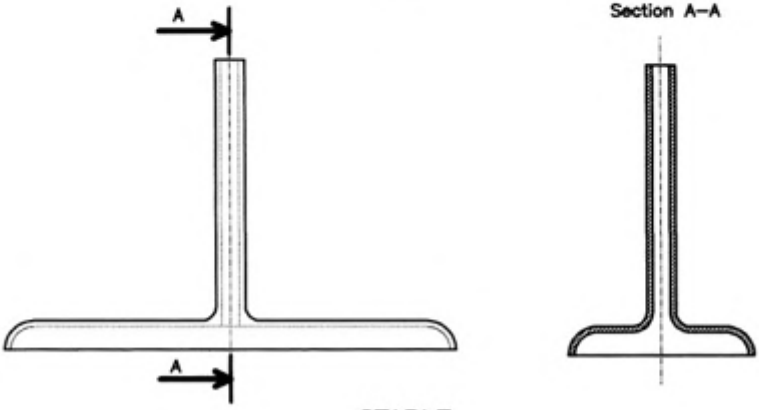
STANCHION BASE

Fig.88



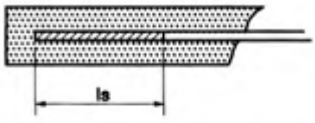
STAND

Fig.89

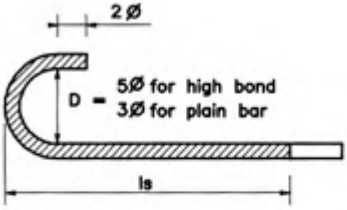


STAPLE

Fig.90

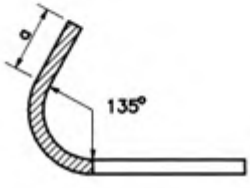


Staying by adhesion alone

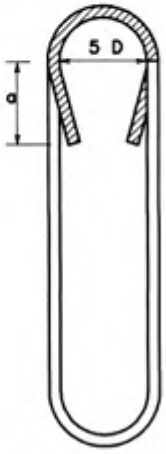


Staying by normal curtailment

ls = length of staying



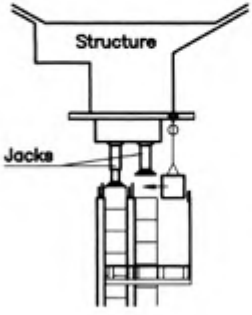
Staying by curtailment with return



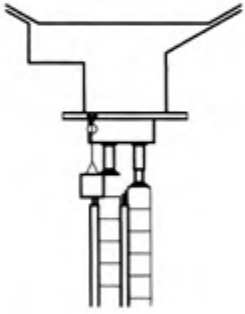
Staying by stirrup

STAYING

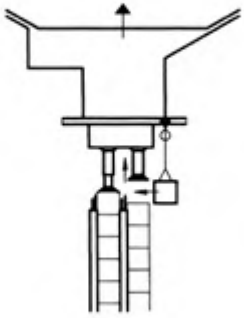
Fig.91



Phase 1



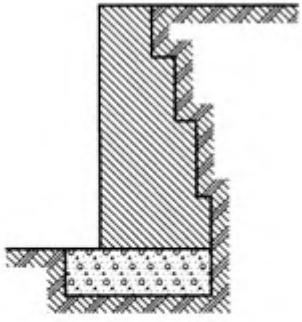
Phase 2



Phase 3

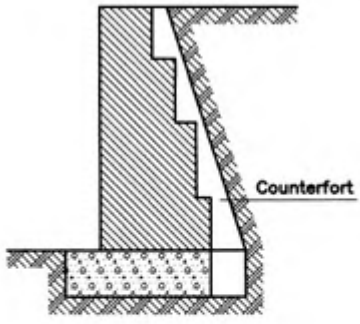
STEP–BY–STEP HOISTING

Fig.92



Stepped wall

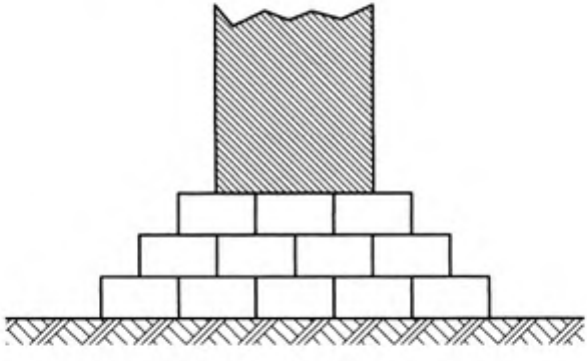
Fig.92a



Stepped wall with counterfort

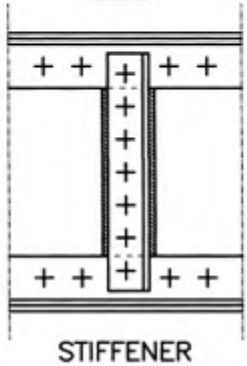
STEPPED WALL

Fig.93



STEPPING

Fig.94



STIFFENER

Fig.95

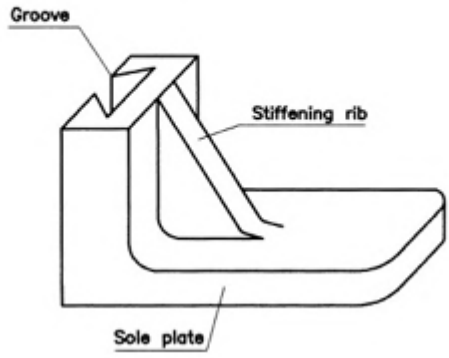


Fig.96

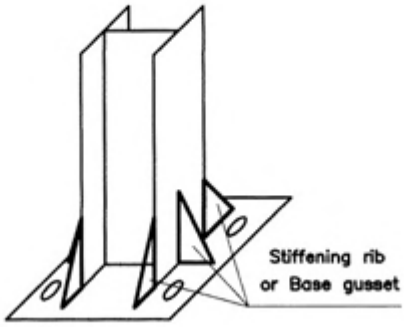
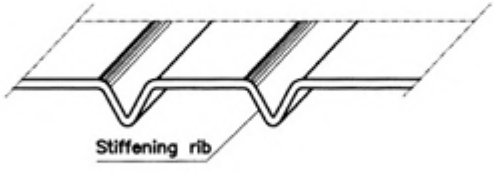
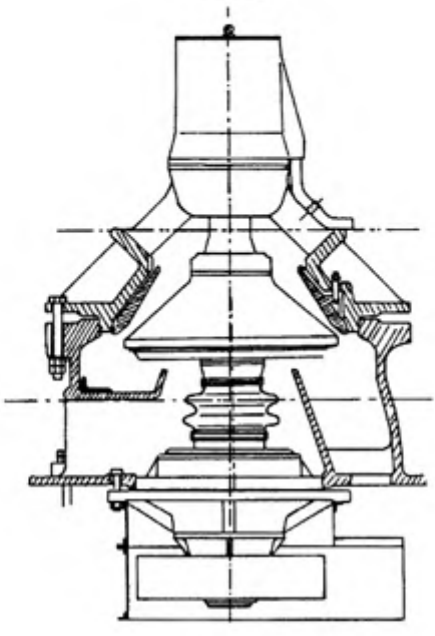


Fig.97



STIFFENING RIB

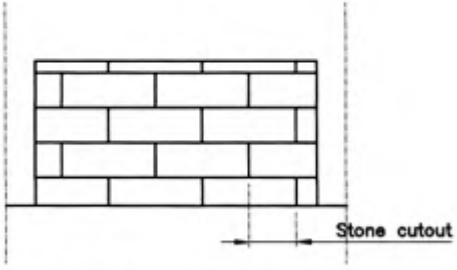
Fig.98



Rotary crusher

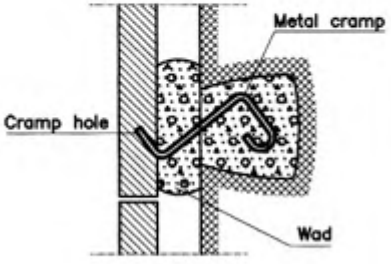
STONE BREAKER

Fig.99



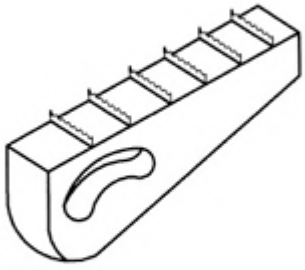
STONE CUTOUT

Fig.100



STONE FACING

Fig.101



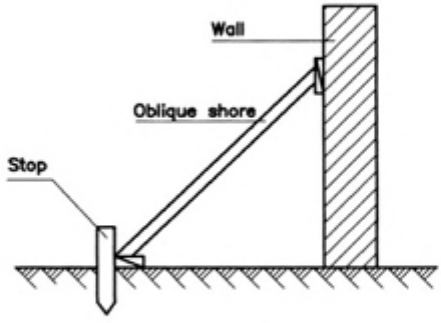
STONE PLANER

Fig.102



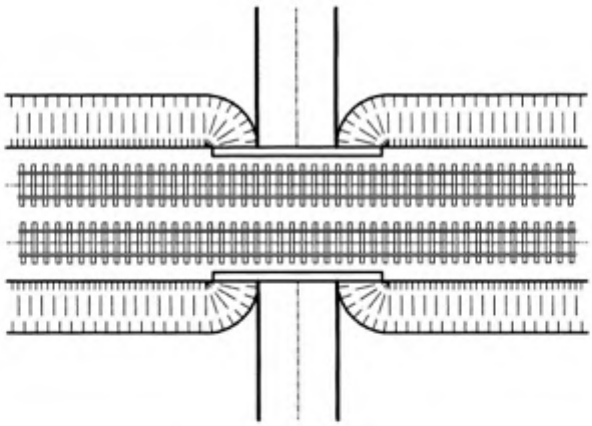
STONESHELL

Fig.103



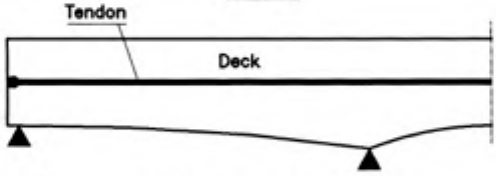
STOP

Fig.104



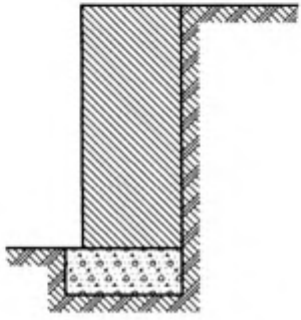
STRAIGHT BRIDGE

Fig.104a



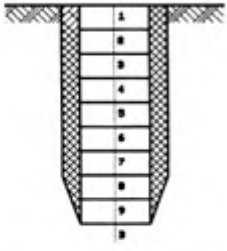
STRAIGHT TRACING

Fig.105

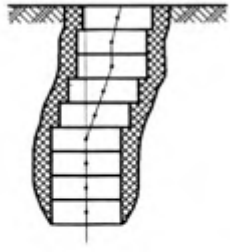


STRAIGHT WALL

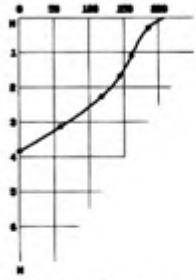
Fig.106



Before the strain of the soil



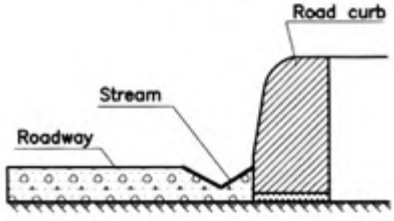
After strain



Horizontal displacements measured

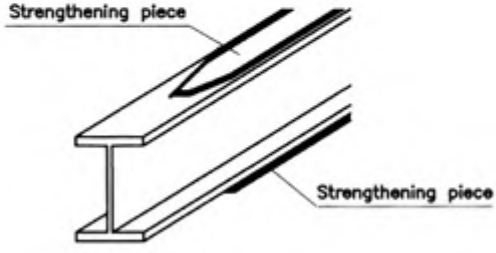
STRAIN WELL

Fig.107



STREAM

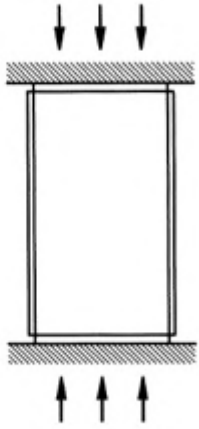
Fig.108



Strengthening piece of flange

STRENGTHENING PIECE

Fig.109



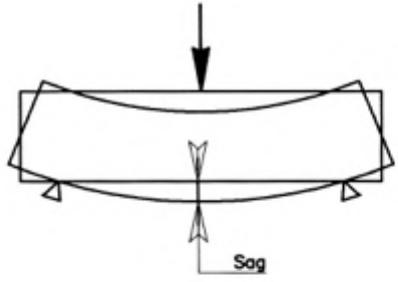
Compression

Fig.109a



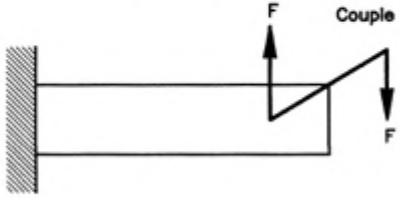
Tension

Fig.109b



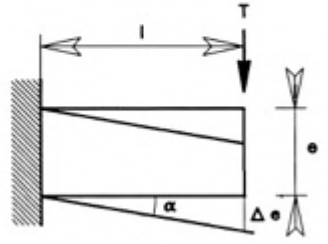
Bending

Fig.109c



Torsion

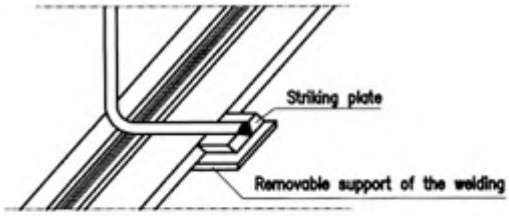
Fig.109d



Shear

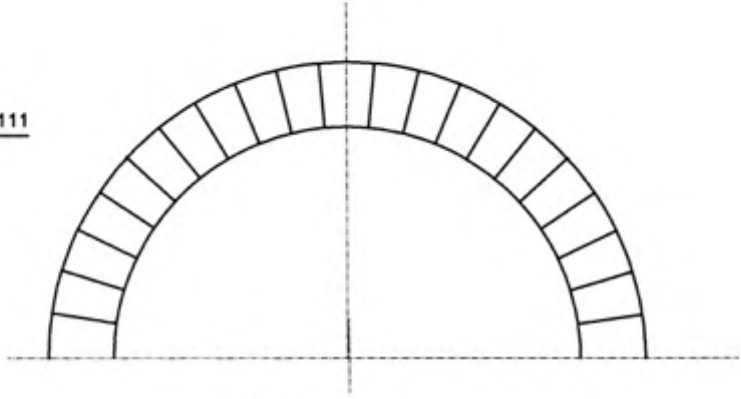
STRESS

Fig.110



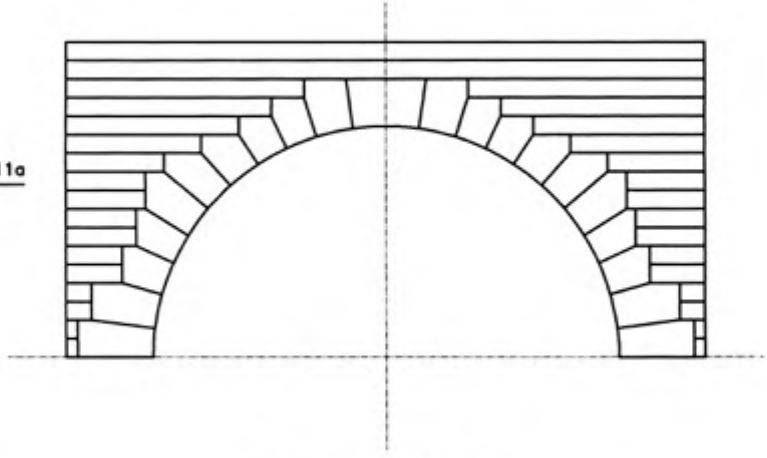
STRIKING PLATE

Fig.111



Backed stringcourse

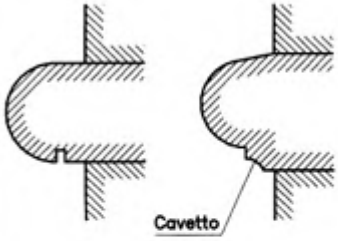
Fig.111a



Stringcourse with shoulders

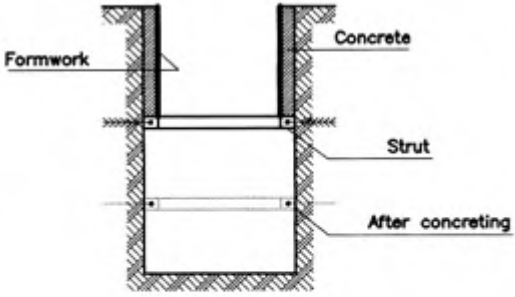
STRINGCOURSE

Fig.112



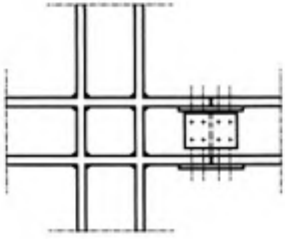
STRING MOLDING

Fig.113



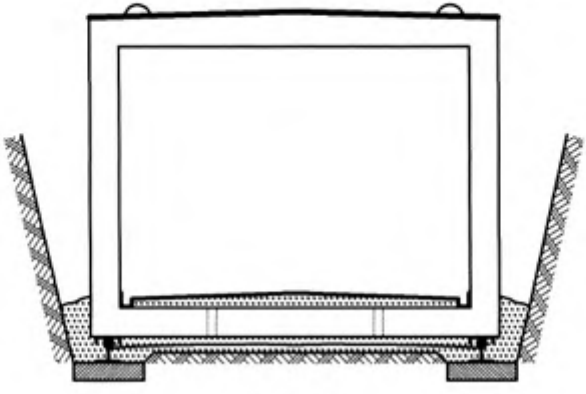
STRUT (of formwork)

Fig.114



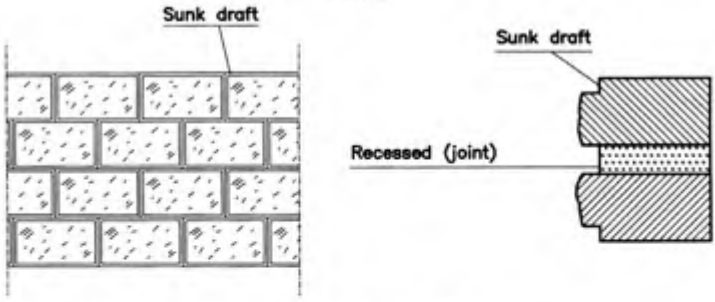
STUMP

Fig.115



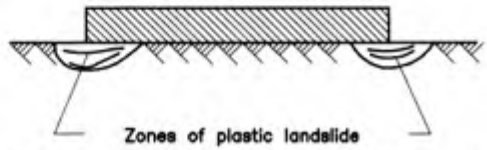
SUBWAY

Fig.116



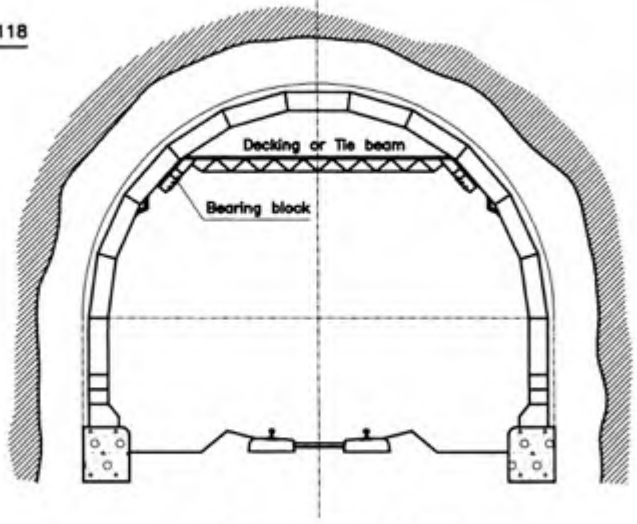
SUNK DRAFT

Fig.117



SUPERFICIAL STATIC LOADING TEST

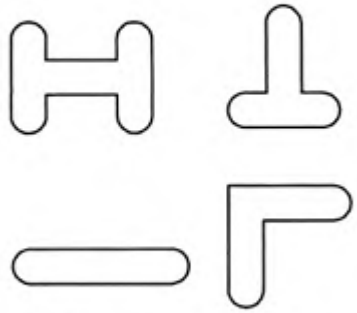
Fig.118



Heavy centering for tunnel

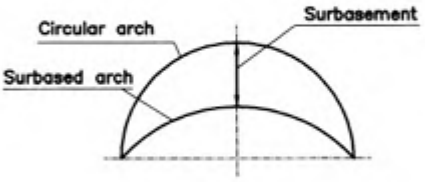
SUPPORTING ARCH

Fig.119



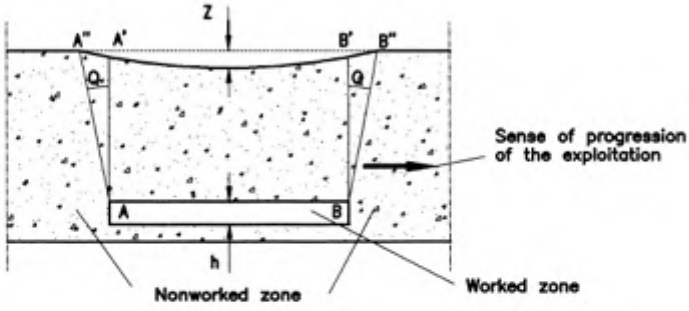
SUPPORTING–WALL UNIT

Fig.120



SURBASEMENT

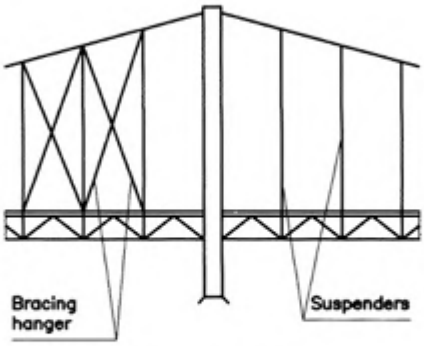
Fig.121



A'B' = Below in surface of the worked zone
Q = Angle of influence
A''B'' = Extension of the zone of influence (zone of subsidence)
Z = Maximal subsidence

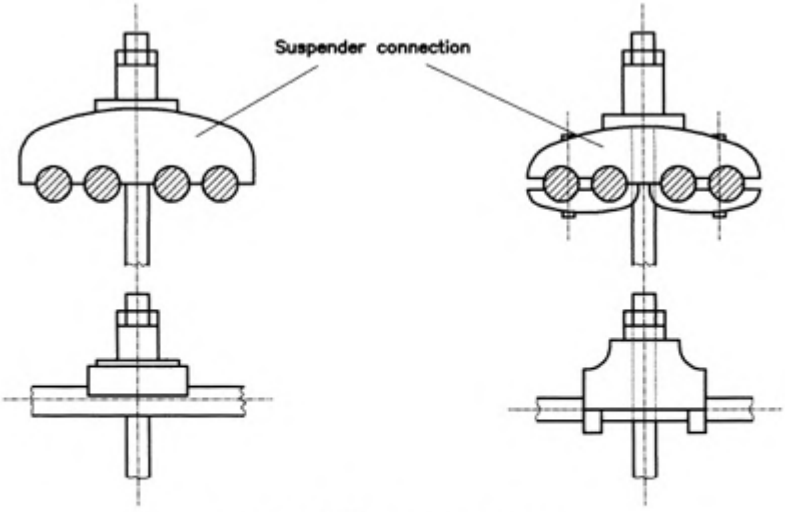
SURFACE SUBSIDENCE

Fig.122



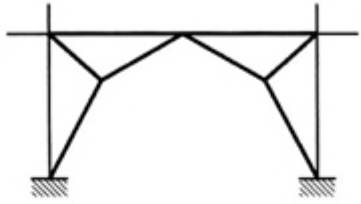
SUSPENDER

Fig.123



SUSPENDER CONNECTION

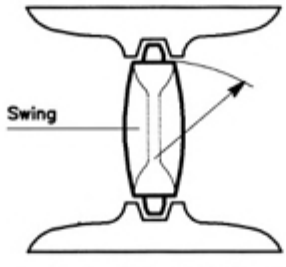
Fig.124



K–kneed sway frame

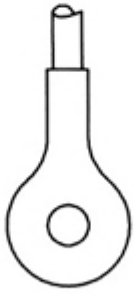
SWAY FRAME

Fig.125



SWING (OF BEARING)

Fig.126



SWIVEL



TAB
Jupe
Construction
A cylindrical or not vertical flank of a caisson or a tank.

***TABER* APPARATUS**
Appareil *Taber*
Assaying Equipment
An equipment for testing the abrasion resistance of a paint film subjected to the sandpaper action.

TABLE LOADING TEST
Essai statique de chargement à la table; Essai à la table
Geotechnics
A test designed to determine the allowable pressure on the subsoil. The adopted criterion is either that of stopping this stress using a method determined by experiment, or that of conventional fixing of the allowable pressure.
The test must be carried out at the same depth as the future foundation. The surface on which the bearing plate sits must be freshly stripped, and neither modified nor tamped. As much as possible, the test must be continued until the ground breaks. Loading must be progressive by fractions of a tenth of the presumed breaking load; every new loading can only be executed after stabilisation under the previous load. Readings are on flexigraphs; these different readings are transferred to a graph and show the curve of the sinking. The test finishes when the breaking of the ground is observed (an immediate and great increase in sinking) or after stabilisation under the last load as long as the total subsidence is at least equal to a tenth of the diameter or side of the plate, without exceeding six times the pressure of the use which is expected during the project. The table is unloaded without omitting to notice the conventional or real rising after complete unloading if the second case applies, as the difference will enable residual sinking to be noted.

TABLET
Tablette; Plaquette; Placage
Building Materials
1. A cut-up stone of small thickness.
2. Syn. with STONE FACING.

TABLET OF QUAY
Entablement d'un quai
Construction
Syn. with COPING (OF QUAY)

TACHEOMETER
Tachéomètre
Equipment for Measure and Control
A topometry instrument used for plotting using the method of declined traversing, and for measuring altitudes.
The tacheometer is a theodolite of slight precision, provided with a constant angle stadimeter and with a declinator. Operations consist in measuring distances and horizontal or vertical angles.
We can distinguish between ordinary tacheometers, measuring oblique distance, and self-reducing tacheometers, which give the horizontal distance straightaway. The majority of tacheometers are anallatic. In some of them, the stadimeter is replaced by a diastimeter or a diasporometer. We can distinguish between:
- **electronic tacheometer** *(le tachéomètre électronique),* which enables measurement and recording of the horizontal and vertical angle. It comprises a geodimeter or a distance meter for measuring distances, an azimuth reading device provided with a field glass with which the point in direction and site is measured on a reflector placed at the end of the sight, and a graduated horizontal circle and azimuth, both provided with a micrometer for photoelectric exploration. The distance, the values of the horizontal and vertical angles can be directly observed on a tube reading system or be recorded on perforated tape;
- **automatic horizontal tacheometer** *(le tachéomètre à horizontalé automatique),* which enables the reading of vertical angles or slope thanks to a pendular or liquid prism compensating device which avoids adjusting the sites level.

Syn. with TACHYMETER

TACHYMETER
Tachéomètre
Equipment for Measure and Control
Syn. with TACHEOMETER

TACK
Pointe; Semence
Building Materials; Materials
1. A long cylindrical nail, with a reduced head, used to assemble timber pieces. We can distinguish clout nails that are used for making formworks, bastard-headed tacks, conical head, man-headed, round-headed, or headless tacks. There are also double-headed tacks that are used a great deal for making formworks because their morphology allows fast and easy form striking. Syn. with NAIL
2. A large-headed nail used to fix materials in sheet. Syn. with CLOUT NAIL

TACK WELD
Pointage; Epinglage
Welding
The carrying out, in places, of small weld beads on the pieces to be joined in order to hold together them in a good position during the welding. **See Figure 1**

TACKINESS
Pégosité; Adhésivité
Adhesives
1. Instantaneous adhesion.
2. Syn. with STICKNESS

TACKLE
Mouflage
Equipment and Tools
1. A hauling system between two points or for lifting a load, requiring a cable immobilized at one end, winding on two opposite pulleys, one of which is fixed, and tractor drawn at the other end. Syn. with REEVING
2. Set of the material used for material lifting.

(BLOCK AND) TACKLE
Moufle
Equipment and Tools
Syn. with DIFFERENTIAL PULLEY BLOCK; PULLEY BLOCK

TAIL
Queue; Appendice; Arrière-bec
Masonry; Welding; Equipment and Tools
1. The part of a material bonded as header and putting in the thickness of a wall.
2. Syn. with SCARFING PLATE; STRIKING PLATE

3. Syn. with BACK SHIELD

TAIL OF STAIR
Queue de marche
Construction
The widest part of a turn step of a staircase. Syn. with OUTER END

TAILING
Queutage
Construction
Part of a vault surmounting the bottom face, whose composition normally differs according to whether it is subjected to strong or low pressures. Courses of the tailing are parallel to the courses of the bottom face, which are normal with the intrados as a general rule: they overlap, which helps towards a more homogeneous strength resistance.

TAILOR'S CHALK
Pierre de lard
Geology
Syn. with FRENCH CHALK

TAKE DOWN
Débrider
Handling
To untie a lifting rope of a load when the latter has reached its destination.

TAKING UP BY CONVERSION
Montage par conversion
Handling
Process of setting up a work over a river that takes place in the following way: the work is built on a bank parallel to the breach to be cleared, and is provided with a metal frame appendix at the end which must remain on the bank; a provisional pivot is laid out under this appendix. The other end, which is placed on rolls, sits on barges whose rotational displacement later allows bringing the bridge to its final site by conversion. The process ends by removing the pivot and appendix, and setting down the work on its final site.

TAKING UP BY SWINGING
Montage par basculement; Rabattement
Handling
Process of setting up a bridge deck. It is a bridge construction method that is used in particular to clear a deep gorge and that consists in assembling half of the bridge vertically on each bank, then swivelling the two halves by retaining them with cables and winches and assembling them permanently when they are joined in place. **See Figure 2**

TALC
Talc
Materials
An hydrated silicate of magnesium used as filler of paints. Syn. with FRENCH CHALK

TALON
Doucine; Talon
Construction
1. A S-shaped molding whose ends tend to the horizontal. Syn. with MOLDING PLANE; OGEE. **See Figure 3**
2. See HEEL. **See Figure 4**

TAMP
Damer
Earthwork
Syn. with BEAT; PUN; RAM

TAMPED CONCRETE
Béton damé; Damage du béton
Building Materials; Construction of R.C. and P.C.
1. A material with a low water content whose compactness on the spot is obtained by tamping with a hand rammer or a jumping jack.
2. The compaction of the concrete which comes trues with hand rammers and by successive layers.

TAMPING
Bourre; Bourrage
Explosives; Materials; Foundation; Masonry
1. Syn. with STOPPING; WAD
2. Syn. with STEMMING
3. All materials used to fill a cavity.
4. The filling to refusal of a foundation pit made with concrete.
5. The blocking up of cavities in a wall with mortar, concrete, or other materials.
6. The filling to refusal of a sealing hole with mortar.

TAMPING OF A COUNTERCOPING
Damage d'une centre-chape
Tightness
The compaction of a countercoping of tightness with rammer or a handroller.

TAMPING REMOVAL
Débourrage
Earthwork
Syn. with BAILING-UP REMOVAL; MATERIAL REMOVAL

TAMPING ROD
Bourroir
Equipment and Tools
A simple rod used by pyrotechnicians to push the cartridge of explosives at the bottom of a blasthole and to compress the wad.

TAMPING ROLLER
Rouleau à pieds dameurs
Equipment and Tools
A similar plant to the sheepsfoot roller, but with a widest bearing surface of the feet.

TANDEM
Tandem
Equipment and Tools
A self-propelled road roller comprising two smooth static cylinders and which the compacting effect is superficial. Its medium weight is 6 metric tons.

TANGENTIAL LOAD
Sollicitation tangente
Strength of Materials
A stress applied to a prismatic piece balanced by a tangent stress.

TANK
Fosse; Bâche
Construction; Civil Engineering Structure
1. Syn. with PIT
2. Water tank.

TANK FOUNDATION
Aire
Construction
The foundation of a basin.

TANKING
Cuvelage
Masonry
Syn. with LINING; WATERTIGHT CEMENT RENDERING

TAP
Prise en charge
Work
The connection of a piping on another already operational.

(SCREW) TAP
Taraud
Equipment and Tools
A truncated-shaped tool comprising sharp grooves, which is designed to carry out threadings, either hand-driven (with a tap wrench), or on machine (drilling machine with speed-reduction gear and reverser of rotation).

TAP ONE
Taper
Painting
To tap with a brush or a paint brush to make penetrate paint into the small cavities or pores of a substrate.

TAP WRENCH
Tourne-à-gauche
Equipment and Tools
A hand tool formed by two branches between which is a kind of vice operated by one of the branches. In this vice, are enclosed tools working in rotation, in particular taps.

TAPE
Ruban
Topography
A small casket into which a ribbon graduated of 10, 20 or 50 m is rolled up, made of steel or plastic-coated cloth, used to measure distances. Syn. with MEASURING TAPE; TAPE LINE; TAPE MEASURE

TAPE LINE
Ruban
Topography
Syn. with MEASURING TAPE; TAPE; TAPE MEASURE

TAPE MEASURE
Décamètre à ruban
Equipment for Measure and Control
Syn. with MEASURING TAPE; TAPE; TAPE LINE

TAPER
Camarder
Construction
To decrease the projection of a profile so as to connect it with another profile.

TAPER PIPE
Réduction
Construction
Syn. with REDUCING PIPE

TAR
Bitumer ou Bituminer; Goudron
Materials
1. To cover with a single bitumen layer or, by extension, with asphalt. Syn. with ASPHALT
2. A generally viscous product resulting from the condensation of the volatile compounds released during the destruction by distillation of the bituminous materials contained in the coal, schist, lignite, peat, or plants. Tar has many applications in work of civil engineering and public works such as tarring roads, protecting buried wood, protecting steel, and so on.

TAR WITH BITUMINOUS CONCRETE
Béton de goudron bituminé
Building Materials
Syn. with ASPHALTIC TAR CONCRETE

TAR-ASPHALT
Bitume-goudron
Materials
A balanced mixture of bitumen and tar characterized by a better adhesive and wetting power of the aggregates than bitumen itself.

TARMACADAM
Tarmacadam
Building Materials
A material used for the road surfacings made up of mineral materials coated with tar.

TAR-OIL TYPE PRESERVATIVES
Produits de préservation solubles dans l'huile
Building Materials
Impregnation and/or injection products for woods, coming from the distillation of tars and having a high point of boiling (creosote for example).

TARRED FELT
Feutre goudronné
Tightness
Any felt of glass or abestos fibers impregnated with coal tar pitch, available under two aspects such as tarred felt impregnated and mineral-surfaced tarred felt.

TARRING
Bitumage; Répandage; Goudronnage
Civil Engineering: Work
1. Syn. with ASPHALTING
2. Syn. with SPRAYING OF WETTING AGENT
3. Spreading of tar or bitumen on any surface .

TARRY (or TAR) CONCRETE
Béton goudronneux
Building Materials
A mixture of mineral aggregates and tar, prepared in advance, placed on a foundation and compressed.

TAS-DE-CHARGE
Tas-de-charge
Construction
See SPRINGING STONE BOND. This type of vault bonding avoids siding thrust. **See Figure 5**

T-BAR
Té
Metallurgy
A standard section whose right cross section is shaped like a T. Angles are sharp or rounded, the web has a thinly decreasing thickness and the flanges are equal or of different width. **See Figure 6**

T-BEAM
Poutre en T
Construction
Syn. with T-GIRDER; T-IRON; T-SECTION

T-BEVEL
Fausse équerre
Equipment for Measure and Control
Syn. with BEVEL SQUARE; SLIDING BEVEL

TECHNICAL REGULATION
Règlement technique
Civil Engineering Structure
A document referring to a standard or a technical specification, or including it.

TECHNICAL SPECIFICATION AND GENERAL CONDITIONS
Cahier des charges
Contract
Syn. with SPECIFICATIONS

TECHNICAL UNIT
Bloc technique
Construction
A particularly meticulous arrangement of compacting and of a range of materials used as a transition device between the body of the abutment and the embankment during the construction of an engineering work, notably roads.

TECTOGENESIS
Tectogenèse
Tectonics
The science dealing with the genesis of structures, thus being different from the orogeny dealing with the genesis of the reliefs, although both are obviously linked.

TECTONIC JOINT
Joint tectonique
Geology
A breaking of ground not showing any throw.

TECTONICS
Tectonique
Tectonics
1. The study of rocks distortion, starting from the scale of a thin blade (microtectonics) until the mountain chains and the entire sphere (geotectonics).
2. A part of geology which studies this distortion

TEETH
Bretture; Brettelure
Equipment and Tools
1. The indented part of a stonecutter's hammer.
2. Teeth on the tool used to tooth.

TEFLON
Téflon
Building Materials
The commercial name of the polytetrafluoroethylene.

TELECLINOMETER
Téléclinomètre
Equipment for Measure and Control
An instrument used inside a trial boring designed to give the drilling slope or to measure its deviation.

TELEMETER
Télémètre
Equipment for Measure and Control
Syn. with RANGEFINDER

TELENIVEAU ™
Téléniveau
Equipment for Measure and Control
An instrument for measuring settlements in the bosom of a work (riprap or earth-fill dam, embankments, etc.).
The teleniveau functions according to the principle of the communicating vessels. Each set of local altitude is made up by a nozzle acting as too full. Each nozzle is connected by a rilsan tube outside the work where is installed a translucent fixed tube assembled in opposite of a graduated leveling staff. The level of overflowing of the overflow is read directly inside the nozzle using the test card. The overflow of the nozzle flows into a plastic pipe which is also used as protection to all of the rilsan tubes leading at each set of local altitude. **See Figures 7 and 7a**

TELESCOMETER
Télescomètre
Equipment for Measure and Control
A measuring device of linear distances constituted by a system of graduated telescopic tubes extended over the height or the length to be measured. It is more efficient than the meter ribbon due to the only fact that a single operator is necessary.

TELESCOPIC CRANE TOWER
Sapine télescopique
Equipment and Tools
A lifting appliance used to support horizontal formworks.
Two models are available.
- **stationary crane towers** *(les sapines fixes),* real supports of formwork constituted by plane panels that can be dismantled
- **mobile crane towers** *(les sapines mobiles)* that cannot be dismantled and are equipped with two axles (including a director) equipped with tyred wheels and a hydraulic lifting set. Inserted between stationary crane towers, they make possible to adjust the formwork when it is installed to carry out the decenter without any effort and to carry the block of the formwork, including stationary crane towers depending on it over long distances.

TELESCOPIC CYLINDER
Vérin télescopique
Equipment and Tools
A jack whose resulting stroke is the sum of displacements of several encased tubes one in another and acting in turn as a piston.

TELESCOPIC TRUSS JOIST
Poutrelle extensible *ou* télescopique
Equipment and Tools
A metal element mostly of triangular shape, whose span is adjustable, mostly used as support of formwork. **See Figure 8**

TELLTALE
Témoin
Equipment for Measure and Control
A device allowing to an observer to follow the evolution of a crack.
A telltale is a small cement or plaster prism, molded across a crack to follow its evolution and bearing the date of his making.
The reliability of this type of telltales is a bit random, generally, it to them is preferred metal telltales. Those later are made up of stainless square irons (section 10 x 10 mm), bent and embedded in the masonry on each side of the crack They overlap and, after setting, are marked each one of a saw line. On one of the branches is indicated the date of installation. These telltales inform about the direction of the masonries movement (slip, rotation, sloping). There also are glass telltales posed across a crack and whose ends are sealed with a resin. The breaking of the glass plate indicates a movement. Syn. with PLASTER PAD. **See Figure 9**

TELLURIAN
Tellurien
Geology
Of what arises from the Earth.

TELLURIC
Tellurique
Geology
In direct relation with sciences of the Earth.

TELLURIC ENVIRONMENT
Milieu tellurique; Milieu hypogé
Geology
An underground unit including a number of elements whose main thing is the ground that prevails at once by its great extent and its continuity; it is added to it constituents of less surface as caverns and networks of splits in karstic environment, underground waters, burrows, termites, and ants nests.

TELLURIC PROSPECTING
Prospection tellurique
Geophysics
A research method that consists in measuring the resistivity of the shallow sedimentary grounds on the surface by using earth currents which go through them.

TEMPER
Retardateur; Recuire
Polymers; Metallurgy
1. Syn. with RETARDER
2. To operate the annealing on a metal.

TEMPERED STEEL
Acier trempé
Metallurgy
Syn. with HARDENED STEEL

TEMPERER
Délayeur
Equipment and Tools
A device or tank in which materials are mixed.

TEMPERING
Recuit; Revenu
Metallurgy
The heat treatment to which is subjected a metal whose the structural state differs from the balance state subsequent to a former heat treatment. It is designed undermine the variation of balance more or less and comprises one or several heatings at temperatures lower than 720°C, while keeping with these temperatures, followed by cooling periods according to suitable methods and laws. The tempering can breed a fall of hardness or, on the contrary, an increase of the former when a secondary hardening occurs. Syn. with ANNEALING

TEMPERING *(or* ANNEALED) STEEL
Acier recuit
Metallurgy
A cold worked or hardened iron alloy which has been subjected to a high temperature in order to work him to its former state.

TEMPING
Délayage
Hydraulic Binders
Syn. with DRAGGING-OUT; MIXING

TEMPLATE
Gabarit; Modèle; Cerce; Carton
Equipment and Tools; Materials
1. A wooden piece or other material formed or carved into a set profile and used to either trace a design onto a piece of material. Also used to check manufactured items for size or shape. Syn. with FORMER; GAUGE
2. Syn. with CAMBER JIG
3. A cardboard or sheet metal template carved following defined shapes and that is designed to trace the profiles on materials to be cut or to be carved.

TEMPLET
Jauge
Equipment and Tools
A rule bearing divisions, used to mark out the wood or stone cuts.

TEMPLET A STONE
Jauger une pierre
Masonry
To measure parts already cut to make parallel opposite faces.

TEMPORARY ASSEMBLY
Brelage
Temporary Construction
A job that consists in roping girders, a scaffolding, etc.

TEMPORARY BEARING
Camarteau
Temporary Construction
Syn. with STACK OF SLEEPERS.

TEMPORARY BRIDGE
Tablier auxiliaire; Pont provisoire
Temporary Construction; Civil Engineering Structure
1. A temporary bridge intended for supporting a line of communication. (In the case of a railway bridge, the deck is mostly constituted by a twin beams deck of simplified construction.) **See Figure 10**
2. A temporary clearing structure over a natural breach or site of a future work and that makes possible to ensure a continued thoroughfare whilst avoiding bypassing the site awaiting the finished work. Temporary bridges can be implemented during important repairs or maintenance of weak works, the replacement of a work by another, etc. They are bressumers, temporary bridges, track supports, army bridges, etc.
Types of temporary bridges are:
- ***Arromanches*** *(le pont Arromanches),* a bridge approximately 25 m long, whose top and bottom booms are of the parabolic type; **See Figure 10a**
- ***Bailey*** *(le pont Bailey),* a lattice girder bridge from the military. It is made by mounting double or triple metal beams intended to form one or two levels. This equipment is of British origin; **See Figure 10b**
- ***Bonnet-Schneider*** *(le pont Bonnet-Schneider),* French military bridge made up of a box girder metal railway bridge mounted in one piece sections of various lengths, joined two by two by bolted joints. There are three types of bridges that are set up by launching using nosing and that are:
  - *B.S. IV* with an upper track of a 39 m span,
  - *B.S. IV a,* of the same span, with an upper or lower track made by widening of the sections,
  - *B.S. IV b* with a lower track that reaches a 60 m span because of strengthening trusses;

- ***Callender Hamilton*** *(le pont Callender Hamilton),* lattice girder metal work intended for supporting a roadway;
- ***Eiffel*** **bridge** *(le pont Eiffel),* made of a steel deck with lattice girders and used as a temporary road bridge; **See Figure 10c**
- **I-Beam Railway (***le pont I.B.R..B.*), French military metal railway bridge made up of I-beams braced by standard parts that are placed in different positions according to the spacing and number of sections composing the bearing unit of span. Diagonals in corner irons supplement the wind bracing. Cross ties of the track rest directly on the top flanges of the universal beams and are fixed by hook bolts;
- ***MZ*** *(le pont MZ)* of the French military park. Of German origin, it is a railway metal bridge that can be dismantled into elements which can be transported by road or railway. It also enables road vehicles to cross thanks to a rolling bridge covering. It is a bridge with simple N-truss steel beams whose elements are made up of welded sheet metal;
- ***Pigeaud*** *(le pont Pigeaud),* metal structure with X-truss girders; **See Figure 10d**
- ***Roth Waagner*** *(le pont Roth Waagner),* metal railway structure of the French military of Austrian origin. It is a wide panel lattice girders bridge that can be dismantled. The constitutive pieces are bolted. This bridge can be on one or two levels;
- **walkway** *(le pont de service)* constituted by a floor and that is intended for clearing small breaches (trenches, culverts, etc.);
- ***English*** **semiportable** *(le pont semi-démontable anglais),* metal railway bridge of the French military formed by two low box-girders, joined by a wind-bracing made up of corner irons horizontally and of distance pieces vertically. The two box girders can have variable spacing for use as a bridge, either in a standard gauge-line track, or in a metric gauge track. Each box girder comprises two I-section beams with a solid web, interlocked with distance pieces under rail with stiffeners to the right of these distance pieces. The rail is fixed, either on sleepers sitting on the under rail supporting the distance pieces, or on cross ties resting on the top flanges of the beams; **See Figure 10d**
- ***French*** **semiportable** (*le pont semi-démontable français),* railway bridge of the French military of which we can distinguish two types (SD 12 and SD 16) characterised by their length. This bridge is made up of two independent box girders, joined by frames of wind bracing in corner irons. The box girder of 12 and 16 m bridges is made up of two solid-webbed I-section girders, interlocked by under rail supporting distance pieces with stiffeners to the right of these distance pieces. These beams are made of sheet metal and riveted or welded sections according to their manufacture;
- **Unit Construction Railway** *(le pont U.C.R.B.),* metal railway bridge of the French military. It is a simple N-truss girder bridge built in relatively light elements which can be easily transported. It can be used for the clearing of independent single span or multiple span breaches which are not accessible by rail. The bridge can be upper track or lower track. Upper track bridges are built with two or three beams. Crossties of the track sit directly on the top flanges of the beams and are fixed by special head bolts. Lower track bridges with are built with two or four beams; they make up a deck of distance pieces and stringers and a longitudinal wind bracing. Stringers of the deck can occupy various positions according to the gauge of the track rails and leveling quotation of the abutment. A suitable bridge covering allows them to be used as road bridges.

TEMPORARY BRIDGE BUILDING
Pontage
Handling
The setting of a temporary bridge. Syn. with BRIDGING

TEMPORARY BUTTRESS
Butée
Temporary Construction
A temporary frame construction, props, and so on, that supports the weight of a masonry during its construction.

TEMPORARY CASING
Tube provisoire
Foundation
Syn. with TEMPORARY PIPE PILE

TEMPORARY EARTH STORAGE
Relais
Handling
The provisional deposit of earths.

TEMPORARY EASEMENT OF OCCUPATION WITH A VIEW TO PUBLIC WORK
Servitude d'occupation temporaire en vue de travaux publics
Law
The temporary right of occupation imposed on a private property in a bid to the implementation of some public work. This easement causes to payment.

TEMPORARY PILE FRAME
Palée
Temporary Construction
Syn. with PILE TRESTLE

TEMPORARY PIPE PILE
Tube provisoire
Foundation
A recoverable work element used to carry out some cast piles. Syn. with TEMPORARY CASING

TEMPORARY RETAINING WORK
Ouvrage de soutènement provisoire
Civil Engineering Structure
A construction that is mostly found in the plot of supported or plated trenches, cofferdams, and usually in the plot of works allowing the issue of an expropriation to go on to realise permanent constructions in a site with difficult access; its role is primarily a protective role during the construction period.

TEMPORARY STRUCTURE
Ouvrage provisoire
Temporary Construction
A temporary support (sheet piles, Berliner or Parisian sheeting, centering, hurpinoise process, etc.) solely intended for enabling the construction of a permanent work; it is not taken into account in the justification of the permanent work, even if this support is left in place permanently for technical reasons at the end of the work. Syn. with TEMPORARY WORK

TEMPORARY TRANSVERSE STIFFENING
Ballonnage
Temporary Construction
The temporary transverse stiffening of a tie beam of truss preventing its buckling during a lifting maneuver with hold in ridge.

TEMPORARY WORK
Ouvrage provisoire
Temporary Construction
Syn. with TEMPORARY STRUCTURE

TENACIOUS
Tenace
Building Materials
Of a material having tenacity properties.

TENACITY
Ténacité
Strength of Materials
The property of a material having at the same time a strong breaking strength and a weak ability for the propagation of the cracks. In a simple tensile test, tenacity is appreciated by the quantity of deforming energy absorbed at the time of the breaking. Tenacity takes into account the preexistent defects or notches in the material; in this case, the metalworkers use a parameter, called *the stress intensity factor,* which characterizes the stress state at the proximity of the crack.

TENACITY-FRAGILITY TEST
Essai de ténacité-fragilité
Geotechnics
A test applied to the rocks which is intended for estimating their strength both in tenacity and in brittleness. The test proceeds in the following way: a standardized sample is subjected to the shock of a mass of constant weight, falling successively from 1, 2, 3, *n* cm, up to cause its breaking. The value of *n* is used as a frame of reference for this property. This test concerns in particular the rocks used as enrockment blocks.

TENDENCY TO SPLIT
Fissile
Defects (Building Materials) and Geology
Of the rocks or building stones (limestones in particular) having a tendency to crack, to split up into folias.

TENDER
Soumission
Contract
Syn. with SUBMISSION

TENDER(ING) ACTION
Adjudication
Contract
Syn. with AWARD OF CONTRACT

TENDON
Câble pour précontrainte
Construction of P.C.
Syn. with PRESTRESSING WIRE; STEEL PRESTRESSING CABLE

TENDONS
Armatures de précontrainte
Construction of R.C. and P.C.
Concerning a prestressed concrete work, reinforcements whose tensloning is permanent and used to develop prestressing stresses. These tendons consist of wires, bars, stranded or twisted high-tensile steel cables.

TENON
Tenon
Nomenclature of Materials
The male part of a jointing which interlocks into the mortise. **See Figure 11.**

TENON-AND-MORTISE DEVICE
Dispositif à tenons et mortaises
Construction
In the construction by successive cantilevers of prestressed concrete works, corbels that prolong the webs of beams of the deck (forming tenons) and penetrate notches (forming mortises) fitted in the abutments.

TENON OF CENTERING
Tenon de centrage
Construction
A tenon carried out in the central part of a bridge-support apparatus, moving in a groove and that prevents a relative and inopportune displacement of its various elements.

TENSILE BENDING TEST
Essai de rupture par flexion; Essai de traction par flexion
Test of Materials
A test that enables to measure the tensile and bending strength of materials such as concrete, grout, and so on.. and which is carried out on cube molds of different sizes according to the nature of tested material. Syn. with BENDING FAILURE TEST

TENSILE STRESS
Traction
Strength of Materials
Syn. with TENSION

TENSILE TEST
Essai de traction
Metallography; Test of Materials (Tightness)
1. A test which consists in breaking a metal test bar, of given shape and dimensions, under the effect of a simple tension driven according to a definite method. This test is generally carried out at room temperature. Measurements are related to the breaking strength, yield point, elongation breaking, etc. Tests can be represented graphically on a diagram giving elongations of the test bars with respect to the applied tensile strains. The section of the tensile test bars can be circular, square, or rectangular.
2. A test to which is subjected a flexible damp course and whose progress is as follows.
The equipment used is an electronic dynamometer of 500 kg of minimum capacity; test specimens are carved in the flexible damp course; two in the direction of the calendering, two perpendicular to the calendering. The temperature of the test is 20°C; the speed of tension is 100 mm/min.
Two types of test specimens can be used, reflecting two procedures:
- *the dumbbell-shaped test specimens which are adapted to the standard: base of dumbbells = 6 cm, median part = 5 cm. After resinification of the parts of test specimens being taken in the jaws, the test is carried out;*
- *the rectangular test specimens of dimensions 50 x 320 mm. To avoid the creep of the product between the jaws, the ends of the test specimens are cooled into a bath of saltwater and ice at -5°C for 1 or 2 min. Test specimens must endure in each direction a strain of 60 kg/cm in width. Elongation in the direction of the calendering and the perpendicular to the calendering must be higher than 3%. It is arranged to this purpose a diagram of the elongation stress.*

TENSILE TEST ON RESIN THIN FILMS
Essai de traction sur film mince de résine
Test of Materials (Polymers)
A test intended for testing resistance to the gluing of resins.
The apparatus used enables to test polymers in the form of circular test specimens from 1 to 2 mm thick and a surface of 50 cm² and consists of two steel cores of 8 cm diameter between which the resin is injected. On these cores are adjusted two steel flasks on which are fixed three displacement sensors positioned at 120°. Cores are placed on a special assembly enabling the position from one with regard to the other so that their opposite faces are perfectly parallel and distant between them of the desired value. A rubber skirt enables to close hermetically the space between the cores. The polymer is injected with a cannula passing through the skirt, once the air was expelled by vent expected for this aim. The machine is mounted between the jaws of a tensile press through the channel of two articulations. After polymerization the tensile test at a speed of 1 mm/min is performed. The research design comprises two stages:
- *comparison of the characteristics of deformation and breaking of polymers in the form of thin films and conventional test specimens;*
- *study of the incidence of the stresses on polymer disks in the process of polymerization.*

See Figure 12

TENSILE WOOD
Bois de tension
Building Materials
A type of reaction wood of abnormal structure which is located in the deciduous trees of the taut side of the trunk. Syn. with TENSION WOOD

***TENSIOMAGP*™ SYSTEM**
Système *Tensiomag*
Equipment for Measure and Control
A sounding probe of concrete structures that allows to measure the strain in the long ferromagnetic material products (example: wire, bars, strand, cable layer, section, etc.).
Used on a work, the probe is designed to control the initial strain of prestressing and to check the admit hypotheses at the time of designing building and the calculating methods of structures; it also enables to check the behavior of the structure from the start-up and, constantly, the residual force of prestressing, to evaluate the losses of stress which are occurred following the appearance of defects and consecutive degradations to unexpected causes (ground settlings, cracks, etc.) or with external stresses (loads or overloads, climatic variations, etc.). This instrument allows the measurement of stresses of ground tie rods, passive reinforcements, etc. The tensiomag applies a physical principle according to which the magnetic permeability of a steel wire or strand varies according to the stress of the steel; the measurement of this value enables to know the tensile stress exerted on this wire. The implementation of the equipment requires to hold from the design of the work a site where the probe will be placed.

TENSIOMETER
Tensiomètre
Equipment for Measure and Control
An instrument for measuring the deformation of a solid subjected to mechanical stresses.

TENSION
Traction
Strength of Materials
The strain that undergoes a body when it is solely subjected to the action of two equal forces, of opposite direction, having their directions in the prolongation one of the other and tending to move away their application points. Under the effect of these two forces, the solid lengthens. Elongations are proportional to the forces if intensity of these ones per unit of area, or stress, remains lower than a certain value called *the yield point of the body to tension.* These elongations disappear when the application of forces cease tobe applicated, what one expresses by saying that the deformation is elastic. Syn. with TENSILE STRESS

TENSION BAR
Tirant d'ancrage; Aiguille
Building Materials; Construction
1. Syn. with ANCHOR ROD; LAND TIE; TIE ROD
2. Syn. with NEEDLE

TENSION CRACKS
Crevasse ou Fissure de traction
Geomorphology
A big fracture that develops in the zone of regression at the head of a landslide and gives place, among others, to water seepage which extend the movement.

TENSION MEMBER OF A BOWSTRING
Tirant d'un bow-string
Construction
A horizontal element connecting the two ends of the arch and balancing the thrust.

TENSION ROD
Tendière
Temporary Construction
Each horizontal bar of a scaffolding connecting the standards by various fastening devices (rope, pin, etc.). In the wooden scaffoldings, tension rods support the floors through the channel of putlogs.

TENSION WOOD
Bois de tension
Building Materials
Syn. with TENSILE WOOD

TENSIONING
Vérinage
Handling
An operation which consists in tensioning steel prestressing cables using jacks especially designed for that purpose.

TERMITE
Termite
Defects (Building Materials)
A xylophagous insect which basically eats vegetable matter and wood in particular.
To avoid the light, termites dig long galleries to reach their sources of supplying. For this reason, the attacked wood can remain of healthy appearance whereas the inside is completely consumed.
According to their mode of existence, we can distinguish several kinds of termites:
- **dry wood and wet wood** *(les termites des bois secs et les termites des bois humides),* which live inside the wood;
- **underground** (*les termites souterrains*), which bring wood in nests constituted by galleries dug under the ground.

Syn. with WHITE ANT

TERNARY CEMENT GROUT
Coulis ternaire
Materials
A binary grout to which sand is added.

TERNARY STEEL
Acier ternaire
Metallurgy
An iron and steel product containing two elements whose measure is higher than that of the primary steel.

TERPENIC RESIN
Résine terpénique
Polymers
A synthetic product obtained from terpenes or their derivatives by various operations of polymerization or polycondensation.

TERRACE
Berme
Civil Engineering and Earthwork
Syn. with BENCH; BERM; STEP

TERRAZZO CONCRETE
Granito
Building Materials
Syn. with GRANOLITH; GRANOLITHIC CONCRETE; GRANOLITHIC FINISH

TEST
Essai; Test; Epreuve
Civil Engineering Structure; Metallography; Strength of Materials; Tests
1. The check of a material, an equipment, a structure, so as to verify and to ensure that the tried element reflects to the waited use and performances.
2. An operation during which it is proceeded on a test specimen to the manipulations, readings or observations expected by standards.
3. A test that consists in studying and measuring the mechanical characteristics, the physical, physicochemical, or chemical properties of a material.

4. A test to which is subjected equipments or materials to check their ability to the focused services or uses.
Syn. with TRIAL.

TEST BY RADIOACTIVE ISOTOPES FOR THE CONTROL OF CONCRETE
Essai par isotopes radio-actifs pour le contrôle des bétons
Test of the Materials
A quality test of the concrete that is carried out by measurement of the gamma radiation absorption and which enables to deduce the concrete density.

TEST LOAD
Charge d'essai
Strength of Materials
The tremendous weight distributed on a bridge, to feel its resistance before delivering it to traffic.

TEST OF CONCRETE CONTROL
Essai de contrôle des bétons
Test of Materials (Building Materials)
A test intended for verifying the regularity of the concrete manufacturing and for checking if the contractual nominal strength is indeed reached. Cylinder tests are taken from the site at the moment of the concreting; tests will be therefore carried out on a concrete of similar proportions and manufactured in the same conditions as the construction work.

TEST OF CRACKING TO THE RING ON CEMENT
Essai de fissuration à l'anneau sur ciment
Hydraulic Binders
Syn. with CRACKING TEST

TEST OF FROST SUSCEPTIBILITY OF BRICKS *or* STONES
Gélivité des briques *ou* des pierres
Test of Materials (Building Materials)
A test intended to test the resistance to frost of stones or bricks.
The test proceeds in the following way. Stones or bricks are submerged for 48 h into water at a temperature from + 15°C to + 25°C. Materials are afterward subjected to a temperature ranging from -15°C to -20°C for 4 h, then submerged in sweet water for 4 h. This cycle is 25 times repeated. This test is mostly followed by a compression testing that enables to appreciate the possible fall of strength in the aftermath of the frost susceptibility.

TEST PIECE
Eprouvette pour essais mécaniques
Test of Materials
The raw or manufactured part of the sample, of determined dimensions, brought to the wanted state to undergo a precise test. Syn. with BAR TEST. **See Figures 13 to 13b**

TEST PILE
Pieu d'essai
Foundation
A pile implemented on the location and under the conditions for implementation of the final piles; it is intended for confirming the conclusions of the geotechnical study of the site, in particular as regards the dimensions to be given to the final piles, their bearing capacity, and possibly the choice of the driving equipment or the most suitable pile driving.

TEST PRESSURE
Pression d'essai
Welding
A tightness test of a weld bead carried out with ammonia under pressure used as tracer, allowing detecting possible tightness defects.

TEST SAMPLE
Echantillon d'essai
Building Materials
The quantity of aggregates obtained from the global sample and intended to trials.

TEST SPECIMEN
Eprouvette
Test of Materials
A sample allowing the study of a specific property of a material, the check on its quality and manufacture.

TEST WITH BALL
Biller
Metallography
To proceed to a ball impact test

TESTER
Auscultateur; Ausculteur
Equipment for Measure and Control: Civil Engineering Structure
1. A ultrasonic sounds instrument comprising a cathodic oscilloscope and that enables the detection of local defects in the mechanical parts, without degradation of the pans and without taking away of test specimens.
2. A person in charge of a sounding.

TESTING
Auscultation
Test of Materials (Civil Engineering Structure)
Syn. with AUSCULTATION; SOUNDING

TESTING MOLD
Moule
Assaying Equipment
Syn. with MOLD; CARDBOARD MOLD

TESTING RING
Anneau
Equipment for Measure and Control
Syn. with CONTROL RING

TETRAPOD
Tétrapode
Construction
A concrete block of special form comprising four protruding parts of slightly truncated shape, directed like the four heights of a regular tetrahedron from the center toward the tops. The tetrapods are used to build dikes and protective jetties, cofferdams, small dam. Their particular shape enables to tangle them up one in another to make up a structure not much sensitive from the action of waves.

TEXOL ™
Texol
Civil Engineering
A ground consolidation process which consists of an association ground and continuous threads of textile by mechanical application on the ground of some number of continuous threads which, at the time of the impact on the ground to be processed, mix closely with it.

TEXTILE FIBER
Fibre textile
Building Materials
An element characterized by its flexibility, fineness, great length in comparison with its diameter, that renders it capable of textiles applications. It can concern filaments or discontinuous fibers.
Textile fibers are, according to their mode of production, classified as:
- **natural** *(les fibres textiles naturelles),* which are been vegetable origin as cotton or the jute, animal origin as silk or the wool or mineral origin as the asbestos;
- **chemical** *(les fibres textiles chimiques).* This generic term designates the whole of textile matters created by modern industry. Chemical fibers textiles are divided into three groups: artificial, synthetic, and mineral textiles;
  - *artificial* or *synthetic* (*les fibres textiles artificielles*) can be cellulose-based product as rayons or to basis of protein matter;
  - *synthetic* (*les fibres textiles synthétiques*) have produced by spinning of macromolecules achieved by polymerization or polycondensation of monomers. One can quote :
    - polyamides (PA) whose the most known are rilsan and nylon,
    - polyesters (PES) as the Tergal, the Dacron, etc.,
    - polyethylene (PE),
    - polypropylene (PP),
    - polyvinyl chloride (PVC);
  - mineral fibers that are the textile glasses.

TEXTILE MATERIAL
Matière textile
Materials
A superordinate including fibrous or filamentous, natural or chemical matters, intended for manufacturing textile articles such as threads, fabrics, fillets, ropes, felt, and so on.

TEXTURAL POROSITY
Porosité texturale
Geotechnics
The porosity that represents the most important fraction and the finest of the total porosity. Its role is essential in the field of water reserve in grounds, and of the circulation of water by mechanisms of suction, of temperature and ventilation of the ground; one measures it on earthy agglomerates of a sufficiently small size not to comprise structural porosity or on a sample to which one has artificially provided a continuous and homogeneous structure. One can

consider that it is an intrinsic characteristic of a material to a given dampness.

TEXTURE
Grain
Nomenclature of Materials
On any breakage, general aspect of the elements of the structure of a stone (size, form, and arrangement of its elements).

TEXTURE
Texture
Mineralogy; Petrography; Metallurgy
1. The spatial arrangement of the minerals of a rock or a soil that designates the shape, dimension, and arrangement of a number of naturally grouped minerals in a population within the rock.
The texture is defined from the following characteristics:
- degree of crystallinity,
- form and dimension of the constituents,
- homogeneity of the size of the constituents,
- homogeneity of material (directed or not),
- presence or absence of bond between neighbouring minerals,
- presence and orientation of the empties and cracks (the continuity of material).

We can distinguish various types of texture: homogeneous texture (not segregation, etc.), directed texture and frothy texture or in microaggregates.
2. The arrangement of the consituents of a rock on a macroscopic scale (vacuolar texture, etc.). Structure and texture of a rock should not be confused.
3. The characteristic related to the dimension, shape, and disposition of grains inside a metal. A preferential orientation of crystals due to the rolling, wiredrawing, forging, usually results in considerable anisotropy that disappears by thermal processing with changing of phase (normalization). We must not confuse texture and structure; the latter, used by steelmakers having the meaning of microstructure, indeed involves:
- modifications in the nature of the constituents;
- changes of dimension, form, distribution of these constituents, etc.

TEXTURE TEST
Essai de texture
Metallography
A test which consists in examining a breakage performed at the end of a chosen bar, to make sure that there is neither solution of continuity, nor inclusion of foreign matters. The bar, notched by any process throughout its circumference so as to obtain, in the central area, a section of breaking equal to approximately half of the primitive section, is suddenly broken cantilevered, either with hammer or press.

T-GIRDER
Poutre en T
Construction
An element of reinforced or prestressed concrete in T-shape with or without heel. Syn. with T-BEAM

THEODOLITE
Théodolite
Equipment for Measure and Control
A measuring instrument of the horizontal and vertical angles.

THEORETICAL LEVEL OF CUTTING OFF
Niveau théorique de recépage
Foundation
The altimetric trimming level of a pile that is fixed by written contracts.

THERAPEUTICS
Thérapeuthique
Civil Engineering Structure
The science of the knowledge of the possible remedies and the treatment of the degradations of a work.

THERMAL ANALYSIS
Analyse thermique
Test of Materials (Construction of P.C. and P.C.)
Concerning the mineralogical analysis of hardened concretes, method that consists in studying the change of temperature of a sample subjected to a regular heating. This examination allows to control *a posteriori* the quality of any concrete and its evolution over time.

THERMAL BORING WITH OXYGEN LANCE
Forage thermique à la lance; Forage à la lance thermique ou à la lance bourrée
Work
A drilling or cutting process that is realized by application against the material (mineral or metallic) to be bored, of the end, brought to red-hot, of a hollow alloy bar essentially iron-based, inside which is sent a jet of oxygen.
The exothermic reaction of combustion of the bar in the oxygen produces oxides that are liquid at the reached high temperature, comprised between 2500 and 3000°C. The chemical reaction, at high temperature, between these oxides and materials to be drilled, gives a molten slag at the temperature of reaction. This slag flows outside the material to be drilled and it thus forms a cavity on the contact surface between the material and the bar. The depth of this cavity increases as the bar consumes and progresses. The drilling is thus obtained without mechanical action by effect of chemical reaction at a high temperature, hence its thermal drilling designation. **See Figure 14**

THERMAL BORING WITH POWDER LANCE
Forage thermique à la lance à poudre
Work
A process allowing drilling and cutting up materials such that the concrete and whose principle is as follows. Inside a trade steel tube, oxygen and powder of iron are concurrently injected whose combustion increases the release of heat and thus facilitates the fluidification of the material to be bored. A special lance holder comprising an arrival of oxygen and powder ensures the mixing oxygen with powder. The powder is stocked in a distributor and is is powered by a stream of nitrogen to low pressure.

THERMAL CHECKING OF WELDING
Contrôle thermique des soudures
Welding
A process that consists in applying two different temperatures at each side of a weld, namely to make pass a heat flow through the weld bead and to analyze at its proximity the field of permanent superficial temperatures. If there is no defect, there is no deformation of flow lines and the isotherm, otherwise there is the variation of the conductivity at the level of the welded zone and therefore the deformation of flow lines and isotherms.

THERMAL CUTTING
Coupage thermique
Metal Construction
A cutting up process of metal pieces by combustion or localized fusion using a flame, a jet of plasma, an electric arc, a blowtorch, etc.

THERMAL DETECTOR
Détecteur thermique
Equipment for Measure and Control
Syn. with THERMAL SENSING PROBE

THERMAL FATIGUE
Fatigue thermique
Welding
A damage by fatigue resulting in stresses induced by successive thermal cycles.

THERMAL FLAKINESS
Friabilité thermique (Ft)
Civil Engineering
The percentage of elements passing through the sieve of a fraction *d/D* beforehand rise at a temperature of 500°C for 1 h with the purpose to determine the strength of aggregates going into the proportions of asphalt. These aggregates must resist at high temperatures to which they are subjected during the manufacture (passage to the drying apparatus).

THERMAL IMAGING
Thermographie
Test of Materials
Syn. with THERMAL MAPPING; THERMOGRAPHY

THERMAL INSULATION
Calorifugeage
Materials
Syn. with HEAT INSULATION

THERMAL MAPPING
Thermographie
Test of Materials
Syn. with THERMAL IMAGING; THERMOGRAPHY

THERMAL SAWING *or* SAWING BY FUSION
Sciage thermique *ou* Sciage par fusion
Work
A cutting up process of metallic and mineral materials in which the highest speed movement of the sawing ribbon movement, causes the fusion of the material.

THERMAL SENSING PROBE
Détecteur thermique
Equipment for Measure and Control
An instrument using the heat and that is intended to the nondestructive tests in civil engineering. We can distinguish the thermopile, the bolometer, and pyroelectrical detectors. Syn. with THERMAL DETECTOR

THERMAL SENSOR
Thermosonde
Equipment for Measure and Control
A sensor drowned in the concrete of some works and that allows to follow thermal variations of the concrete over time.

THERMAL SHOCK
Choc thermique
Building Materials
The large gap of temperature voluntarily caused (example: quenching of a steel tool) or involuntarily by sudden changes of climatic conditions (sudden frost on concrete freshly poured, or also watering of a rendering applied by hot weather with the water at a temperature lower than the rendering).

THERMAL STABILITY TEST OF BITUMENS
Essai de stabilité thermique des bitumes
Test of Materials (Materials)
A test for determining the loss of mass of a bitumen to a certain temperature. Test schedule: about than 10 g of bitumen in pieces are put into a crystallizer and are weighed except for the centigram. Five bitumen samples are thus prepared and referred. These samples are left 4 h in a steamer rise at 290°C. After cooling, the loss in weight of each sample is determined by weighing. The result is given by medium of the ratios loss in weight/initial weight, expressed as a percentage.

THERMAL WEIGHT ANALYSIS
Analyse thermique pondérale simplifiée
Test of Materials (Construction of P.C. and P.C.)
A minerals analysis method applied to hardened concretes which allows to determine the various forms (anhydrous or hydrated) of the free lime in a cement and the global mineralogical analysis of industrial limes.

THERMOBALANCE
Thermobalance
Assaying Equipment
An equipment used for dry corrosion tests which allows to measure, using a calibration, the oxide mass formed according to the time, for given conditions of gaseous atmosphere, temperature and pressure. Several types of thermobalances are used: Gulbransen, Cahn, Chevenard, etc.

THERMOCONDENSABLE
Thermocondensable
Polymers
Of a resin which condenses to the heat.

THERMOELASTICITY
Thermoélasticité
Strength of Materials
The science that studies the distribution of the stresses of thermal origin being able to appear in a solid when it prevails there a nonuniform field of temperature or when its expansion is hampered by outside connections.

THERMOGRAPHY
Thermograhie
Test of Materials
All the processes giving an image characterizing the emissivity of the bodies in the infrared. Thermography has multiple applications such as the non-destructive testing of masonry, identification under a rendering of the various types of masonry, tires materials, in welding, moisture content of the grounds, and so on. The principle of this technique is based on the measure by infrared radiation of the temperature of materials, which varies according to the nature

of these ones. Syn. with THERMAL IMAGING; THERMAL MAPPING

THERMOGRAVIMETRY
Thermogravimétrie
Test of Materials
A technique of physicochemical analysis that allows to evaluate the saving or loss of mass of a substance heated or cooled in a continuous way, according to the temperature or time. This technique is used to analyse cements and concretes and enables to study the speed of oxidation of a metal or an alloy using a thermobalance.

THERMOHYGROGRAPH
Thermohygrographe
Equipment for Measure and Control
An instrument for measuring and recording the temperature and relative humidity of air.

THERMOLYSIS GAS ANALYSIS
Analyse des gaz issus de thermolyse
Test of Materials (Construction of P.C. and P.C.)
A thermal study method of hardened concretes carried out by chromatography or gravimetry after selective absorption.

THERMOMETRY
Thermometrie
Test of Materials
The science of the temperature measurement used in particular to check the temperature of concrete before and after its placing.

THERMOMINERAL WATER
Eau thermominérale
Geohydrology
A water of which temperature is more than 5°C higher than the average temperature of the zone of emergence.

THERMOPILE
Thermopile
Test of Materials
A thermal detector equipment used in civil engineering which is made up from 10 to 100 thermocouples (example: bismuth-antimony) connected in serie, forming a sensitive surface from 1 to 8 mm^2 following the case. The carrying out is often made by evaporation.

THERMOPLAST OF PLASTOMER TYPE
Thermoplaste du type plastomère
Polymers
The name by which should be designated the thermoplastic materials.

THERMOPLASTIC
Thermoplastique
Polymers
Of a polymer which softens through heat and whose properties are reversible.

THERMOSETTING
Monoplaste; Thermodurcissable
Polymers
1. A monoplast of the rigid dimer type.
2. Of a polymer which is irreversibly stiffened under the influence of the heat.

THERMOSETTING RESIN MORTAR
Mortier de résine thermodurcissable
Building Materials
A product in which the binder is a resin (epoxy, polyurethane, etc.).

THICK BOARD
Madrier
Building Materials
Syn. with BALK; BEAM; DEAL; PLANK; (PART OF) TIMBER

THICK JOINT
Joint gras
Masonry
A big space located at the junction of two stones forming edge.

THICK PLASTIC COVERING FOR CONCRETE
Revêtement plastique épais pour béton
Construction
A product mainly formed by a mixture of synthetic binders with aggregates and inert mineral batches, with or without pigments. Its enough pasty consistency distinguishes it from paints in thin film actually that it consists of coarse batches of variable grain size. It is therefore more covering and thicker than paints, and masks the surface defects such as hairline cracking and blistering for example. Its flexibility is all the more limited that the

percentage of batch is low. Its vocation is basically decorative and possibly protective.

THICKNESS EXCESS
Affranchi
Building Materials
An extra thickness of a squared block or a cut piece with regard to the dimensions to be obtained. It is intended for allowing a possible recuts without falling below of these dimensions.

THICKNESS MARK
Hoche
Masonry
Syn. with MARK; REFERENCE MARK

THICKNESS OF A DECK
Epaisseur d'un tablier
Construction
A constant or variable vertical height, between the level of the line of communication on the bridge and the underside of the deck.
The top level to be considered is:
- for railway bridges, the top of the bottom rail;
- for roadway bridges, the top of the pavement in the longitudinal axis of the road.

THICKNESS OF COURSE
Hauteur d'assise
Masonry
Syn. with DEPTH OF COURSE

THICKNESS REDUCING
Réduction d'épaisseur
Defects (Metal Construction)
The thinning down of a metal part due to the corrosion, the metal being partially transformed into oxide. The reduction of thickness can be local or extensive.

THIN DOWN
Amaigrir; Démaigrir
Building Materials
1. To reduce in width or in thickness a material or a piece, in order to be able it laying out at the envisaged location. Syn. with REDUCE
2. Syn. with PARE

THIN JOINT
Joint maigre
Masonry
A joint located at the angle of an edge and that is more closed than a right angle. Syn. with V-JOINT

THIN MORTAR
Rusticage
Masonry
A very clear mortar sprayed on a wall with a broom to roughcast it or to bush-hammer it.

THIN SHEET
Tôle mince; Feuillet
Metallurgy; Building Materials
1. A product whose thickness is lower than 3 mm.
2. Syn. with PLATE

THINNER
Diluant
Painting
A volatile liquid usable in normal drying conditions, restrictively or totally miscible in the medium of suspensions, added to the paints at the moment of the use for obtaining characteristics of application required without bringing about perturbations. Syn. with DILUENT

THINNESS
Maigreur
Defects
The lack of thickness of a rendering or a paint leading their inability to play the role (protective, decorative, etc.) which is reserved for them in a satisfactory way.

THINNING AGENT
Diluant
Materials
A product having the property to be able diluting another product.

THINNING DOWN
Amaigrissement; Amenuisement
Civil Engineering; Building Materials
1. The reduction of thickness of a roadway or a ballast bed on a railway bridge, a viaduct, etc.
2. Reduction of thickness.

THIXOTROPIC
Thixotrope; Thixotropique
Geology; Materials
1. Qualify any sediment liquefying during an agitation and finding its initial state at rest.
2. Qualify a gel which has the property to liquefy to the agitation then to take its initial state when the agitation stops.
3. Of a matter which has abilities for thixotropy.

THIXOTROPIC AGENT
Agent anticoulure
Painting
A product mixed in a paint with the intention to facilitate its implementation and more especially to head off the formation of runnings, in particular on vertical parts.

THIXOTROPIC CEMENT GROUT
Coulis de ciment thixotropique
Materials
A mixture used to inject into soils, obtained by subjection to high turbulence inside special mixers. This produces an ionization of molecules in the colloidal solution that gives the grout a high degree of liquidity while still enabling a percentage of water weaker (on the order of 50%) than that used in ordinary grouts. After the grout rests for a characteristic period, it acquires a degree of rigidity due to which it preserves its cohesion even in the presence of underground water flowing.

THIXOTROPIC MUDS
Boues thixotropiques
Geology
Homogeneous and viscous sediments that cover the bottom of lakes, ponds, canals, and rivers. When they are liying, these muds and sludges have a solid behavior; but as soon as they are shaken, they become very fluid and conversely.
These sediments belong to the set of powders, particles of diameter contained between 1 and 20 micrometers.

THIXOTROPIC SETTING
Prise thixotropique
Building Materials
The firming and hardening of a bituminous binder, to the exclusion of any evaporation of solvent, of any falling in temperature or of any chemical phenomenon such as oxidation, condensation, and polymerization.

THIXOTROPY
Thixotropie
Geology; Materials
1. The property of some sediments to be able becoming suddenly liquid in consequence of a mechanical action having the effect of putting their particles in suspension into the water; this is the case of some clays.
2. A phenomenon taking place in a fluid at the level of intermolecular bonding forces and resulting in fact that, in the laminar displacement of two layers of fluid infinitely thin and infinitely neighbors, the tangential forces of the contact decrease when the speed of gradient increases. One is then in the presence of a nonnewtonian fluid. To put in clearly, phenomenon by which some mixtures pass from the state of gel into that of liquid by slight agitation. The liquid state being reached, it is enough to leave the rest mass so that it turns again into gel. The aqueous colloidal solutions of hydroxide of iron, alumina, kaolin, etc., have this property to increase considerably their rigidity by the rest.

THOROUGH MINERALOGICAL ANALYSIS
Analyse minéralogique complète
Test of Materials
Syn. with QUANTITATIVE MINERALOGICAL ANALYSIS.
This expression is used as opposite to *lightened analysis.*

THREAD PROTECTOR
Protecteur de filetage
Equipment and Tools
A removable top screwed on the male thread or inside the female thread of a drill rod or a tubing to protect it from the damage during handling.

THREAD UNION
Manchon
Construction
Syn. with SLEEVE; SLEEVE NUT; SOCKET

THREADED ROD
Tige filetée
Nomenclature of Materials
A bar comprising a threading throughout its length.

THREADING
Manchonnage
Works
Syn. with SLEEVING

THREADLIKE CORROSION
Corrosion filiforme
Defects (Painting)
A paintwork defect on the metal works characterized by the appearance in the film of a kind of a small bypassed tunnel. This defect of the electrochemical corrosion type is due to an anodic attack.

THREE-CENTERED CURVE
Anse de panier
Construction and Metal Construction
Syn. with. BASKET HANDLE

THREE-COMPONENT CONCRETE
Béton ternaire
Building Materials
A material whose skeleton is formed by three aggregate fractions.

THREE-CONE ROTARY BIT
Tricône
Equipment and Tools
A trepan formed by three toothed wheels of conical shape.

THREE-DIMENSIONAL REINFORCEMENT OF GROUNDS
Renforcement tridimensionnel des sols
Foundation
The consolidation of a ground by inclusions directed in all directions, with fibers, tablets, or continuous synthetic threads (geotextile).

THREE-EDGED FILE
Tiers-point
Equipment and Tools
A triangular file.

THROAT
Gorge
Construction
A deep groove machined in a piece mostly rounded at its lower part. Syn. with GROOVE

THROATING
Mouchette; Goutte d'eau; Larmier
Construction
The outstanding part of a dripstone of cornice that prevents the water to drain away below. Syn. with DRIP; DROP OF WATER; THROAT

THROUGH STONE
Pierre parpaigne; Parpaing
Masonry
A stone that makes all the thickness of a wall. (The bonder has the form of a parallelepiped rectangle cutting up directly in the mass). Syn. with BONDSTONE; BONDER; PERPEND

THROW
Jet; Jet de pelle
Earthwork
1. An operation that consists for a navvy digging at the level of the excavation bottom, in discharging with the shovel on the level of the natural grade or on a fitted floor plate, extracted grounds to the progress. Among the various types of throws are:
- **bank** *(le jet sur berge),* which consists in throwing the ground on the longitudinal edge of the excavation forming a windrow to the progress;
- **horizontal** *(le jet horizontal),* which consists in throwing the ground on the edges of the excavation by spreading out it;
- **boarding** *(le jet sur banquette),* which consists in discharging the ground on an upper floor plate.

2. An operation that consists in removing, with a shovel, loose ground or previously dug coming from an excavation or a stripping; the horizontal and vertical throw on bank are the two methods in use.

THROW OF A CRACK
Rejet d'une fissure
Defects
The component of the movement, tangent to the surface of the facing and parallel to the crack. **See Figure 15**

THROWING
Projection
Defects (Welding)
A splash of molten metal thrown during a welding operation and that adheres on the parent metal or the molten metal already solidified.

THRUST
Poussée
Civil Engineering Structure
Syn. with PRESSURE

THRUST BLOCK
Bloc anti-poussée; Massif; Massif de butée; Massif d'ancrage
Construction
1. A masonry or concrete block erected against an elbow in a large distribution piping system of pressurized water to stop the thrust exerted by the water on this point.
2. A massive construction of masonry (or concrete) built in foundation or outgrade to support a construction, to be of use as stop, cramping, etc. Syn. with ANCHORAGE BLOCK
3. A massive construction of concrete whose aim is to withstand to thrust strains or tensile strains and which is in particular used to anchor the end of cables of suspension bridges. **See Figure 16**

THRUST PIT
Puits de service pour fonçage horizontal
Earthwork
Syn. with JACKING PIT; LAUNCH PIT

THRUST WALL
Mur d'appui
Earthwork
The vertical wall of a launch pit onto which come lean the jacks that push the tubes or pipes into the ground during an operation of horizontal driving by pushing.

THUMB
Extrémité inférieure; Pouce
Geomorphology
Syn. with BOTTOM END

TIE
Bride; Ancrer; Lier; Lien
Metal Construction; Civil Engineering Structure; Work; Carpentry
1. Concerning railway bridges with metal deck, flat iron (80 x 20 cm) which two ends are bored by a hole through into which the threaded rod of the hook bolt is gone through. A nut is later screwed on the rod. This bar is intended for keeping up the longitudinal sleeper supporting the rail in its small trough.
2. Syn. with ANCHOR; BRACE; STAY
3. Syn. with BIND; BOND
4. Syn. with BRACE

TIE
Epingle; Etrier; Ancre
Building Materials
1. Each steel bar sealed in a drilling intended for carrying out a needling.
2. Syn. with BINDER BAR; BINDING; LINK; SECONDARY REINFORCEMENT; STIRRUP
3. Syn. with ANCHOR; CRAMP IRON; S-ANCHOR; T-ANCHOR, etc.

TIE
Ligaturer; Ligature; Epingle
Construction of R.C. and P.C.
1. To make interdependent between them the reinforcements of a bar setting with ties. Syn. with BIND
2. Syn. with BINDING WIRE; TYING WIRE ; WIRE TIE
3. Syn. with STIRRUP

TIE (WALL, ETC.)
Chaîner
Construction
To carry out the wall bracing of a construction.

TIE BAR
Fenton; Côte de vache; Carillon; Acier de couture
Construction; Construction of R.C. and P.C.
1. A steel bar, generally square that rests on the bottom flange of the universal beams of former decks built with cased composite beams and that been of use as reinforcement to the concrete between girders. **See Figure 17**
2. A reinforcement intended either for bonding two parts of concrete separated by a crack in order to restore some cohesion to the unit, or for heading off this risk in a sensitive zone. Syn. with CONTINUITY REINFORCEMENT

TIE BEAM
Longrine; Entrait
Metal Construction; Temporary Construction; Carpentry
1. In some steel structures, running lengthways secondary beam used on the occasion of strengthening and that is laid out under the distance pieces or transverse girders. This piece

was sometimes improperly called *the subtie beam.*
2. An oblique or horizontal piece, sandwiched or not between double members, a truss of framing, on which come to joint the principal rafter and the king post. **See figures 17a to 17c.**
Syn. with MAIN TIE

TIE BEAM
Tirant; Poutre de rigidité; Chaînage
Construction
1. A reinforced concrete beam stressed in simple tension. There is generally of a rectilinear prismatic piece in which, for each straight section, the center of gravity of the surface occupied by concrete tallies with that of the surface occupied by the steel and the point of passage of the outside force. The tie beam is an element of structure normally used in the constructions (suspenders of arch bridges with a suspension deck, etc.).
2. Syn. with STIFFENING GIRDER; STRAP BEAM
3. Syn. with WALL TIE

TIE BEAM OF END ANCHORAGE (for the strengthening of the bridges of P.C. by additional prestressing)
Longrine d'ancrage d'extrémité (pour le renforcement des ponts en B.P. par précontrainte additionnelle)
A part made of P.C. or R.C. that receives anchorages of the longitudinal reinforcing cables and that ensures the diffusion of the strains that it transfers on the webs and/or concrete slabs. This part often consists of a vertical thick slab leaning on the end of the deck. **See Figures 18 and 18a**

TIE BOLT
Tirant; Boulon d'ancrage
Masonry; Equipment
1. Concerning repairing of masonry, metal bar used for reinforcing vaults (separation of string courses, deflection of tympanums, etc.). The implementation of a tie bolt consists in boring right through the masonry of the vault parallel to a generatrix of the stringcourse to opposite stringcourse and placing into the obtained drilling a steel rod provided at its two ends by steel plates and nuts. The tie bolt is tensioning by tightening of the nuts. Annular space is afterward injected with grout (cement or resin). **See Figure 19**
2. Syn. with ANCHOR BOLT; ANCHOR ROD

TIE PLATE
Plaque de liaison
Metal Construction
In the riveted trussed metal beams, metal piece which unites two combined bars or two diagonals.

TIE ROD
Tirant; Tirant d'ancrage
Building Materials
1. A lengthened element, other that a suspender, a guy or a suspension bridge cable, permanently subjected to a tension strain. Example: tensional member of a bowstring or an anchoring rod. Syn. with TENSIONAL MEMBER; TIE BEAM. **See Figure 20**
2. Syn. with ANCHOR ROD; LAND TIE; TENSION BAR

TIERING
Croisure
Temporay Constructions
Syn. with HOOPING; LAPPING

(Water) TIGHT
Etanche
Tightness
Syn. with IMPERVIOUS

TIGHT FILM
Film *ou* Feuil tendu
Painting
Very smooth and uniform paint film after drying.

TIGHTEN
Serrer
Work
To overtighten a nut, a bolt or also to keep up two elements in a certain position with a cramp or a joiner's clamp.

TIGHTENING OF BLOCKING
Tension de blocage
Strength of Materials
The tightening up again or stress relieving of a cable, a tie, a rod, etc., after the tensioning test so as to block it in this position.

TIGHTER
Etancheur
Tightness
A worker in charge of the implementation of a tightness.

TIGHTNESS
Etanchéité
Tightness
A strengthened waterproofing likely, on the one hand, to resist the inclemencies for a long time and, on the other hand, not to break despite the possible crackings of the tightness support. Its primary role is to avoid to the zenithal water or to the water circulating inside the ground:
- to soak, concerning the masonry works (bridges, tunnels, retaining walls, abutments, etc.) into the existing joints between subunits (stones, bricks, concrete blocks) and making this, on the one hand, to fade the mortar constituting these pointings, and, on the other hand, to attack the subunits themselves;
- to soak, concerning the reinforced concrete or prestressed concrete works, into the concrete (fissures, porous concrete, etc.), to arrive at the touch of reinforcements and to bring about the oxidation and possibly the rust expansion of these last and as a last resort the bursting of the concrete (consecutive on the one hand to the rust expansion of reinforcements or to the frost on the other hand);
- to soak into the concrete of composite works by causing there what is indicated above, but also to create in the metal frame located at the touch or below the reinforced concrete, prejudicial oxidation zones with the good performance of the work.

Syn. with DAMPPROOFING; STAUNCHNESS; WATERPROOFING

TIGHTNESS BLANKET
Tapis d'étanchéité
Construction
A revetment of puddley clay, carried out upstream from a barrage over a some width from its base so as to prevent seepages in this zone and to decrease risks of uplift by increasing the length of percolation.

TIGHTNESS BY COPING IN ASPHALT
Etanchéité par chape en asphalte
Tightness
See ASPHALT (WATERTIGHT) COPING.

TIGHTNESS BY COPING TO CEMENT MORTAR
Etanchéité par chape au mortier de ciment
Tightness
A screed carried out independently of the concreting but in the same conditions as the monolithic toppings.

TIGHTNESS BY FLEXIBLE SINGLE-LAYER REINFORCED COPING
Etanchéité par chape monocouche souple armée
Tightness
See FLEXIBLE (WATERTIGHT) COPING.

TIGHTNESS BY RESIN-BASED THIN COPING
Etanchéité par chape mince à base de résine
Tightness
See RESIN (WATERTIGHT) COPING.

TIGHTNESS DEAD END
Opercule
Metal Construction
In metal works, transverse plate closing the end of a tube or a stiffener and ensuring waterproofing. Do not confusing with a diaphragm, although, in some circumstances, the same part carries out the two functions. Syn. with TIGHTNESS TRANSVERSE DEADPLATE

TIGHTNESS DEFECT IN THE CABLE BOTTOM
Défaut d'étanchéité du culot
Tightness
A defect affecting the anchorages of cable bridges, characterized by the possibility of water intake into the cable bottom by the orifice of passage of the cable. This defect results from a bad filling by the fuse alloy and is worsened by:
- an adhesion defect of the putty;
- a cracking in the putty; or,
- the absence of putty.

This defect generative of corrosion inside or at the opening of the cable bottom can go up to the breaking of the cable at the anchorage.

TIGHTNESS DEVICE
Dispositif d'étanchéité
Tightness
A structural arrangement putting a work (deck, vault, etc.) under cover of water seepages. Syn. with SEAL

TIGHTNESS STRUCTURE
Structure d'étanchéité
Tightness
A waterproofing system formed by a geomembrane or two geomembranes separated by a draining device.

TIGHTNESS SYSTEM BYGEOMEMBRANE
Dispositif d'étanchéité par géomembrane
Tightness
All the components constituted by:
- a support structure if necessary,
- tightness structures,
- a structure of protection if necessary.

TIGHTNESS TRANSVERSE DEADPLATE
Opercule
Metal Construction
Syn. with TIGHTNESS DEAD END

TILE
Carreau; Dalle croûte
Building Materials: Nomenclature ofMaterials
1. Syn. with FLAG.
2. The first slice resulting from the sawing of a block of stone.

TILE *or* BLOCK AND HEADING BOND
Appareil en carreaux et boutisses
Masonry
Any masonry bond fully formed by elements bonded alternately in tiles and headers.

TILE CLAY
Glaise
Geology
Syn. with CLAY; LOAM; POT CLAY

TILE CLEAVAGE
Débit en plaquettes
Defects (Building Materials)
The splitting of quarry stones, marly or chalky benches into small plates with an uneven surface more or less embossed. This damage allocates tunnels covered or not covered by a rubble walling (all other rubble walling works are also affected by this damage).

TILT
Bâche
Geomorphology
An oblique or parallel dip to the beach dividing two sandy crests (more rarely stony) on a beach.

TILTDOZER
Bouteur inclinable
Equipment and Tools
An earthmover of which blade can be tilted compared with the horizontal line.

TILTING PIER
Piédroit; Béquille
Construction
Syn. with FRAME STANCHION; DIAGONAL HINGED PIER

TIMBER
Bois d'oeuvre; Charpenter
Building Materials; Carpentry
1. A wood whose dimensions (and forms) suit for heavy constructions such as bridges, piles. These dimensions are generally greater than a minimum that varies from a country to the other.
2. A material adequate to make frames, to saw, to slice, etc.
3. Syn. with FRAME

TIMBER CENTERING
Cintre en bois
Temporary Construction
A temporary work made up of jointed pieces forming trusses with or without intermediate bearings. Usually joints are nailed for small openings, bolted in the opposite case. Main parts of a wooden centering are the:
- drum (or guide of the vault),
- actual centering,
- infrastructure (formed by supports or bearings),
- decenter devices.

See Figures 21 to 21b

TIMBER FLUME
Nochère
Sanitary Engineering and Drainage
A pipe of quadrangular or U-shaped section intended for water runoff. This conduct is formed with boards.

TIMBER FRAME
Pan de bois
Carpentry
A set of structural members jointed in the same plan.

TIMBER MAT
Gril en bois
Foundation
A distribution sole of foundation made up of pile caps uniformly distributed, resting on a sand bed. *These pile caps, that are used as breastsummer, are endowed with notches into which cross sleepers comes to get placed. Gaps between cross sleepers are filled in by a floor carried out with baulks. Masonry is afterward set up on the floor plate. (The floor is sometimes replaced by a reinforced concrete table.)* Syn. with GRILLAGE. **See Figure 22**

TIMBER MAT PIT
Rouet
Foundation
An assembly of frame being designed to built the foundations of a well. Syn. with GRATING PIT

TIMBER PLANKING
Bordage
Construction
A construction carried out with boards that forms a chest surrounding masonry on which one wants to raise a jetty.

TIMBER PRESERVING
Conservation du bois
Building Materials
Syn. with WOOD PRESERVATION

TIMBER SET
Cadrage
Temporary Construction
The propping-up of galleries, tunnels, with wooden or metal constructed works (frameworks). Syn. with BRACING

TIMBERED GALLERY
Galerie blindée
Earthwork
A work whose walls are covered with a sheeting as and digging advances.
Usually, this sheeting is replaced, in the definitive construction, by a concreted or built wall whose carrying out is done in the opposite direction of the sheeting, this one being removed by zones of small width and being replaced at once by the final wall.

TIMBERING
Blindage; Boisage
Temporary Construction
1. Syn. with SHEATHING; SHEETING
2. The setting of a wooden supporting in an excavation, a gallery, etc. (By extension, the word is also used when the supporting is carried out with metal elements.) Syn. with CASING; LINING. **See Figure 23**

TIMBERING REMOVAL
Déboisage
Temporary Construction
The removal, the withdrawal of a supporting in a gallery or a tunnel. This expression applies to wooden supportings as well as to metal supportings.

TIMBERWORK
Chaise
Carpentry
A framework of four pieces.

TIME OF ASSEMBLY
Temps d'assemblage
Adhesives
The gap of time included between the end of application of an adhesive onto surfaces to be assembled by sticking and its initial set.

TIME OF OPEN ASSEMBLY
Temps d'assemblage ouvert
Adhesives
The gap of time included between the application of adhesive and the setting in the intimate contact of the substrates with or without pressure.

TIME YIELD
Fluage
Metallurgy
Syn. with CREEP

TINNING
Etamage
Metallurgy
A process that consists, after having cleaned some metals, in covering them by a thin coat of

tin so as in subtracting them from the oxidizing action of atmospheric agents and others.
We can distinguish tinning by metal spraying with a gun, electrolytic tinning, and chemical tinning.

TINT
Teinte
Various
The shade of a color.

TINT GAUGE
Teintomètre
Equipmentfor Measure and Control
An instrument for evaluating or comparing using a reference pilot, the color of a liquid or a colored surface. The *Lovibond* tint gauge allows, with the help of a prism, to compare the coloring of a sample with that of the light emitted by a white standard after having interposed, on the journey of this light, a superposition of red, yellow, or blue filters. One has 470 filters of various thickness; by choosing them up to what the balance has reached and knowing the spectral graphs of the filters, one goes up with the trichromatic components of the color of the sample. Syn. with TINT METER

TINT METER
Teintomètre
Equipmentfor Measure and Control
Syn. with TINT GAUGE

TINTACK
Broquette
Materials
A small nail with a fiat and round head.

TINTING
Teintage; Nuançage
Work; Painting
1. Operations which consists in changing the color of a piece, a rendering, etc.
2. Syn. with SHADING

TINTING STRENGTH
Pouvoir colorant
Painting
The power of a pigment which, although mixed with others, imposes its peculiar tint.

TIP
Mouche; Picot
Equipment and Tools
1. The concave-shaped point of a drilling auger that constitutes the sharp part of the tool.
2. Syn. with PATCH

TIP TRUCK
Wagonnet
Equipment and Tools
A small truck also sometimes used on the building sites; it is made up of an auxiliary frame or metal chassis carrying a sheet metal skip which can tip up laterally for unloading. The most practical system comprises two cradles whose one is mobile in comparison with the other. One uses these tip trucks on tracks of 0.60 m.

TITANIUM DIOXIDE
Blanc de titane
Materials
Syn. with PRECIPITATED TITANIUM

TITLE BLOCK
Cartouche
Drawing
Syn. with SCROLL; TITLE PANEL

TITLE PANEL
Cartouche
Drawing
Syn. with SCROLL; TITLE BLOCK

TO AND FRO MONOCABLE
Monocâble à va-et-vient
Equipment and Tools
An areial materials-handling device formed by an endless cable, carrying carriers and that is propelled by an electric winch (or hand made).

TOADDUCT
Crapauduc
Civil Engineering Structure
A work built under a roadway or a railway track that allows to the batrachians to clear these obstacles so as to go from a watering place to another without encumbering.

TOADSKIN
Grêlure; Crocodilage; Peau de Crapaud
Defects (Metallurgy)
1. A superficial defect of the rolled metal products characterized by an aspect resembling toad skin.
2. Syn. with CROCODILING

TOBERMORITE
Tobermorite
Hydraulic Binders
A hydrated calcium silicate formed by very fine crystals formed during cement hardening from the bi- and tricalcic silicates put in the presence of water. It is the main constituent of the hardened cement paste; it is at the origin of the strength of the cement and, consequently, of that the mortars and concrete of hydraulic binders. Syn. with HYDRATED CALCIUM SILICATES

TOBOGGAN
Toboggan
Equipment and Tools
A device that enables to supply in materials from an upper level toward a lower level by simple gravity. This device is formed by a kind of corridor of rectilinear or curved profile, with a smooth bottom on which slips materials. Syn. with CHUTE

TOE
Front; Pointe
Geomorphology; Nomenclature of Materials
1. A border marking the downhill slope end of a landslide.
2. The lower part of a pile (for a pit or some piles, one speaks of *base).*

TOEBOARD
Plinthe
Temporary Construction
A board placed on edge on the floor and against the standards of a scaffolding; it is used as stop for the feet of the workers and prevents the material fall. Syn. with GUARD BOARD

TOGGLE JOINT
Genouillère
Construction
The bulged part of the bottom bearing balance that ensures the connection with the upper bearing balance of a fixed bridge support apparatus for metal work. (The toggle joint plays the role of a hinge.) Syn. with KNEE; KNUCKLEJOINT

TOLAMITE
Tolamite
Explosives
A variety of plastic dynamite.

TOLERANCE
Tolérance
Metrology
The gap accepted in addition or in less in comparison with one theoretical measurement so that the measured value is considered admissible.

TOMMY BAR
Pince
Equipment and Tools
Syn. with CROWBAR

TONE DOWN
Adoucir; Assourdir; Amortir
Painting
1. To carry out a soft and equal surface on the connection of two tints.
2. To make smooth and even a surface using a coating before covering it with a coat of paint.
3. Syn. with SOFTEN
4. To weaken the intensity of the color or the tone of a paint. Syn. with FLATTEN

TONGUE
Languette
Carpentry
A tenon that runs throughout the length of a piece and intended for sliding in a groove. Syn. with SMALL TONGUE

TOOL
Outil; Layer
Equipment and Tools; Construction of R.C. and P. C and Masonry
1. The active element of a felling machine, directly in contact with the ground to be cut down, namely picks or wheels mounted on drums, etc.
2. Syn. with COMB-HAMMER; HACK; TOOTH

TOOL HEAD
Tête d'abattage ou de forage
Equipment and Tools
The active part of a tunneling machine that carries the tools (picks or wheels), constituted either of a drum, or of a turntable:
- the bulged thinly turntable, of a diameter equal or almost than the gallery to be excavated, turns as straight as a die. On the turntable are fixed tools (wheels or picks); it is the full-face boring method. A lite of this method consists in replacing the conical drilling head by a set of excavator elements functioning in synchronism: for example, satellite tool holders driven by a planetary movement around the axle of rotation of the head;
- the rotary drum which is either furnished of picks and that equips the movable boom of boomheaders or is equipped with separated disks carrying tools.

TOOLED FACE
Parement de taille ; Parement ouvragé
Masonry; Construction of R.C. and P.C.
Syn. with WORKING FACE.

TOOLING
Bretture; Jointoiement
Masonry
1. A rusticated cut around each course of a rubble walling. Syn. with TOOTHING
2. Syn. with POINTING

TOOTH
Dent; Layer
Civil Engineering; Construction of R.C. and P.C.and Masonry
1. An element of a doweled pavement joint. **See Figure 24**
2. Syn. with COMB-HAMMER; HACK; TOOL

TOOTH (STONE)
Bretteler
Masonry
To do ridges on a stone facing (or a rendering) with a paring chisel or a chip. Syn. with NOTCH

TOOTHER
Attente; Harpe
Construction
1. The toothed end of a masonry, accommodated to allow a connection with a planned construction.
2. Syn. with TOOTHING BRICK (*or* STONE).
3. Elements in standby bonded at the end of a wall with the purpose of a future bond of connection and which are regularly spaced (example: toother for ulterior connection).

TOOTHING
Arrachement; Brettelure; Bretture
Masonry
1. Stones or bricks alternated overhanging that serves as connection between the construction in progress or completed and a future construction which would become connected to it.
For ashlars, in particular of a coin stones, toothing takes the name of *toother.* **See Figure 25**
2. The pulling free and taking down of facing stones of a masonry in order to be able to examine the body of it.
3. A hole or notch does in a former masonry in order to enable the connection with a contiguous new masonry.
4. The irregular end of a masonry due to a partial destruction.
5. All the ridges carried out on a facing with an indented tool as a rough hammer. Syn. with CHASING; NOTCHING
6. Syn. with TOOLING

TOOTHING
Harpement; Harpe d'attente; Arrachement
Construction
1. A wall bonded with quarry stones or bricks overhanging at the end (toothings) so as to facilitate the rework and the linking-up of the continuation of the wall.
2. A serrated arrangement of quarry stones or bricks between successive rolls of a vault to make them interdependent.
Syn. with INDENTING
3. Each of stones or bricks forming overhang or setback at the end of a wall, for possible prolongation of the wall. Toothings allow to bond the rework directly below of the wall. **See Figure 25c**
4. The base of the springing of a vault restrained in a wall.

TOOTHING BRICK (*or* STONE)
Harpe
Construction
Stone or brick of a quoin stone whose visible face is broader than those of the elements placed

above and beneath that one calls *quoin bondings.* Syn. with TOOTHER. **See figures 25 to 25b**

TOOTHING OF BONDING
Harpe de liaison
Construction
A vertical construction joint between two rings of a rubble walling, characterized at the intrados of a vault by the engaging in crenel of the contiguous quarry stones.

TOP
Crête; Couronner; Ecimer; Toit
Construction; Masonry and Work; Geology
1. Syn. with CREST; RIDGE
2. Syn. with COPE; CROWN
3. Syn. with POLLARD
4. The upper face of a bench.

TOP BAR
Chapeau
Construction of R.C. and P.C.
A tension reinforcement of a bar setting intended for strengthening the top part of a beam or a slab on the restraint side, at the passage of a pole or at the right of a beam in the case of a beam and slab floor deck.

TOP COURSE
Hérisson
Masonry
A course of bricks or quarry stones bonded on edge at the top of a wall to form a coping.

TOP MAN
Gabier
Work
A worker who works to the construction of cribs, cofferdams or who is in charge of the concreting into caissons, cofferdams and cast-in-situ piles.

TOP *or* ROOF OF AN UNDERGROUND WATER
Toit d'une nappe
Geohydrology
An impermeable formation delimiting the upper surface of a captive water table.

TOP SURFACE
Arase
Masonry; Foundation
Syn. with LEVELING; LEVELING COURSE

TOPOGRAPHER
Topographe
Topography
A technician in charge of topography work.

TOPOGRAPHICAL SURVEYING
Arpentage
Topography
Syn. with LAND MEASURING; LAND SURVEYING

TOPOGRAPHIC MAP
Carte
Topography
Syn. with MAP; SURVEYING MAP

TOPOGRAPHIC PLAN
Plan topographique
Topography
A precise and detailed figuration in plan of a some plot of land. Syn. with SURVEYING MAP

TOPOGRAPHIC POLYGON
Polygone topographique; Canevas
Topography
Syn. with SKELETON TRIANGULAT1ON

TOPOGRAPHY
Topographie
Topography
The technique whose purpose is to picture on a plan the configuration of a plot of land of a small extent, with details and undulations which are on its surface. It requires two distinct operations:
- planimetry (or plane surveying),
- altimetry (or leveling) that enables to picture the relief or movements of the soil.

TOPOMETRY
Topométrie
Topography
All operations carried out, mainly in the field, for the metric determination of the elements of a map. Operations of topometry comprise:
- in the field, measurements of distance, horizontal and vertical angles;
- to the office, calculations of the coordinates and altitudes of the points which will be used as a skeleton map to the topographic or photogrammetric surveys.

TOPPING
Couche de roulement; Chape; Ehoupage
Construction; Building Materials
1. Syn. with CARPET; SURFACING; SURFACING COURSE
2. Syn. with CEMENT SCREED; COVERING; FLOOR SCREED; SCREED
3. The pollarding of a tree before its felling, so as to reduce damage that it could have caused by its fall. Syn. with POLLARDING

TOPPING APPLICATOR
Chapiste
Construction
Syn. with FLOOR COVERER; FLOOR LAYER

TOPSOIL
Terre végétale
Geology
Sweet ground that is a mixture of sand, clay, and humus. Syn. with MOLD

TORCH
Torche; Torchon
Building Materials
Means of protection of the edges of stones during their handling, which can consist of braids of straw or polystyrene.

TORQUE RELATED TO A SECTION
Torseur relatif à une section
Strength of Materials
A torque constituted by elements of reduction, in the center of inertia of the section, of the forces system and the torque system applied to the beam on the same side of this section. (The strength of materials enables to determine from this torque the distribution of the stresses in the section.)

TORQUE WRENCH
Clef dynamométrique
Equipment and Tools
Syn. with DYNAMOMETRIC(AL) WRENCH

***TORSHEAR* BOLT**
Boulon *Torshear*
Materials
A special high-tensile bolt, having an extra thread length separated from the thread of tightening by a throat calculated to break under the excess of the couple of twist when the tightening is suitable.

TORSION
Torsion
Strength of Materials
A phenomenon to which a body is subjected when two close sections slip one on the other turning in their plan and that the fibers become deformed into helix shape. There is torsion when the piece is prompted by a torque acting in a plan perpendicular to its axis. We can distinguish the:

- **left twist (or complex)** *(la torsion gauche (ou complexe)):* state of pure twist of a bar such as in the process of deformation the straight sections, originally plane, are warped (buckling) turning around the axis of twist, without there being deformation of the line of a perpendicular plan to this axis (distortion). A case in point is the noncircular beams of sections and open profiles;
- **impeded left twist** *(la torsion gauche entravée):* left state of twist of a bar in which regular warping of the sections along the beam is disturbed by an obstacle due to the restraints or a bending or twist continuity, and arguably a thicker sheet metal welded in end of bar, from hence its name of "impeded or hampered torsion". It is the case, for example, of a short beam whose ends are kept from twisting by fixed sheets comprising the lights of the same profile as that of the beam, and the central part is prompted by a moment of a direct twist. The obstacle with warping, or buckling, brings about normal stresses, what modifies considerably the strength of the bar to the twist. The bar therefore undergoes tangential and normal stresses, the tangential ones being notably decreased compared to what they would be in free or uniform left twist;
- **free or uniform left torsion (or of St-Venant)** *(la torsion gauche libre ou uniforme (ou de Saint-Venant));* left state of torsion of a bar in which warping, or buckling, sections is carried out freely and under conditions such as phenomenon does not come disturbing the regularity of the buckling all the bar;
- **direct twist** *(la torsion pure):* state of torsion obtained from pure torque of torsion centered on the axis of twist (locus of the centers of twist of the sections);
- **plane twist (or simple)** *(la torsion plane (ou simple)):* the state of the direct twist such as

during deformation the straight sections remain plane and parallel between them. The bar undergoes only tangential stresses whatever the mode of fixing of its ends. It is a twist also said *uniform.*
Syn. with TWISTING. **See figures 26 to 26b**

TORUS
Bosel; Tore
Construction
The rounded part used as base of columns.

TOTAL HARDNESS
Degré hydrotimétrique (T.H.)
Hydrology
Syn. with DEGREE OF CALCIFICATION

TOTAL LAND REQUIREMENT
Emprise
Law
A plot of land area belonging of the public estate and on which will be (or have been) constructed a road, a railway track, a waterway and their dependences. Syn. with RIGHT OF WAY

TOTAL MONOLITHISM
Monolithisme global
Welding
The characteristic of a welded construction influencing the weldability. The total monolithism is all the more higher as the elastic deformations, and *a fortiori* plastic, overall are weak, as in flexion as in twisting.

TOUGHNESS PIPES CATEGORY
Classe de résistance d'un tuyau *ou* Série
Building Materials
The crushing strength of a pipe brought to the inside diametral surface (example, for 135 A, the strength is 135 kN/m^2).

TOURNADOZER
Bouteur à pneus
Equipment and Tools
An earthmover on rubber-tired wheels instead of caterpillar tracks. Syn. with WHEELED DOZER; TURNADOZER

TOURNIQUET
Garrot
Equipment and Tools
A wooden or metal piece introduced into the knot of a rope to carry out a "strong" tightening.

TOW ROPE MEASUREMENT
Mesure à la cordelle
Equipment for Measure and Control
A bathymetric localization process, associated usually with the bathymetry measurement with sensor plumb.
A small launch stiffens perpendicularly to the bank a graduated rope, the tow rope. A light boat moves along the tow rope and perform at the right of each graduation a measurement of depth. The process is theoretically precise, but imposes nautical constraints: it is difficult indeed to practise it by strong stream. One uses it in zones where, the measurement of depth with the ultrasonic sound is difficult, such as, for example, the berths of quay.

TOWED COMPRESSION ROLLER
Rouleau compresseur
Equipment and Tools
A self-propelled plant used to compact grounds and made up of a chassis supporting the driving cab, the whole mounted on smooth metal cylinders of large diameter forming wheels (one at the front, two at the back). Syn. with ROAD ROLLER; ROLLER

TOWED-TYPE ROOTER
Défonceuse tractée; Rooter
Equipment and Tools
Syn. with ROOTER

TOWER
Pylône
Construction
1. A slender construction made of masonry or metal, intended for supporting a structure and that leans on a foundation. Syn. with LATTICE MAST; PYLON
2. Sometimes designates some piers of a colossal aspect.

T-PIECE
Té
Drawing
A T-shaped designer instrument thanks with which he can draw parallel or perpendicular lines between them.

TRACE
Tracer
Work
To do a drawing.

TRACER
Traceur
Materials
The inherent property of a natural or artificial element, mixed with a body and whose detection allows to study the behavior of the body in which it stands (for example: the radioactivity of a substance is a tracer). Tracers can be colorings (fluorescein, red organol, etc.) or radioactive elements (isotopes).

TRACER SUBSTANCE
Produit révélateur
Welding
Syn. with DEVELOPER

TRACHYTE
Trachyte
Geology
A volcanic rock with porous texture made of siliceous paste.

TRACING BY PLOTTING
Dérobement; Tracé par dérobement
Masonry
The transfer on the stone to be cut of the line obtained by working drawing. This job is carried out by the stonecutter. Syn. with TRACING BY TRANSFER

TRACING BY TRANSFER
Dérobement; Tracé par dérobement
Masonry
Syn. with TRACING BY PLOTTING

TRACING CHALK
Arcanne
Material
A product made up of red chalk mixed into water and impregnating a line. Herewith impregnated line the carpenters carries out layouts on the timber pieces.

TRACING OF A CRACK
Tracé d'une fissure
Defects
The more or less sinuous journey which figure a visible crack on a facing, a piece, etc.

TRACK
Chemin de glissement; Chemin de roulement; Havée
Handling: Earthwork
1. A setting device by sliding along of works constituted by grooves in rails without joints and lateral guides. The slipping of decks can be improved by greasing or by intervention of a film of Teflon pasted on the surface of the deck in contact with the rails.
2. Syn. with BALL RACE; CONVEYOR LINE; RACEWAY; ROLLERPATH; RUNWAY
3. Syn. with CHANNEL; CUT

TRACK BENCH
Banquette
Construction
A traffic platform reserved on one or two sides along some traffic lanes (bears the towpath along tunnel canals). **See Figure 27**

TRACK LAYING ON TIMBERS
Pose de voie sur pièces de bois
Civil Engineering Structure
A track laying system directly on a structure, from which we can distinguish several practices:

- on **metal structures with longitudinal sleepers** *(sur ouvrages métalliques avec longrines),* sleepers can be fixed by ties and hook bolts or inside small troughs or also between universal beams;
- on **metal structures with crossties** *(sur ouvrages métalliques avec traverses),* crossties rest on base plates and are attached at the rim squares by ties and hook bolts or by horizontal bolts crossing one or two rim squares;
- on **reinforced concrete structure and of encased composite beam structure** *(sur ouvrages en béton armé et en poutrelles enrobées),* when the height whose one lay out, while enabling the pose of the track on some timber pieces, not enable any interposition of ballast, the track is laid on some crossties fixed to the concrete of structure by resting on some plates of elastomer.

TRACK LAYING ON NONBALLASTED RAILWAY BRIDGE
Pose de voie sur ouvrages ferroviaires non ballastés
Civil Engineering Structure
A direct track laying system without interposition of ballast between the deck and the railway track. In the bridges with steel decks, the track is mostly posed, either on crossties, or on sleepers, except for the twin-girder bridges and boxes where the track is solely laid on sleepers. In some circumstances, for railway bridges comprising a reinforced concrete slab (reinforced concrete bridges and composite bridges in particular) or for bridges with cased composite beams, it is not possible, for lack of height, to insert between the concrete and track, a layer of ballast. In these cases, rails are laid:
- on wooden pieces (sleepers or crossties) fastened in the concrete of the deck; or
- on saddles or concrete crossties themselves attached on the deck; it is the *direct laying.*

TRACK LIFTING JACK
Chèvre
Equipment and Tools
Syn. with BOOMLESS DERRICK; HORSE ; LIFTING JACK; SHEAR LEGS

TRACK ROPE COUPLING
Manchon
Construction
Syn. with CABLE SLEEVE; COUPLING SHELL

TRACK SUPPORT
Support de voie S4
Temporary Construction
A provisional device formed by two I-girders 8 m long surrounding each stretch of rail, connected between them by distance pieces. The end of the beams rest on three sleepers at the very least. A track support enables the clearing of breaches, up to 4.95-m opening, without bearings and raising of the track. This device enables to carry out the work to open roof under railway track such as a passage of aqueduct, sewers and all works of slight importance.

TRACKING
Frayée; Orniérage
Civil Engineering
1. A weak longitudinal dip affecting a roadway brought about by the traffic.
2. The longitudinal concave deformation of a roadway due to traffic of heavy goods vehicles.

TRACTIVE FORCE
Force, puissance tractrice, pouvoir tracteur
Hydrology
The dynamic potential exerted by the current of a waterway that enables it to undermine the banks, to erode the bed, and to carry solid materials.

TRACTOR-SCRAPER
Tracto-tombereau
Equipment and Tools
A machine used on the great building sites of earthwork to transport excavated materials. Its appearence is identical to the scraper, but unlike the latter it cannot load only excavated materials.

TRACTOR-SHOVEL
Chouleur-pelleteur; Chargeuse-pelleteuse
Equipment and Tools
A hydraulic-controlled motorized machine supplied of a bucket for the reclaiming, transport and unloading of materials and excavated materials. It is a pneumatic-mounted vehicle. The bucket can be replaced by a blade of earthmover or a forklift truck.
2. Syn. with BACKHOE LOADER; BUCKET LOADER; LOADING SHOVEL

TRADE ASSOCIATION
Corps d'état ou Corps de métier
Civil Engineering
Each of the trades of civil engineering or public works.

TRAFFIC SEPARATOR
Séparateur
Civil Engineering
A plan of safety separating two roadways for avoiding the passage of vehicles from a roadway to another.

TRAINING WALL
Décaissement
Construction
Safety work which ensure to keep up rivers in their bed.

TRAINING WORK
Ouvrage de régularisation
Civil Engineering Structure
A device or construction to:
- protect the embankments from waters. This mantle of safety is stopped at 1 m above the level of highest waters;
- regulate the bed of a river, when the speed of water, for a centennial flow, is too important;
- lower the crest of too important peak flow.

They are cribs, ripraps, small slabs of cover, subhorizontal drains, water cushion, accumulation or reservoir, curtain of sheet piles, etc. Syn. with CONTROL STRUCTURE

TRANSFER BRUSH
Pochon
Equipment and Tools
A small round brush used by painters when they use a transfer.

TRANSFERRING
Pochage
Work
The drawing of an ornament, a letter, or a figure using a transfer having the carved shape of the drawing to be reproduced.

TRANSFLUENCE
Transfluence
Hydrology
A waterway which joins other one of it later to have abandoned its bed.

TRANSGRANULAR
Transgranulaire
Metallography
Of a crack which comes through the grains of a metal.

TRANSIT MIXER TRUCK
Camion-malaxeur; Truck-mixer; Toupie à béton
Equipment and Tools
Syn. with AGITATING TRUCK; TRUCK-MIXER

TRANSITION FILTER
Filtre
Hydraulic Work
The element of an earth dam section (with core), formed by a material of intermediate size placed between the core and the permeable solid masses to function such as a filter, preventing the side movement of the thin fractions of the core.

TRANSITION RADIUS (OF TWO FACES)
Congé
Construction
The concave connection of two surfaces.

TRANSITION RADIUS OF A CURVE
Courbe de raccordement
Topography
A curve being designed to pass, without shelf, of an alignment to another. Syn. with JUNCTION CURVE

TRANSMISSIVITY
Transmissivité
Geohydrology
The ability of a ground to leave percolate more or less quickly seepage waters toward groundwater; the transmissivity T depends of the ground permeability K and of the thickness of the groundwater table, wrote down H if it is about a free-water sheet or E if it is captive, according to the formula:
$T = KH$ or $T = Ke$ (in m^2/s)

TRANSPACK ™
Transpack
Equipment and Tools
A handling equipment used to put in place by pushing, sliding along, or rotation of a deck.
This device is made up of a framework which slides on a rail and which is blocked thanks to a system of vice (clamping). The framework is equipped with a long hydraulic jack. This system, entirely automated, pushes or pulls step by step the load. The operation proceeds in the following way:
- *clamping of the frame on the rail,*
- *pushed or pulling of the load with jack,*
- *releasing of the clamping in race end and closing of the jack, the load remaining in fixed position,*
- *new clamping on the rail.*

See Figure 28

TRANSPARENT STONE
Pierre hydrophane
Geology
A concretionary silica, becoming transparent by water absorption.

TRANSPORT
Transport
Hydrology
All the materials that the currents of a waterway can carry on its bed or in suspension (sands, silts, etc.).

TRANSPORT
Barder
Handling
To handle materials with a wheelbarrow. Operation includes loading, transport, and unloading.

TRANSPORT CRATE
Harasse
Equipment and Tools
A crate formerly used to transport ground or stony materials.

TRANSVERSE ARCH
Arc-doubleau
Construction
An arcade outstanding on the lower part of a vault and perpendicular to the axis of the vault. They are parallel parts to the stringcourses, formed by materials of better quality that those of the intrados. They are original and then intended for reinforcing the vault or consecutive to a widening of the vault (former stringcourses remained on the spot). Syn. with TRANSVERSE RIB. **See Figure 29**

TRANSVERSE CRACK
Fissure transversale
Defects (Welding)
A discontinuity affecting a weld bead and whose main direction is appreciably perpendicular to the axis of the weld bead. Syn. with CROSS CRACK

TRANSVERSE DECK JOINT
Joint transversal de tablier
Construction
A transverse device that ensures the continuity of the roadway between two independent decks built end to end enabling their respective movements each one. This joint is different from the pavement joint because it is not visible on the traffic area; it is covered by the road infrastructure. Syn. with JOGGLE JOINT; STOP END AND KEY

TRANSVERSE DEFORMATION
Déformation transversale
Construction of R.C. and P.C.
A conventional value of the deformation of a prestressed concrete slab in the transverse way, obtained by taking into account the value of Poisson's ratio fixed by the regular prescriptions in the calculation of stresses.

TRANSVERSE FORCE
Effort tranchant
Strength of Materials
Syn. with SHEARING FORCE; SHEARING STRESS

TRANSVERSE GIRDER
Entretoise; Pièce de pont
Construction
1. A connection, in construction, placed between two elements to increase the strength or rigidity or to keep between them a constant space.
2. Transverse element being found in some decks of bridge which can be an element uniting two stringers and a main beam or a relatively important and rigid piece, that connects beams transversely in a deck to common beams or to box girders and distributes between these beams loads and deformations.
When the same element fills simultaneously the two functions of bridging piece and transverse girder, we normally make use of the *distance piece* term if the element is on some bearing and the term *bridging piece* if it is in a span.
We can distinguish the:

- **standard transverse girder** *(l'entretoise courante)* which, in a deck of skew metal bridge, connects the main beams outside the zone of abutments;
- **brace on abutment** *(l'entretoise sur culée),* which in a deck of skew metal bridge, rests on the abutment by one of its ends; **see Figure 30**
- **cross beam of bracing** *(l'entretoise d'entretoisement),* constituted by a transverse piece intended for connecting the various running lengthways elements of a metal deck and that is intended for giving the rigidity to the whole of the work, for keeping the space between the beams, and for serving as armature to the bridge covering;
- **track-spacing distance** *(l'entretoise d'entre-voie),* which connects and renders interdependent two joined metal decks (case of railway bridges);

- **subtrack cross beam** (*l'entretoise sous voie),* which connects the beams located under the track (case of a metal railway bridge);
- **gravel guard transverse girder** *(l'entretoise garde-grève)* which, in a metal bridge deck, is located before the gravel guard;
- **carrier cross bar *or* load-bearing cross member** *(l'entretoise porteuse)* which, in a bridge of reinforced concrete, is an element transmitting a load to a piece of a higher strength and has been normally set in the direction of the piece on which it leans.
- **carrier distance piece under rail** *(l'entretoise sous rail)* which, in a twin-girder railway bridge, connects beams surrounding the stretch of rails and supports the longitudinal sleepers. This distance piece is generally of steel cast.

3. Rigid transverse element, that in a girder or box bridges transmits and distributes to the latter forces and stresses received. Its objective is also to participate in the general strength of the work by limiting bending and twist deformations.
4. A beam perpendicular to the longitudinal axis of a bridge that transmits the strains brought by the stringers, stiffening ribs or the cover slab to the main beams or suspenders. The transverse girder mostly provides at the same time the function of distance piece in the twin-beam decks.
5. In a suspension bridge, transverse beam mostly fastened to the suspenders to which the loads of the deck are transmitted.
Syn. with BRIDGING PIECE; CROSS BEAM; DISTANCE PIECE; JOIST

TRANVERSE HEAD BEAM
Chevêtre
Construction
1. A horizontal beam made of R.C. or metal connecting on head the poles of a piling and intended for transmitting their loads. **See Figure 31**
2. A little slender horizontal piece that ensures the transmission of the loads to distinct points from points of application. Particular example: a transverse girder or bearing cross beam supporting one or several main beams that it is impossible to make rest on the pier or the abutment.
3. The name given to the bridge pier caps that are real beams and are in charge to ensure the transmission of loads from the deck to the bearings, in the case of abutments and hollow piers, abutments with buttresses, hammer piers, bridge bent to oblong poles or no.
Syn. with PIER CAP; PIER TEMPLATE

TRANSVERSE PLANK
Moise
Foundation
A metal or wooden piece connecting horizontally between them heads of piles or sheet piles. Syn. with BINDING PIECE

TRANSVERSE REINFORCEMENTS
Armatures transversales
Construction of R.C. and P.C.
Reinforcements formed by binder bars, stirrups, and ties which connect between them longitudinal bars of a bar setting. Syn. with CROSS REINFORCEMENT

TRANSVERSE RIB
Arc-doubleau
Construction
Syn. with TRANSVERSE ARCH

TRANSVERSE RIDGES
Rides transversales
Geomorphology
In a landslide, folds which form in the border of the movement of terrain, evidence of compressive strains being able to end in overlappings in the material.

TRASS
Trass
Geology
A volcanic tuf used as building material. Crushed, the trass is used as addition in some cements thanks to its pozzolanic properties.

TRAVELING BRIDGE
Pont-roulant
Civil Engineering Structure
A movable bridge moving horizontally by roll in the way of its longitudinal axis on one of the abutments to release the span. The back of the deck is endowed with an overhanging of counterweight forming counterbalance. **See Figure 32**

TRAVELING BRIDGE CRANE
Pont de service
Equipment and Tools
A lifting appliance made up of that can be dismantled timberwork or steel frame, being able to move on rails that are laid parallel to the axis of the work. At the top part is laid out a lifting appliance (crane, winch), likely to transverse displacement.

TRAVELING BRIDGE CRANE WITH (BLOCK AND) TACKLE
Pont de clavage
Equipment and Tools
In the construction of bridges built by successive corbelings, gantry leaning on the segments already put in place on the two surrounding pilings. On the beams of the gantry circulates a carriage equipped with a hoist that is designed to lift and to set up segments.

TRAVELING GANTRY CRANE
Pont-roulant
Civil Engineering Structure
1. A lifting appliance to parallelepipedic sphere of activity, made up of a horizontal metal frame (made of one or two beams) supplied with rollers at its ends, moving on two runner ways or heightened parallel rails. Along this frame mostly move one or several carriages, equipped with a hoist or a winch, but sometimes also of a crane or special lifting or prehension devices.
2. A lifting appliance, specially designed for some important building sites and constituted by a powerful mobile gantry which, moving on runner ways, enables the handling of provisional or final decks prefabricated outside their final site.

TRAVERSING
Cheminement
Topography
A topographic operation used as basis for surveys of kinds very different and which consists in determining the relative positions of several points *A M N P... B* measuring the linear and angular elements which make it possible to construct or to calculate the polygonal line that one obtains by joining each from these points to the next. The traversing is *closed* when broken lines, on which one leans to level, are related to their ends by marks or form polygons. The traversing is told *opened* if the *Z* point of arrival is different from the point of origin *A*.

TRAVERTINE
Travertin
Geology
A white yellowish carbonated sedimentary rock of biochemical origin, which is an excellent building stone. It is a rock harder than the tuff. The travertine is formed by chemical precipitation in a lacustrian basin; it constitutes a fine crystal powder which is stratified in regular layers. In France, *Sézanne's* travertine (the Marne) is one of the most known.

TRAY
Marmite; Camion
Equipment and Tools
In painting, Syn. with PAINTER'S KETTLE

TREAD
Echelon; Marche en volute
Equipment and Tools; Construction
1. The rung fixed between the two uprights of a ladder.
2. Syn. with SCROLL; VOLUTE

TREAD LENGTH
Longueur d'emmarchement
Construction
The largest dimension of a stair; it is the width of the staircase.

TREAD PLATE
Tôle antidérapante
Metallurgy
A product covered with a sowing of crushed cast-iron aggregate setting inside a matrix constituted of a tin alloy or of very strong paste.

TREMIE SEAL
Longueur d'immersion
Construction of R.C. and P.C.
The part of a tremie tube needed to constantly remain drowned inside the fresh concrete already on the spot during a concreting operation making call to the use of this process (aquatic site, diaphragm walls, supporting-wall units, etc.).

TRENCH
Tranchée; Rigole; Fossé
Construction; Masonry; Foundation; Sanitary Engineering and Drainage
1. A linear notch carried out in a masonry to perform the embedding of a piece, to embed a piping, etc.
2. A channel with three preserved faces.
3. Syn. with FOOTING.
4. Syn. with DRAIN; DIKE; DITCH; GRABEN

TRENCH
Tranchée; Bateau; Cunette
Earthwork
1. A longitudinal excavation carried out to open air in the ground, to execute generally the foundations of a work there. A digging is considered in trench when the width in the trench bottom does not exceed 2 m. In the case of deep trenches (more than 6 m), one mainly proceeds by:
- lateral basin practice,
- the central basin method (rocky grounds).

Syn. with CUT; CUTTING; DITCH. **See figures 33; 34 and 34b**
2. An oblique chase carried out in the base, during the heading of a tunnel by the timbered galleries method.
This chase allows the lifting of the head beam of the supporting framework the one after so as to authorize the progress of the earthwork.
3. The first trench of small depth made at the right of an important cut which facilitates the earth transports.

TRENCH EROSION
Fosse d'érosion
Geohydrology
Syn. with TRENCH UNDERCUTTING

TRENCH EXCAVATOR
Fraise à tranchée; Roue-pelle; Excavateur rotatif
Equipment and Tools
Syn. with BUCKET WHEEL; EXCAVATOR; TRENCHER

TRENCH HOE
Pelle rétrocaveuse mécanique
Equipment and Tools
Syn. with BACKACTER; BACKHOE; DIGGER; DRAG SHOVEL

TRENCH JACK
Trench jack
Temporary Construction
A prop formed by a strong squared timber piece or by a metal tube provided at its end, by a screw jack comprising a nut with arm being tightened by hand.

TRENCH PIPE LAYING
Pose en tranchée
Earthwork
A laying method of pipes or ovoids of R.C. to open air. Pipe in trench is laid out in a relatively narrow and deep digging then embanked.

TRENCH REVETMENT BANK
Banquette
Construction
A brought back or origin earth shoulder located at the base of trench slopes or filling and that ensures them a higher stability.

TRENCH UNDERCUTTING
Fosse d'érosion
Geohydrology
A natural hollow that develops in the bed of a waterway that is usually due to a narrowing of the bed at the right of a structure. (The narrowing brings abouts a local speeding-up of the velocity that has for effect to erode the bed on a more or less large extent and depth; this phenomenon mostly observes in piers or abutment downstream from the work.) Syn. with TRENCH EROSION

TRENCHER
Trancheuse
Equipment and Tools
Syn. with DITCHER; EXCAVATOR. TRENCH EXCAVATOR

TRENCHING MACHINE
Trancheuse
Equipment and Tools
A machine used to cut up rocks in quarry and equipped with sharp tools prompted of a rotary movement.

TREPAN
Trépan
Equipment and Tools
1. A heavy boring tool, which works in free fall, namely by percussion. It is used to come through

the hard benches, by disintegration of the ground. **See Figure 35**

In a trial boring carried out by driving, the trepan, fixed at the bore rod or cable, works by percussion. Most frequent of these tools is the trepan with three serrated rollers or tricone. There are a great range of trepans adapted to the problems and of the nature of the rocks needed to be attacked. The term *drilling tool* often replaces the word *bore bit;* in an operation of core drilling, it is called a *crown bit.* Several models essentially are available:

- **cross bit** *(le trépan à bonnet carré),* whose cross-shaped edge of attack, and that is designed to break and to drive back the objects inopportunely fallen into a trial boring in progress;
- **diamond drill bit** *(le trépan à diamants),* whose active surfaces are set with diamonds (used in harder grounds);
- **bladed-bit of splayed form** *(le trépan à lames de forme évasée),* with two or four bored blades of an opening enabling the injection of water or drilling mud. This type of trepan is used to drill in loose grounds;
- **tricone rotary bit** ***or*** **tri-roller bit** *(le trépan à molettes ou tricône)* formed by three toothed wheels assembled through the channel of rolls on the axles of three arms joined between them by welding. A threading enables to screw the tool with the drill collar. Openings of drilling mud injection are in the axis of tricone for tricone the known as conventional ones; they are located on the sides of the trepan in the tools to jets and are then of small diameter, what enables to increase the pressure of the drilling fluid and to thus carry out a more effective cleaning of the bottom of the hole. The number and length of the teeth of the serrated rollers depend on nature on the ground to be drilled. This type of trepan is used to drill in hard rocky grounds;
- **roller bit** ***or*** **toothed roller bit** *(le trépan rotatif)* provided with toothed wheels or blades, working in rotation, generally associated to the process of drilling by invert circulation and comparable with the tools used in oil drilling.

2. A boring tool fastened at a stand of a drill pipe, constituted by a cylinder whose attack edge is carved in blade, picks or in jagged outline to ensure the disintegration of the rock by wrenching.

Syn. with BORE BIT; DRILLING BIT

TRESTLE
Chevalet
Temporary Construction
Syn. with HORSE; HORSEHEAD; SUPPORT

TRESTLE
Cabre; Cadre; Travée
Handling; Equipment and Tools; Temporary Construction
1. A small shear legs at the top of which is fixed a pulley on which passes a rope supporting a bucket or a small skip. This system is used to hoist excavated materials during the boring of a well, the cleaning of a deep aqueduct, etc.
2. A shear legs made up of three poles connected at their top end and being used as support to a pulley.
3. The distance separating two frameworks of the supporting of a timbered gallery, two centerings of the supporting of a tunnel.

TRESTLE PIER
Pile à chevalet
Construction
A pier made up by a frame including posts or piles of steel, reinforced concrete or wood, stayed diagonally and horizontally and which supports a deck. This type of pier is used to clear breaches of low height.

TRESTLE TREE
Elongis
Carpentry
Each wooden piece intended for lengthening some others.

TRIAL
Essai
Civil Engineering Structure
Syn. with EXPERIMENT; TEST

TRIAL BATCH
Lot
Building Materials
The quantity of aggregates possibly subjected to a check of reception by sampling.

TRIAL LOAD METHOD
Trial load practice
Strength of Materials
A calculation method of arches-dams which consists in decomposing them into horizontal

elements (arches) and vertical elements (walls or corbels), and to be noted that at the common points to these elements (nodes), the radial, tangential and twist deformations apply in a way equal on both sides.

TRIAL PIT
Puits de reconnaissance
Geotechnics
A hole or pit in a bid to study it visually and possibly to take samples there.

TRIAL SETUP
Montage à blanc; Assemblage à blanc
Temporary Construction; Construction
1. A provisional assembly carried out in factory or on the construction site, intended for checking the good assembly of the various parts, the possible marking of these ones, and thus enabling carrying out the last corrections necessary before the final assembly or the transport on the construction site, Syn. with TRIAL ERECTION
2. The temporary assembly of the subunits of a work enabling the checking of the unit before final assembly.

TRIAL TIE ROD
Tirant d'essai
Building Materials
A reinforcement intended for testing the process of execution and for checking, to modify it possibly, the value of the considered allowable tension.
The dimensioning of a tie rod is extremely empirical, since the length of sealing results of the experiment. Also, when the number of tie rods considered is high or when the nature of the work justifies it, one has recourse to the execution of approval tie rods. These tie rods are carried out, prospectively the project, on the site of the building site. They go before cycles of tensioning. Lengthenings corresponding with the stages of tension are written according to the tensions applied and of times. These tests make it possible to check the predimensioning of the tried tie rods and, consequently, to modify, if any, the type or characteristics of the tie rods of the future work.

TRIANGULATED SYSTEM
Système triangulé
Strength of Materials
Reticulated system made up of triangles which are juxtaposed outside. Bars form the common sides to two triangles ; this system is simply triangulated when triangles form a continuation with the first and the last triangle, each of other triangles having a common side with the precedent and with the next triangle.

TRIAXIAL APPARATUS SHEARING TEST
Essai de cisaillement à l'appareil triaxial
Geotechnics
Test carried out on a ground sample with the same aim that the Casagrande's shearing box test and which consists in measuring φ and *c*. In this test, it is possible to control the drainage and to measure the pore water pressure inside the sample.
Inside the triaxial apparatus, the sample, which is surrounded with a rubber membrane, is put on the bottom base of a banded plexiglas cell. Under the water pressure, we apply an σ_3 *hydrostatic stress on the sample. A piston which crosses the cell's top transmits a P force at the samples head. Porous stones are put at both ends of the sample to drain it and to measure the pressure in the saturated ground sample.*
With a constant lateral σ_3 *stress, we let the* σ_1 *axial stress grow, increasing the P force transmitted by the piston at a constant deformation speed.*
During all the the triaxial test, we record the P force transmitted by the piston, the vertical deformation of the ε_1 *sample, and possibly the pressure (or overpressure) in the sample.*
Thanks to the triaxial test, we can check the ground samples drainage and measure the pressure in the ground. With this test we can determine the point of friction and the cohesion corresponding to the overload application speed and drainage conditions for saturated fine grounds. We use three classic triaxial tests to represent the conditions.
• **unconsolidated, not drained** ***UU Test*** *(l'essai non consolidé, non drainé UU)* : the shear strength has for expression : $\tau = C_u + \sigma \operatorname{tg} \varphi_u$; C_u and φ_u are the unconsolidated and not drained parameters, in relation with or stresses. The test is carried out with closed drainages , at a fast shear

speed (about 1 mm/mn). The UU test corresponds to the short-term behavior of a fine ground and is used on saturated cohesive soils. Moreover we have in this case $\varphi_u = 0$;

- **consolidated, drained *CD* Test** *(l'essai consolidé, drainé CD).* The test consists in consolidating the ground sample under an hydrostatic pression by opening the drainages and waiting for the overpressure dissipation, and in digging the ground very slowly (about $\mu m/mn$) with openned drainages, so that the pore overpressure is always null. The shear strength has for expression: $\tau = C' + \sigma' \tan\varphi'$. C' and φ' are parameters relating to σ' stresses between the grains (effective stresses $\sigma' = \sigma - u$; U is the pore-water pressure).

These parameters characterize the long-term behavior of a fine ground. We use CD tests only on dry pulverulent or saturated ground, or on coherent saturated grounds;

- **consolidated, undrained *CU Test*** *(l'essai consolidé, non drainé CU)* consists (as for the *CD* test) in consolidating the ground sample with an hydrostatic stress, but then in digging the ground faster (about $10\ \mu m/min$) with closed drainages and in recording at the same time the interstitial pore-water overpressure in the ground, during all the shearing time. Thanks to this test we can :

- study the resistance variation to the shearing in an undrained ground, according to the consolidation pressure,
- determine the *C'* and φ' characteristics of saturated grounds, without using the too long *CD* test.

So we can use it for saturated cohesive soils.

TRIAXIAL CELL MACHINE
Appareil triaxial
Equipment for Measure and Control
A machine for studying the ground shear characteristics and that enables as executing consolidated or not consolidated rapid tests as slow tests.

TRIAXIAL TEST
Essai triaxial
Geotechnics
Test carried out on a ground sample to determine its breaking point, its shearing characteristics, its cohesion and its inner friction point.
This test is carried out with a machine made up of the same press which is used for the simple compression testing, but also of an air compressor, a special cylindrical cell, and an instrument and notice board. We put a ground test specimen in the cell at an uniform pressure on its external surface, thanks to a liquid under pressure. Then we carry out the breaking test of the sample by an axial compression, either immediately, or after consolidation.

TRICALCIUM ALUMINATE
Aluminate tricalcique
Hydraulic Binders
$3\ CaO\ Al_2O_3$, which is one of the constituents of cements which exists in various crystalline forms, whose hydration brings about a fast set associated to a release of heat known as *of hydration.*

TRICHLOROETHYLENE
Trichloréthylène
Materials
A derived three times chlorinated from the ethylene that is used as solvent of the greasy substances for degreasing metal pieces.

TRICKLE
Pissou
Defects
An inrush of water by jet through the facework of a tunnel or by a crack of the rock (not covered tunnel), due to a pressurized pocket of water behind the facework or inside the rock.

TRICYCLE
Tricycle
Equipment and Tools
A three-cylinder compacting plant used in public works.

TRILINVAR ™
Trilinvar
Equipment for Measure and Control
A measuring device of relative convergence by invar alloy (like the distomatic and distancing unit). We operates herewith instrument by trilateration method that enables to calculate the coordinates X, Y, Z, in absolute value, of the every selected point of a given profile. This instrument is in particular used to measure deformations in tunnel.

TRILOBITE
Trilobite
Geology
An arthropod of the primary era, whose apogee stands to the Cambrian and Devonian. It is an excellent stratigraphic fossil.

TRIM
Habillage; Couvre-joint; Dresser; Chapoter; Cooroyer
Construction; Work; Carpentry; Building Materials
1. Syn. with ENVELOPE; EXTERNAL CLADDING; HAUNCHING
2. Syn. with BATTEN; BEAD; BUTT STRAP; CAPPING STRIP; COVER PLATE; COVER STRAP; FILLER; JOINT COVER
3. Syn. with DRESS; FACE; STRAIGHTEN
4. To rough out wood.
5. To dress, to put width and thickness a wooden piece. Syn. with DRESS; ROUGH PLANE

TRIM THE EDGES
Dégraisser
Carpentry
To remove wood on a cup to facilitate the joint. Syn. with BEVEL OFF

TRIM UP
Ragréer
Masonry
To add mortar on a spall, a chipping in order to give again the primitive form which had the element to the construction.

TRIMMER
Décapeuse; Scraper
Earthwork
Syn. with SCRAPER; SCRAPER-LOADER

TRIMMING
Ebarbage; Dressage; Recépage
Metallurgy; Work; Foundation
1. The removal of smudges and other manufacturing or foundry protrusions on a metal piece by various processes such as grinding, chiseling, filing, and so on. Syn. with FETTLING
2. Syn. with LEVELING
3. The cutting off of piles, sheet piles to level them on a given level or to eliminate a doubtful part. Syn. with CUTTING-OFF; STRIKE-OFF

TRIPLE PRESSURE
Triple étreinte
Strength of the Materials
A state of stress reflecting to a hydrostatic compression, compressions being equal according to the three axes.

***TRIPLEX* STEEL**
Acier *Triplex*
Metallurgy
A material made up of a mild steel core and, on both sides of this core, by a steel harder layer to high content in carbon with adding of manganese, and arguably of chromium, and for some of molybdenum. This steel has a great resistance to abrasion (Triplex steel is not a material obtained by veneering, but carried out in ingot mold).

TRIVALENT PRODUCT
Produit trivalent
Hydraulic Binders
A concrete admixture used in particular in winter period and which is made up of antifreeze, fluidifier and air-entraining agent.

TROLLEY
Chariot
Construction
In some suspension bridges, mobile apparatus on rolls connecting between them, in head of pylon, two cables located on either side of this one. **See Figure 36**

TROMMEL
Trommel
Equipment and Tools
Sifting device constituted by a rotary cylindrical sieve with a tilted axis. The trommel has holes for maximum D and minimum d aggregate samples ; with the one cylinger trommel, d holes are put at the higher part and D holes at the lower part.
In double concentric cylinder trommels, D holes are fitted in the inner cylinder, and d holes in the out one. The oversized stones or aggregates (elements > D) are recovered at the base and sent back to grindings or crushers.

TROOSTITE
Troostite
Metallurgy
In the micrographic structure of a hardened steel, set of the black kidneys which appear on background of martensite (this state appears when the birth of the pearlite during the transformation is local only).

TROPICAL HARD WOOD
Bois tropical
Building Materials
A commercial material which grows in intertropical regions and, especially, in the equatorial zone.

TROPICALIZATION
Tropicalisation
Building Materials; Metallurgy
1. To treat a material to make it more resistant when it is confronted with a tropical climate.
2. The passivation of pieces having undergone a zinc plating or cadmium plating treatment, plunging them into a special bath.

TROUGH
Auge
Geology
A flat-bottomed valley with abrupt slopes.

TROUSER LEG
Jambe de pantalon
Temporary Construction
An oblique element leaning on the earthwork support of an excavation to strengthen it. Syn. with INCLINED STAY

TROWEL
Truelle; Gâche; Grelichonne
Equipment and Tools
1. A builder's tool formed by a thin metal plate of triangular or trapezoidal form, equipped with a rod back bent on which is adapted a wooden handle. There are several types of trowels:
- **French drag** *(la truelle Bertholet),* Syn. with NOTCHED TROWEL;
- **notched trowel** *(la truelle brettée),* of different form from the mainline trowels: it is made up of a rectangular metal plate including among which side is notched and the other is slanted carved. In the axis of the plate, and perpendicular to this one, is fixed the handle at the end of a rod. This tool is used to dress and scratch renderings; Syn. with FRENCH DRAG
- **trowel of terrazzo** *(la truelle de cimentier dite à l'italienne),* of triangular form with rounded end; it is the most used;
- **trowel** *(la truelle à mortier ou gerluchonne),* of rectangular form with square or rounded end;
- **gauging trowel** *(la truelle langue-de-chat),* of narrow triangular form with rounded end;
- **triangular trowel** *(la truelle triangulaire),* of triangular form with pointed end.

2. A builder's tool used to mix and apply the mortar.
3. A trapeze-shaped mortar trowel used by builders.

TROWEL BATCH
Clapée
Masonry
The quantity of mortar thrown in only once by the builder against a wall facing.

TROWEL HOOK
Crochet
Equipment and Tools.
A trowel whose end is in crooked point.

TROWELED RENDERING
Enduit taloché
Masonry
Any mortar manually or mechanically applied on a wall and that is constituted by a rough coat or bonding grout, a floating coat forming the body of the rendering and a finishing cement rendering which gives the aspect.
The troweled renderings can make the object of a treatment giving them the following prospect:
- **raked plaster *or* scraped finish** *(le gratté),* in which troweled rendering is scratched with the indented blade in the process of set, about the 2 to 3 h which follow the application;
- **rubbed/raked finish** *(le gratté grésé),* in which a scraped finish is ground superficially with the abrasive or plane superficially with the nail float during the hardening period;
- **rubbed finish** *(le grésé),* in which troweled rendering is ground with the abrasive or plane superficially with the nail float during the hardening period;
- **embossed finish** *(le bouchardé)* in which the rendering is compacted with the hawks following the set. It is afterward bush hammered three

weeks after with the hand or pneumatic granulating hammer;

- **washed finish** *(le lavé)* in which the coat is compacted with the steel float or with the roll. Grains are afterward released by brushing with the supple brush accompanied by washing with water jet to low pressure. Compaction and washing operations are repeated up to obtaining a clean grain. The cleaning of the surface is ended in the next few days by washing with acidic water steady by a clear water rinsing;
- **brushed finish** *(le brossé)* whose surface has been stamped with the brush before the final set so as to make disappear all harshnesses;
- **rubbed finish** *(le frotté)* whose surface is compacted using a small hawk so as to attract the laitance on the surface;
- **weaved plaster** *(le tramé)* whose surface makes the object of treatment using rubber rolls with reliefs.

TROWELING
Talochage; Truellage; Clapée; Lissage
Masonry; Construction of R.C. and P.C.
1. The finishing of a concrete or mortar surface with a float or a mechanical float with a view to obtain a smooth aspect. Syn. with FLOATING
2. The execution of a task with a trowel.
3. The builder's gesture that throws with the trowel the mortar on a facing to carry out a rendering.
4. Syn. with SMOOTHING

TRUCK
Bardeur; Camion
Handling; Equipment and Tools
1. A platform truck for transporting concrete blocks. Syn. with WAGON
2. A motorized vehicle intended for transporting equipments or materials. Syn. with LORRY; ROADTRUCK

TRUCK CRANE
Chariot-grue
Equipment and Tools
A self-propelled lifting appliance of average power, used on building sites of weak importance and being of use to the supply of materials (concrete, bricks, etc.) at little risen levels.

TRUCK MIXER
Bétonnière portée; Camion malaxeur; Malaxeur porté, Truck-mixer; Toupie
Equipment and Tools
A machine used to transport concrete from the concrete mixing plant to the building site. It is made up of a self-propelled chassis, a vat being able to turn on its axis, a water reserve and a driving device of the vat. Currently truck mixers can supply quantities about of $8\ m^3$. They may be equipped by a distributor belt or a concrete pump. Syn. with AGITATING TRUCK; READYMIX TRUCK; TRANSIT MIXER TRUCK. **See Figure 37**

TRUDGE
Cheminer
Construction
Syn. with ADVANCE; CREEP

TRUE BEARING DISTANCE
Portée totale
Construction
Syn. with TRUE SPAN

TRUE DENSITY
Masse volumique absolue; Masse volumique réelle
Building Materials
1. The mass of a body per unit of volume (excluding empty spaces between elements) expressed in kg/m^3.
2. The mass of a volume of granular materials occupying the unit of volume, excluding intergranular empty spaces, expressed in kg/m^3.

TRUE POROSITY
Porosité totale
Building Materials
The ratio of the volume of the apparent and sealed pores to the apparent volume of the product, expressed as percentage.

TRUE SPAN
Portée totale
Construction
The distance measured between the axis of the extreme bearings of a work following the axis of the upper line of communication. Syn. with TRUE BEARING DISTANCE

TRUE SPECIFIC GRAVITY
Densité absolue
Building Materials
The ratio of the mass of a matter compared to the mass of a quantity of water that, at 4° C, occupies a volume equal to the true solid volume at the measuring temperature.

TRUMPET INLET
Trompette
Construction
An element of sleeve or tube which, placed at the end of a cable duct, enables the blooming of the cables.
Near anchorage, the prestressing wires bloom slightly to pass into the corresponding holes of the head of anchorage, what requires a widening of the diameter of the cable duct in comparison with that necessary to the beam of wires of the usually part. **See Figure 38**

TRUNCATED ROLLER
Segment; Rouleau tronqué
Construction
The mobile part of a metal bridge-bearing apparatus constituted by a slender parallclepipedic steel piece, and whose each end is machined as an arc of circle.

TRUNCATED SLEEVE
Manchette
Nomenclature of Materials
1 mm thick sheet metal truncated element, which is put at the end of a standard cable duct for steel prestressing cable and nearby an anchorage. Thanks to the truncated sleeve, we can open strands out, so that they can pass into the corresponding holes of the anchorage head.

TRUNK PLATE
Plateau
Building Materials
A wooden piece of 80 mm thick coming from the sawing up of a log. Trunk plates are:
- **sharp-edged** *(le plateau déligné),* stemming from a log whose first edge was drawn up by sawing;
- **revived** *(le plateau avivé),* stemming from a log whose two edges were drawn up by sawing;
- **squared** *(le plateau affranchi d'équerre),* which shows its two edges dressed by sawing as its two sawn ends perpendicular to the large faces.

TRUSS
Ferme; Bielle
Construction; Carpentry
1. A former term designating:
- the main beams;
- the set formed by a stiffening girder, suspenders, and the carrying cable in the case of a suspension bridge.

2. A structure formed by a trussed assembly of wooden or metal pieces. **See Figures 39 and 39a**
3. In a Polonceau truss, bar that is compressed between the principal rafter and its understainers.

TRUSS GIRDER
Poutre armée
Construction
A piece worked out by the assembly of several elements made jointly liable by triangulation.

TRUSS GIRDER PANEL
Panneau de poutre triangulée
Metal Construction
The part of a truss girder delimited by two successive stanchions.

TRUSS MEMBER
Barre
Metal Construction
Syn. with BRACING; WEB MEMBER

TRUSS ROD
Tirant
Carpentry
The name given to the tie beams of metal trusses, in particular to the Polonceau.

TUBE
Tube; Tuber
Metallurgy; Work
1. A metal product with a hollow profile, of uniform thickness and of constant section, mostly circular, square, or rectangular form.
2. To put in place tubes into a drilling. Syn. with CASE

TUBE A MANCHETTES
Tube à manchettes
Equipment and Tools
Injection tube introduced inside a drilling and strained on all the height to be treated. These

perforations form usually 3 groups by meter. Each group is covered by a rubber ring forming a valve, called a *manchette.* A clay-cement grout, friable and plastic, is interposed before the injection, between the tube and the drilling wall; this grout is called *sheathing clay-cement grout* and the space it occupies, *sheaths.* The grouting is performed in a reduced height slice, limited by two obturators. Under the influence of internal pressure, windows are uncovered, the external socket is split and the grout comes in the ground. Thanks to the "tubes à manchettes" we can carry out some ground processings (in particular alluvial) which require several grouting passes and moreover a check at various depths of the injected grout volumes. They also are used for masonry grouting.

TUBE AQUEDUCT
Aqueduc-buse
Civil Engineering Structure
A structure allowing a waterway to clear underneath a section of canal.

TUBE-BENDING MACHINE
Cintreuse
Equipment and Tools
Syn. with BAR BENDER; BENDING MACHINE; ROD BENDING MACHINE; STEEL BENDER

TUBE FUSE
Coupe-tube
Equipment and Tools
Syn. with CASING KNIFE; INSIDE CUTTER; PIPE-CUTTER

TUBE HEAD
Tête de buse
Construction
A particular arrangement of the end of a duct.

TUBE *PERFO*™ METHOD
Méthode du tube *Perfo*
Work
Sealing and cramping method which consists in introducing a cylindrical tube in a drilling equipped with lateral holes, whose number of size has been carefully studied and which are furnished with mortar. The bolt, of simple concrete-reinforcement steel (smooth or creneled but of suitable diameter) which we sink in the Perfo tube after having put it in the drilling, works as a piston and drives out the mortar by all the lateral holes. It gives a perfect sticking to the mortar and ensures the bolt adhesion on the drilling walls throughout its length ; the mortars sheath also protects the bolt from any corrosive action. This process is used in the case of fissured or porous rocks or masonries.

TUBED FOUNDATION PIT WITH METAL CORE FILLED WITH CONCRETE
Puits de fondation tubé rempli de béton avec noyau métallique
Foundation
A compound column of foundation whose bottom end is restrained in the ledge rock and the upper end in the work. It is designed to bear heavy loads on a column with a single diameter. The column is made up of a steel envelope filled with concrete in the center of which is placed a steel core having the height of the column.

TUBELIKE ARCH
Buse-arche
Temporary Construction
A compressed formwork of an underslinged section used as reinforcement of a bridge.

TUBING
Tubage d'un forage
Work
Very strong special steel tube whose diameter is adapted to the tool used for drilling and to the needs of tubes pile-up on various heights. This tube is driven or deepened into the ground before or after the drilling. (When the ground nature is so that the drilling walls cannot balance naturally - and that it is the frequent case for superficial layers - it is necessary to ensure this balance artificially, either by mud injection, or by setting of a temporary special steel tubing). Syn. with DRIVE PIPE

TUBULAR ARCH BRIDGE
Pont-voûte tubulaire
Civil Engineering Structure
A bridge whose main load-bearing elements are tubes forming arch.

TUBULAR BEAM or TUBULAR GIRDER
Poutre tubulaire
Construction
A lattice metal element of very great height that forms a frame (top and bottom bracing). **See Figure 40**

TUBULAR BRIDGE
Tablier tubulaire
Construction
A structure of bridge having the shape of a quadrangular tube from which we can distinguish:
- **metal deck with lateral beams of great height** *(le tablier métallique à poutres latérales de grande hauteur),* whose top flanges are connected by distance pieces;
- **reinforced or prestressed concrete deck** *(le tablier en B.A. ou en B.P.),* constituted by a solid concrete slab, strengthened at the intrados by elegy beams. **See Figure 41**

TUBULAR PIER
Pile tubulaire
Construction
A circular or square hollow intermediate bearing which can be made of cast iron, steel, or concrete.

TUBULAR ROT
Pourriture tubulaire
Defects (Building Materials)
An alteration characterized by the destruction of the wood inside surface channel whose diameter is in the range of the centimeter and which extend with the grain of the wood over a length of several decimeters. The tubular cavities resulting from this attack are filled by a felting of mycelium filaments.

TUBULAR SCAFFOLDING
Echafaudage métallique tubulaire
Temporary Construction
A scaffold made of mild-drawn steel tubes of different lengths jointed by pins or various nature necklaces. Their design varies according to distinguishing traits. (The morphology and the design of this type of scaffolding are appreciably identical to wood scaffolding.)

TUBULAR STEEL CENTERING
Cintre supporté par une charpente tubulaire
Temporary Construction
A temporary work whose form lining is carried out of wood and the supporting elements of metal tubes. **See Figure 42**

TUCK-IN
Engravure; Saingnée; Plumée
Construction; Tightness
1. Raglet reserved in a vertical face (example: side slab) to stop the dampproof membrane. Syn with RAGLET. **See Figure 43**
2. A chase of low depth carried out on the job in a material (brick, quarry stone, etc). In an ashlar, the tuck-in takes the name of *sawed channel.*

TUFA
Tuffeau *ou* Tufeau
Geology
A variety of chalky limestone, containing conchiferous remains and which is generally regarded as a good natural building stone.

TUFF
Tuf
Geology
A rock of weak hardness at the time of its extraction and generally porous. Tuffs are calcareous, siliceous, or volcanic nature.

TULIP
Tulipe
Welding
The special form of a chamfer for welded joint.

TUNG TREE
Abrasin
Building Materials
Syn. with ABRASIN

TUNGSTEN INERT GAS WELDING
T.I.G.
Welding
See WELDING

TUNNEL
Tunnel; Galerie
Civil Engineering Structure
1. Linear cavity bored in the ground, without clearing of upper and side ground, with or without coverings, which contributes (in a more or less important way) to the unit stability.

Contrary to the underground passage, the tunnel is a work which leads to a communication channel, which always emerges to the open air at its two ends.
A carrying out of a tunnel is made by successive operations which must be good connected : striking down, mucking out, temporary supporting, final covering, finishings. The performance practice choice of a tunnel basically depends on the ground nature. Many practices are implemented. For economic reasons, we try to bore with the largest section (full-face boring, boring with the shield, boring with the tunneler). If the ground and the sections size impose it, we first bore and support the vaulted top part and then we pull the center core down (in half-section boring). In the case of hard ground, we bore in several drifts, according to various processes which have traditional denominations; among these are English, German, Austrian and Belgian practices (see DRIVING and NATM).
We can distinguish:
- **direction tunnel** *(le tunnel en direction),* which is bored parallel to the family of country rock discontinuities and which is usualy constituted by the stratification (opposite of main crosscut);
- **immersed tube or submerged tunnel** *(le tunnel immergé),* which is a clearing work constituted by an assembly of caissons made of reinforced concrete and rests on a river bed or on sea-beds, in a berth prepared for this purpose. Prefabricated caissons which have a mask at each end, are brought to their place by floating and are then immersed thanks to a system which ballast them by water filling (each caisson rests on intermediate bearings). When their assembly and stowing are carried out, we carry out the water expulsion out from the caissons.
- **crosscut tunnel** *(le tunnel en travers-banc),* is bored perpendicular to the family of the main discontinuities (usually constituted by the stratification).

See Figure 44
2. Syn. with GALLERY

TUNNEL HEAD
Tête de tunnel
Construction
The particular arrangement of the end of a tunnel (comprising cap, return wall, etc.).

TUNNEL LOADING
Marinage; Déblocage
Earthwork
Syn. with MUCKING OUT.

TUNNEL SURVEY TRUCK
W.I.T. (Wagon d'Inspection des Tunnels)
Assaying Equipment
A railway machine intended for tunnel inspection or other works such as road bridges, railway crossover, retaining walls, rocky trenches, etc. This truck consists of a job platform as a directional telescopic basket. **See Figure 45**

TUNNEL VENTILATION
Ventilation des tunnels
Civil Engineering Structure
Devices used to remove stagnant heat and polluting gases brought about by vehicles and diesel engines. Emissions from railway and traffic tunnels.
In traffic tunnels these devices are destined to ensure visibility spite of the release of diesel emissions and especially to control the air pollution from vehicles. Natural ventilation is limited because of the site, length and weather. To improve natural ventilation one has recourse to longitudinal and semitransverse ventilation using suction wells, etc.
During tunnel construction ventilation also is necessary, using vacuum pipes to displace polluted air with fresh. Ventilation practices differ widely depending on the design and geographical site of the tunnel.

TUNNELER
Tunnelier; Machine à forer pleine section
Equipment and Tools
Machine created and designed to bore galleries, tunnels, or full-face wells and which ensures the loading, the batter and the supporting, in addition to the boring, by using techniques of full-face shearing and test boring.
To bore the ground we use two effects of the cutting wheels punching in the face rock, resulting from the thrust due to the propulsion jacks on the head, and to its circular movement which is caused by engines around an axle. The progression is discontinuous with successive bearings and recoveries on retractable bearing plates. Current tunnelers diameters are contained between 3 and 11 m.

TUNNELING MACHINE
Machine à forer; Foreuse; Tunnelier
Equipment and Tools
Earthmoving machine used to bore underground works (galleries, tunnels). We can distinguish :

- **full-face tunneling machine** *(les machines pleine section)* (e.g., Robbins type); **See Figure 46**
- **boomheader *or* cutter boom tunneler** *(les machines ponctuelles)* (standard Alpine, Blaireau, etc.).

Full-face tunnelings are called *tunneler* or *tunneling machine*. Boomheaders are equipped with an hydraulically hinged arm and have on their head a (milling) cutter with picks or serrated rollers which disaggregate the ground by successive passes.
According to their operating mode, we can distinguish three big families of tunneling machines:

- **revolving full-face tunneling machine** *(la machine à plateau tournant),* is made of a piece whose drilling head is constituted by a turntable equipped with plougher picks. That is used for borings in loose grounds or soft rocks. The rock extraction principle is as follows: the turntable (drilling head) is strongly pressed on the front by jacks, while it carries out a rotational movement; tools punch the rock and let it burst in scales; **See Figure 46a**
- **full-face tunneling machine with fragmented drilling head** *(la machine pleine section à tête de forage fragmentée)* where massive turntable is replaced by distinct elements whose movements are independent but synchronized, so that all the section is drilled at the same time;
- **boomheader *or* cutter boom tunneler** *(la machine à attaque ponctuelle)* whose drilling head, of a reduced size, is carried by a mobile arm which let it sweep successively all the section of the gallery. Every common boomheaders with specific attack are equipped with cutter picks. **See Figure 46b**

TURBIDES
Troubles
Hydrology
Suspended matters carried by a waterway.

TURBIDIMETER
Turbidimètre
Equipment for Measure and Control
An instrument for measuring water turbidity.

TURBIDITE
Turbidite
Hydrology
A detrital sedimentary material (quartz, more rarely calcareous) given up by turbidity currents and characterized by verticalways and horizontalways grain-size classification. (A turbidite is formed by superposition of granoclassified sequences.)

TURBIDITY
Turbidité
Hydrology
The quantity of suspended matter in a waterway.

TURBINE BORING MACHINE
Foreuse à turbine
Equipment and Tools
Syn. with TURBINE DRILLING; TURBODRILL

TURBINE DRILLING
Foreuse à turbine
Equipment and Tools
Syn. with TURBINE BORING MACHINE; TURBODRILL

TURBOAGITATOR
Turboagitateur
Equipment and Tools
A device equipped with blades used for the mixing or brewing operations.

TURBODRILL
Foreuse à turbine
Equipment and Tools
A drilling machine in which the drill string is fixed. The tool is directly driven by a turbine with multiple formations that is directly put in above it. The turbine is sued by drilling fluid (water, mud) coming from the drill rod chuck. Syn. with TURBINE BORING MACHINE; TURBINE DRILLING

TURBODRILLING
Turboforage
Work
A drilling process in which driving of the bore bit is done by a turbine placed above and actuated by circulation of muds, the stand of drill

pipe remaining fixed. (It is about an alternative of the rotary drill.)

TURBULENCE
Turbulence
Hydraulics
A phenomenon of agitation, of disordered intermixing of fluid particles undergoes by a liquid at the entry of the zone of influence of an obstacle or a pipe, and which depends of the preliminary disturbance, of the own roughness of the walls of the obstacle or pipe placed in the liquid or around the liquid.

TURBULENT FLOW
Ecoulement turbulent
Geohydrology
A current in greatly permeable grounds. These volumes of water are more important than in the laminar flow, being displaced to a relatively accelerated regime in the ground. Syn. with EDDY FLOW

TURCY
Turcie
Civil Engineering Structure
A defense work build with the intention to protect some sites from the floods.

TURF
Engazonner
Civil Engineering
To sow grass a slope, an embankment.

TURN
Faire quartier; Donner quartier
Handling
To turn a stone on another side in order to present another face of it for cutting or bedding.

TURN BLUE
Bleuir
Metallurgy
To oxidize mild steel in order to endow it by this process a protection from corrosion.

TURN GRAB
Turn-grab, Grappin rotatif
Equipment and Tools
A drilling machine constituted by a rotary grap that enables, with each passes to extract an important quantity of ground. It is actuated by a telescopic square rod, the kelly, and a table of rotation. Drillings thus carried out are tubed using a provisional steel shaft lining pushed to the progress by a hydraulic system.

TURN OVER
Biller
Handling
To turn over a block of stone, concrete, etc., on the right or left side

TURNADOZER
Bouteur à pneus
Equipment and Tools
Syn. with WHEELED DOZER; TOURNADOZER

TURNAPULLS
Tournapulls
Equipment and Tools
An earthmover, synthesis of the scraper and the trailer with tractor provided with an interchangeable blade which bites the ground, excavated materials being stored inside a skip progressively of progress.

TURNAROCKERS
Tournarockers
Equipment and Tools
An earthmover of great capacity used to transport excavated materials. The swing of the skip is obtained thanks to a bringing closer of the two axles, combined with the action of a track rod.

TURNBUCKLE
Lanterne de serrage
Equipment and Tools
A coupler tapped at the two ends, particularly used for the assembly of the tie beam forming metal tie rod in the middle of a truss. **See Figure 47**

TURNBUCKLE SCREW
Ecrou à lanterne
Equipment and Tools
A rotating sleeve having two internal screw threads, used for joining end to end and lengthening threaded pieces.

TURNED PILLAR
Pilier tourné
Construction
In an underground quarry, pillar carried out by working of the rock around what will constitute the pillar; the turned pillar is therefore a natural supporting.

TURNED UP
Relevé
Carpentry
Of a tie beam of truss that is not horizontal, but presents two slopes such as the lower point of the king post of the truss is situated at a level higher than that of the assembly at the bearing.

TURNING
Balancement
Construction
Syn. with BALANCING

TURNING POINT
Station
Topography
Syn. with CHANGE POINT

TURNROUND LAUNCHING
Lancement par conversion
Handling
Syn. with ROTATION LAUNCHING; WHEEL LAUNCHING

TURP SPIRIT
White spirit
Painting
Syn. with MINERALSPIRIT; TURP SUBSTITUTE

TURPENTINE
Essence de térébenthine
Painting
Syn. with OIL OF TURPENTINE

***TUSSCHENBROECK'S* TEST**
Essai de *Tusschenbroeck*
Test of Materials (Hydraulic Binders)
A test intended for studying the false set of cements; it consists in vigourosly mixing in a container 300 g cement and 105 g water for 1 min. The very fluid paste is then versed in Vicat's cupel, and one make consistency probe of diameter 1 cm and of weight 300 g going down every minute. False set appears when the probe does not touch more the bottom of the cupel before a waiting period for 15 min (after mixing). The height of the refusal under the probe and time of appearance of the phenomenon enables to quantify the intensity and speed of the false set.

TWIN CRYSTAL
Made
Geology
Syn. with MACLE

TWIST
Vrillage; Vriller
Defects
1. The helical deformation of a piece longer than wide; example, a post.
2. To take a helicoid form speaking of a piece, for example of a post. (The verb *to warp* applies preferably to thin pieces, such as sheet metal, for example.)

TWIST DRILL
Mèche
Equipment and Tools
Syn. with AUGER BIT

TWIST METER
Torsiomètre
Assaying Equipment
An instrument for measuring deformations of a test specimen subjected to the twist test.

TWIST TEST
Essai de torsion
Metallography
Test which is mainly carried out to know the characteristics of a metal subjected to great deformations. As the twist does not put the test specimen out of shape, the constriction phenomenon is eliminated. The test specimen which has a full or empty cylindrical form, is taken, on one side, in a gripping jaw bound to a lever which measures the applied torque, and on the other side in a gripping jaw driven by uniform rotational movement. The rotation difference of the two gripping jaws provides the sample twist.

TWISTED
Voilé
Building Materials
Syn. with WARPED

TWISTED FIBERS
Fils tors
Defects (Building Materials)
Syn. with INTERLOCKED GRAINS; SPIRAL GRAINS

TWISTED TIMBER
Bois gauche
Defects (Building Materials)
A piece whose straightness is not perfect after its square sawing.

TWO-BALL
Biboule
Materials
A device constituted by two concrete spheres connected between they by a stainless reinforcement. Two-balls are working at the foot of foundations in aquatic site with the purpose to provide them from underwashings.

TWO-COMPONENT CONCRETE
Béton binaire
Building Materials
A material whose skeleton is formed by two different granular class. Syn. with BINARY CONCRETE

TWO-PART
Bicomposant
Materials
Syn. with BICOMPONENT

TWO-PRONGED FORK
Bécat
Equipment and Tools
A pitchfork with two broad teeth used to excavate stony grounds. Syn. with TWO-TINE FORK

TWO-TINE FORK
Bécat
Equipment and Tools
Syn. with TWO-PRONGED FORK

TYING
Chaînage; Chaînement
Construction
The result of the implementation of a wall tie.

TYING WIRE
Ligature
Construction of R.C. and P.C.
Syn. with BINDING WIRE; TIE; WIRE TIE;

TYMPANUM
Tympan
Construction
One holds rather the term *tympanum* to the spandrel walls of the viaducts and that of *spandrel walls* for bridges. By extension, surface located in edge, under the roadway (or railway track), contained between the arch and the cap of a metal or concrete bridge. Syn. with FRONT WALL; SPANDREL WALL. **See Figure 49 to 49b**

TYMPANUM DETACHMENT
Décollement de tympan
Defects (Masonry)
Damage that concerns the masonry bridges that appears in the form of breaking between the tympan and the vault. This defect is mostly followed by a sloping overhanging of the tympan.
Indeed, under the influence of the rolling load, the vault bends; the tympan mostly thicker, is only subjected to its peculiar weight in the vertical plan, bears in contrast the side thrust of the ballast (in the case of a railway bridge) and behaves such as a breast wall; it results some the frequent separation of these elements. There exists others causes to this kind of damage such that the recovery of the profile of ways, the suppression of sidewalks for widening the roadway, etc. **See Figure 48**

TYMPANUM STANDARD
Potelet
Construction
A vertical element of the tympanum equipping some arch bridges with upper deck that connects the deck with the arc. **See Figure 50**

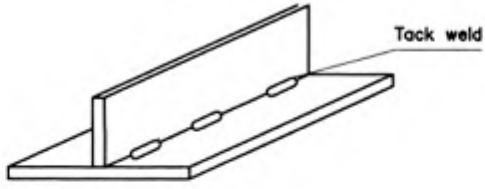
TYROLEAN FINISH
Enduit tyrolien; Mouchetis; Crépi tyrolien
Masonry
A spraying mortar of granular aspect applied in one or several layers, down high, with a mechanical machine called *roughcast machine* or with a pneumatic gun. Syn. with ALPINE FINISH; ROUGH RENDERING; ROUGHCAST

TYROLEAN MACHINE
Tyrolienne; Crépisseuse; Moustiquette
Equipment and Tools
Syn. with ROUGHCAST APPLICATOR; ROUGHCAST MACHINE

Figures of the letter

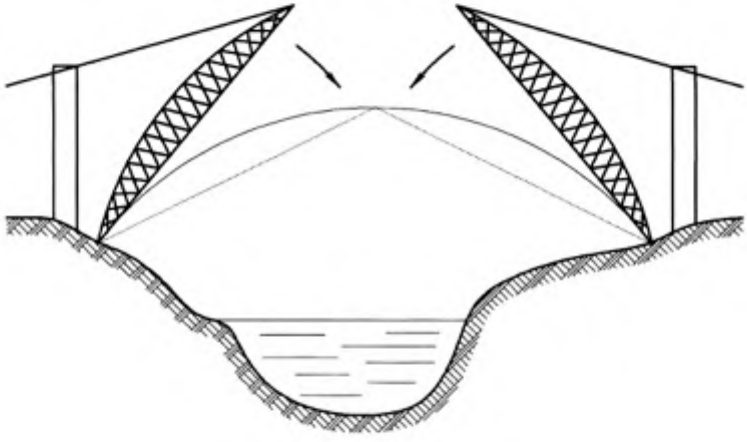


Fig. 1



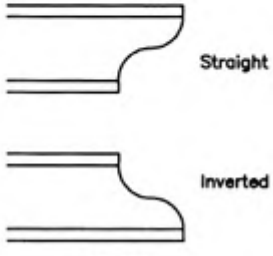
TACK WELD

Fig. 2



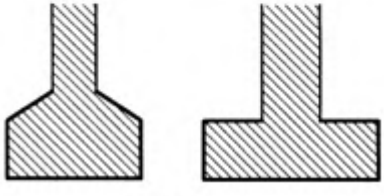
TAKING UP BY SWINGING

Fig. 3



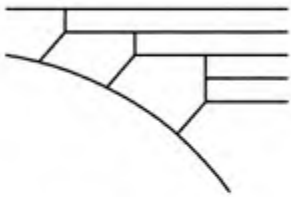
TALON

Fig. 4



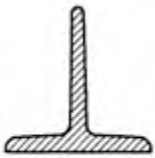
TALON

Fig. 5



TAS–DE–CHARGE

Fig. 6



T–BAR

Fig. 7

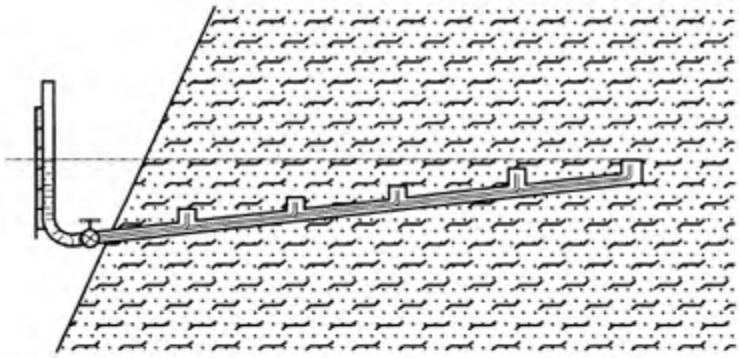
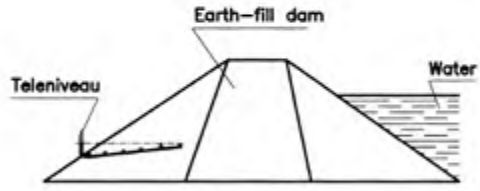


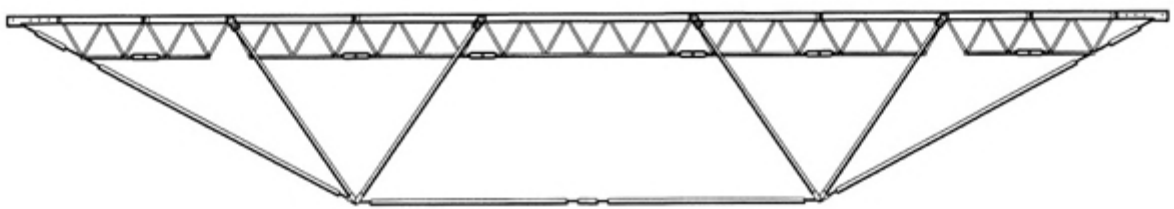
Fig. 7a



Principle

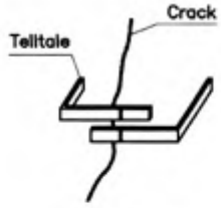
TELENIVEAU

Fig. 8



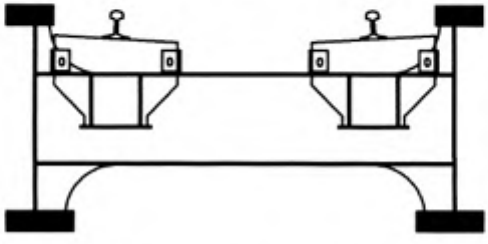
TELESCOPIC TRUSS JOIST

Fig. 9



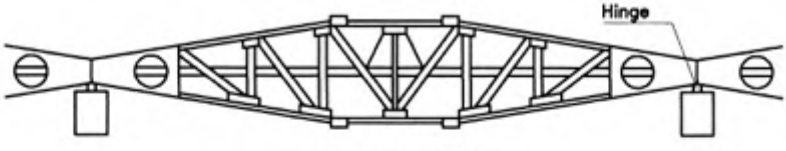
TELLTALE

Fig.10



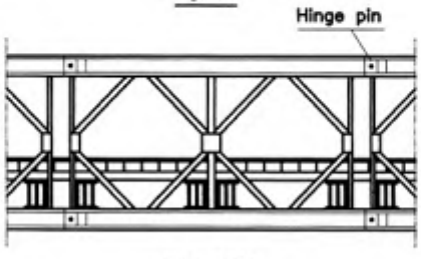
Temporary bridge with welded twin girders

Fig.10a



Arromanches bridge

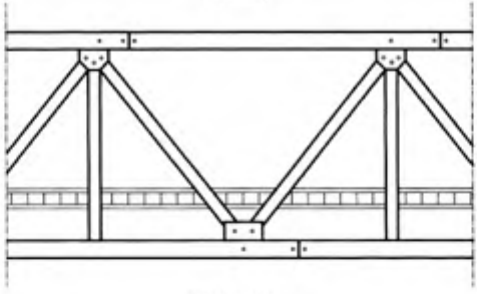
Fig.10b



Bailey bridge

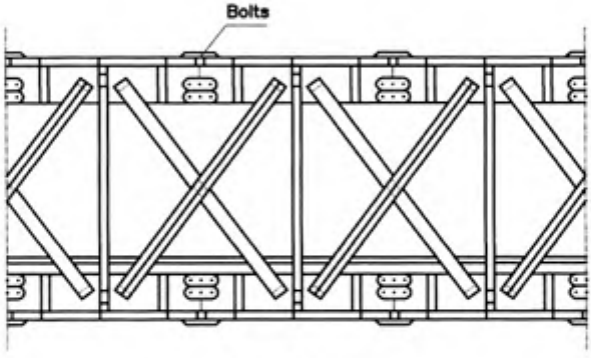
TEMPORARY BRIDGE

Fig.10c



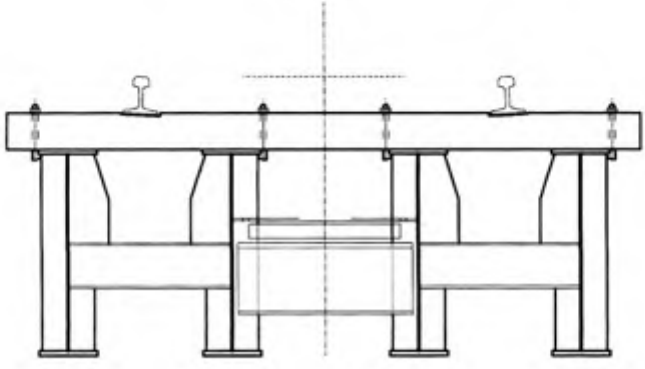
Eiffel bridge

Fig.10d



Pigeaud bridge

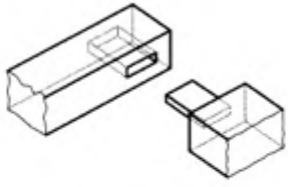
Fig.10e



English semiportable bridge

TEMPORARY BRIDGE

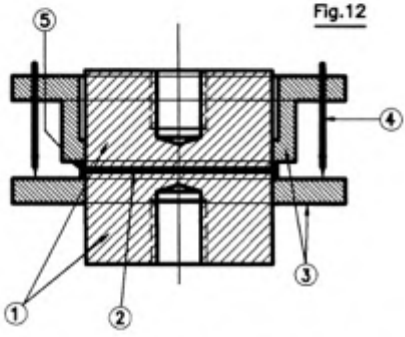
Fig.11



Mortise–and–tenon joint

TENON

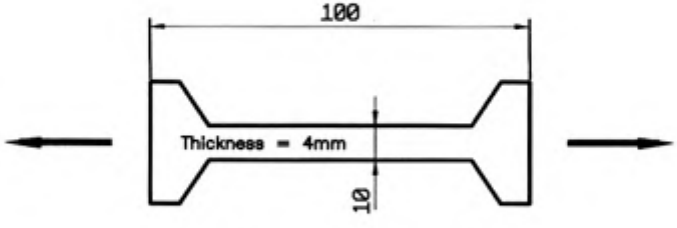
Fig.12



1 = Steel cores
2 = Resin
3 = Steel flasks
4 = Displacement sensor
5 = Rubber skirt

TENSILE TEST ON RESIN THIN FILMS

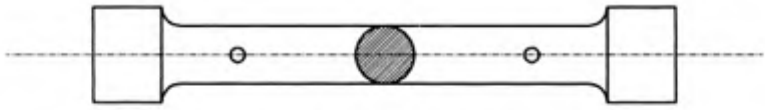
Fig.13



Barbel test piece for tensile test

TEST PIECES (Different types)

Fig.13a



Tension specimen with circular cross section (metal test)

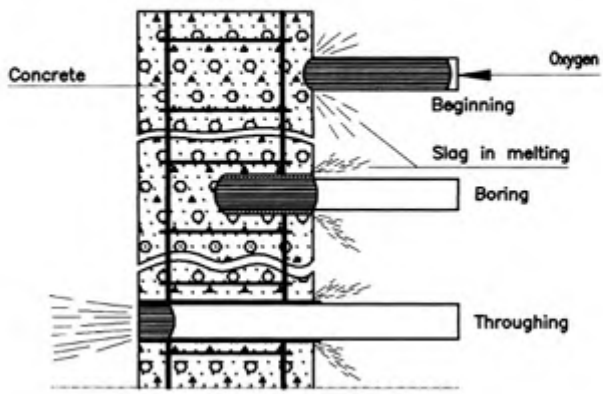
Fig.13b



Test piece for testing of sticking of concrete

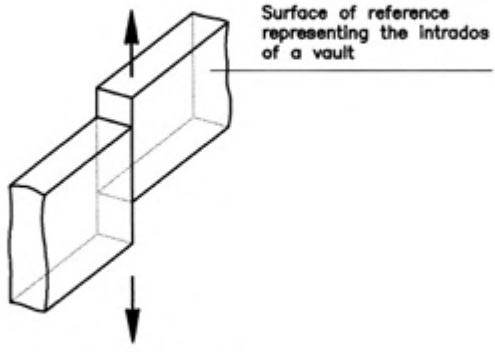
TEST PIECES (Different types)

Fig.14



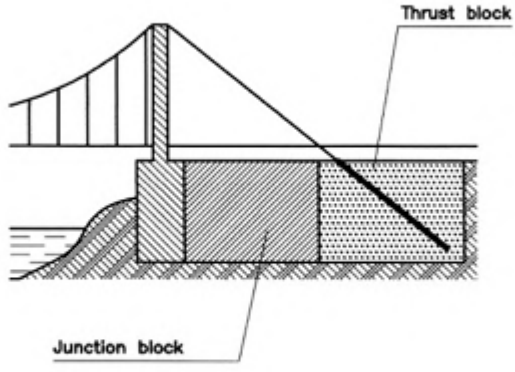
THERMAL BORING WITH OXYGEN LANCE

Fig.15



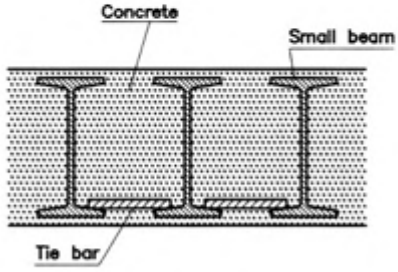
THROW OF A CRACK

Fig.16



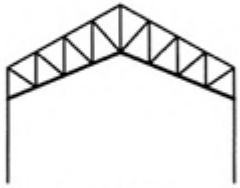
THRUST BLOCK

Fig.17



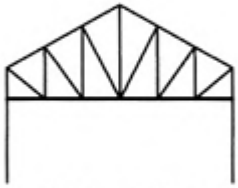
TIE BAR

Fig.17a



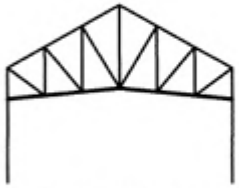
Collar beam

Fig.17b



Straight tie beam

Fig.17c



Raised tie beam

TIE BEAM

Fig.18

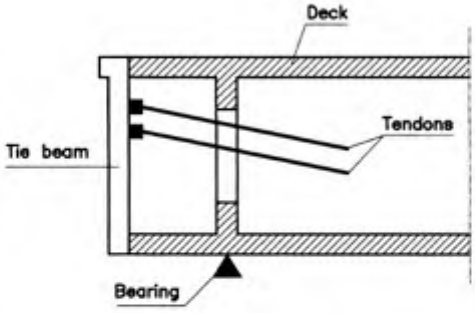
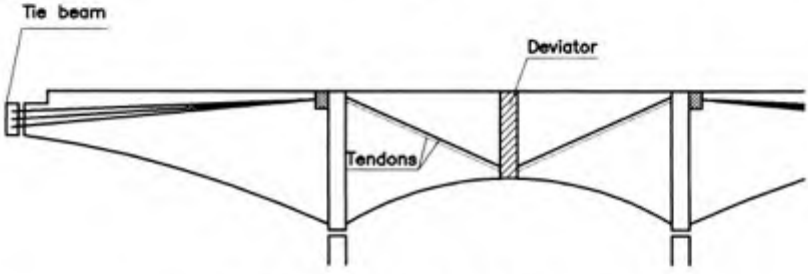
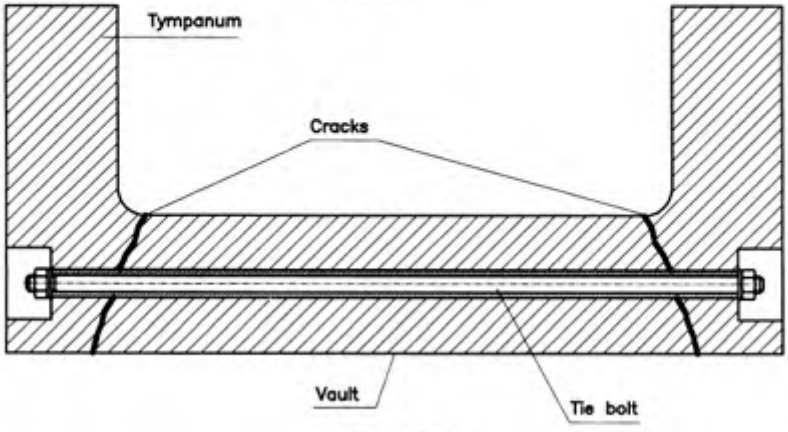


Fig.18a



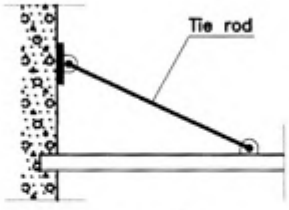
TIE BEAM OF END ANCHORAGE

Fig.19



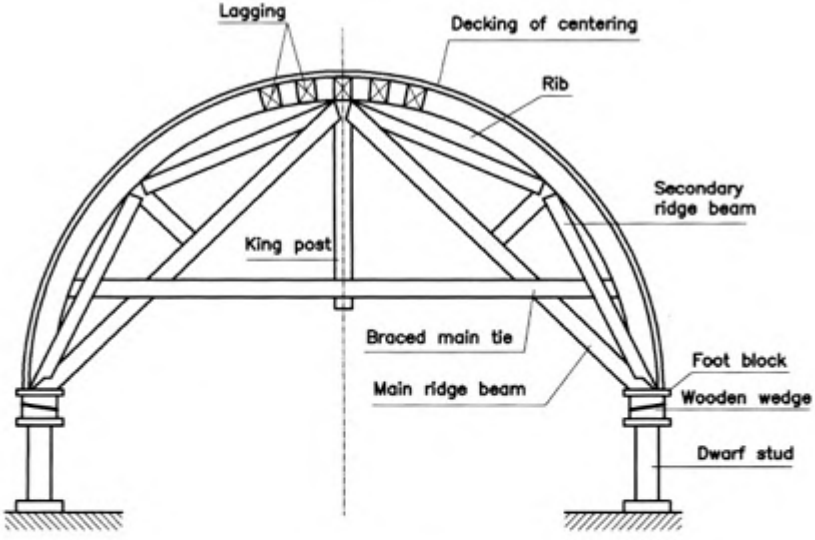
TIE BOLT

Fig.20



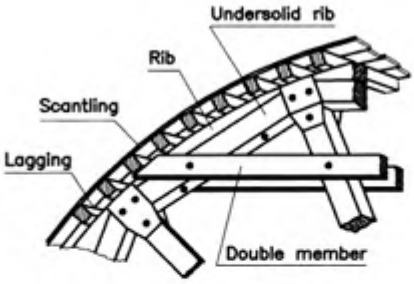
TIE ROD

Fig.21



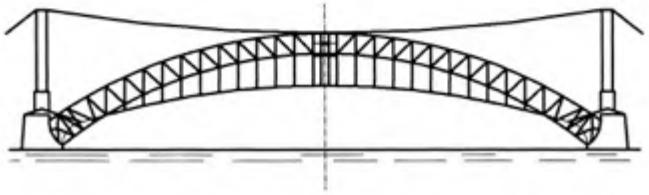
TIMBER CENTERING

Fig.21a



TIMBER CENTERING (details)

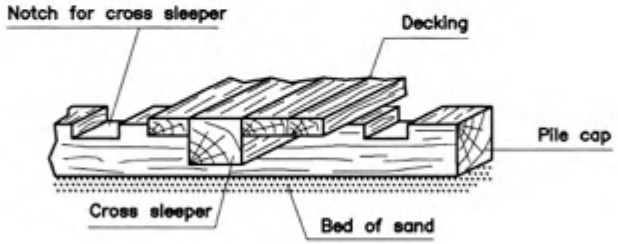
Fig.21b



Timber centering suspended by cables with 2 arches of metal frame

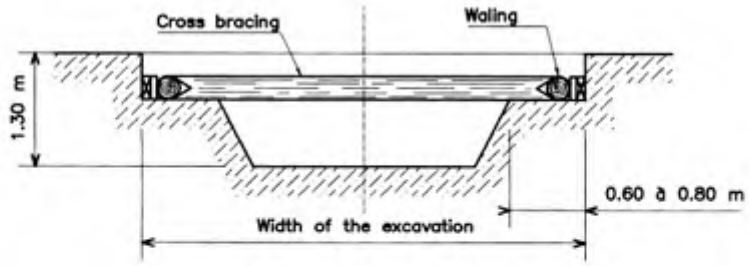
TIMBER CENTERING

Fig.22

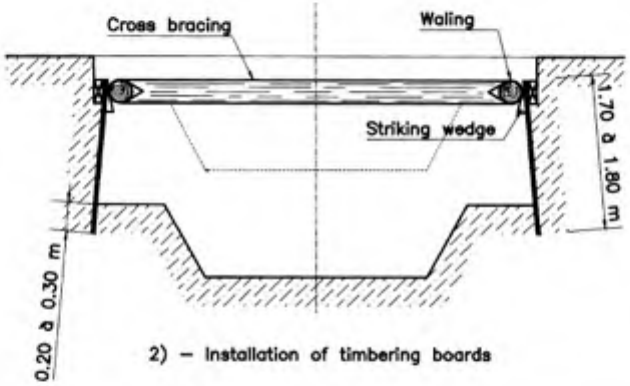


TIMBER MAT

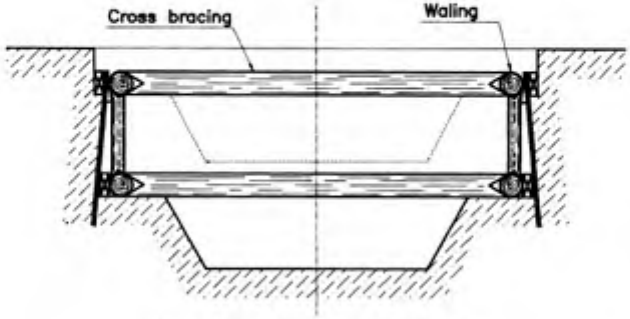
Fig.23



1) – Installation of the first set



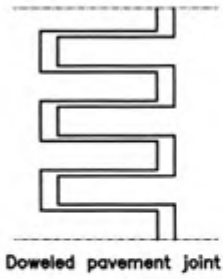
2) – Installation of timbering boards



3) – Installation of the second set

TIMBERING (Principle of timbering of an excavation)

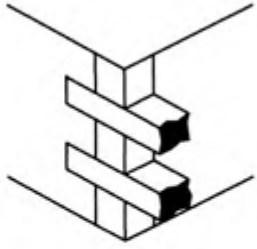
Fig.24



Doweled pavement joint

TOOTH

Fig. 25



TOOTHING

Fig.25a

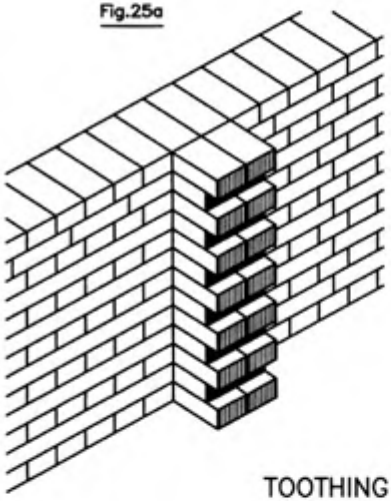
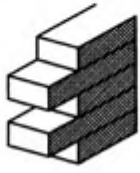


Fig.25b



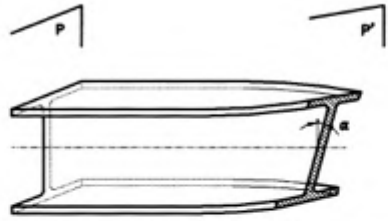
TOOTHING (brick or stone)

Fig.25c



TOOTHING

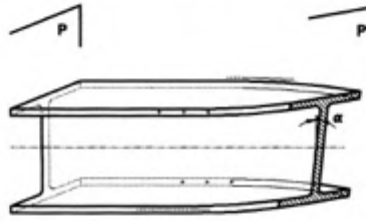
Fig.26



Side of transverse restraint

FREE LEFT TWIST : The plan P' undergoes a warping.
The angle of twist α is more important for the same moment of twist that in impeded twist.

Fig.26a

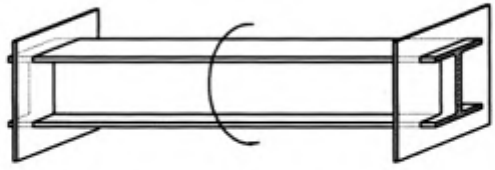


Side of complete restraint

Side of the pure twist

LEFT TWIST TOTALLY IMPEDED. The plan P is parallel to P' that remains plan.

Fig.26b

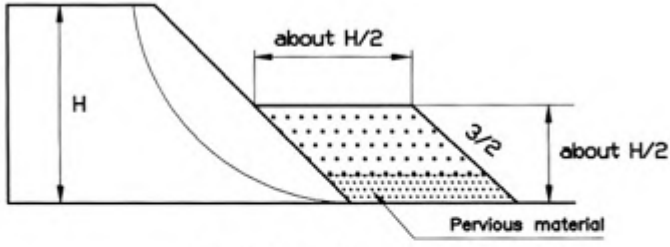


Left twist on short beam impeded in the central part.

Left twist

TORSION

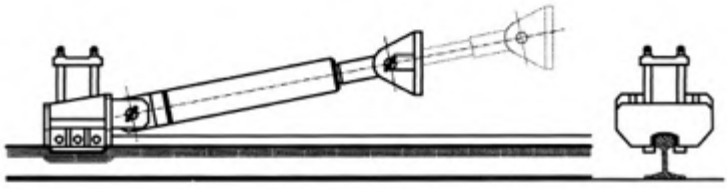
Fig.27



Track bench of toe

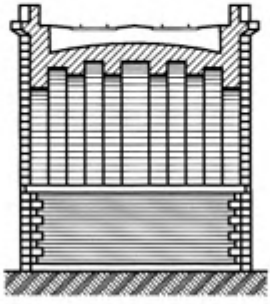
TRACK BENCH

Fig.28



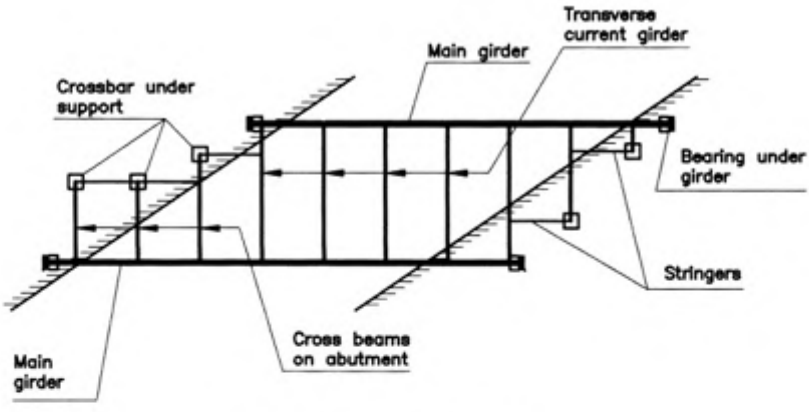
TRANSPACK

Fig. 29



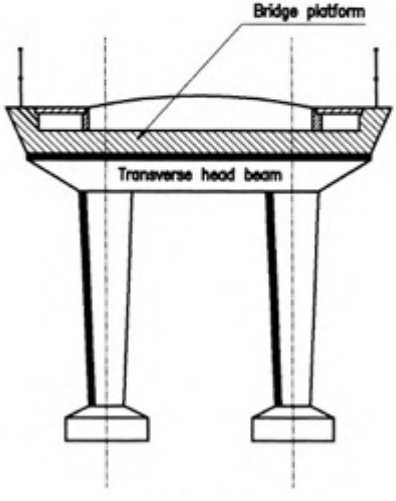
TRANSVERSE ARCH

Fig.30



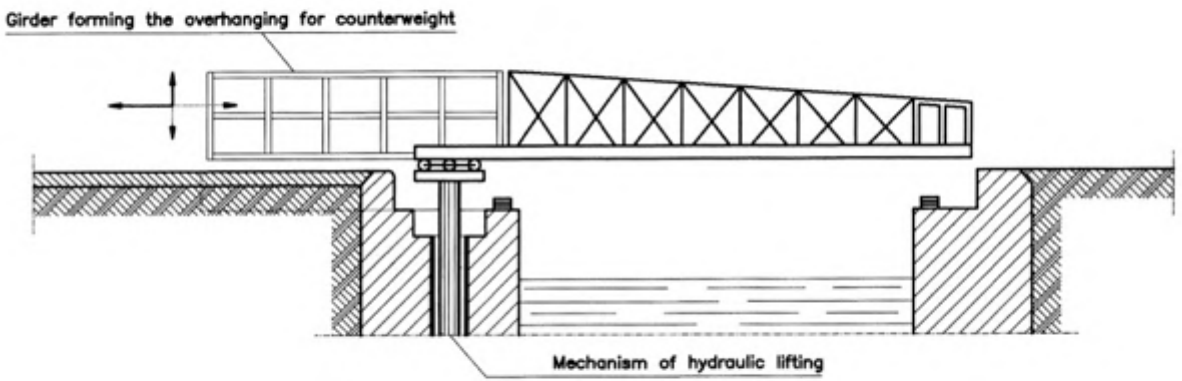
TRANSVERSE GIRDERS

Fig.31



TRANSVERSE HEAD BEAM

Fig.32



TRAVELING BRIDGE

Fig.33

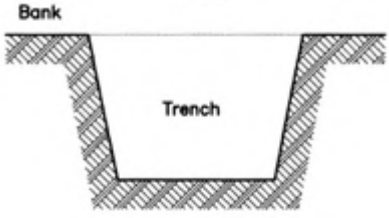
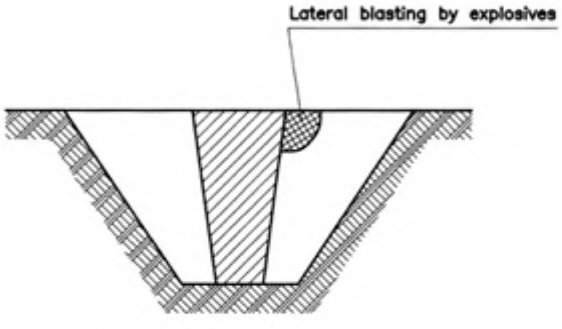
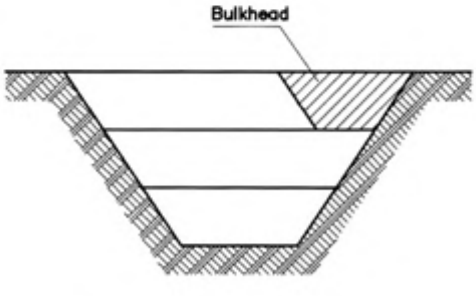


Fig.34



Trench (central bulkhead method)

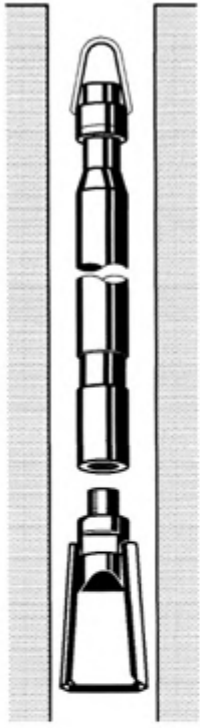
Fig.34a



Trench (lateral bulkhead method)

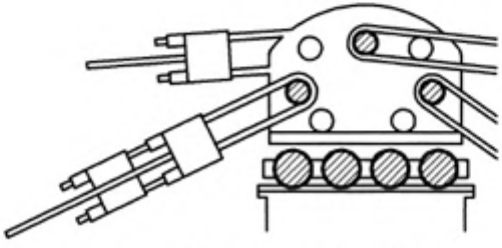
TRENCH

Fig.35



TREPAN (with casing)

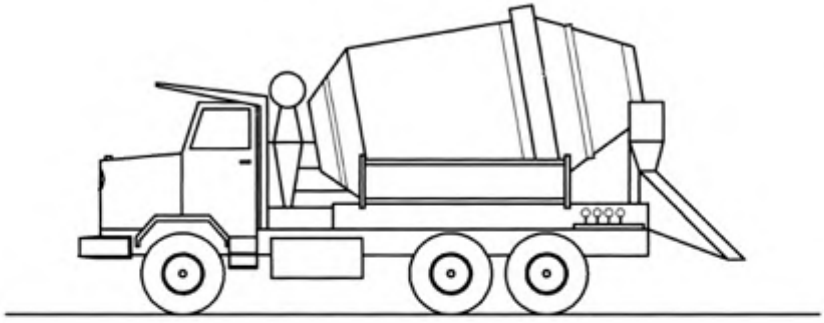
Fig.36



Trolley of suspension bridge

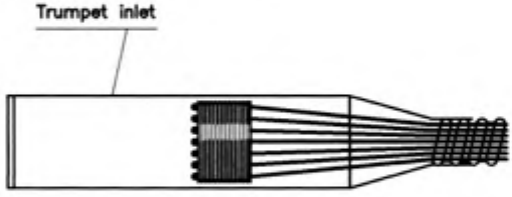
TROLLEY

Fig.37



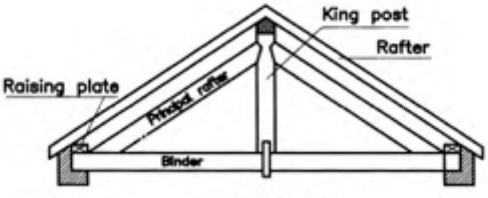
TRUCK MIXER

Fig.38



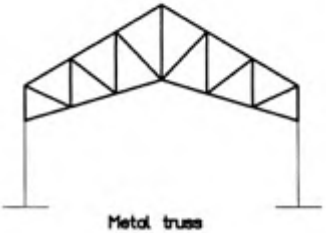
TRUMPET INLET

Fig.39



Wooden truss

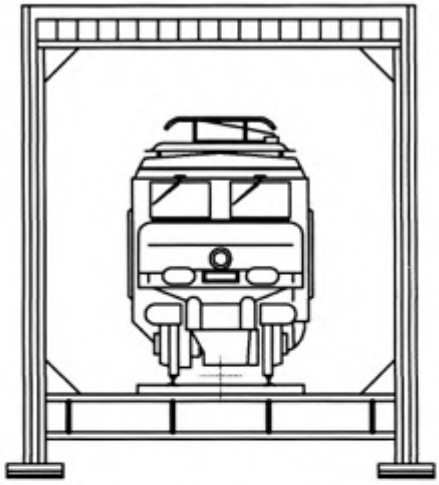
Fig.39a



Metal truss

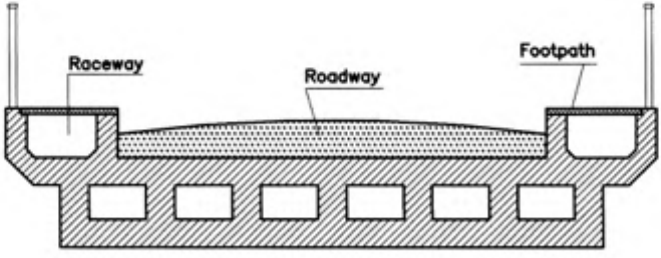
TRUSS

Fig.40



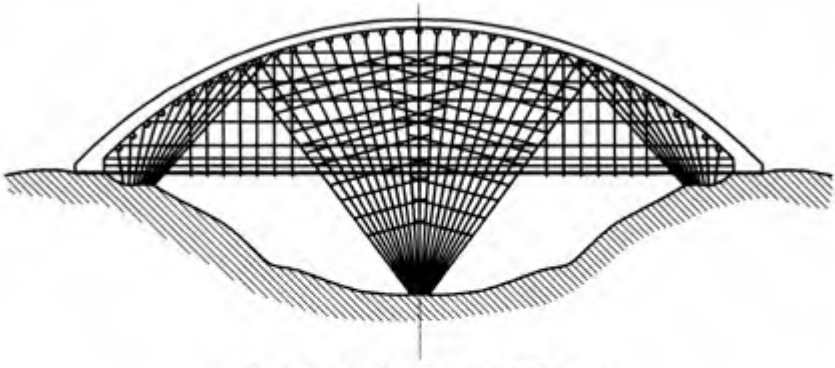
TUBULAR BEAM or GIRDER

Fig.41



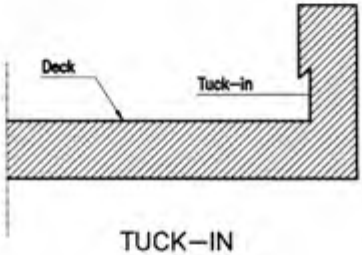
TUBULAR BRIDGE OF R.C.

Fig.42



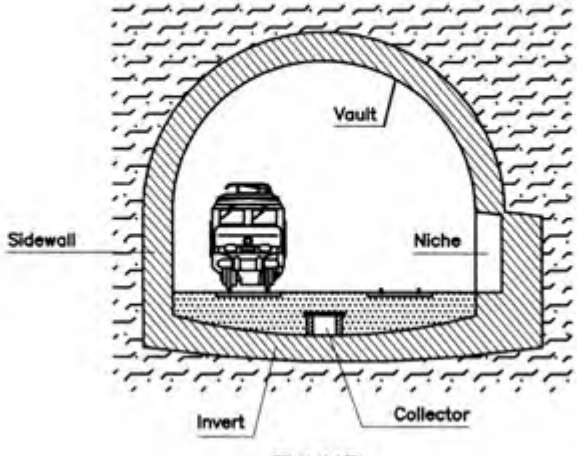
TUBULAR STEEL CENTERING

Fig.43



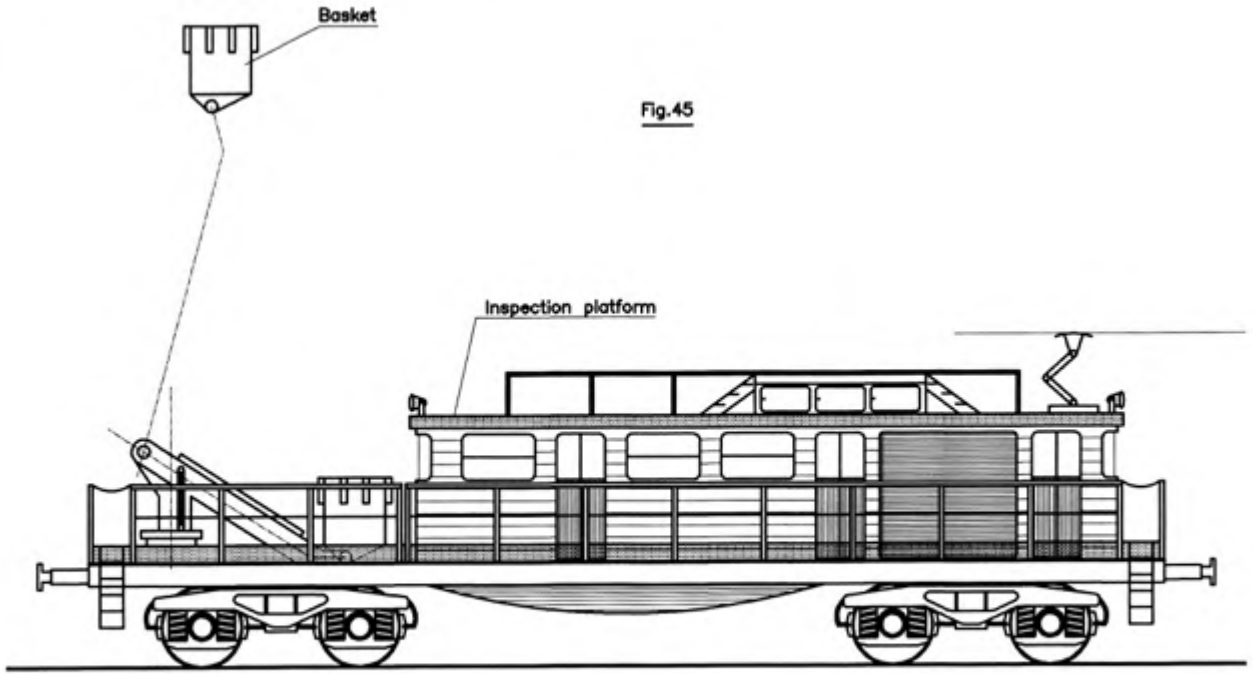
TUCK—IN

Fig.44



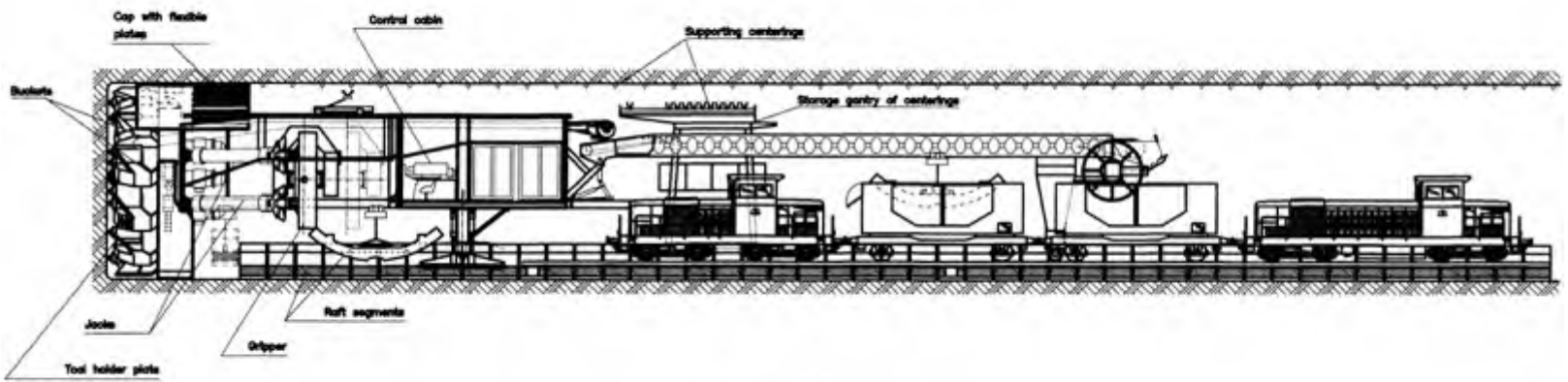
TUNNEL

Fig.45



TUNNEL SURVEY TRUCK

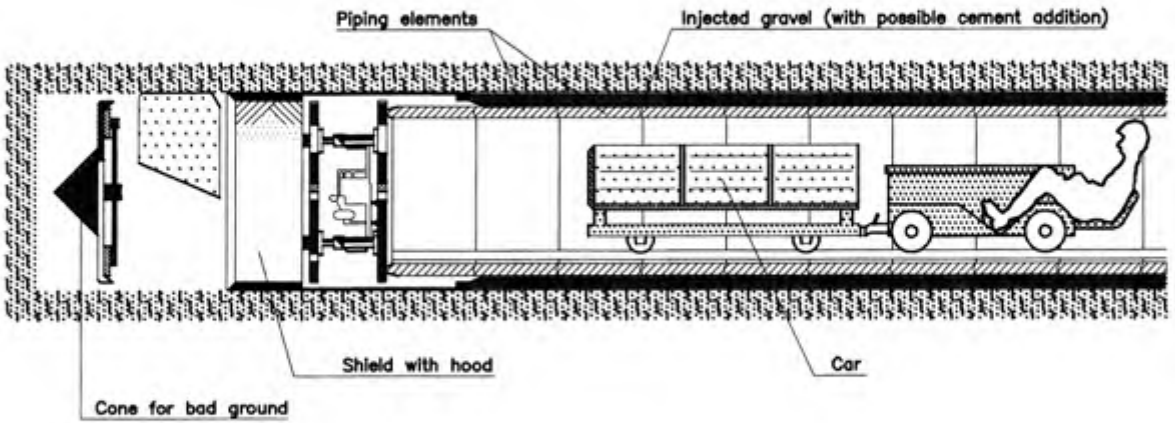
Fig.46



Fulllface tunnelling machine (Longitudinal section)

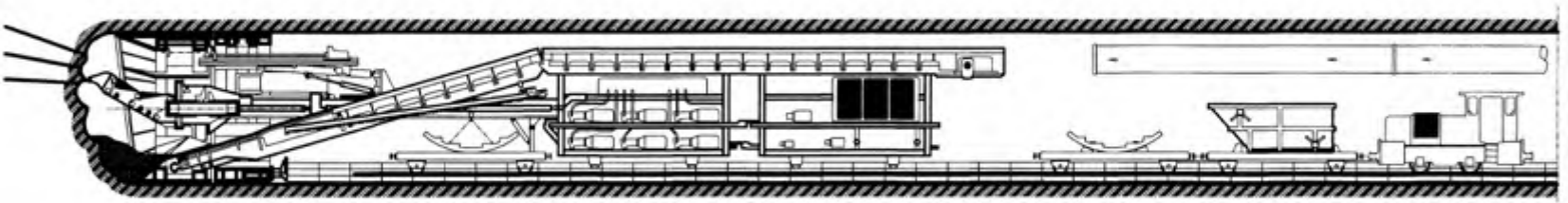
TUNNELING MACHINE

Fig.46a



TUNNELING MACHINE

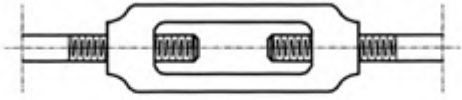
Fig.46b



Boomheader

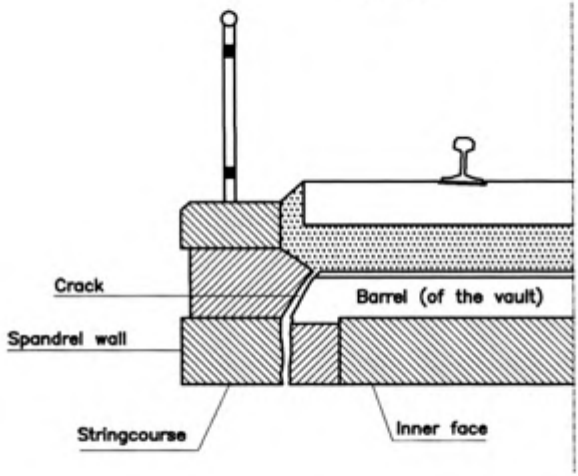
TUNNELING MACHINE

Fig.47



TURNBUCKLE

Fig.48



TYMPANUM DETACHMENT

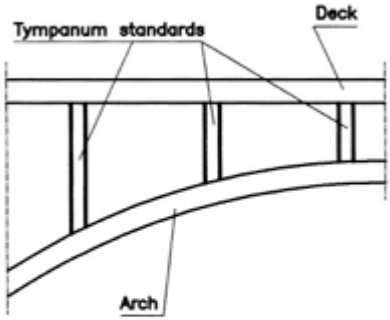
Fig.49 Fig.49a Fig.49b



Different types of bridge tympans of masonry

TYMPANUM

Fig.50



TYMPANUM STANDARD



U-AXLE
Etrier
Equipment and Tools
Syn. with U-BOLT

U-BOLT
Etrier
Equipment and Tools
A piece supporting the axle of a pulley in a pulley block. Syn. with U-AXLE.

U-CHANNEL
Coulisse; U
Building Materials; Metallurgy
1. A U-shaped cold-rolled section whose two equal or unequal legs have in-curving edges, so that its profile resembles a C. The section is then called a C.
2. A standard section resembling the letter U. Syn. with CHANNEL IRON

ULCER
Ulcère
Defects (Building Materials)
A lesion of wood penetrating down to the woody body. The atmospheric agents having deteriorated the external rings of sapwood, it lets flow a brownish liquid. The ulcers can also be produced by sap fermentation, accumulated in a particular point. It is an affection from which the tree can die

U-LINER
Chemisage
Construction
The dubbing of a defective pipe with a polyethylene pipe.

ULTIMATE DESIGN
Calcul à la rupture
Strength Materials
A design method of the elements of a reinforced or prestressed concrete construction assuming on the premise that the obtained balance corresponds to a given ratio between the working load and breaking load.

ULTIMATE EQUILIBRIUM
Equilibre limite
Geotechnics
Syn. with LIMIT EQUILIBRIUM

ULTIMATE LOAD
Charge ultime
Foundation
The breaking load of the constitutive materials of piles or wells.

ULTIMATE RESISTANCE
Résistance ultime
Strength of Materials
The strength taken into account to size tunnels built in the rock to guarantee stability of it.

ULTRABASIC ROCK
Roche ultrabasique
Geology
A grained-texture plutonic stone made up for more than 90% of its volume by colored and mafic minerals (high iron and magnesium content).

ULTRAFINE SAND
Sablon
Geology
A finest sedimentary sand.

SABLON n.m.
Ultra-fine sand; Scouring sand
Géologie
Sable sédimentaire très fin.

ULTRASONIC CONTROL
Contrôle ultrasonique
Test of Materials
The verification, by the means of ultrasonic sounds, of materials such as piles, metal pieces, concrete, etc. The principle consists in measuring the propagation velocity of a wave within the concerned material, between a ultrasonic transmitter and receiver. The propagation velocity depends on the quality and defects encountered throughout the structure of the material.

ULTRASONIC TESTING
Contrôle par ultrasons
Test of Materials (Metallurgy)
A process for detecting defects in the internal structure of a metal.
The ultrasonic testing is the most widespread practice of nondestructive detection; the detectors are probing transmitters and piezoelectric quartz or oxide receivers. The control by transmission is performed through the separation of the probing transmitter and receiver, the internal defects of the metal more or less lessening the transmitted waves.
The reflection control (echo process) is carried out through a probing transceiver (which is operational even if one of the piece's faces is not accessible); the defect can then be localized in depth. The control by resonance, with variable frequency, allows the measurement of materials' thickness or of the sound velocity within a material whose thickness is known. (This type of inspection is not valid for puddled iron.)

UMBER
Terre d'*Ombre ou* Terre de *Nocera*
Geology
A natural range of a hydrated ferric oxide coming from Ombrie (Italy). It is a reddish brown ochre.

UMBRELLA
Parapluie
Construction
A safety device from the rain and flows of water fitted under a nontight bridge deck. This equipment is generally laid out under the bottom chord of metal bridges crossing a channel of communication used by pedestrians (for example : sidewalk bordering an abutment). The umbrella extends over the whole work's width; it consists of a metal sheet inclined toward the abutment (or the pile) that pours the collected water in a valley gutter directed toward an outlet. Syn. with SHIELD. **See Figure 1**

UMBRELLA SHEET
Plaque parapluie
Construction
A plate fastened at the intrados of a vaulted railway tunnel that protects from drippings and stalactites of ice the parts under tension of the electrical traction devices or the subgrade.

UMBRELLA VAULT
Voûte parapluie
Construction
A non-carrying construction which protects the space reserved for traffic from falls of small stone blocks in tunnels. This device also limits the water circulation between the umbrella vault and the intrados of the tunnel. Umbrella vaults can be of precast concrete or metal.

UNALIGNED
Désaxement
Defects
Syn. with OUT OF LINE

UNBARKED TIMBER
Bois en grume
Building Materials
Syn. with ROUND TIMBER

UNBLOCKING
Décaissement
Earthwork
The removal of filling materials and earth at the stern of the vault and/or the abutment of a bridge.

UNBROKEN ROCK
Roche intacte
Earthwork
Speaking about heading of a tunnel and following a shot firing, rock that presents no fault or internal joints.

UNBURNT LUMP
Incuit
Hydraulic Binders
The inert part of a hydraulic binder whose baking during its development was not brought up at a sufficient temperature to cause the normal reactions accompanying this baking.

UNCERTAIN JOINT
Joint incertain
Masonry
The characteristic bond of a random rubble work bonding (that does not have definite orientation).

UNCOIL
Délover
Equipment and Tools
Syn. with UNWIND

UNCONFINED COMPRESSION TEST
Essai de compression simple
Geotechnics
A test which allows the determination of the normal pressure producing the breaking of a ground test specimen without lateral stresses and authorizes the calculation of cohesion if one knows the value of the angle of internal friction. The simple compression press is made of a jack and mainline ring. The test also allows to determine the shearing characteristics of a sample and the angle of internal friction.

UNCONFINED COMPRESSION TEST OF REINFORCED CONCRETE VERTICAL ELEMENT
Compression simple d'un élément vertical en béton armé
Strength of Materials
A rectilinear body subjected to forces which tend to shorten it and within which all fibers are solicited likewise. The unconfined compression of a vertical element of reinforced concrete therefore implies that in each cross section the following elements shall tally:
- the center of gravity of the busy area by the steel,
- the center of gravity of the busy area by the concrete,
- the point of passage of the external force.

The latter forces reduced then to a normal compression force. Cases in point are poles, columns, piles, etc.

UNCOURSED RUBBLE
Blocage hourdé
Masonry
Syn. with BLOCKING; HARDCORE; RANDOM

UNDERBENT
Sous-bandé
Carpentry
Of a horizontal structural member such as a beam, a ground sleeper, etc., which, bearing on two supports and loaded in its central point, should work to the bending but that a lower tie rod, anchored at its ends, force to be worked to the compression.

UNDERBREAK
En profil *ou* Sous profil
Topography
The volume determined between the theoretical profile and the real profile of a tunnel when the ground moves away from the theoretical profile toward inside of the work. Syn. with UNDERSECTION

UNDERBRIDGE
Passage inférieur
Civil Engineering Structure
A work which allows to a channel of communication to pass under another. In the French Railway (SNCF), this type of work is

called *railway bridge.* Syn. with UNDERGRADE CROSSING; UNDERPASS

UNDERCOAT
Sous-couche
Materials
A layer of product or materials that must be covered by one or several layers.

UNDERCONSOLIDATED SOIL
Sol sous-consolidé
Geology
A ground whose natural evolution of consolidation has not yet arrived in its term (example, recent deposits).

UNDERCROFT
Cryptoportique
Civil Engineering Structure
Syn. with CRYPT

UNDERCUT
Morsure; Caniveau
Defects (Welding)
1. A small lack of metal removed by melting, during the welding on the edge of the one of the parts.
2. A small cavity inside a weld bead due to a insufficiency of deposited metal.
3. A defect characterized by the presence after welding of small basins or furrows parallel to the weld bead at the weld metal and parent metal junction. **See Figure 2**

UNDERCUTTING
Erosion régressive
Hydrology
Syn. with BACKWARD EROSION; REGRESSIVE EROSION

UNDERFIRED BRICK
Vare-crue
Building Materials
Insufficiently fired brick, therefore unacceptable for use in construction.

UNDERFLOW
Sous-écoulement
Hydrology
A current of water doubling in depth surface rivers.

UNDERFORM
Couche de forme; Couchis
Civil Engineering: Construction
1. The top layer of ground intermediate between the ground and the base course of a roadway, improved by supply of materials or by treatment with cement or lime.
2. An improved subgrade of sand or other materials on which rests the final revetment (paving, tarmacadam, etc.).

UNDERGRADE CROSSING
Passage inférieur
Civil Engineering Structure
Syn. with UNDERBRIDGE; UNDERPASS

UNDERGROUND CAVITIES
Cavités souterraines
Geomorphology
Underground excavations of various natural origins (dissolution of limestones, etc.).
Some of the main cavities are:
- **caves *or* dens *or* lairs** (les *antres),* excavations with unique hall;
- **caverns** (les *cavernes),* excavations with several communicating halls;
- **lairs *or* dens** (les *tanières),* cavern or simple hole being of use as shelter to an animal.

These three types of cavities are called *caves.* The den and cavern roof is often adorned with stalactites and draperies.
Syn. with SOLUTION CAVITIES; UNDERGROUND HOLES. **See Figure 3**

UNDERGROUND CHANNEL
Chatière
Hydrology
A underground channel of masonry which enables the water draining from a basin.

UNDERGROUND EROSION CAVITY
Folletière
Hydrogeomorphology
An underground erosion caused by water circulation between the hard (rock) and soft zones of the basement. With short steps, the gnawed terrain carves into cylindrical blocks that subside. In surface, the vegetable ground remains on the spot, but collapses over time.

UNDERGROUND HOLES
Cavités souterraines
Geomorphology
Syn. with SOLUTION CAVITIES; UNDERGROUND CAVITIES

UNDERGROUND PASSAGE
Passage souterrain
Civil Engineering Structure
Syn. with PLATFORM SUBWAY; SUBWAY; UNDERPASS

UNDERGROUND ROCKET
Fusée souterraine
Earthwork
A device for piercing embankments in which pipes will be installed. It is a self-propelled machine which is, operated thanks to compressed air by the agency of an internal piston, which by a rapid alternative movement of touch/hammering, propels the machine.
The use of this machine prevents the opening of a trench. There are two ways to work it, either in drilling or in pipe-pushing machine. **See Figure 4**

UNDERGROUND SEEPAGE
Percolation
Geology
The natural percolation of the rainwater through a more or less porous soil. Syn. with PERCOLATION

UNDERGROUND TANK
Bachou
Sanitary Engineering and Drainage
A small underground basin where accretes oozing waters.

UNDERGROUND WATER
Eau souterraine
Geohydrology
A water coming largely from seepages and zenithal water percolations; it most often gathers in natural cavities of the basement or is found in dispersion in very permeable terrains.
There are several types of underground water:
- **phreatic** *(les eaux souterraines phréatiques),* located between 0 and 50 m from the ground surface;
- **subsurface groundwaters** *(les eaux souterraines de subsurface),* located between 50 and 250 m deep
- **deep** *(les eaux souterraines profondes),* located more than 250 m deep.

Syn. with SUBSURFACE WATER; SUBTERRANEAN WATER

UNDERGROUND WATER BED
Mur d'une nappe
Geohydrology
An impermeable formation on which rests underground water.

UNDERMINE
Affouiller; Saper; Caver; Miner
Hydrology; Earthwork
1. To mine, to dig, speaking of the water action.
Syn. with ERODE; LAY BARE, WASH AWAY
2. To attack a wall or to erode a bank at the base.
Syn. with UNDERCUT
3. To dig under.
4. To sap a work to demolish it.

UNDERMINING
Affouillement
Defects (Foundation); Geomorphology and Hydrology
1. A funnel-shaped excavation which forms itself in the ground, at the base of piers or abutments, consequently to the swirling movements of water.
Undermining is local or general:
- **local** *(l'affouillement local)* is an erosion of bottoms in connection with the concentration of swirls of horizontal axis which become within a horseshoe-shape around the bearing [the materials of the bed are torn off the upstream (by the vertical component of the flow), are raised and carried by the current. It forms a conical pit whose deepest point is situated in the vicinity of the upstream generatrix];
- **general** (*l'affouillement général)* is an erosion of beds which concerns the totality of the bearing and which extends far upstream or downstream of the aforesaid support.

2. An action of underground waters modifying the structure of a ground under a foundation block, and capable of deteriorating the balance of this block vertically or in rotation or else in these two concomitant displacements.

3. The localized removal of material due to swirls generated by water currents.
Syn. with BLOWING UP; SCOURING; UNDERMINING; UNDERWASHING; WASHING AWAY

UNDERMINING
Sape; Sapement
Earthwork
1. A small excavation, mostly in trench, carried out in underwork to collapse a construction or to make slip a ground mass in filling.
2. The action to undermine, to attack by underhand at the base.

UNDERPASS
Passage inférieur; Passage souterrain
Civil Engineering Structure
1. Syn. with UNDERBRIDGE; UNDERGRADE CROSSING
2. Syn. with PLATFORM SUBWAY; SUBWAY; UNDERGROUND PASSAGE

UNDERPASS APPROACH
Trémie
Construction
The access trench to a tunnel or an underbridge constituted of sloped walls or straight walls made of masonry or R.C. (retaining walls). Syn. with TUNNEL APPROACH

UNDERPIN
Reprendre en sous-oeuvre; Etayer
Foundation; Temporary Construction
1. See UNDERPINNING.
2. Syn. with BUTTRESS; SHORE (UP); STAY (UP); STRUT

UNDERPIN A WALL
Rechausser un mur
Work
To reinforce a wall by the foot, by contribution or replacement of materials.

UNDERPINNING
Reprise en sous-œuvre; En sous-œuvre; Etançonnement
Foundation; Work; Temporary Construction
1. The consolidation or strengthening of a foundation which consists in connecting the reinforcements to the existing foundations, by various means. The repair and/or reinforcement of foundation works by underpinning concern old works or more recent works whose infrastructure appears impaired or unsuitable. The existing foundations are supplemented as needed by structures similar in nature on levels which can be different from those of the initial foundation. The reinforcement by piles or micropiles deferring loads to distinctly lower levels can be associated with the technique of underpinning.
2. A job carried out under an already existing carrying structure either with an aim of consolidation or in a normal operation of work.
3. Syn. with PROPPING; SHORING (UP); STAYING

UNDERREAMER
Elargisseur
Equipment and Toots
Syn. with ENLARGING BIT; HOLE OPENER

UNDERSECTION
En profil *ou* Sous profil
Topography
Syn. with UNDERBREAK

UNDERSIDE
Sous-face
Construction
The seen face of the bottom of a slab, a beam, etc., called *intrados* in some circumstances. Syn. with SOFFIT; INTRADOS

UNDERSIZED MATERIAL
Tamisat
Building Materials
The part of a granular material which crosses through a sieve (screenings are what does not pass). Syn. with SCREENED MATERIAL; SIEVED AGGREGATE

UNDERSOLID RIB
Sous-vau
Temporary Constructions
An element that supports the rib of a centering.

UNDERTRACK GIRDERS
Poutres sous voies
Construction
See BRIDGE. **See Figure 5**

UNDERWASHED
Affouillable
Hydrology
Syn. with WASHABLE

UNDERWASHING
Affouillement
Geomorphology and Hydrology; Defects (Foundation)
1. Syn. with BLOWING UP; UNDERMINING; WASHING AWAY;
2. Syn. with BLOWING UP; SCOURING; UNDERMINING; WASHING AWAY;

UNDERWATER CONCRETE
Béton sous l'eau
Building Materials
A product using in aquatic site whose one distinguishes two practices:
- **immersed concrete** *(le béton immergé):* any concrete of special proportions made out of the water and working underwater before the initial set;
- **underwater concrete** *(le béton sous l'eau)* carried out by injection, in all the mass of an aggregate forming skeleton and beforehand placing in the water, by a special mortar possessing ad hoc qualities.

UNDERWATER CONCRETING TO FLOWING SLOPE
Bétonnage à talus coulant
Construction of R.C. and P.C.
A concreting process underwater limited to shallow water depths (mostly less than 0.80 m). The process consists in having the concrete running along the bank and making it take in by natural compression in the previously-poured mass. Thus, the massif progresses along a *T* slope alone in contact with the water and alone subjected to washing out.

UNDERWATER FOUNDATION
Fondation sous l'eau
Foundation
A work carried out in an aquatic site that can be executed by means of cofferdams, enrockments massifs, immersed caissons, etc.

UNDRESSED SAWING TIMBER
Bois brut de sciage
Building Materials
A sawing having undergone no dressing, even on a single face. Syn. with UNWROUGHT TIMBER

UNDRESSED STONE
Pierre de pratique
Building Materials
A material which is used rough.

UNDULATION
Ondulation; Vague
Defects (Civil Engineering)
The longitudinal profile of a roadway marked of small unevennesses more or less regularly spaced and looking like small waves.

UNEQUAL DOUBLE-GROOVE PREPARATION
Préparation à double ouverture inégale
Welding
See UNEQUAL PREPARATION.

UNEQUAL EXTRADOS
Extrados inégal
Construction
The top surface of a vault whose axis of the highest point is out of line in comparison with the axis of the intrados.

UNEQUAL PREPARATION
Préparation inégale
Welding
A double-opening preparation in which the profile of the joint and that of the adjacent parent metal do not have a common axis of symmetry coming through the two elements.

UNEQUAL SETTLEMENT OF SUPPORTS
Dénivellation d'appui
Defects (Civil Engineering Structure)
The difference of level between two or more consecutive bearings.
In a statically indeterminate system, such a situation leads in a beam uncontrollable shearing forces and bending moments if the situation results from a settlement of foundation under a pier for example. Syn. with DIFFERENTIAL SETTLEMENT OF SUPPORTS

UNFASTENING TEST OF SHEET PILES
Essai de dégrafage de palplanches
Test of Materials (Foundation)
A test intended for determining the resistance to the unfastening of the joints of metal sheet piles. This test is carried out at room temperature and consists in subjecting a test specimen constituted of an assembly of flat sheet-pile sections to a tensile stress until unfastening.

UNFOUNDED
A cru
Construction
Of a construction without foundations.

UNHARLING
Déhourdage
Masonry
Syn. with UNPOINTING

UNIAXIAL
Uniaxiale
Strength of Materials
Qualify a single normal stress, therefore occurring in only one direction.

UNIFORM COLOR
Teinte plate
Various
Uniform dyes.

UNIFORMITY COEFFICIENT
Coefficient d'uniformité *ou* de Hazen
Geotechnics
Syn. with COEFFICIENT OF UNIFORMITY; *HAZEN'S* RATIO; MODULUS OF UNIFORMITY

UNION
Raccord
Construction
Syn. with JOINT; JUNCTION; NIPPLE

***UNIONMELT* PROCESS**
Procédé *Unionmelt*
Welding
An electric arc welding practice which principle is as follows: a metal electrode is dived in a special slag set between the pieces to weld. The slag has an electrical resistance which brings about its heating up, the latter decreasing when the temperature increases. Thus, the metal electrode and the edges of the piece to be welded melt. The fusion occurs within the slag without sparks. The slag is vitrified on its surface, thus protecting the bath which cools very slowly protected from open air.

UNIT CONSTRUCTION
Préfabrication
Buildings Materials
Syn. with PRECASTING

UNIT OF PERMEABILITY *DARCY or DARCY*
Unité de perméabilité *Darcy ou Darcy*
Metrology
See DARCY

UNIVERSAL BEAM SECTION
Poutrelle
Building Materials; Construction
1. An iron and steel product obtained by hot rolling and made up of two identical flanges joined by a web in a plan which is perpendicular for them. Universal beams are broken up into three main categories:
- **H** and **I**, they are: universal beams HEA, HEB, HEM, universal beams IPN, universal beams IPE:
- **U-irons**, they are universal beams UPN, universal beams UAP,
- broad flange universal beams with parallel faces.

Syn. with JOIST; ROLLED-STEEL JOIST; SMALL BEAM
2. A beam of reduced sizes, mostly constituted by a metal section. Syn. with UNIVERSAL SECTION

UNIVERSAL PLATE
Large plat
Metallurgy
A flat iron and steel product, hot-rolled on the four faces (or in closed grooves), which currently distinguishes it from the sheet metal (width up to 200 mm), universal plate is mostly obtained from split sheet metal. Syn. with WIDE FLAT

UNIVERSAL SECTION
Poutrelle
Construction
Syn. with UNIVERSAL BEAM SECTION

UNIVERSAL TUNNELING MACHINE
Haveuse universelle
Equipment and Tools
A cutting machine equipped with a mobile arm carrying a chain armed with picks and being able to carry out a groove from 2 to 4 m deep.

UNLAUNCHING
Délançage
Handling
The deposit of a bridge deck by longitudinal movement. **See figures 6 to 6c**

UNLOADING POST
Poteau de décharge
Construction
A vertical element of a frame or a framework that relieves a horizontal or little tilted element.

UNPOINT
Déhourder
Masonry
To remove the mortar of a joint of masonry; by extension, to demolish *in conservation* any brickwork or a rubble walling.

UNPOINTING
Déhourdage; Déjointoiement
Masonry
1. The mortar removal of the pointings of a masonry. By extension: partial or total demolition of a masonry. Syn. with UNHARLING
2. Syn. with RAKING OUT

UNPOLARIZED ELECTRODE IN COPPER SULFATE
Electrode impolarisable au sulfate de cuivre
Equipment for Measure and Control
A measuring device regarding the potential of natural ground electrical powers and which consists of a plastic tube containing a cork in porous wood to its base. The tube in which dives a rod of electrolytically pure copper is filled with a solution saturated with purified and refined copper sulphate (crystals of $CuSO_4$ dissolved in hot distilled water). The potential of this electrode is approximately + 0.6 V compared to the earth.

UNSEAL
Desceller
Work
To remove a whichever part embedded in a work.

UNSTABLE CEMENT GROUT
Coulis instable
Materials
General name of simple cement-based suspensions. These suspensions remain homogeneous if they are kept agitated.

UNSTABLE EQUILIBRIUM
Equilibre instable
Civil Engineering Structure
A body that, when it is slightly parted of its balance position, has tendency to distance some more.

UNSTRANDING
Détoronage
Defects (Materials)
A damage allocating the cables (of steel prestressing or not) that is characterized by a relaxation of a part of wires composing the strand. This damage is often the result of a rupture of one or several wires.

UNSURFACED EXPOSED CONCRETE
Béton brut de décoffrage
Building Materials
Any concrete whose facing has not been treated (smoothing, etc.). The quality of the facing depends on the formwork, that is used, that can be sawing boards, plywood with marked veins, etc. Syn. with DIRECT-FINISH CONCRETE; OFF-FORM CONCRETE

UNWIND
Délover
Equipment and Tools
To unfold a cable. Syn. with TO UNCOIL

UNWROUGHT TIMBER
Bois brut de sciage
Building Materials
Syn. with UNDRESSED SAWING TIMBER

UPLIFT
Sous-pression
Geohydrology
The pressure that exerts the water contained in the ground on the buried constructions or parts of constructions.

UPPER NOZZLE
Arrière-bec
Handling; Temporary Constructions
A temporary steel frame fixed at the back of a structure to set up by launching and which is intended for balancing and prolonging the runway of this structure. The upper nozzle is only occasionaly used. **See Figure 7**

UPPER PLAN
Plan supérieur
Drawing
The dimensioned representation of a work seen on the top on which appear in dashed lines some hidden parts.

UPPER ULTIMATE EQUILIBRIUM
Equilibre limite supérieur
Geotechnics
The state of a ground on the breaking edge of the balance when external forces exert a pressure on the mass and that the latter is equal to the pressure resulting from the mass (on the very moment before breaking). If it is applied to the external-force screen tending to repress the ground and that one gradually increases these forces, they will be balanced by the reaction of the mass on the screen until the moment when the internal balance will be broken, provoking the breaking of the mass along a certain surface and the breaking up of a corner of earth whose lower edge is located at the foot of the screen. During this phenomenon, the remaining ground exerts on the slipping surface -delimiting the earth corner- the forces of friction directed to the base of the screen and having tendency to oppose the displacement. On the instant before the breaking, the corner of earth is, as in the preceding case, in balance under the action:
- of its own weight;
- of the force applied to the screen;
- of the reaction of the ground in place along the surface of slipping.

This state is named as *upper ultimate equilibrium.* The reaction exerted by the earth is called *passive earth pressure* or *thrust.*

UPRIGHT
Montant; Echasse d'échafaudage; Chandelle
Construction; Temporary Construction
1. A vertical part being part of an unit whose aim is to support, strengthen, or relieve. Syn. with VERTICAL STAY. **See Figure 8**
2. Syn. with SCAFFOLDING POLE; STANDARD; STILT;
3. Syn. with DEAD SHORE; PILLAR; POST; PROP, STAY; SHORE

UPSTAND
Relevé d'étanchéité
Tightness
The part of a waterproof blanket turned up vertically on a small height on the edges that limit a slab, the extrados of a vault, etc. (the internal side of a slab or tympanum, for example)

UPSTREAM
Amont
Hydrology; Tightness
1. Syn. with HEADWATER
2. Of a watertightness complex when the water meets it before the structure of the work.

UPSTREAM AND DOWNSTREAM FILL
Massif
Construction
An element of earth-fill dam, built in permeable or semipermeable materials upstream and downstream from the tight core or the watertight diaphragm.

UPSTREAM APRON
Avant-radier
Construction
Syn. with UPSTREAM FLOOR

UPSTREAM CUTWATER
Eperon; Avant-bec
Construction
The cutwater of a bridge pile located upstream side of a waterway. As for the downstream cutwaters, it intend to facilitate water flow and to move away floating bodies.

UPSTREAM FLOOR
Avant-radier
Construction
A construction putting up upstream of the foundation raft of a work intended for preventing underminings. The upstream floor is often coupled with the work to be protected. Syn. with UPSTREAM APRON

UPSTREAM SHOCKPROOF
Patte d'oie
Construction
A construction erected in a triangular pyramid shape in front of a bridge pier in river to preserve it from ice blocks or others shocks.

UPTIME
Période d'utilisation
Equipment and Tools
The space of time during which an earthmoving plant is used on a building site during a working session.

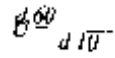
UPWARD DEFLECTION
Contreflèche
Construction
Syn. with PRECAMBER.

URBAN CORROSION
Corrosion urbaine
Metallurgy
The surface alteration, localized at the ends, edges, etc., at sheltered places from the rain and attributed at the acidic elements of smoke, retained by dusts or froths agglomerated in these places.

UREA-FORMALIN RESIN
Résine urée-formol
Polymers
A compound obtained by polycondensation of urea and formalin and that consistutes one of the essential ranges of aminoplasts.

USUAL MAINTENANCE
Entretien courant
Civil Engineering Structure
Syn. with ROUTINE MAINTENANCE; STANDARD MAINTENANCE

U-UNIFORMITY
Uniformité U
Geotechnics
The characteristic of the grain-size classification of a soil; it reflects the ratio of dimensions of the two sieves letting pass, for one, 60% of the elements of a soil, and, for the other, only 10% of the same elements. The uniformity U of a soil is expressed by *Hazen's* coefficient defined by:

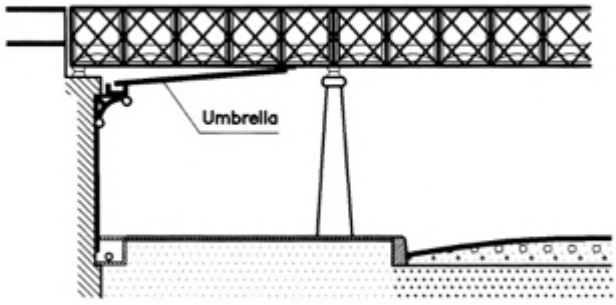


d 60 and *d 10* being dimensions of the two sieves described above.
If $U \leq 2$, the soil is of uniform grading;
if $U > 2$, the soil is of wide grading.

Figures of the letter

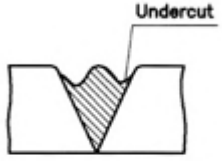


Fig. 1



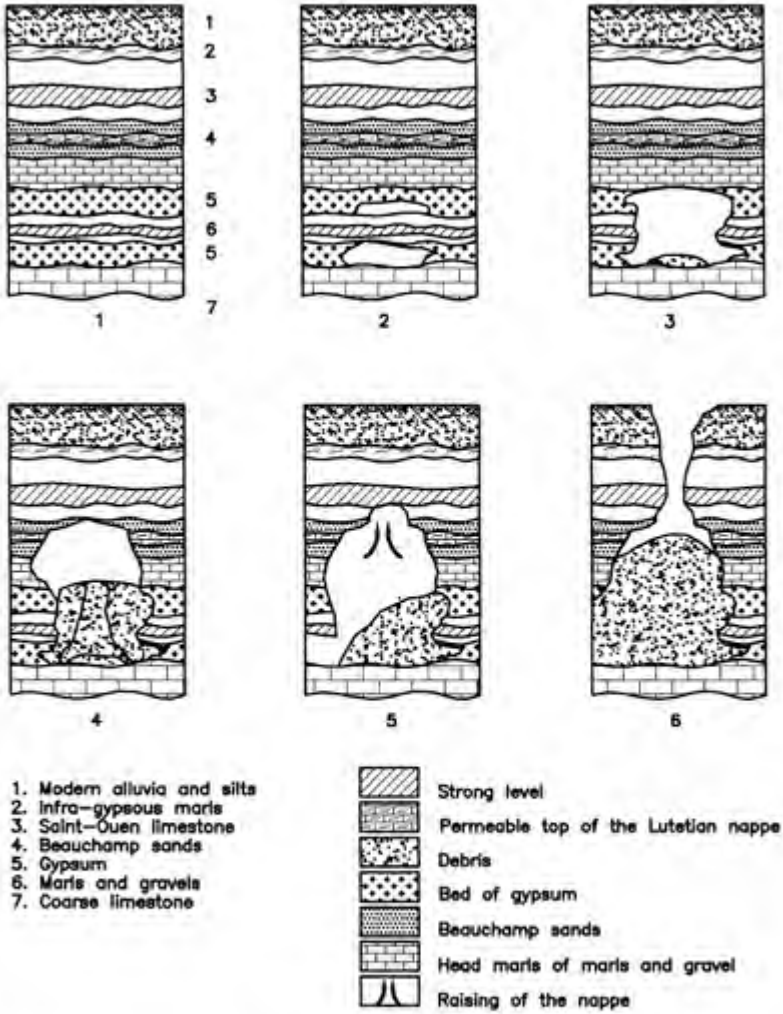
UMBRELLA

Fig. 2



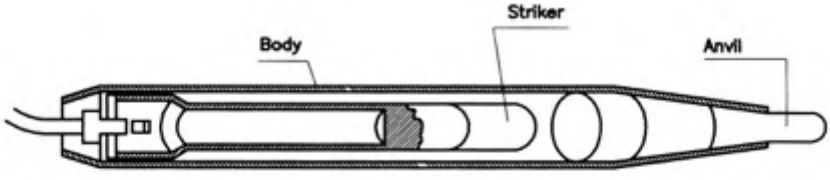
UNDERCUT

Fig. 3

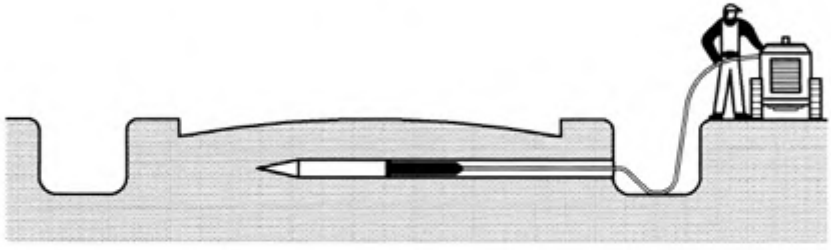


UNDERGROUND CAVITIES (Formation and evolution underground of a cavity of dissolution in the gypsum of marls and gravels)

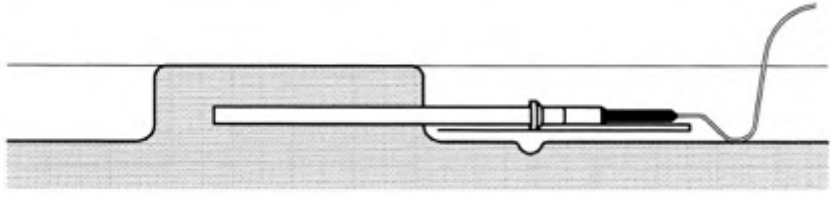
Fig. 4



Plan of a rocket



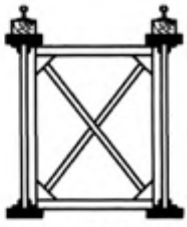
Using a rocket in a sub—roadway crossing



Using a rocket in a pipe pushing machine

UNDERGROUND ROCKET

Fig. 5



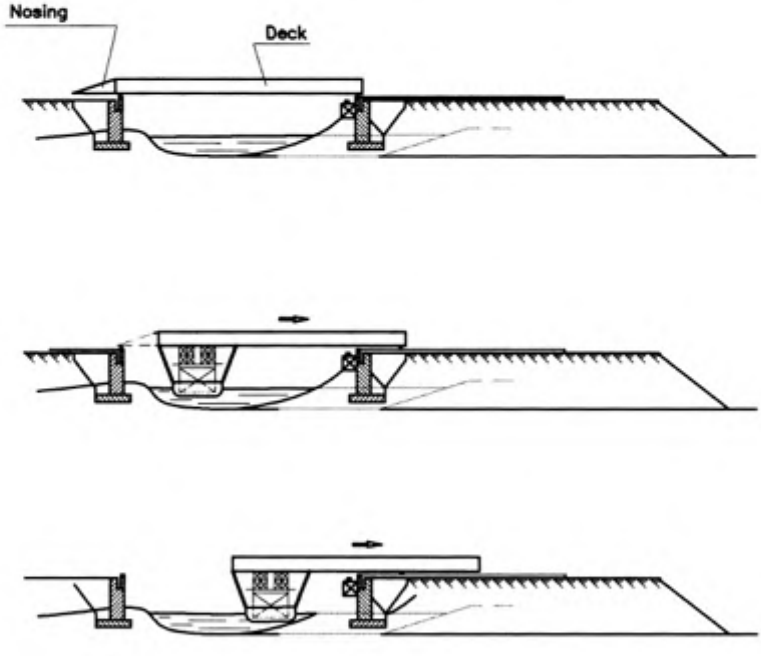
Laying on longitudinal sleeper



Laying on sleepers

UNDERTRACK GIRDERS

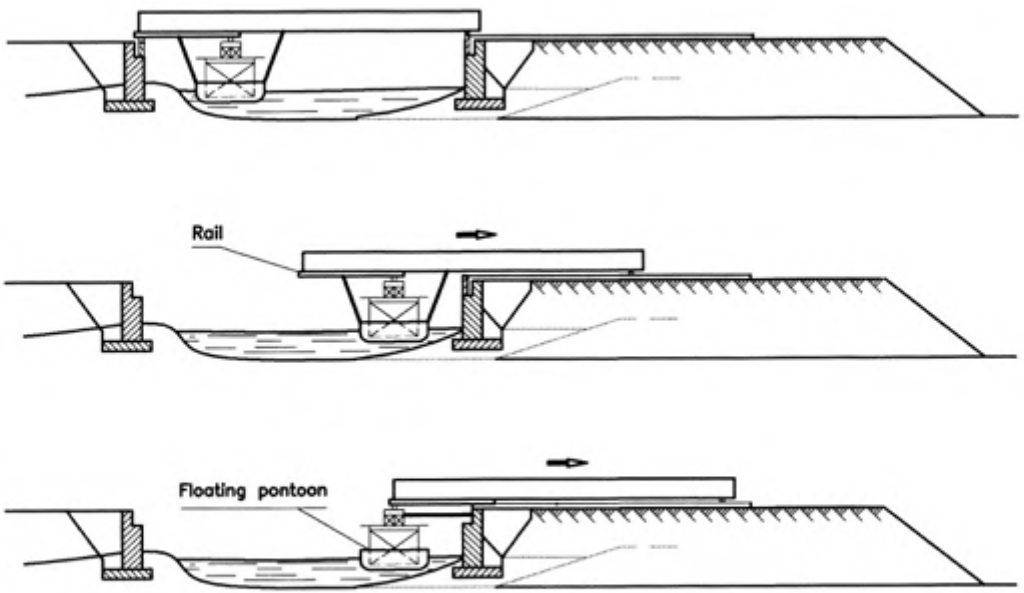
Fig. 6



Unlaunching with nosing

UNLAUNCHING

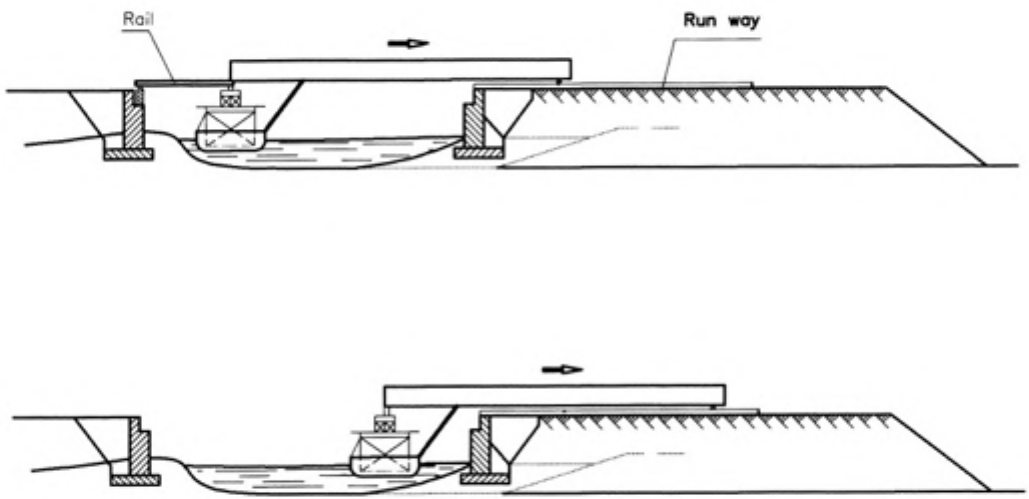
Fig. 6a



Unlaunching with rail under the beam

UNLAUNCHING

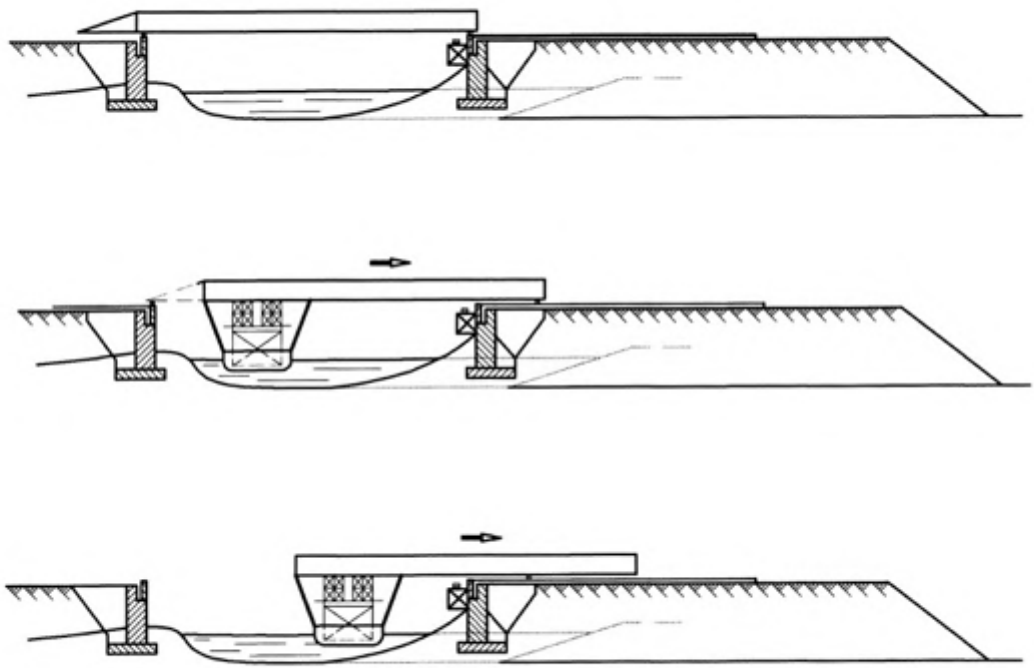
Fig. 6b



Unlaunching with a rail of roll between the bearing and the floating pontoon

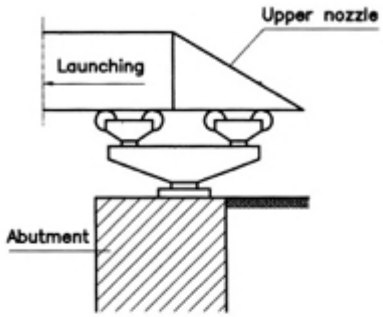
UNLAUNCHING

Fig. 6c



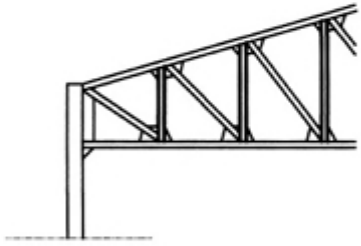
UNLAUNCHING

Fig. 7



UPPER NOZZLE

Fig. 8



UPRIGHT



VACANCY
Lacune
Defects
Absence in a structure of one or several elements (example: quarry stone wrenching). Syn. with HOLE

VACUOLAR DOLOMITE LIMESTONE
Cargneule
Geology
Syn. with AMYGDALOIDAL ZECHSTEIN DOLOMITE; BLASENSCHIEFER

VACUOLAR ROCK
Roche vacuolaire
Geology
An eruptive rock of volcanic origin with many pores, spherical bubbles resulting from the solidification of a gas-rich magma. Cavernous grit stone, pumice, volcanic scoria, and some lava are vacuolar rocks.

VACUOLE
Vacuole
Geology
A type of small bubble affecting the internal structure of certain solid rocks.

VACUUM CLEANING
Dépoussiérage
Building Materials
A coarse method of grain-size classification eliminating the thinnest particles from fractions less thin.

VACUUM CONCRETE
Béton essoré par le vide; Béton sous vide
Building Materials
A material that contains at the beginning a deliberate water excess so as to obtain an excellent workability. In order to prevent an excess water from affecting the definitive strength of the work, one pulls this water out of the concrete under vacuum. For this reason, one pours the concrete in formworks with a perforated face so that the excess water is extracted by suction through the perforations by means a vacuum pump. The effect of vacuum is to evacuate the excess water and the intervals left by the water disappear thanks to atmospheric pressure. This process leads to a strong cohesion of the concrete enabling a rapid form striking. Syn. with VACUUM DEWATERING

VACUUM DEPOSIT
Dépôt sous vide
Metallurgy
A coating obtained by displacement of a filler metal by vacuum; the operating procedure can either consist of heat evaporation with condensation, or of cathodic projection, with the basic metal in anode.

VACUUM DEWATERING
Béton essoré par le vide; Béton sous vide
Building Materials
Syn. with VACUUM CONCRETE

VACUUM MAT
Tapis d'aspiration
Equipment and Tools
Equipment used for drying concrete by vacuum.

VACUUM PROCESS
Procédé sous vide
Building Materials
A wood impregnation process during which a preservative is made to penetrate inside an airtight vat, by applying vacuum on wood, then filling the vat in vacuum, but using no pressure during the process.

VACUUM PRESSURE PROCESS
Procédé sous vide et pression
Building Materials
A wood impregnation process in autoclave, consisting of an initial phase of applying vacuum on the wood then applying pressure after adding the preservative.

VACUUM PUMP
Pompe à vide
Equipment and Tools
A device assembled on a chassis like that of a wheelbarrow, which is made up of a pump driven by a thermal or electric engine and of a tank that collects the water which has been sucked up or of a direct drain. (This pump is used for the removal of surplus water from concrete.)

VADOSE WATER
Eau vadose; Eau géothermale
Geohydrology
A thermomineral liquid of zenithal origin that has infiltrated great depth. During its penetration it crosses terrains whose high temperature enables synthesis of mineralization. Its temperature is subject to lowering when in contact with colder infiltration waters. We can distinguish: *artesian vadose waters* and *phreatic vadose waters.*

***VALETTE* METHOD**
Méthode *Valette*
Building Materials
A method of studying the composition of concrete which consists in creating concrete with minimum cement and a maximum gravel.
The quality of concrete depends on its proportions of gravel, sand, cement and water, and on the quality of the mixing. Its strength depends on the C/W (cement-water) ratio which must be the greatest possible. The quantity of water depends on the fineness of the grains, since fine grains require much water. Therefore, it is necessary to establish a full concrete composition with a maximum of gravel, or rather with a minimum of sand. The principle of the method consists in checking the quality of mixtures in the following way:
- *creating a mortar with the minimum of cement paste with no admixtures corresponding to the calculated gaps of wet sand, whilst controlling the bleeding of the mixture and its consistency;*
- *creating a concrete with a minimum amount of cement, and adding to the previously obtained mortar the maximum amount of gravel which is compatible with workability according to the density of the bar setting and the type of work. This is made into a reduced-scale model;*
- *substituting a volume of cement paste with no admixtures with an absolute volume of wet sand in order to create the proportions and the required strength, then making a test batch;*
- *adding the quantity of water needed to correct the workability, if necessary.*

VALVE
Clapet
Equipment and Tools
A safety or exhaust valve that opens or closes a passage of liquid.

VANE
Scissomètre; Vane test apparatus; Moulinet
Equipment for Measure and Control
Equipment enabling to measure on site the undrained cohesion of soils, used on cohesive

soil of weak consistency, particularly on soft clay or mud.
This apparatus is made up of a cross brace, consisting of two sharp plates (the vane) which is driven into the ground and made to turn at a constant speed to cut up the soil. A measurement is taken of the torque which is necessary to lift a cylinder of soil around the vertical axis of symmetry of the machine.
In the range of this type of apparatus we can distinguish the pocket vane, the portable vane, used up to a depth of 3 metres, the power driven vane used in laboratories, the vane for boreholes, used to 10 m deep, and heavy vanes, used to about 30 m deep without preliminary drilling. **See Figure 1**

VANE PROBE TEST
Essai à la vane; Essai scissométrique
Test of Materials
A test for cutting up soil on the spot that consists in driving a cross brace (vane) into the ground and then rotating it to establish the relation between the rotation of the vane and the resistance of the soil to being cut up. The test consists in measuring, in terms of depth, the visible cohesion of fine cohesive soils of low to medium consistency.
The test consists in driving the vane in at the level of the trial area and rotating it at a constant speed using the torsion bar of the torquemeter.
Readings of rotations are carried out at regular intervals 20 s apart until four readings after the maximum value of torsion (the peak of resistance determined by τ_{max}) and afterward, four readings are carried out after the vane has turned ten times in the ground (residual resistance measured with τ_r).

VARIATION
Dénivelée
Civil Engineering Structure and Civil Engineering
The difference of the level between two points. Syn. with DIFFERENCE IN LEVEL or IN HEIGHT

VARVE
Varve
Geology
A thick clay-like deposit whose layers form a foliated stratum. Its presence suggests the site of a dried-up pond or lake.

VAUCLUSIAN SPRING
Source vauclusienne
Geohydrology
An abundant and intermittent spring with a rising pipe, due to the presence of a syphon in an underground system in limestone.

VAULT
Coquille; Voûte
Construction
1. A semicircular construction forming the vault of a refuge hole in a tunnel. Also called SOFFIT
2. A solid contained between two cylinders with horizontal generatrixes (intrados or bottom face and extrados), two vertical planes which are mostly perpendicular to the generatrixes (heads), and two planes parallel to the generatrixes and perpendicular to the intrados (these are springings if the curve is complete, or a rise if there is an arc of curve).
A vault is a crossing, made of stones, bricks or concrete, and built on centering. It forms the carrying structure of a bridge (road or railway) and is built between two bearings (abutments or piles), made in a solid section in cross section, and in a curved form (or in a broken line) in the longitudinal direction (semicircular vault, surbased vault, basket-handle vault, etc.). The entire vault includes heads and the vault barrel.
We can distinguish three types of vault in terms of operation of structures:
- **nonarticulated vaults *or* nonhinged vaults** (*les voûtes inarticulées*) (100% of masonry works built in France);
- **articulated vaults of masonry** (*les voûtes articulées en maçonnerie*), with three articulations, one at the key, and the others at the breaking joints (or bearing joints); the arch is then isostatic. This type of construction does not exist in France in masonry work. On the other hand, it is frequently adopted for reinforced concrete arches;
- **semiarticulated vaults** (*les voûtes semi-articulées*), whose articulations are only fitted during construction, and are then rigidified before allowing access to traffic.

Among the various geometrical designs of vaults, we can mainly distinguish:
- **annular vault** (*la voûte annulaire*), cradle turning on a vertical axis, which can be a solid core, a rotunda, or a roundabout;

- **three-centered vault** (*la voûte en anse de panier*): see BASKET HANDLE; **See Figure 2**
- **sloping arch vault** (*la voûte en arc rampant),* asymmetrical vault whose springings are not at the same height (the line which joins the springings is called a *line of slope*);
- **groined vault** (*la voûte d'arête*), which is the result of the intersection of two cradle arches;
- **barrel vault** (*la voûte en berceau*), semi-circular vault which rests on two parallel walls and which is at least twice as long as it is wide; **See Figure 2a**
- **skew vault** (*la voûte biaise*), whose head planes are not normal in relation to the cylinder axis. Various equipment is used for such vaults: parallel orthogonal bonding, helical bonding, straight arch bonding;
- **composite vault** (*le voûte composite*), which is made up of vertical chain bonds or sometimes horizontal chain bonds. Some vaults are strengthened by transverse arches which jut out on the intrados; **See Figures 2b and 2c**
- **conical vault** (*la voûte conique ou trompe*), whose generatrixes and sidewalls are convergent;
- **flattened, in through vaulting, double-groined vault** (*la voûte déprimée en arc de cloître ou à arêtes doubles*), whose section has a profile with a diminished arc;
- **sloping arch** (*la voûte en descente*), generally built for aqueducts under embankments and whose layout is one of the following: **See Figures 2d and 2e**
  - vault has a uniform thickness and its axis is inclined toward the downstream side according to a uniform plane,
  - vault is made up of a succession of horizontal or inclined vaults laid out in steps;
- **straight vault** (*la voûte droite*), whose head planes are normal in relation to the cylinder axis;
- **lintel course** (*la voûte à l'impériale*), see LINTEL COURSE; **See Figure 2f**
- **ovoid vault** (*la voûte ovoïde*), circular and with a semielliptical axial vertical section;
- **semicircular vault** (*la voûte plein cintre*), which in cross section forms a complete semicircle, so that the height is equal to the half-opening; **See Figure 2g**
- **cupola dome** (*la voûte sphérique ou en coupole*), that takes on the shape of a half-sphere resting on circular continuous side walls also called *drums;* **See Figure 2h**
- **surbased vault *or* flattened arch** (la voûte surbaissée): see ARCH; **See Figures 2i to 2k.**
- **three-centered arch *or* arch in ellipse and raised arch in semicircular vault** (*la voûte surhaussée en plein cintre, en ellipse et en anse de panier*) of which we can distinguish:
  - *semicircular arch* (*la voûte plein cintre*) of which the center of its half-circumference is located above the plane of the springings, **see Figure 21**
  - *three-centered vault* (*la voûte elliptique ou en anse de panier*) whose height or rise is higher than the half-opening of the work. **See Figures 2m to 2o**

Syn. with ARCH

VAULT
Voûter; Chapelle
Work; Defects
1. To build or cover with vault. Syn. with ARCH
2. Syn. with CHAPEL

VAULT BUTTRESS
Boutée
Construction
A masonry construction that butresses the thrust exerted by a vault.

VAULT CURVATURE
Concamérétion
Construction
The bending of a vault.

VAULT DEFORMATION
Déformation de voûte
Defects (Civil Engineering Structure)
Damage affecting the cross section of tunnels and other vaulted works, which causes vault flattening, concave and convex facing profiles. Causes of this damage may be creeping and swelling pressures of the country rock, bad blocking of the terrain, dispointing of building works, etc.

VAULT NEWEL
Noyau de voûte
Construction
The central pillar receiving the axial offspring of an annular vault. Syn. with CORE WALL

VAULTED
Voûté
Construction
Covered with a vault; curved. Syn. with ARCHED

V-CHANNEL
Anglet
Masonry
Syn. with V-LINE

VEGETABLE PLETHORA
Pléthore végétale
Defects (Building Materials)
A wood disease caused by too much nutritive matter, affecting some parts of the tree, deforming it, and making it unsuitable for construction.

VEHICLE
Milieu de suspension; Véhicule; Liant
Painting
1. All of the liquid components of a paint (binder, solvent, thinner, and, possibly liquid driers).
2. Syn. with BINDER.

VEIN
Filon; Veine; Gisement; Gîte; Fil
Geology; Hydrology; Defects
1. The filling of a fracture of the Earth's surface by means of materials known as *intrusive* (eruptive rocks or minerals). This way, the veins intersect preexistent grounds.
2. A layer found in rock or construction stone. They are colored small fillets different in tint from the rest of the material.
3. Syn. with BED; DEPOSIT; LAYER
4. A narrow underground current of water
5. Syn. with STRAND

VEIN WALL
Eponte
Geology
The name given to the two surfaces separating a country rock from a vein. Syn. with MARGINAL SELVAGE

VEINED
Filardeux
Defects (Building Materials)
Syn. with STRANDED

VEINING
Gerce
Defects (Metallurgy)
A foundry default due to the cracks on the surface of the mold and that causes excrescences on the surface of the piece.

VELOCITY SURVEY
Sismo-sondage
Equipment for Measure and Control
A practice of seismic prospecting that consists in inserting into a trial hole a geophone to explore at various levels the came through geological beds. The principle consists in causing at different levels seismic shocks by various processes, and in measuring the propagation speed of the waves in each one of these levels.

VELOCITY TEST OF FLAME PROPAGATION
Essai de vitesse de propagation de flamme
Test of Materials (Tightness)
A test which consists in subjecting an asphalt material to the action of flames in order to test its behavior to fire. To do so, one lays out a sample (40 x 3.5 cm) on edge which one subjects to the action of a flame of Bunsen tip. The propagation speed between two reference marks at a 25 cm distance is then measured. This way, it is determined the index of inflammability, of development to the combustion, of combustibility, etc.

VENEER
Plaque; Feuille; Plaquer
Buildings Materials; Masonry
1. Syn. with PLATE; SHEET
2. Syn. with TO CLAD

VENT
Event
Construction
An orifice allowing the air to escape; example: from a cable duct during an operation of injection. Syn. with GROUT VENT; VENT HOLE

VENT HOLE
Event
Construction
Syn. with GROUT VENT; VENT

VENTILATION
Aérage
Work
An action that consists in bringing and forcing the circulation of fresh air. Syn. with AIR SUPPLY

VENTILATION BRAKE
Frein d'aérage
Construction
A device installed in a gallery and used to slow down the draft.

VENTILATION SHAFT
Puits d'aération
Construction
A chimney dug or drilled between the vault of a tunnel and the top level of the natural ground level which is intended for the ventilation of the work. Syn. with AIR SHAFT

VERBOQUET
Verboquet; Vingtaine
Equipment and Tools
A rope attached to the ground to raise a heavy object so that is will strike against a wall or scaffold. The guide rope is fixed so as not to turn or twist on itself. Syn. with GUIDE ROPE. **See Figure 3**

***VERDEYEN* APPARATUS**
Appareil *Verdeyen*
Equipment for Measure and Control
An instrument which allows to separately measure the point resistance and the lateral resistance of a pile of small diameter sunk with jacks. These measurements are made at different depths in order to gain information about the resistance that present the underlying layers.

VERDIGRIS
Vert-de-gris
Metallurgy
The copper oxidation characterized by the appearance of a green-gray film.

VERGE (roadway) *or* SHOULDER (railway)
Accolement; Accotement; Bas-côté
Civil Engineering
The strip lateral to a roadway located between the rim and the ditch or a wayside property. The shoulder is intended for vehicles and pedestrian garage, at the various installations (signs, lighting, etc.) and to the provisional materials dumps of maintenance of the roadway (downtown or on the road bridges the verges are replaced by sidewalks). We can distinguish the:
- **flush shoulder** (*l'accotement dérasé*), located underneath the roadway level;
- **raised shoulder** (*l'accotement surélevé*) which stands out slightly on the level of the roadway.

Syn. with BANK; BENCH; CESS SIDE; ROADSIDE; SIDE PATH. **See figure 52**

VERGE CUTTING
Délignement; Délignage
Civil Engineering
Syn. with VERGE TRIMMING AT EDGE OF A CARRIAGEWAY

VERGE TRIMMING AT EDGE OF A CARRIAGEWAY
Délignage; Délignement
Civil Engineering
An operation that consists in rectifying the shoulder/roadway boundary by materials and vegetation removal that encroach on the roadway.

VERMICULAR BLOWHOLE
Soufflure vermiculaire
Defects (Welding)
A blowhole in woodworm gallery form affecting the molten metal of a weld and resulting from the advance of gases.

VERMICULATED PEBBLE
Caillou vermiculé
Geology
A stone that shows a furrowed surface of small grooves resembling the marks left by the woodworms. These furrows are due to a particular form of dissolution in arid climate.

VERMICULATED STEEL
Acier vermiculé
Metallurgy
A steel covered by vermiculations.

VERMICULATION
Vermiculure
Defects (Metallurgy)
A surface fault affecting steel sheet metals characterized by thin sinuous veins.

VERMICULITE
Vermiculite
Geology
A metamorphic rock of composition close to that of micas (iron aluminosilicate magnesia and hydrated magnesia), existing in the granitic grounds and middle-aged grounds not eroded by surface water. It is an argillaceous mineral which, by hot expansion (700°C), enables to obtain a very light material which can be used as aggregate in the composition of some concretes in order to lighten them.

VERMICULITE CONCRETE
Béton de vermiculite
Building Materials
A light sand and vermiculite-based material.

VERTICAL (UPRIGHT)
Montant vertical
Metal Construction
The vertical part of a lattice girder located between the oblique parts of the lattice.

VERTICAL CRATER RETREAT
Abattage par charges concentrées
Building Materials and Earthwork
A cutting method of the rock by vacuum chamber or chamber shop into which horizontal slices are cut down by firing of large charges, placed at the bottom of vertical holes of a large diameter, drilled from a level head.

VERTICAL GUY ROPE
Câble à briquet
Construction
A vertical standing rope located along of a pylon and anchored on an anchored bracket that equips some suspension bridges.

VERTICAL *or* LONGITUDINAL LAMINATION
Laminage vertical ou longitudinal
Defects
A damage affecting the uncovered tunnels in direction. The country rock is cut into parallel lamina by the fracturing (in general of a thickness lower or equal of 10 cm).

VERTICAL LEVEL
Niveau de maçon
Equipment for Measure and Control
Syn. with MASON'S LEVEL; PLUMB LEVEL

VERTICAL ROD
Montant
Construction
The vertical part of a railing that supports the handrail, midrails or cross braces and cross members. The vertical rod is embedded into the masonry that supports the railing or bolted on a baseplate or also welded, riveted, or bolted in the case of metal works.

VERTICAL SECTION NORMAL TO FAULT SURFACE
Assereau
Geology
A breaking plan perpendicular to the plan of fissility of the roof slate.

VERTICAL STAY
Montant
Temporary Construction; Construction
1. In the supporting timbering of a gallery, each vertical part plated against the facing, leaning on the ground and supporting the end of the head beams.
2. Syn. with UPRIGHT.

VERTICAL TIGHTNESS LINING
Revêtement vertical d'étanchéité
Tightness
A coating or water tightness complex applied or stuck on a vertical structure (mostly buried) to preserve it from water seepages.

VERY HARD STONE
Pierre froide; Pierre marbrière
Building Materials
A very hard chalky rock which takes the polish, such as for example the comblanchian. The density of the very hard stone is mostly higher than 2.58, its crushing strength higher than 108 MPa, its hardness index ranging between 8 and 14.

VESICLE
Vésicule
Defects (Painting)
A blister that appaears in a paint film. Syn. with BLISTER

VESICULAR
Bulle
Defects (Construction in R.C. and P.C. and Painting)
Syn. with AIR BUBBLE

VIABLE
Viable
Civil Engineering
Of a channel of communication able to traffic.

VIADUCT
Viaduc
Civil Engineering Structure
A clearing structure of a great height built above a breach, a dip, made up of several successive spans. Viaducts can be built of masonry (arches), concrete (arches or straight spans), metal (arcs or straight spans) or mixed (example: masonry arches and metal arches).
Viaducts with a single large arch are sometimes called *bridges*. The distinction between a viaduct and a bridge is slightly clear; one can consider that with beyond 30 m opening and 15 m clearance for one arch or beyond three spans, it is advisable to use the viaduct term. **See Figure 4**

VIBRATE
Vibrer
Work
To subject a concrete or a soil to vibrating.

VIBRATED CONCRETE
Béton vibré
Building Materials
A material whose compacting of the constituents is obtained by vibratory movements. The vibration is carried out by machines such as internal vibrators, vibrating screeds, vibrating formworks, external vibrators, etc.

(SHEET-PILE) VIBRATING
Vibrage (de palplanche)
Foundation
A sheet-piles driving method which applies particularly well to granular soils, little or fairly compact, water-saturated. The principle consists basically in making fall the side friction soil and sunk element by spreading to the latter an energetic vibration with vibrators.

VIBRATING BEAM
Poutre vibrante
Equipment and Tools
A beam mounted on shock absorbers, equipped by a vibration system and that is used to vibrate horizontal concrete surfaces.

VIBRATING FLOAT
Taloche vibrante
Equipment and Tools
A tool animated by vibrations, used for the concrete superficial vibration as to its dressing. Syn. with VIBRATORY FLOAT

VIBRATING NEEDLE
Aiguille vibrante
Equipment and Tools
A cylindrical device from 40- to 60-cm long and from 18- to 150-mm diameter used for the internal vibration of concrete and whose higher vibration frequency allows an excellent compacting of this one. Syn. with POKER VIBRATOR

VIBRATING PRECAST CONCRETE
Béton choc
Building Materials
Any concrete perfectly cast and vibrated in factory, vibrations being obtained by jerking the mold. This method is only used for precast pieces.

VIBRATING RAMMER
Vibrodameur
Equipment and Tools
A consolidating rammer equipped with a device, transmitting vibrations, and which, applied on a ground to be compacted, gives better results of settlement than a common consolidating rammer, the vibrations having an in-depth action higher than a simple tamping. (Vibrations bring about a shifting of air and of a part of water contained in the ground; so, grains will be tightened, thus increasing the shearing coefficient.) Syn. with VIBRATORY RAMMER

VIBRATING ROAD ROLLER
Rouleau compresseur vibrateur
Equipment and Tools
A plant that includes a roller and a wheel to which is transmitted a vertical vibration of a frequency 3600 vibrations/min. Being added to

the compression, vibration acts in-depth and carries out a better tightening of the materials with a smaller number of runs.

VIBRATING SCREED BOARD
Règle vibrante
Equipment and Tools
An apparatus for vibrating superficially concrete (about 15 cm in thickness) and to level it.

VIBRATING TABLE
Table vibrante
Equipment and Tools
A tray animated by vibrations for vibrating prefabricated cast concrete parts. Molds filled with concrete are laid out on the vibrating table which transmits jolts. The vibrating table is different from the molding table by the vibration frequency.

VIBRATING WIRE HYGROMETRIC CELL
Cellule de pression totale à cordes vibrantes
Equipment for Measure and Control
Equipment intended fort measuring stresses and pressures that associates a vibrant string sensor with a pressure cell.

VIBRATION
Vibration
Construction of R.C. and P.C.; Civil Engineering
1. The action that consists in transmitting to a concrete mass jerks at high frequencies with apparatuses expected this purpose (vibrators and internal vibrators in particular). The vibration is usually created by an internal mass to the vibrator turning at high speed through the agency of an electric motor or, mostly, of a small compressed-air turbine; the mass is slightly outlying on its axis of rotation and it is what brings about the vibration. These vibrations bring about tightening between them the various components by decreasing they empties, therefore consequently to increase its compactness. Vibrated concrete will have a better mechanical strength, and will also increase its resistance to the permeability. There are several types of vibration:

- **external** (*la vibration externe*), carried out outside the mass of concrete, vibrators being straight applied on the formwork. This type of vibration interests only one weak thickness of concrete and is reserved in principle for thin shells;
- **internal** (*la vibration interne ou pervibration*), which takes place inside the even mass of the concrete with floating internal vibrators or needle internal vibrators;
- **surface** (*la vibration superficielle*), which is carried out by successive layers with floats, beams, and vibrating screed board laid down on the concrete surface and carrying fitting vibrators.

2. A compacting process of soils that applies in particular to the sandy or muddy grounds, water-saturated. A vibrator is came down by jetting up to the depth where one wishes obtaining a compacting. It is gradually took up in vibration. This method is in particular used to compact former fills or sandy natural soils, before the setting of foundations. Efficiency of this system can be upgraded accompanying the increase of the machine by injection of water under pressure (vibroflotation).

VIBRATIONS METHOD
Méthode des vibrations
Foundation
A process that consists in transmitting vibrations to a pile to reveal there possible constructive anomalies. The measurement of the mechanical impedance of an isolated pile enables to determine its integrity, its length and the presence of quintessential defects: cracks, bulbs, constriction, quality of anchorage.
The principle is as follows: the pile is put in vibration with a vibrator that applies a sinusoidal force on the head. Vibratory speed is measured with a geophone or an accelerometer. Successive resonances of the piles can be observed. Recorded signals enable after processing to calculate and plot the impedance, force/speed ratio, or its reverse, the admittance. Analysis of the graphs leads to the determination of the characteristic parameters of the pile: length, stiffness, presence of anomalies. The practice is well adapted to the piles, wells, concrete supporting-wall unit not equipped with tubes, to the piles and steel caissons and even to wooden piles.

VIBRATIONS RECORDER FOR SHOOTING CONTROL
Enregistreur de vibrations pour le contrôle des tirs
Equipment for Measure and Control
A punctual device made up of a detecting box containing geophones and a recorder and which processes electronically received data. This instrument records automatically the date, hour and particle speed of peak produced by shootings, driving of piles, work of quarry, use of break rockers, powerful cutting or drilling machines.

VIBRATOR
Vibrateur
Equipment and Tools
1. A device intended for the concrete vibration. There are several types of vibrators:
- **electric** (*le vibrateur électrique*), external vibration apparatus of concrete made up of a box containing an electric motor which makes turn at high speed two heavy masses with outlying weights that breed vibrations;
- **external** (*le vibrateur externe*), vibration apparatus of concrete which is tacked on the formwork at certain sites defined at the time of the design. Formwork plays the role of a genuine living membrane (the interested concrete depth is from 10 to 20 cm);
- **internal *or* poker *or* immersion** (*le vibrateur interne ou pervibrateur*), formed by a vibrating needle from 40 to 80 cm long and diameter from 18 to 150 mm. The operating range of the vibrating needle varies with its frequency and its diameter;
- **reciprocating pneumatic** (*le vibrateur pneumatique alternatif*), external vibrator of concrete formed by a cylinder into which moves at high pace a piston moved by compressed air and whose repeated shocks bring about the vibrating of this apparatus and the formwork on which it is fixed;
- **rotary pneumatic** (*le vibrateur pneumatique rotatif*), external vibrator of concrete functioning by rotation at high speed of an outlying mass which transmits the vibrations to the formwork;
- **surface** (*le vibrateur de surface),* surface vibration apparatus straight put in contact with concrete. Primary vibrators used are the float, beam, or vibrating screed, vibrating finishing-machine. (With these apparatuses, the thickness of concrete is 10 to 20 cm).

2. A machine intended for sinking sheet piles or piles. It is formed by parallel arbors, on which synchronised unbalances, turning in opposite direction, are fixed. These arbors are laid out so that the horizontal components of the centrifugal inertias are canceled and that the vertical components of these forces are added. Their resultant, alternatively directed upward and downward, produces vertical vibration. Syn. with VIBRATORY (SHEET) PILE DRIVER. **See Figure 6**

VIBRATORY FINISHING MACHINE FOR CONCRETE PAVEMENT
Vibrofinisseuse; Vibreuse-finisseuse
Equipment and Tools
Syn. with CONCRETE FINISHING ROAD VIBRATOR

VIBRATORY MOLDING
Vibromouleuse
Equipment and Tools
A manufacturing set of concrete manufactured products which acts simultaneously all the functions, that is to say concrete supply, its castings, its vibration as its demolding, the whole being automated.

VIBRATORY PRODUCING
Vibropondeuse
Equipment and Tools
A light and mobile machine comprising mold and tamping organs, that puts on the ground its finished products before moving; it is used in the industry of cement blockwork.

VIBRATORY RAMMER
Dame vibrante
Equipment and Tools
The mechanized version of the hand rammer, animated of vibration by compressed air, used to compact concrete or ground. Syn. with VIBRATING RAMMER

VIBRATORY SIEVE
Tamis vibrant
Equipment and Tools
A special sieve animated by vibrations which is used to recycle drilling mud by elimination of resurfaced excavated materials.

VIBRATORY SINKING CORE BORING
Carottage par vibro-fonçage
Geotechnics
A taking of soil carried out with a machine that comprises turning outlying masses and that is fixed on the test boring tube with necklaces tightened by pressure. Under the effect of the vibration and the shock, the machine sinks rapidly into the ground. A special core drill adapted to the tubing enables the taking of the ground as the sinking advances.

VIBROCOMPACTING
Vibrocompactage
Civil Engineering
A technique of consolidation of grounds, which consists in causing there a constant vibration by using a vibrating point. In the aftermath of this vibration and induced shearing, the friction forces between the particles of ground are minimized. That allows a reorganization, which increases the initial density of material. During this phase of reorganization, a subsidence around the vibrator is observed, which corresponds to the increase of the compactness.
Vibrators currently used are built on the same principle: one or several unbalances are driven by a hydraulic or electric engine and bring about horizontal and circular vibrations.

VIBROCOMPACTION
Consolidation dynamique
Work
Syn. with DYNAMIC CONSOLIDATION; GROUND BASHING

VIBROCONSOLIDATION
Vibroconsolidation
Civil Engineering
A technique of consolidation of grounds, which is one of the practices of vibratory flotation used for the sandy grounds containing few fines. In this kind of grounds, the horizontal vibrations produced by the vibrator get propagated to a long distance, and produces a compacting in the mass of sandy solid mass. Generally, contribution materials are mixed to compensate the volume reduction of the ground made denser. In the mass, the mechanical characteristics of material increase, whose advantage is an important increase in allowable stresses.

VIBRODRIVE DRILL
Vibrofonceuse
Equipment and Tools
A machine has been specially designed for geotechnical drilling, coring, installation of casing, or small diameter augering. Fully hydraulic, it operates independently in rotation or percussion and can be delivered trailer or skid-mounted.

VIBRODRIVE DRILLING
Vibroforage
Civil Engineering
A piling process that consists in drilling, through alluvial stratums and as far as the good ground, a temporary supporting tube, opened at its base. The driving of the tube is carried out with the vibrating (sheet) pile driver. The tubing set and vibrating (sheet) pile driver is hung on the jib of a crane. Once the contact with the good ground has been obtained, the clearing of the tube is then carried out with an auger of fitting diameter. The completion of the clearing out is carried out with shoe-nosed shell with valve, the tube being kept full of water to avoid the deposit of sandy materials, due to the uplifts. At the end of the operation, the pile is poured, with a tremie tube. The concreting only requires one operation. The concreting finished, the supporting tube is removed with the vibrating (sheet) pile driver.

VIBROFLOTATION
Vibroflottation
Civil Engineering
A practice of soil stabilization which consists in sinking there a tube equipped at its lower part of a nose cone capable of horizontal circular vibrations arising from a turning outlying mass. The penetration into the ground is ensured by water jets of strong pressure coming out from the lower part of the nose cone and cut on the arrival at the lower point. The action of vibrations in the ground produces an increase in the density of the surrounding medium, and therefore its compacting. Two practices are possible: Vibroconsolidation and the ballasted piles. **See Figure 7**

VIBROGRAPH
Vibrographe
Equipment for Measure and Control
Instrument for measuring vibrations to which a work is subjected.

VIBROPILING
Vibrofonçage
Civil Engineering
A technique of driving that mainly applies to the sheet piles, but also to the precast piles; it is especially used in the granular and very wet sandy grounds. The process consists in transmitting to the part, in the ultimate set, vibrations produced by a vibrodrive drill. The machine covers the sheet pile (or the pile); outlying masses, setting on axle, create vibrations, whose effect, added to the weight of the vibrating (sheet) pile driver, carries out the sinking of the sheet pile (or of pile).

VIBRO-SHEET-PILE EXTRACTOR
Vibro-arracheur
Equipment and Tools
A public works plant enabling to pull sheet piles of a caisson for example and which is animated by a vibratory motion destroying partly forces of the side friction, thus allowing an easier extraction.

***VICAT* APPARATUS**
Appareil *Vicat*
Assaying Equipment
An instrument supporting a sliding part of a given weight, ended either by a cylindrical rod 10 mm diameter (called *Tetmajer probes* being designed to the test of consistency) or by a needle of 1.13 mm diameter and 300 g weight (called *Vicat needle*) being of use as set test of the cement pastes.

***VICAT* AUTOMATIC APPARATUS**
Appareil *Vicat* automatique
Assaying Equipment
An instrument serving as the determination of the setting time of the cement pastes and whose principle is as follows.
The support tray of the mold containing the binder moves according to a movement fathering a spiral. The needle carries at its upper end a graph registering on a drum the penetration stroke of the needle. Periods of penetration can be adjusted on gaps than 5, 10, or 15 min ensuring test durations for 1, 2, or 3 h.

***VICAT* NEEDLE**
Aiguille de *Vicat*
Equipment for Measure and Control
A rod with the help of which are performed tests that allow to work out the set velocity of cements (initial, duration and final set). This needle is made of polite metal and shows a cylindrical section of 1.13 mm diameter ($1\ cm^2$ of section), weighing 300 g.

VICE
Défaut
Defects (Building Materials and Metallurgy)
Syn. with BLEMISH; DEFECT; FLAW

VICE TOOL
Marteau grain d'orge
Equipment and Tools
Syn. with DIAMOND POINT CHISEL; PARTING TOOL

***VICKERS* HARDNESS TEST**
Essai de dureté *Vickers*
Test of Materials (Metallurgy)
A test of hardness using a pyramidal diamond impressor to imprint the metal under a load *F* and during a given time and measuring the diagonal *d* of the remanent imprint (*HV* hardness). It is used to control pieces treated superficially or those having a small thickness. **See Figure 8**

VICTORIA STONE
Pierre artificielle
Buildings Materials
Syn. with ARTIFICIAL STONE

***VIERENDEEL* GIRDER**
Poutre échelle; Poutre *Vierendeel*
Construction
See LATTICE GIRDER. **See Figures 9**

VIEW
Vue
Drawing
The representation of a part, a work, such as it can be observed since a given position.

VIEW WINDOW
Fenêtre
Masonry
An opening carried out in a masonry enabling the direct examination of this one so as to divulge there possible spaces, cracks, and in general to be

aware of its general state. Windows can be prolonged beyond the coating, into the ground, to enable a detailed examination.

VILLEBOIS ASHLAR
Villebois
Geology
An ashlar from the Ain (France).

VINYLIDENIC RESIN
Résine vinylidénique
Polymers
A synthetic product whose macromolecular sequence is linear and characterized by the opening, followed of polymerization, of the double connection of vinylidenic type.

VINYLTAR
Goudron-vinyle
Materials
A tar into which vinyl (P.V.C.) in low quantity is mixed (from 1.5% to 6%). Among the other associated forms of tar, one can quote tar epoxies and tar polyurethanes. Its use is similar to that of tar.

VIRVOLT
Virvolt
Equipment and Tools
A small machine of building site intermediate between the power barrow and the power-driven tipper; it is a little more powerful than the down-market power barrow. The driver sat on a saddle and holds a handlebar. It is a kind of a delivery tricycle with tilting skip.

VISCOELASTIC
Viscoelastique
Materials
Of the behavior of a material which, subjected to a constant loading, sees its deformations evolving according to the time (viscosity) and to cancel entirely itself (elasticity) after complete unloading.

VISCOELASTICITY
Viscoelasticité
Materials
The property of viscoelastic materials.

VISCOELASTICITY METER
Viscoélasticimètre
Equipment for Measure and Control
Syn. with VISCOLELASTIMETER

VISCOELASTIMETER
Viscoélasticimètre
Equipmentfor Measure and Control
A laboratory instrument used to study the viscoelasticity of materials. Syn. with VISCOELASTICITY METER

VISCOMETER
Viscosimètre
Equipmentfor Measure and Control
An instrument used to measure the viscosity of fluids. Several models are available:

- **falling coaxial cylinder viscometer** (*le viscosimètre à cylindres coaxiaux*), with which the viscosity of grouts is measured and that enables to draw by points the graph showing the diversion of the internal cylinder according to the number of revolutions of the external cylinder; **See Figure 10**
- ***Fann* viscometer** (*le viscosimètre Fann*), enables the measurement of the rheological properties of the fluids and is equipped with a synchronous engine allowing the device to achieve any range of controlled shearing rates;
- ***Marsh* viscometer** (*le viscosimètre de Marsh*): see FLOWMETER;
- ***Stormir* viscometer** (*le viscosimètre de Stormir*), allows to measure the drilling muds viscosity. It is intermediate between the falling coaxial cylinder viscometer and the flow viscometer. Measurement is done by finding the weight necessary to actuate an agitator at the speed of 600 rpm. (with this machine a measurement of rigidity can also be achieved);
- **flow viscometer** (*les viscosimètres à écoulement*), machines having the morphology of mainline funnels with a calibrated nozzle,

enabling to measure the rate of flow of a known volume of grout. According to the consistency of grout, one can use:

- *Marsh flowmeter* (*le cône de Marsh*) (nozzle 4.8 mm),
- *Mécasol flowmeter* (*le cône Mécasol*) (nozzle 8mm),
- *Prépakt flowmeter* (*le cône Prépakt*) (nozzle 12.7mm),

Volumes of normally used filling are 1 liter, 1.5 liters, or close-cropped edge;

- ***Redwood*** **viscometer** (*le viscosimètre Redwood)* (nozzle from 4 to 10 mm), used to measure the viscosity at a constant temperature of the bituminous products, consists in measuring the flow time of $50\ cm^3$ of product;
- ***Engler*** **viscometer** (*le viscosimètre Engler*), is used for the measurement of viscosity of the bituminous products and its principle consists in comparing the flow rate to a constant temperature of $200\ cm^3$ of a bituminous product and $200\ cm^3$ of water.

VISCOMETRY
Viscosimetrie
Rheology
The science of the viscosity measurements of some matters (polymers, etc.).

VISCOSITY
Viscosité
Strength of Materials
A physical property characterized by the resistance to the displacement of molecules ones on the others; it varies according to the liquids.
We distinguish various cases of viscosity, and in particular:

- **pure viscosity** (*la viscosité pure*), so called when, at a given temperature, a one-to-one relation is established between stresses and speeds of such a deformation that these quantities concurrently cancel;
- **Newtonian** ***or*** **normal viscosity** *(la viscosité newtonienne ou normale*), so called when the differential viscosity coefficient is independent of the deformation speed and of the time.

For a Newtonian fluid and a linear flow, the viscosity coefficient linked to the shear stress at the speed of slip is constant; it is called *Poiseuille coefficient.*

VISCOSITY COEFFICIENT
Coefficient de viscosité
Rheology
1. The necessary shear stress to produce inside a matter a gradient of flow velocity of one unit.
2. The ratio between an increase infinitely small of the stress and the corresponding increase in the bending (out of shape) velocity.

VISCOSITY INDEX
Indice de viscosité
Rheology
The characteristic number, on a conventional scale, of the viscosity variation of a fluid according to the temperature. More the variation is low, more the index is high.

VISCOSITY STRENGTHS
Forces de viscosité
Rheology
Tangential contact forces between two layers of the fluid considered.

VISCOSITY TEST
Essai de viscosité
Test ofMaterials (Tightness)
A test intended for testing the properties of elasticity of the tightness screeds.
Test schedule: cube molds (3 x 2 x 1 cm) obtained, either by cutting with a diamond saw, or by casting, are pasted between two parallel metal plates ofarea $S = 6\ cm^2$ (2 x 3 cm) so as to form a sandwich, which is fixed vertically on a shearing machine (rheometer). One ofthe plates is fixed, whereas the other is surmounted by a calibrated mass M, so that the material ranging between the plates goes before a shear stress $\tau = M/S$ of constant value in the time. An interdependent sensor of the mobile plate enables the measurement and round the clock recording displacement. During the tests, the test specimen is dived in a thermostatized bath. The test starts at the time when the mass M is released by an electromagnetic device. The set of machines (thermostat, magnetic release, displacement collector, etc.) is connected to a system of data acquisition and control that enables the automatic piloting of test. The computer program ensures the:

- *starting of test and its timing,*
- *recording on magnetic cassette of various data,*
- *control of temperature (constant or variable),*
- *layout of graphs and interpretation of results at the end of the test. The deformation of the sample according to time is directly observable as a graph of creep.*

VISCOSTATIC
Viscostatique
Rheology
Of a matter gifted of a practically immutable viscosity in view of this action of external agents.

VITAL CYCLE
Cycle évolutif biologique (cycle vital)
Building Materials
For xylophage insects, all successive transformations undergone by the insect from a generation to the following. Term most often used to identify the period between the egg and adult stage resulting from larval and nymphal stages.

V-JOINT
Joint maigre
Masonry
Syn. with THIN JOINT

V-LINE
Anglet
Masonry
A line digs in V laid down to mark courses of stone. Syn. with V-CHANNEL

VOID
Pore
Building Materials and Geology
A residual empty coarsely spherical that results from a gap of cementing for the sedimentary rocks or of the imprisonment of bubbles for volcanic rocks.

VOIDLESS CONCRETE
Béton plein
Building Materials
Any concrete in which, when it has settled, all voids are filled with mortar. This can be verified after the action of vibration leading to a slightly bleedy surface if the mortar is itself full. Syn. with DENSE CONCRETE

VOIDS RATIO
Indice des vides
Geotechnics
The ratio of the volume of the empty spaces of a soil (the totality of volume which is not occupied by solid particles) to the volume of solid particles. This index is noted *e.* Empty spaces can be filled by water, by air, or by one and the other.

***VOIGT'S* MODEL**
Modèle de *Voigt*
Rheology
A model constituting, with that of Maxwell, one of the two rheological models used to study viscoelastic properties of the macromolecular materials.

VOLATIBILITY NUMBER OF A SOLVENT
Indice de volatibilité d'un solvant
Painting
The quotient of the duration of evaporation of the n-butyl acetate taken as reference solvent by the duration of evaporation of the studied solvent.

VOLCANIC CONCRETE
Béton volcanique
Building Materials
Syn. with POZZOLAN CONCRETE; PUMICE CONCRETE

VOLCANIC FLY-ASH CONCRETE
Béton aux cendres volcaniques
Building Materials
Any classic concrete in which ashes of volcanic origin have been mixed so as to give it more plasticity.

VOLCANIC ROCK
Roche volcanique
Geology
An endogenic material stemming from magmas that made irruption on the surface during volcanic eruptions.

VOLLEY
Volée
Foundation; Earthwork
1. A series of many and consecutive blows transmitted to the piles or sheet piles sunk into the ground by driving. A volley reflects *n* blows of rammer.
2. The volume of rock breaking away in a single operation during an earthwork with explosives (for example, during tunneling).

VOLTAIC ARC
Arc voltaïque
Welding
Syn. with ELECTRIC ARC

VOLUME BATCHING
Dosage d'un constituant d'un béton, d'un mortier
Building Materials
Syn. with BATCHING

VOLUME YIELD OF GUNITE
Rendement d'un mortier projeté
Building Materials
The ratio of the volume of mortar to the volume of sand used. This ratio varies with the volume of cement, nature, and grading of sand.

VOLUME YIELD OF SHOTCRETE
Rendement d'un béton projeté
Building Materials
The ratio of the volume of concrete in place to the volume of prepared concrete. The yield depends basically on the aggregates used and the qualification of the gunite applicator.

VOLUMETRIC
Volumétrique
Equipment for Measure and Control
Of a meter equipping some instruments, which counts the volumes of supplied, injected, etc., materials

VOLUMETRIC GRAIN COEFFICIENT
Coefficient volumétrique d'un grain
Test of Materials (Building Materials) and Geotechnics
The ratio between its volume *V* and the volume $\pi N^3/6$ of the sphere whose diameter is equal to its biggest dimension *N*.

VOLUMETRIC MASS
Masse volumique
Hydraulic Binders
The mass of the unit of volume of the considered binder. Let *m* be the mass of a grain of the flour constituting the grain, *v* the volume of this grain, for a mass $M = \Sigma m$ of binder, the actual volumetric mass is the quotient *M/V,* with $V = \Sigma v$ (the Greek letter Σ means "sum of all values of ").

VOLUMETRIC MASS BULK OF AN AGGREGATE
Masse volumique vrac d'un granulat
Building Materials
The unit volume mass (m^3 or dm^3) occupied by the aggregate stored in bulk. This concept is useful to turn a batching into volume, and vice versa.

VOLUMETRIC MASS ON THE SPOT
Masse volumique en place
Hydraulic Binders
The quantity of binder contained in an unit volume; it is a practical value that depends of the fineness, compactness, etc., of binder elements; if *V'* designates the volume wrapping the binder (and either the sum of volumes of the grains constituting the binder), the volumetric mass in place costs *M/V'*.

VOLUMETRIC MASS OF HARDENED CONCRETE
Masse volumique du béton durci (symbol: MVAP)
Building Materials
The mass determined by weighing of a cylinder test 16 x 32 cm, after 28 days of conservation, without water, at 20°C, in a plastic bag hermetically closed. The mass is expressed in kilograms per cubic meter.

VOLUMETRIC MASS OF SOLID PARTICLES
Masse volumique des particules solides
Building Materials
The mass equal to the quotient of the solid particles mass by their volume.

VOLUTE
Marche en volute
Construction
Syn. with SCROLL; TREAD

***VON ARX*™ GUN**
***Von Arx*; Pistolet à aiguilles**
Equipment and Tools
The commercial name of a pneumatic gun whose single tool (burin, gouge, butt iron) would be replaced by a great number of needles. Syn. with NEEDLE GUN

VOUSSOIR
Voussoir; Vousseau; Claveau
Construction
1. Wedge-shaped stone with two curved faces, one internal, the other external; the juxtaposition of several voussoirs forms an arch or constitutes the filling of a vault. Among the various voussoirs met in a string course, we distinguish the:

- **crossette archstone** (*le voussoir à crossette*), whose top part forms an angle to join up a level course;
- **keystone** (*le voussoir médian ou clef*),
- **springer** (*le voussoir de retombée*), which rests on the springer.

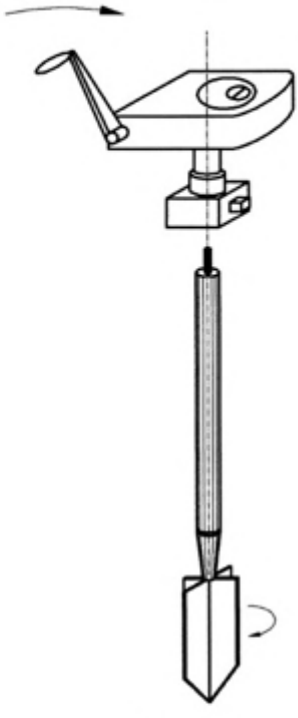
Syn. with ARCHSTONE. **See Figure 11**
2. An element of a vault. Syn. with ARCHSTONE.
3. Each wedge-shaped ashlar of a fiat arch. In a vaulted work, the feather takes the name of *voussoir.* These are courses located between the key and the springers. Syn. with FEATHER

VOUSSOIR HEAD
Tête de voussoir
Construction
The vertical saw face of an archstone.

Figures of the letter



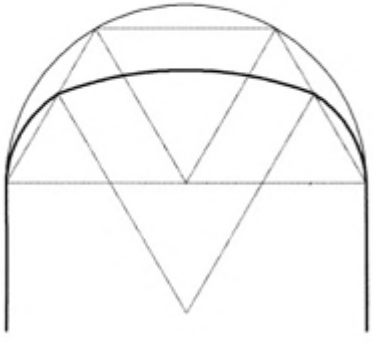
Fig. 1



LPC vane–test apparatus

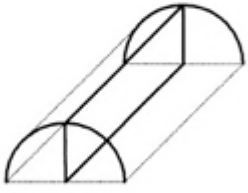
VANE

Fig. 2



Three–centered vault

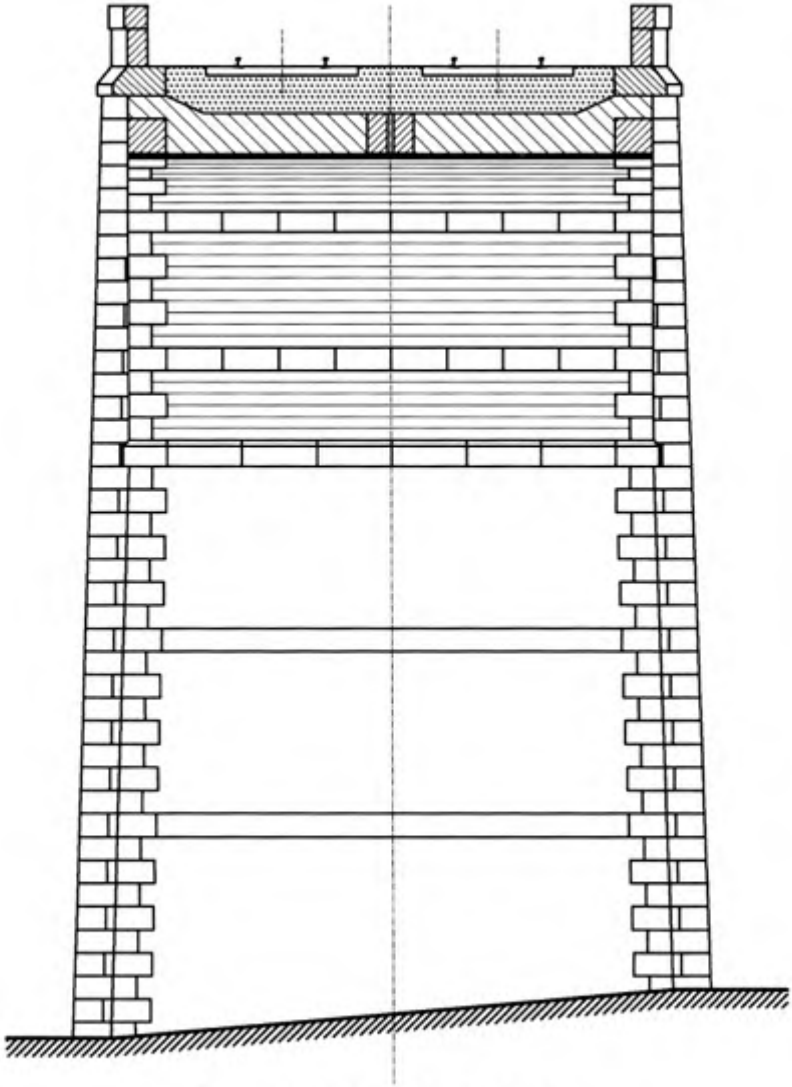
Fig.2a



Barrel vault

VAULT

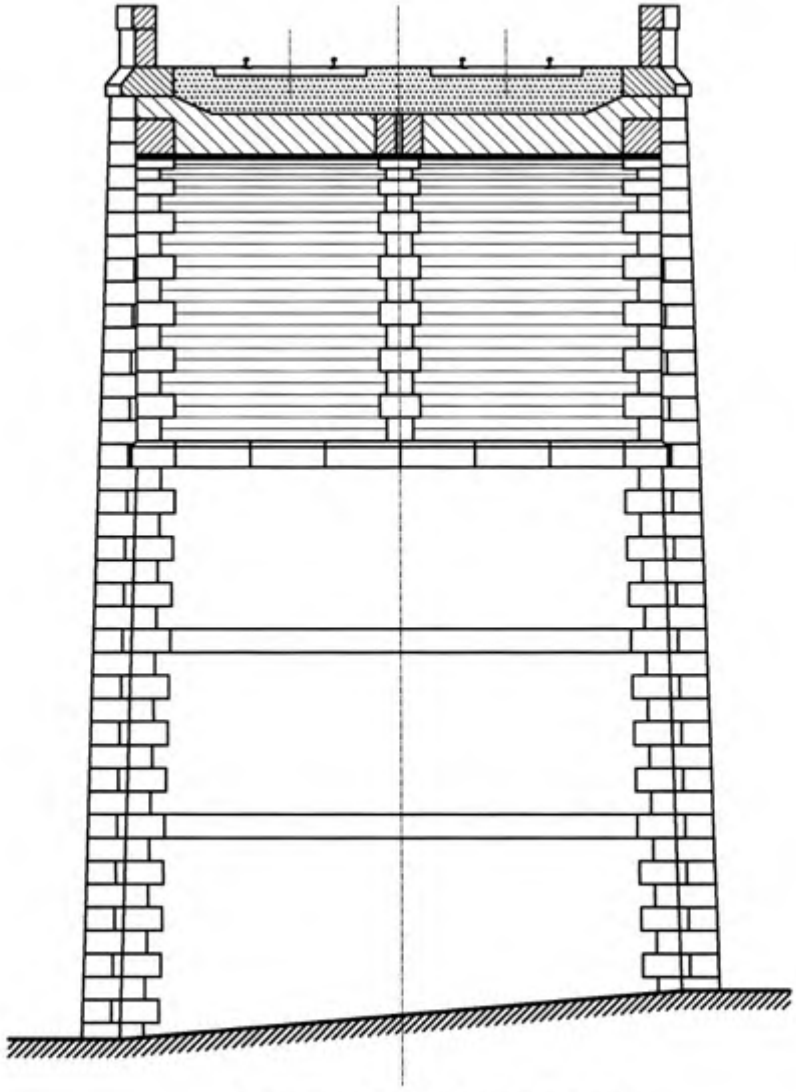
Fig. 2b



Composite vault with horizontal chain bond

VAULT

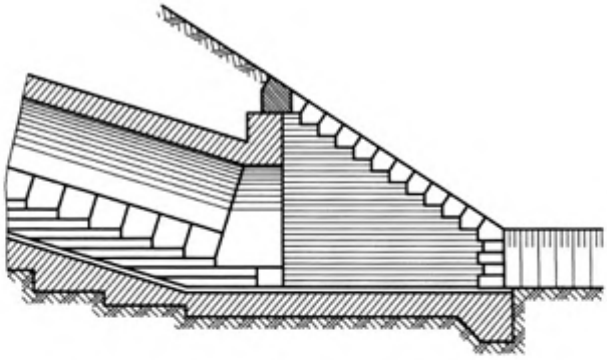
Fig. 2c



Composite vault with vertical chain bond

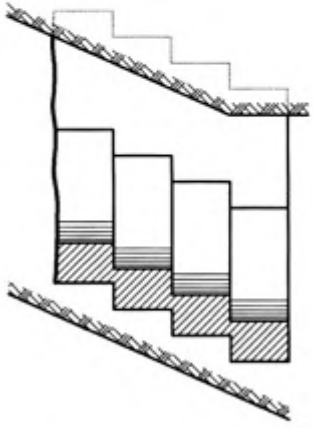
VAULT

Fig. 2d



Aqueduct with sloping arch and wing walls with crossettes

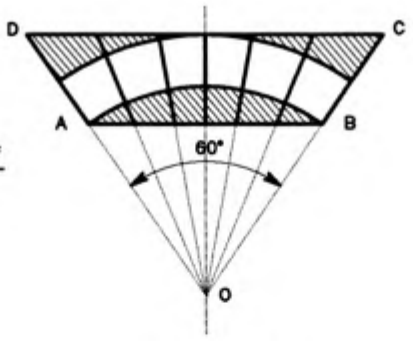
Fig. 2e



Sloping arch with steps (Aqueduct in descent by horizontal parts)

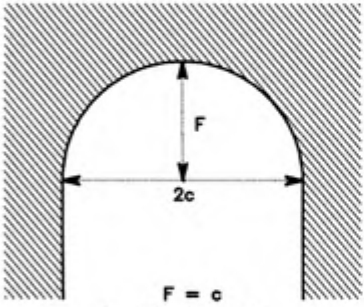
VAULT

Fig. 2f



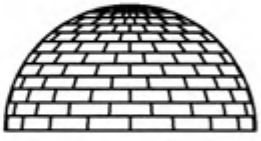
Lintel course

Fig. 2g



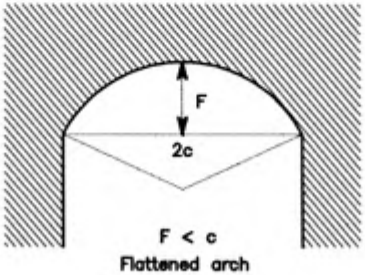
F = c
Semicircular vault

Fig. 2h



Cupola dome

Fig. 2i



F < c
Flattened arch

VAULT

Fig. 2j



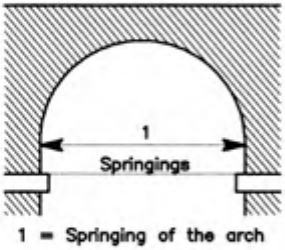
Flattened vault extradossed parallel

Fig. 2k



Flattened vault extradossed horizontally

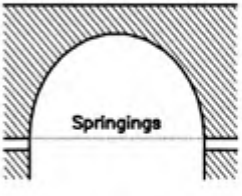
Fig. 2l



1 = Springing of the arch

Surmounted arch

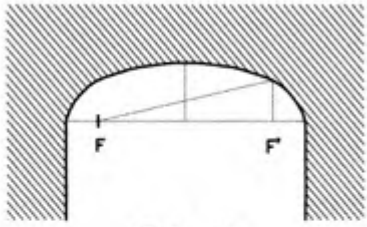
Fig. 2m



Stilted elliptic vault

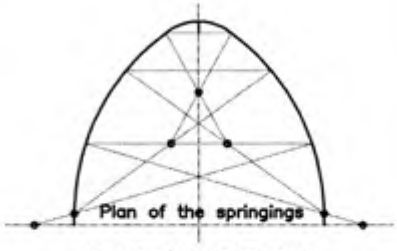
VAULT

Fig. 2n



Elliptic arch

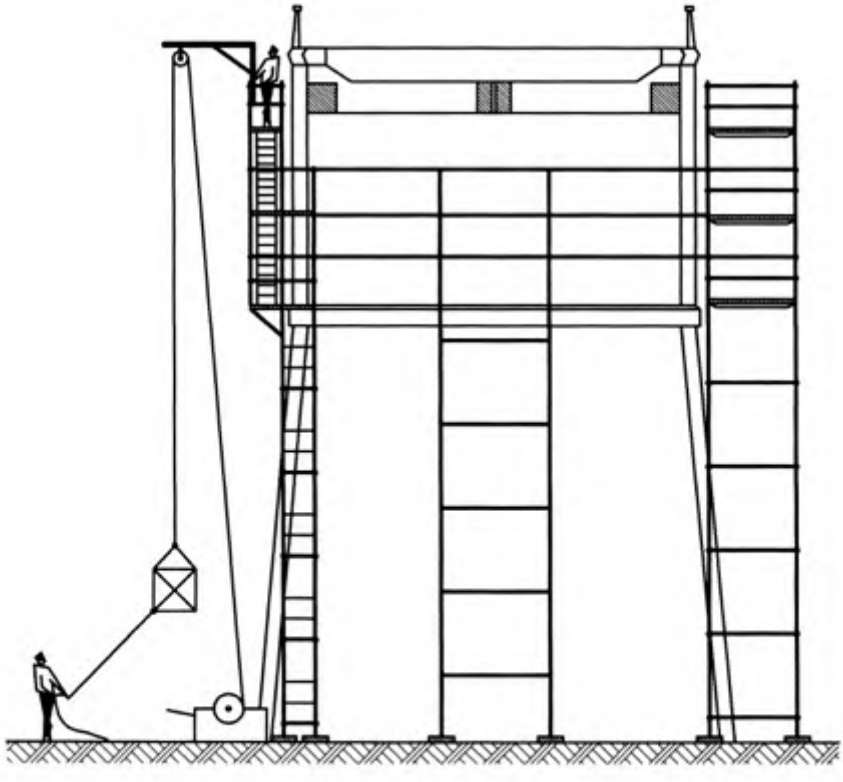
Fig. 2o



Surmounted basket arch

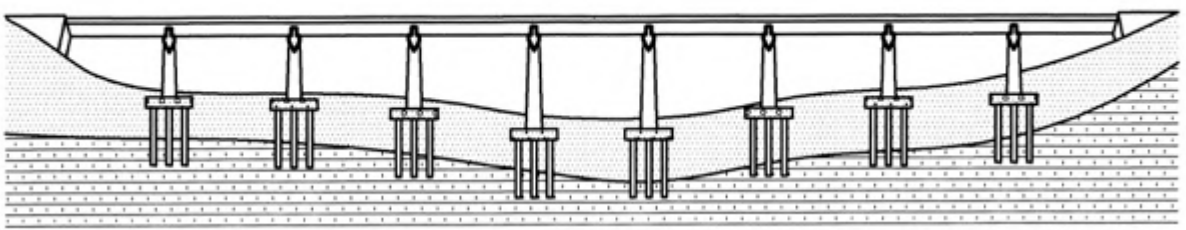
VAULT

Fig. 3



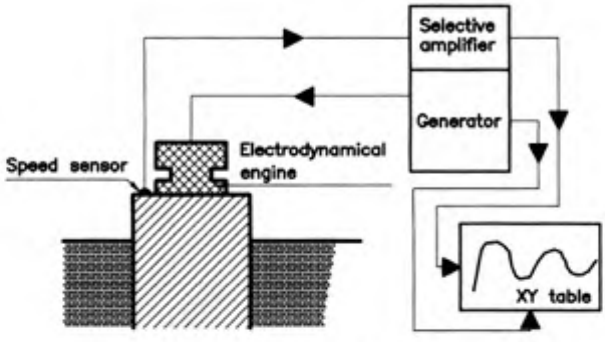
VERBOQUET

Fig. 4



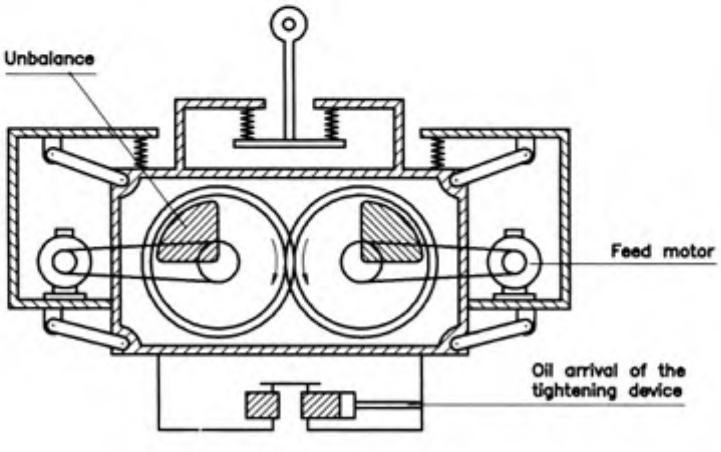
VIADUCT

Fig. 5



VIBRATIONS METHOD (Principle)

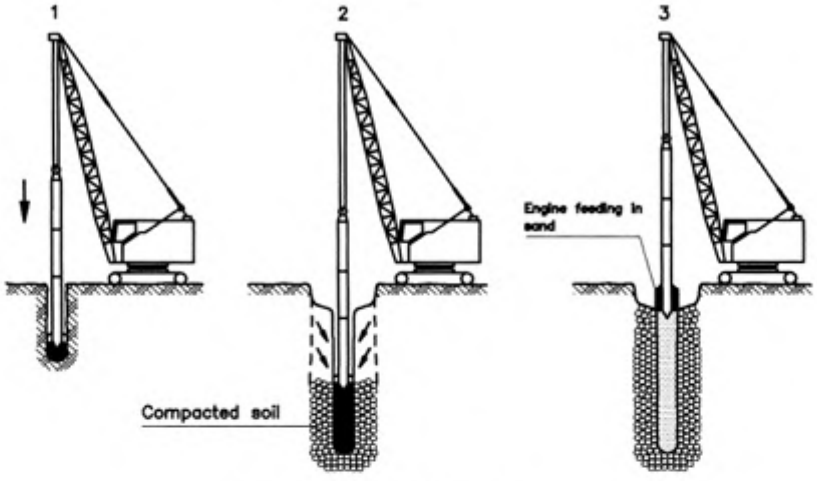
Fig. 6



Vibrator for vibropiling

VIBRATOR

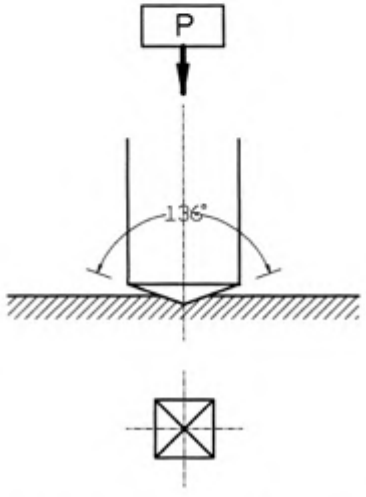
Fig. 7



Vibroflotation in sandy ground

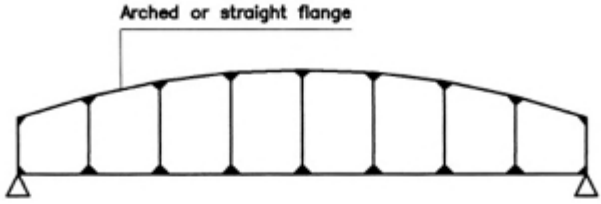
VIBROFLOTATION

Fig. 8



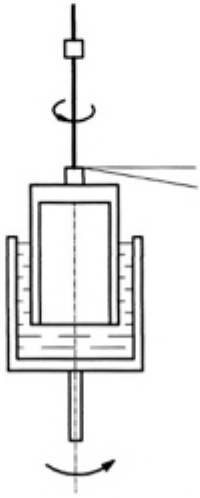
VICKERS HARDNESS TEST

Fig. 9



VIERENDEEL GIRDER

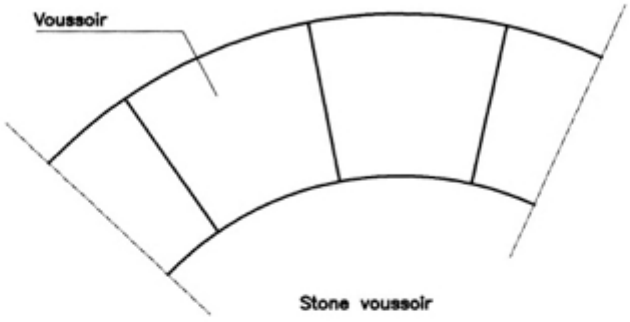
Fig.10



Falling coaxial cylinder viscometer

VISCOMETER

Fig.11



VOUSSOIR



WACKES
Wackes
Geology
Rather gritty volcanic rocks with vacuoles filled with various minerals and which are used as building stones or pulverized as pozzolana.

WAD
Bourre; Polochon
Explosives; Construction
1. A material used to tamp a blasthole. Syn. STOPPING; TAMPING
2. A small pad of mortar placed between the veneering and the wall, at a right angle to where the hook is sealed, when using hooks to apply veneering to a wall. (The wad must adhere to the wall and to the veneering.)

WADING ROD
Perche graduée; Perche support; Perche de mesure
Measuring Equipment
A graduated rigid rod to which are fixed one, two, and sometimes several current meters, used for the measurement of water velocity in relatively shallow rivers (< than 5 m).

(TWO-WHEELED) WAGON
Efourceau
Equipment and Tools
A vehicle with two large wheels joined by an axle used to transport very heavy loads.

WAGON-DRILL
Chariot de foration; Wagon drill
Equipment and Tools
A towable or self-propelled vehicle, equipped with one or several drilling arms. Syn. with BOOMER

WAIST
Paillasse
Construction
A sloping slab supporting the steps of a staircase. Syn. with FLIGHT SLAB

WALKING LINE
Ligne de foulée
Construction
Line placed at a constant distance from the stairwell and which must be marked off to make the full-scale working drawing of the turned staircases. The walking line is the path followed by a person at a normal distance from the railing.

WALL
Paroi
Foundation
A cast or prefabricated wall set in the ground at surface level, used to support the walls of the excavation once the digging is complete or used as a watertight blanket. These walls can also be used as a foundation.
The various forms are as follows:

- **Berliner wall** (*la paroi berlinoise ou Berlinoise*): see BERLINER SHEETING; **See Figure 1**
- **composite wall** (*la paroi composite*), which combines two or more construction processes. For example: in the lower section, it is necessary to join up with the naturally impermeable substrate to form a watertight enclosure, while in the higher section, all that is required is support. Thus, starting at the naturally impermeable substrate, the diaphragm wall system is used up to the desired height, upon which a precast wall will rest; **See Figure 1a**
- **thin wall** (*la paroi mince*), consists of a wall sunk in the ground with a thickness ranging from a few centimeters up to 10 cm. The process consists of sinking or driving a metal section into the ground down to the wanted level, then extracting it while injecting watertight grout that fills the resulting space; the machine is then advanced the width of one section, etc; **See Figure 1b**
- **diaphragm wall *or* ICOS wall *or* slurry wall** (*la paroi moulée dans le sol*), which consists of a narrow vertical trench dug in the ground starting at the surface down to a sometimes considerable depth (around 100 m). The walls of the trench are stabilized by bentonite that is poured as the digging advances and forms a cake on the walls, thus acting as watertight shoring. When the digging has reached the desired depth, the reinforcements are placed into the excavation. Using a chute, the concrete is poured starting from the bottom grade. The mud rises as the excavation is filled in with concrete and is recovered to be recycled. This process is especially used in aquiferous ground or ground of poor geotechnical quality. The diaphragm walls are constructed panel by panel and can be anchored in the ground; **See Figures 1 to 1e**
- **Parisian wall** (*la paroi parisienne*), variant of the Berliner wall and in which the sections are replaced by reinforced concrete precast posts, with shoring being provided by reinforced concrete poured in situ or by sprayed concrete; **See Figure 1f**
- **prefabricated *or* precast wall** (*la paroi préfabriquée*), which evolved from the mainline diaphragm wall and is made in an excavation of well-defined geometrical shape and set under drilling mud, by placing regular panels of prestressed or reinforced prefabricated surface concrete, and sealing these panels to the ground either with drilling mud which was mixed with cement and fitting products, or with grout substituted for drilling mud immediately before the panels are put into position. In the first case where drilling mud is also used as sealing grout, this mud is called *self-hardening grout.* The panels have at their foot a metal spur which enables to guide and if required to join two successive panels together as the panels are being put into place. To ensure watertightness between two panels, a special type of water-stop joint is laid down whose hollow ring of dovetails is filled in with a cement grout; **See Figure 1g**
- **slurry wall *or* slurry trench** (*la paroi au coulis*), a wall dug with traditional tools and cast with a special slurry that sets in a few hours and essentially constitutes the body of the watertight diaphragm. This slurry, whether slurry-cement or self-setting grout, remains fluid during digging; it consists of cement, bentonite, and chemical admixtures to determine the setting time and flow speed. Currently, thickness is 0.60 m. Joints are made simply by scoring the adjacent panel. Often this wall is constructed around the clock because it can warp. This type of wall is especially useful as a watertight diaphragm; **See Figure 1h**
- **plastic concrete wall** (*la paroi en béton plastique*), a wall dug with traditional tools, cast under bentonite slurry and applied to the plunger column with plastic concrete. This type of wall is designed for use as a cutoff wall for dams, etc. Such concrete must be watertight and elastic. Per cubic meter, it is consists of 100 to 200 kg of cement, 1800 to 2000 kg of round fine aggregates and 30 to 40 kg of bentonite. Generally these walls have a

thickness of 60 cm and are composed of alternating panels, joints being made with the stop-end tube; **See Figure 1i**

- **slurry trench** (*la paroi à la bentonite*), designed for use as an impervious diaphragm consisting of a cut made up of aggregates mixed with bentonite. A wide trench is dug (from 1.50 to 3 m) and the trench is kept full of bentonite slurry. The aggregates unearthed during digging are poured into the trench. The job is usually carried out in advance, with the pouring of the aggregates (which form a natural slope in the trench) taking place at a sufficient interval before the digging so that the base of the slope is always set back from the drilling. A strong thickness is essential for ensuring a correct cut despite the obvious simplicity of the process. **See Figure 1j**

WALL
Mur
Construction
A vertical construction or one using batter, raised vertically or laid in foundation with materials joined with a binder (bricks, quarry stones, etc), of concrete, reinforced or not, or earth (reinforced earth construction).
The principal types are:

- **barrage wall** (*le mur barrage*), a wall built between a cliff and a transportation corridor to protect it from landslides. The barrage wall is often associated with a scree chamber which can be easily cleared by earthmoving equipment; **See Figure 2**
- ***Ebal*™ wall** (*le mur Ebal*), a process using factory produced modular and self-stabilizing materials, laid side by side on a slope concrete. A footing, reinforced and poured on the spot, secures the base of materials. This process allows vertical or tilted walls to be constructed which are likely to bear heavy loads (retaining walls, abutments, etc.).
- **embankment wall** (*le mur de pied*), a supporting work of low height that retains the earth at the foot of an embankment; **See Figure 2a**
- **quay wall** (*le mur de quai*), a vertical covering, of masonry or concrete, applied to the bank of a river or a port;
- **revetment wall *or* protection wall *or* facing wall** (*le mur de revêtement*), consists of a thin covering (0.50 to 0.60 m) of masonry or concrete, built against a slope or a rock face bordering a transportation corridor to protect the covered ground from water (frost, and in particular strong rains). This safety mantle is designed to avoid landslides or rockslides;
- **nailed soil wall** (*le mur en sol cloué*), a wall using earth and reinforcements, the latter being linear materials, usually high-strength steel bars. The nailed soil wall is very similar to a reinforced earth wall. In both cases, tension along inclusions reaches maximum at a certain distance inside the wall and not close to the facing. A nailed soil wall is built from the top down, whereas a reinforced earth wall is created from the bottom up. In a nailed wall, horizontal displacements are concentrated at the top, whereas in a reinforced earth wall, they are in the lower portion;
- **retaining wall *or* breast wall** (*le mur de soutènement*), is designed for supporting ground and overloads that it will likely be subject to (eg. railway or road overloads). It can support, either an existing earthwork, or a recessed earthwork. The retaining walls act both as a foundation masonry, with its facing in contact with the ground, or aerial masonry, through its external facing. Among the main types of retaining wall we can distinguish in particular:
  - *tied (retaining) walls* (*les murs ancrés*), built when the ground to be supported is high. The process consists of anchoring shells into the ground by means of prestressed tie rods, **see Figure 2b to 2d**
  - *Armco™ (retaining) walls* (*les murs Armco™*), which are wall-caissons consisting of steel caissons 3.05 m long. Caissons are constituted by folded galvanized sheet metal which are bolted together. Once set up, they are banked up, preferably with a gravel-like material: as-dug aggregate or crushed stone from ballast pit or quarry. These walls rest directly on the subgrade by means of metal base plates, fixed under each column,
  - *articulated (retaining) walls* (*les murs articulés*), prefabricated units, having the shape of a bottomless and topless caisson which are stacked with decreasing width and depth. These casings are then filled with crushed and calibrated materials which, on the one hand, ballast the work and, on the other

hand, allow it to drain. These units have high and low notches on their unexposed faces which are aligned during assembly and which, by inserting a concrete pin, make it possible to interlock the units. These notches allow the ground to drain. The wall rests on a reinforced concrete footing or directly on the ground,

- *cantilever (retaining) walls* (*les murs à bèches*), are retaining walls made of R.C. having a beam (or keel) in front of or behind the footing or even under the shell, in its extension, to improve, when necessary, slip stability of the wall, **see Figure 2e**
- *shelf (retaining) walls* (*les murs à console ou à chaise*), retaining works of R.C. with a bracket incorporated into the back of the shell, forming an intermediate footing that plays an important part in the static balance of the unit, **see Figures 2f and 2g**
- *counterfort (retaining) walls* or *retaining wall with buttress* (*les murs à contreforts*), retaining works strengthened on their front or back face by shells of R.C. perpendicular to the normal shell, spaced every 2.50 to 5 m. The buttresses are designed to stiffen the shell and are embedded in the footing, **see figure 2h to 2k**
- *retaining walls with friction slab* (*les murs à dalle de frottement*), retaining works consisting of a thin shell of R.C. connected to a horizontal slab embedded in the fill by means of tie rods which can be simple steel bars. The slab resist movements of the wall by friction on one or two faces according to its depth in the ground and its distance from the wall, **see Figure 2l**
- *ladder (retaining) walls* (*les murs à échelle*), consisting of a thin shell on a footing, kept in place by short tie rods placed at intervals mainly within the landslide prism. These tie rods, made of round steel coated of R.C., can have anchorage plates or not; they work primarily against the side friction in the solid mass, **see Figure 2m**
- *guard (retaining) walls* (*les murs de garde ou murs de masque*), buried supporting works built near an existing construction to avoid settling when excavating near the foundations of the existing construction,
- *gravity retaining walls* (*les murs poids*), supporting works which provide support by virtue of their own weight. They former provide a strength moment to the motor moment of the forces of the natural or added fill. Gravity retaining walls can be built of concrete or masonry,
- *caisson (retaining) walls* (*les murs caissons*) are similar to cribs, but are used for large heights. They are supporting works made up of prefabricated units that are simply stacked or encased. They provide a good flexibility with respect to warping and differential settlements of the subgrade,
- *Peller™ (retaining) walls* (*les murs Peller™*), supporting walls built with reinforced concrete girders of variable length and section laid out in open-work box form filled with noncohesive material. The position of each girder is determined to avoid a shearing action in the girders and so that the slope of the fill material of the wall between girders falls between 2/1 and 3/2, **see Figure 2n**
- *shaped (retaining) walls of reinforced concrete* (*les murs profilés en B.A.*) are prism-shaped and made up of thin shells whose section is similar to L- or T-sections used in steel construction. Among these types of walls we can distinguish:
  - the inverted-T (retaining) wall (see below),
  - the angle wall, which is generally L-shaped,
- *quay (retaining) walls* (*les murs de quai*), has a vertical facing, with a more pleasing appearance s than standard retaining walls, crowned by a parapet often supported by a plinth or a cornice,
- *fill (retaining) walls and cut (retaining) walls* (*les murs en remblai et les murs en déblai*): fill walls are designed for typical situations where the slopes and surfaces of the earthworks need to be stiffened, without there being any particular site constraints; walls are then built as independent works; then, once completed, fill is added using a suitable material by means of earthmovers. Cut walls are designed for use when effect of a natural slope must be reduced to enable the construction of a transportation corridor or a some other type of work,
- *inverted-T (retaining) walls* (*les murs en T renversé*), supporting works made of R.C. which apply on the subgrade relatively moderate stresses, much lower than those to which a gravity retaining wall of similar

height is subject to. The inverted-T (retaining) walls consist of a thin shell embedded in a footing that supports part of the fill, which improves the stability of the unit; **See Figure 2o**

- *Delta™ (retaining) wall or acoustic construction* (*le mur de soutènement et de protection phonique ou mur Delta™*), structure made up of precast modular concrete sections, which can be assembled with variable batters, inclined or curved, and tolerate the differential settlement. Two types of units are used:
  - slabs that constitute the visible pan of the work and whose dimension specifications depend on the thrust of the internal embankment,
  - lengthwise ribs of superimposed elements, having a rear bulb whose form is determined partly to constitute a hard point in the external embankment and partly to allow the formation of relieving arches in the embankment. Thus, the thrust exerted by the embankment is completely transferred to the ribs. A version of this type of wall, known as *Delta-Phonique™,* which allows plant growth on both faces, constitutes an excellent soundproof wall.

(SECTION OF) WALL
Pan de mur
Construction
The portion of a wall between ground level and the top. Syn. with LENGTH OF WALLING

WALL ANCHOR
Patte à scellement
Masonry
A generally flat metal piece whose one end is designed for a wooden, metal piece, etc., to be attached, and whose other end is equipped with a fishtail fixing to be sealed.

WALL ARCH
Formeret
Construction
An arch set in a wall forming a rib designed to receive the head of a cradle vault or a jack arch of a groin vault.

WALL AT AN ANGLE
Mur biais
Construction
A construction whose two facings are not parallel. It can be a construction anomaly or intentional. Syn. with SKEW WALL. **See Figures 3 and 3a**

WALL BRACING
Chaîne; Moufle
Construction
A series of metal bars or braces used to reinforce a structure, or masonry work.

WALL BRACKET
Console
Construction
Roughly molded and sculpted ashlar standing out on the facing of a wall to support a cornice.

WALL CRACKER
Wall cracker
Equipment and Tools
A rock breaking device that operates without vibrations; its protective hood covers a number of powerful teeth, driven by hydraulic actuating cylinders working at a pressure of 450 bars, which penetrate hard and reinforced concrete. This machine exists in three forms with widths of 40, 60 and 90 cm. (Another version with circular jaws is used for trimming piles)

WALL CRANE
Grue-console
Equipment and Tools
An apparatus that moves vertically on a system of rails attached along a wall.

WALL DRAINAGE
Remplage
Sanitary Engineering and Drainage
A dry stone masonry set between a wall and the banked earth that decreases hydrostatic pressure by draining off water contained in the ground.

WALL EFFECT
Effet de paroi
Construction of R.C. and P.C.
The difficulty when filling a mold with concrete (to make formworks, reinforcements,

cable ducts, etc.) of making sure the concrete fills by volume every surface of the mold.

WALL HEAD
Tête de mur
Construction
The face of a wall forming the wall end. **See Figure 4.**

WALL IN OVERHANG
Mur en surplomb
Construction
A work whose higher portion hangs out over the base.

WALL MASK
Masque
Construction
1. In tunnels, designates:
- the vertical stop wall matching the irregularities of the rocky profile built when going from a covered section to an uncovered section;
- the end wall of a dead end tunnel.

2. A wall or section of precast units, shell-shaped, used for sealing a space.
Syn. with STOP WALL

WALL PERFORMANCE TEST
Essai de tenue de paroi
Tests
A test used to ensure the stability of the walls consisting of simple drilled piles. It is conducted as follows. Before work starts on a building site of drilled piles, three drillings are made that match the diameter and length of the largest piles planned for the project. These drillings monitored to ensure that no slides occur for a time T equal at least to twice the time it takes for concreting, being not less than 4 h. These drillings are carried out away from the sites planned for the final piles.

WALL PLATE
Panne sablière
Carpentry
A structural member set at the base of the principal rafter. Syn. with POLE PLATE

WALL PLUG
Tampon
Materials
A wooden part embedded into a wall and intended for receiving a screw, nail, etc. The cleat can be leveled or projecting in comparison with the main plane of the wall.

WALL SHUTTERING
Banchage
Temporary Construction
1. A process of raise wall construction that consists of filling with concrete the space contained between two formwork panels called *wall forms.*
2. The setting of wall forms.

WALL STABILITY BRACKET
Chaise
Construction
A heel located at the rear and halfway up the shell of some breast walls made of R.C. It is used to strengthen the vertical stability of this wall. The wall stability bracket is used when the height of the ground to be supported is considerable. Syn. with CANTILEVERED BACK SLAB; CORBEL BACK SLAB. **See Figure 5**

WALL STRING(ER)
Faux-limon
Construction
An oblique piece, positioned against a wall, whose purpose is to receive and support steps of a staircase that is not restrained in the wall.

WALL TIE
Ancrage; Agrafe; Chaînage
Masonry; Construction
1. Masonry reinforced with steel bars using nuts and a distribution plate. Syn. with CRAMPING. **See Figure 6**
2. Syn. with CLAMP IRON; DOUBLE DOVETAIL MASONRY TIE; MASONRY TIE; METAL CRAMP
3. A series of braces or beams made of R.C. generally built-in in a construction with the aim to distribute stresses caused by one or several concentrated loads, thus avoiding fractures in the supported structure. Syn. with TIE BEAM

WALL TO CYLINDRICAL SURFACE
Mur à surface cylindrique
Construction
A wall between two cylindrical surfaces with vertical generatrixes. Its base can have a circular, elliptic, concentric, eccentric, or equidistant form.
We can distinguish:
- **straight circular wall** (*le mur circulaire droit*), set up to connect of two straight walls of similar thickness;
- **straight elliptic wall** (*le mur elliptique droit*), a straight cylindrical wall whose base lies between two ellipses;
- **slanting cylindrical wall** (*le mur cylindrique oblique*), a construction whose facing lies between two cylindrical surfaces with oblique generatrixes and whose base can have a circular, elliptic, concentric, eccentric, or equidistant form.

WALL WITH RELIEVING ARCH
Mur en décharge
Construction
A wall with regularly spaced relieving arches built in to relieve stress. **See Figure 7**

WALLING
Murage; Longrine
Work; Temporary Construction
1. The construction of a wall.
2. Longitudinal wooden piece supported by trench braces which is propped against the shoring boards in an excavation.

WALLING UP
Murage
Work
Syn. of BLOCKING UP; BRICKING UP

***WALTZ* BOWL TEST**
Essai au vase de *Waltz*
Test of Materials (Building Materials)
A test that measures the consistency of fresh concrete; it consists in filling a cylinder 40 cm high with a circumference than 20 cm free of pressure. It is vibrated until it reaches level *h* and remains constant. The formula or equation is (degree of compaction):

$$v = \frac{400}{h}$$

with *h* in mm.

WANE
Flache; Flacheux
Defects (Building Materials)
1. A defect in the edge of a squared wooden piece; part which is not square edge. Syn. with WANEY EDGE
2. Of wooden pieces showing defects of square sawing.

WAREHOUSE SET
Eventement
Hydraulic Binders
Syn. with AIR SET

WARM-AIR GENERATOR
Aérotherme
Equipment and Tools
A generator made of a fan and a heating bank blowing hot air into a room or any enclosure to maintain a certain temperature there. Syn. with FORCED-AIR HEATER

WARPED
Gauche; Gauchi; Caussiné; En aile de moulin; Voilé
Defects (Building Materials)
1. Syn. with BUCKLED; OUT OF TRUE
2. Syn. with LOPSIDED
3. Affected by warping. Syn. with TWISTED

WARPING
Déversement; Gauchissement; Voilage; Voilement
Defects
1. A transverse deformation as a result of the elastic instability of a chord of beam in comparison with the other in the aftermath of external stresses (bending moment and/or shearing force).
2. A permanent twisting deformation of a piece which may be the result of evolution or a shock. Syn. with BUCKLING; SPRINGING; TWISTING
3. A defect affecting plane surfaces which is characterized by a deformation in a helix shape.
4. A phenomenon not controlled by instability in an elastic state, concerning the plates and metal surfaces compressed parallel to their plan. The warping produces important

deformations appearing as a bending, a blistering or parallel undulations according to the degree of freedom of the edges of plate or solicited surface. When it reaches the plasticity threshold of the metal, the warping, just like the buckling, can lead to the localized or total ruin of the work. **See Figure 8**

WARPING OF THE EDGE GIRDER
Déversement d'une poutre de rive
Defects (Civil Engineering Structure)
A defect affecting suspension bridges and cable-stayed bridges. The warping of the edge girder is the consequence of a bad adjustment of the suspension, when it results an excessive sag of the deck, leading to an abnormal compression of the top chord (or sometimes only of the guardrail).

WASH
Glacis
Construction
A kind of slope of the top surface of a headband, a cap or a wooden piece, used out to facilitate the stormwater flow.

WASH AWAY
Affouiller
Hydrology
Syn. with ERODE; LAY BARE, UNDERMINE

WASH PRIMER
Lavabilisateur
Work
Of a surface treatment that makes washing dirt resistant.

WASHABILITY
Lavabilité; Lessivabilité
Painting
The ability of a paint film to undergo washing without deterioration of its inherent qualities (color, adhesion, etc.).

WASHABILITY TEST OF PAINT ON CONCRETE GROUND BASE
Essai de lessivabilité d'une peinture sur support béton
Painting
A test intended to evaluate the resistance to the washing of some coatings applied on the concrete.
The conditions of the test are identical to those really practised for the urban tunnels (walls and ceiling) and consist of throwing watermixed with detergent at 80°C and under a pressure of 40 bars. During the test, one observes the behaviour of the paint film and one notices exact times when occur deteriorations such as:
- *loss of shiny;*
- *detachment (blistering, scaling);*
- *variation of dye;*
- *wear.*

The maximum duration of the test is 9 h. If the coating remains, this test is always supplemented by the wrench resistance test. The value obtained is always compared to the value of an indicator test specimen. A slight loss of adhesion in the range from 10 to 15 bars is generally observed.

WASHABLE
Affouillable
Hydrology
Of a ground, a foundation, and so on, likely to be the object of underminings. Syn. with UNDERWASHED

WASHED
Lavée
Earthwork
In hydraulic backfilling, stony material mixed with water and transported in a conduct.

WASHER
Rondelle
Materials
A cylindrical piece of small thickness bored in its center and laid between the nut and piece to be tightened.
Several models are available:
- ***Belleville* washer** (*la rondelle Belleville*), a metal part designed in order to be used as brake of nut;
- **tapered washer or bevelled washer** (la rondelle biaise), with two nonparallel faces, used in certain bolted assemblies when the sections have a batter; **See Figure 9**
- **flat washer** (*la rondelle plate*), circular, of low and equal thickness, bored in its center. It

is often set under the head of a screw or nut in order to distribute the tightening pressure; **See Figure 9a**

- **spring lock washer** (*la rondelle Grower*), a piece of divided square section and forming a helix, intended to be used as brake of nut.

Syn. with RING

WASHING
Lavage; Lessivage
Geomorphology; Work
1. The sifting carried out by the running water in diffuse streaming inside a loose deposit; the finest elements are removed, coarsest remain on the spot and, on a mass of fallen earth, end up constituting a paving.
2. The cleaning of a facing, painted or not, with water mixed with detergent products.

WASHING AWAY
Affouillement
Defects (Foundation)
Syn. with BLOWING UP; SCOURING; UNDERMINING; UNDERWASHING

WASHING OUT
Lavage
Masonry and Painting
A cleaning process of dry paint films, masonry facings, and so on. For the masonry, we can distinguish:

- **washing down *or* hosing down** (*le lavage à l'eau*), which consists in a cleaning of a facing by water throwing under low pressure (2 to 3 bars) to facilitate the dissolving and detachment of dirt then brushing of these ones, always under sprinkling, with brass or nylon brushes;
- **steam washing *or* steam cleaning** (*le lavage à la vapeur*), which consists in throwing on a facing of a vapor jet under pressure (5 to 7 bars) which is followed by a brushing.

WASHOUT GATE
Vanne de chasse
Construction
A flushing device using water under high pressure to clear out sludge and other deposits.

WASHOVER CUTTER
Surforeur coupe-tube
Equipment and Tools
A fishing tool of the boring stand of drill pipe equipped with sharp extensible blades, likely to cap a *fish* of the outside diameter smaller than its inner diameter to cut it and make it possible the extraction of it.

WASTE
Stériles; Gravats; Gravois
Building Materials; Work
1. Concerning the exploitation of quarries, foreign grounds from the deposit exploited.
2. Syn. with BUILDER'S RUBBISH; RUBBISH

WASTE PRODUCT
Déchet
Building Materials
The loss of rough materials as a result of their implementation (the surplus of cut, an excess of prepared mortar, falls of metal, etc.).

WASTEFUL WORK OF ENERGY
Ouvrage dissipateur d'énergie
Hydraulic Work
A construction whose role is to reduce the current velocity at the downstream side of a work to avoid the erosion of the ground, and which can be consisted of a reinforced concrete basin (break-pressure tank) or simply made up of ripraps.

WATER ABSORPTION TEST
Essai d'absorption d'eau
Test of Materials
A test carried out on bricks with the aim to know their porosity.
A sample of six bricks is initially placed for 48 h into a steamer at 100°C, then weighed and partially submerged for 4 h. At the end of this time, bricks are completely submerged and after 48 h a total stay inside the water, are removed, wiped and weighed by it again. The difference in weight before and after immersion, related to the weight of dry brick and multiplied by 100, expresses relative porosity or absorbed water weight expressed in percentage.

WATER ABSORPTION TEST ON IMMERSED TEST SPECIMENS
Essai d'absorption d'eau sur éprouvettes immergées
Test of Materials (Tightness)
A test carried out in particular to verify the water's resistance penetration into the waterproof blankets.
To make this test, three test specimens of 10 x 10 cm are kept into a distilled water bath at 20°C for one month. They are periodically weighed with a hydrostatic scale. The variations of volume are wrote down and the absorption of water by the product is expressed in percentage.

WATER BAR
Joint d'étanchéité. Larmier
Tightness; Construction
1. Syn. with GASKET; SEAL; WATER STOP
2. Syn. with WATER STOP

WATER BEARING
Aquifère
Geohydrology
Syn. with AQUIFER; GROUNDWATER RESERVOIR

WATER CHANNEL
Dalot
Civil Engineering Structure
Syn. with BOX CULVERT; SCUPPER; WATER DUCT

WATER CONTENT OF HARDENED CONCRETE
Teneur en eau des bétons durcis
Test of Materials
The difference between the weights of a concrete sample before and after drying or burning.
To determine the moisture content of a concrete, one applies the same practices as in soil mechanics as others whose:
- the practice derived from the atomic physics. One counts the thermal neutrons coming from fast neutrons emitted by a source of beryllious radium, slowed down by hydrogen of the water which one wants batching;
- the practice based on the variation of the specific inductive capacity;
- the use of the calcium carbide which, mixed with the wet concrete, gives acetylene that one weighs.

WATER CORRECTION
Correction d'eau
Building Materials
The modification of the quantity of water that was anticipated by the formulation design of a concrete.
The extent of this rectification of water is function of the moisture content of the sand used. This revision is necessary to avoid a surplus of water in the concrete.

WATER CUSHION
Bassin dissipateur d'énergie
Hydrology
An embankment type soil structure located at the base of a stream, formed in a cascade or a slide, used to slow water before its draining to a ditch or other draining system. Syn. with DETENTION TANK. **See Figure 10**

WATER DEPTH
Tirant d'eau
Hydrology
Syn. with DRAUGHT

WATER DUCT
Aqueduc; Dalot
Civil Engineering Structure
1. Syn. with BOX CULVERT; SCUPPER; WATER CHANNEL
2. Syn. with AQUEDUCT; CULVERT

WATER GAIN
Remontée; Ressuage
Construction of R.C. and P.C.
Syn. with BLEEDING; BLEED-THROUGH; SWEATING

WATER GAIN CANALS
Canaux de ressuage
Defects (Construction of R.C. and P.C.)
Syn. with BLEEDING CANALS; BLEEDING GROOVES

WATER GAIN GROOVES
Canaux de ressuage
Defects (Construction of R.C. and P.C.)
Syn. with BLEEDING CANALS; BLEEDING GROOVES

WATER GAIN TEST
Essai d'exsudation
Test of Materials (Building Materials)
Syn. with BLEEDING TEST

WATER HARDNESS
Dureté d'une eau
Hydrology
The content of calcium and magnesium ions in water.

WATER HARDNESS MEASUREMENT
Hydrotimétrie
Hydrology
Technique for determining the water hardness, that is to say the proportion of alkaline-earthly salts which it contains in dissolving.

WATER INJECTION
Infusion d'eau; Injection d'eau
Earthwork; Geotechnics
1. A water injection under pressure or also water spraying executed during the execution of underground earthworks, inside or on the working face, to reduce emissions of dust.
2. See LEFRANC TEST and LUGEON TEST

WATER LEVEL
Niveau d'eau; Niveau à caoutchouc
Equipment for measure and Control
An equipment made up of two graduated phials, filled of liquid and joined between them by a supple pipe, that allows to defer levels on opposite walls for example. Syn. with GAUGE LEVEL

WATER LEVEL GAUGE
Limnimètre
Equipment for Measure and Control
A gauge made up of a graduated rule of wood, of enamelled metal, etc. installed on the banks of a lake, a river, a water tower or a tank and that allows to follow the variation of level of a liquid. This rule can be fixed on the abutment of a structure, on a post firmly anchored in the ground, on the external facings of a tank, etc. When this equipment is installed in a river, its lower end must always be immersed and located at a lower level than the lowest-water level known. Syn. with LIMNIMETER; STAFF GAUGE

WATER LEVEL MAP
Carte piézomètrique
Hydrology
A document giving the level variations of the ground water tables displayed on some years.

WATER LEVEL RECORDER
Limnigraphe
Equipment for Measure and Control
Syn. with LIQUID LEVEL RECORDER

WATER OF CONSTITUTION
Eau de constitution
Building Materials
A liquid that is integral to the matter.

WATER OF HYDRATION
Eau d'hydratation ou de prise
Building Materials
The water absorbed by a hydraulic binder during hydration. The binder in contact with water brings about a chemical reaction that provokes setting, then hardening, of this binder. Syn. with HYDRATION WATER; SETTING WATER

WATER PERVIOUSNESS TEST
Essai de perméabilité à l'eau
Test of Materials (Painting)
A test intended for testing the water permeability of a paint applied on concrete.
Two practices are distinguished:
- **LCPC test** *(la methods LCPC),* which allows as a rule the evaluation of the permeability of a coating applied on a porous cement mortar support. The apparatus used is the one designed to measure the permeability of the hydraulic concretes and mortars. The coating goes before growing water pressures, each one being kept a given time. One notes the pressure for which the water passes through the test-specimen. For this test two cases are considered:
  - water coming from the outside (streaming water): pressures used up to 50 bars,

- water coming from within (seepage water): pressures used up to 5 bars;
- **CSTB practice** (*la méthode CSTB*), conventional test that consists in determining the quantity of water crossing through a paint film applied on a definite porous substrate (compressed asbestos cement silica) by comparison with an application on glass. Gauged glass tubes are fastened on the surface of the test-specimens and regularly filled with known quantities of water. The duration of the test is 8 days. The result is expressed in grams of water consumed per square decimetre of surface tested for 24 h.

WATER RATIO
Water ratio
Hydraulic Binders
The ratio of the volume of water to the cement weight (W/C) which conditions the strength of a concrete (or a mortar).

WATER REPELLENT
Hydrofuge
Materials
A product slowing down the movements of entry and exit of water from the wood.

WATER RESOURCES
Régime hydrique
Geohydrohgy
All the seasonal variations of the water content of soils, measured by the determination of two hydric parameters: maximum capacity of retention for water (CR) or capacity in the field (ground wiped after the rain), and the moisture of the soil at the point of permanent withering of the vegetables (HF).

WATER RETENTION
Rétention d'eau
Building Materials
The power which has cement grout, mortar, or fresh concrete, to retain the water of hydration with the effect of suction and to avoid a premature start of water necessary for setting.

WATER SAMPLER (*RUTTNER* JAR)
Echantillonneur d'eau (Bouteille de *Ruttner)*
Assaying Equipment
An equipment that enables to take dry matters in suspension inside a drilling at the considered level.

WATER STOP
Larmier; Joint d'étanchéité
Construction; Tightness
1. A flat iron laid on edge that equips a guard-gravel of sheet metal and intended for avoiding any water flow on an abutment. Syn. with WATER BAR. **See Figure 11**
2. Syn. with GASKET; SEAL; WATER BAR

WATER STORAGE COEFFICIENT
Coefficient d'emmagasinement S
Geohydrology
The volume of gravity water, measured in m^3, released by an aquiferous prism with a 1 m^2 section for a lowering of the piezometric surface or of the load, of 1 m. It is determined in situ by pumping tests into the wells and trial borings. In the free water bearings, the water storage coefficient is similar to the efficient porosity. In an artesian aquifer, where the water is not released by gravity but by decompression, the water storage coefficient is a hundred and even a thousand times smaller.

WATER STRAINER
Crépine; Crapaudine
Construction
A filter placed on the upper orifice of a rainwater pipe. Syn. with GRAVEL GUARD

WATER TABLE
Nappe aquifère; Niveau hydrostatique ou de saturation
Geohydrology; Hydrology
1. All ground that contains water on a given level and is fed by rainfall.
2. The water top level of a nappe.

WATER TEST
Essai d'eau
Geotechnics
A test that measures the permeability of the rock or the ground, to divulge fissures, to anticipate a program of injection processing, to know the flow of a well or a drilling.
We can distinguish:

- **water injection tests** (*les essais par injection d'eau*) with or without pressure (Lugeon and Lefranc test);
- **pumping tests** (*les essais par pompage*) (Lefranc test).

WATER TRAIL
Bourrelet
Hydrology
Marks left around the piers of some bridges built into aquatic sites which are due to localized waterway perturbations (untimely raisings) whose primary causes are floods. These marks are located at a level higher than the real level of the flood.

WATER WAYLEAVE
Aiguage; Aiguerie
Law
The right of water supply on a property across the ground of a third party.

WATER-BASED PRODUCT
Produit à l'eau
Painting
A material (paint, varnishes, coating or putty) comprising the use of a binder put in an aqueous solution, pertaining to the one of the families XI or XII of the methodical classification.

WATER-BEARING STRATA
Couche aquifère
Hydrology
Underground waters field operational as source of water. It is a geological formation containing inside its empty spaces water in circulation being able to be extracted by economical means. The aquifer contains the reservoir rock and water. Syn. with AQUIFER

WATERBORNE (- TYPE) PRESERVATIVES
Produits de préservation hydrosolubles
Building Materials
Products whose aqueous solutions are used to protect woods, such as the copper sulfate, sodium fluoride, or arseniate of sodium.

WATER-CEMENT GROUT
Coulis simple
Materials
A preparation composed solely of cement and water.

WATER-HOLDING ABILITY
Capacité de rétention d'eau
Materials
The power of a substance to retain the water that it contains during an excessive drying process.

WATERING
Chantepleure
Construction
Syn. with SPOUT; WEEPHOLE

WATERING DOWN
Délavage
Defects (Civil Engineering Structure)
The mixing of the binder of a mortar or a fresh concrete through the agency of the water.

WATERING JOINT
Abreuvoir
Construction
A joint between the stones of a masonry bond to encourage the penetration of mortar.

WATERLOGGED GROUND
Terrain uliginaire *ou* uligineux
Geology
A ground saturated by water.

WATERMAN
Waterman
Equipment and Tools
A special machine used to excavate in watery site.

WATERPROOF
Imperméable; Hydrofuge; Hydrofuger
Building Materials; Materials
1. The property of a material, a rock, a ground, impervious to water.
2. Of a waterproof support, but remains permeable to gases. Syn. with DAMPPROOF; RAINPROOF
3. To make a material waterproof.

WATERPROOFER
Hydrofuge
Hydraulic Binders
Mortars and concretes admixture that consists of mixtures of very variable compositions having for substrate greasy substances, more or less siccative (soaps, oils), resinous or bituminous matters, or encrusting and hardening products such as magnesium fluosilicates which form insoluble products on the surface of concrete in the presence of lime.
We can distinguish:
- **surface water repellents** (*les hydrofuges de surface*), that appear and are implemented as superficial coats hardening or waterproofing the concrete on the surface, or as colorless products which act by impregnation when applied on the materials. They prevent the capillary phenomenon of suction and favor the streaming of water;
- **compound waterproofers** *(les hydrofuges de masse),* intended for waterproofing the concretes in their mass either during their making, or subsequently to their implementation and their hardening. The compound waterproofers block the capillaries of the mortar or concrete thanks to crystallization secondary to the phenomenon of set.

Colorless waterproofings containing silicones also exist, that act not by obturation of the pores, but by a modification of the capillary state of the surface, preventing the latter from being wet by water.

WATERPROOFING
Etanchement; Hydrofugation
Tightness; Construction of R.C. and P.C.
1. The waterproofing of a structure.
2. The waterproofing of a concrete which can be done in the mass or by superficial treatment.

WATERPROOFING COMPLEMENT
Complément d'imperméabilisation
Building Materials
A treatment able to limit, in some conditions that it is peculiar, the penetration of rainwater (possibly other liquids) into the supports on which it is applied.

WATERPROOFING MEMBRANE
Chape d'étanchéité; Membrane d'étanchéité
Tightness
1. All materials poured in situ (or glued for prefabricated materials) on the extrados, on a raft, to protect them against water seepage. Syn. with DAMPPROOF MEMBRANE; WATERTIGHTNESS COPING
2. A thin film or sheet of a supple and waterproof material, placed, either inside the body of an earth-fill dam, or close to its upstream face.

WATERPROOFING PROTECTION
Protection
Masonry
The creation of a barrier between a masonry surface and its aggressive environment, basically water; this protection consists in applying water-repellent products (silicones; silicates, etc.) that prevent the water to soak through the masonry.

WATER-REPELLENT PRESERVATIVE
Produits de préservation hydrofuges
Building Materials
Woods preservatives into which water-repellent products were mixed so as to decrease inside the treated wood the rate of water absorption.

WATER-REPELLENT PRODUCTS
Produits hydrophobants
Materials
A range of special chemicals used for the ground treatment. Their incorporation into a ground suppresses the phenomenon of suction. They are used by emulsion in water, at proportions < 5% of the aqueous product. (A hydrophobic ground remains permeable to the water, does not retract by excessive drying, does not inflate by humidification, but upgrades its strength).

WATER-RETAINING AGENT
Rétenteur d'eau
Materials
An admixture mixed into cement grout, mortar, or concrete whose property is to limit the sweating.

WATERSPOUT
Gargouille; Descente d'eau
Construction ; Sanitary Engineering and Drainage
1. Syn. with RAINWATER SPOUT
2. Syn. with LEADER; RAINWATER PIPE; STACK PIPE

WATERTIGHT
Etanche
Tightness
Qualifies a work in which the flows of leak running through it, their location, their reappearance and traversing are limited and suit to the owner.

WATERTIGHT BOTTOM SHAFT
Plate-cuve
Foundation
During the boring of a pit in aquiferous ground, plug concreted in the bottom to avoid water go back up to the surface. **See Figure 12**

WATERTIGHT BULKHEAD
Cuvette étanche
Foundation
A tight screen, mostly a diaphragm wall, forming an enclosure and gets down up to the impermeable ground. The bottom is injected to make impervious. This process is used when one wants to carry out excavations of great importance (so superficial that deep) in a very permeable ground and where the level of the ground water table stands at a small depth.

WATERTIGHT CEMENT RENDERING
Cuvelage
Masonry
A tight coating covering the internal facings of a buried work (example: gallery, underpass) in a waterlogged ground. Syn. with LINING; TANKING

WATERTIGHT CUTOFF
Coupure étanche
Construction
An underground construction erected upstream from a dam, increasing its waterproofing properties so as to prevent underwashing. It can be a cutoff wall, a diaphragm wall, or a grout curtain.

WATERTIGHT DIAPHRAGM
Voile d'étanchéité
Civil Engineering
A zone of ground, generally small thickness, injected to increase the impermeability of the ground. Grouting curtains are highly often used to reduce water circulation under a barrage. Syn. with DIAPHRAGM WALL

WATERTIGHT EARTH
Terre étanche
Hydraulic Work
A waterproofing process of water storages which consists in pulverizing aquareactive prepolymers on a geotextile. This pulverization forms a kind of a monolithic tight thick shell. During the pulverization the ground, was also impregnated by the prepolymer and it therefore takes part to the waterproofing.

WATERTIGHTNESS COAT
Couche d'étanchéité
Tightness
A coating of various materials that takes the name of *screed* or *membrane* when it concerns a cover of concrete work and *coat* when it concerns the metal cover of a work. Syn. with DAMP COURSE; DAMP-PROOF COURSE

WATERTIGHTNESS COMPLEX
Complexe d'étanchéité
Tightness
A covering that ensures the placement water off of a work by application of a multilayer system and a countercoping on its extrados.
We can distinguish:
- **adherent tightness complex with heavy countercoping** *(le complexe d'étanchéité adhérent avec contrechape lourde)* made up of:
  - a cold-laid mixture,
  - a topping with double armature of glass cloth and glass shell to high strength, strengthened by an armature of Rilsan self-protected by a sanded finish in factory,
  - a protective countercoping made up of a bituminous mixture 30 mm thick after compacting or a countercoping 25 mm thick porphyry asphalt;

- **adherent tightness complex with prefabricated countercopings** (*le complexe d'étanchéité adhérent avec contrechapes préfabriquées*) made up of:
  - a cold-laid mixture,
  - a topping made up of reinforced or unarmed bituminous sheets,
  - two countercopings made up of reinforced bituminous sheets;
- **resin complex** (*le complexe résine*) made up of:
  - a sealing coat or primary bond,
  - two crossed resin layers (polyurethane mostly),
  - a sanding on the second layer of resin for road bridges, a heavy protection (some cold(-mixed) bituminous mixture for example) for railway bridges;
- **nonadhesive watertightness complex with light or heavy countercoping** (*le complexe d'étanchéité non-adhérent avec contrechape légère ou lourde)* made up of:
  - an antiperforating felt (mostly polypropylene fibers linked together mechanically by lashing),
  - a reinforced layer bitumen-polymer,
  - in some cases, of a heavy countercoping (coated material) or antiperforating felt.

Syn. with BUILT-UP ROOFING

WATERTIGHTNESS INJECTION
Injection d'étanchéité
Work
See CAGING INJECTION

WATERTRAP AND/OR DUSTTRAP
Piège à eau et/ou Piège à poussière
Defects (Construction)
1. A geometrical arrangement of a work or a part of work which can bring about the stagnation of water (rainfalls, streaming, condensation, etc.) and/or accumulation of dust or other remains, and consequently, the maintenance of moisture (It is mostly about a defect of design).
2. In the fastener collars of suspenders; defect of design preventing, by absence of outlet at the low point, the water draining which, in all cases, permeates into the fasteners and bathes the cables.
3. In the low fasteners of bars or stirrups; particular anomaly to the cable bridges that is a defect of design or performance sparing a watertrap (and/or dust) on the level of the low part of the stirrup or bars.

WATERWAY GRADIENT
Pente d'un cours d'eau
Hydrology
Syn. with WATERWAY SLOPE

WATERWAY SLOPE
Pente d'un cours d'eau
Hydrology
The incline of the bed of a waterway along its axis, positively counted if the bed is downward in the direction of the flow. Syn. with WATERWAY GRADIENT

WATTLE
Clayonner
Work
To strenghten a slope, a filling with wattle work.

WATTLE WORK
Clayonnage
Work
The strenghtening of slopes and fillings by driving of stakes connected between them by fascines. Syn. with BASKET-WORK

WAVE
Vague; Ondulation
Nomenclature of Materials and Hydrology
Syn. with UNDULATION

WAVY WOOD
Bois ondé
Building Materials
A wood whose grain has light regular undulations.

WEAKEN
Affaiblir
Building Materials
To reduce the thickness of a piece by removal of matter.

WEAKENED CEMENT
Ciment amaigri
Hydraulic Binders
A product into which inert mineral matters are mixed.

WEAKENING
Fragilisation
Metallurgy
The diminishing of elastic qualities of a metal that is due to aging or to its conditions of use (new stresses, etc.).

WEAR (AND TEAR)
Usure
Metallurgy
The loss of mass undergone by a steel piece when it goes before a mechanical action (corrosion is the loss of mass by chemical action). This wear can meet in the modes of following stresses by:
- friction or rolling putting in contact two metal surfaces: actual wear;
- action of an abrasive body on one (or two) metal surface: abrasion;
- one of the two earlier modes, but in the presence of a liquid or of a reactive gas with regard to the metal: wear or abrasion and corrosion.

These actions can be exerted in various climatic or mechanical conditions (temperature, shocks, pressure, etc.).

WEAR AWAY
Corroder
Materials
Syn. with CORRODE; ERODE

WEAR RESISTANCE
Résistance à l'usure
Building Materials
The wear resistance of a material is characterized by its loss of matter through the agency of the friction of a known ruggedness surface, and under a known pressure.

WEAR RESISTANCE TEST OF CRUSHED MATERIALS
Essai de résistance à l'usure de matériaux concassés ou de blocs d'enrochements
Test of Materials (Building Materials)
A test intended for testing the endurance of the rocky materials facing some abrasive aggressions and which is determined by a trial whose principle is the following.
A test specimen 4 x 6 x 10 cm is carried out in the material to be studied. One of its faces is worn with the cast iron millstone, with calibrated Fontainebleau sand (dry or saturated with water). After one thousand rotations, one turns over it end for end, for a second period of wear carried out under the same conditions. The undergone shortening indicates the strength of the rock.

WEAR TEST
Essai de durée; Essai d'usure
Strength of Materials
1. A test that consists in subjecting materials to various stresses so as to determine their strength duration (elongation, aggressive atmosphere, etc.).
2. A mechanical test enabling evaluating, in determined conditions, the surface damage resistance of a material by modification of the shape, the state of surface or lost mass, of the tried piece.

WEAR TEST OF AGGREGATE BY SANDBLASTING
Essai d'usure des granulats par jet de sable
Test of Materials (Building Materials)
A test which consists in subjecting aggregates to abrasive throwings to examine artificially their wear resistance. Aggregates are rotated into a basket while a sandblast is thrown on them. Loss of mass of the fine gravels by abrasion and in the highlighting of some particular structures (bedding, cracking) is the aim of this test.

WEAR TEST OF AGGREGATE WITH AGITATOR
Essai d'usure des granulats à l'agitateur
Test of Materials (Building Materials)
A test intended for determining the matter loss by friction of an aggregate sample. The test consists in placing fine gravels in the presence of water inside a plastic container, which is subjected to an agitation about for 20 min. One is sometimes interested in the quantity of produced fines and always in the busy height occupied by these fines in a SE bottle (sand equivalent) with addition of a flocculating agent.

WEATHERBOARDING
Bardage
Construction
Syn. with BOARDING; SHEETING

WEATHER MOLD
Larmier; Goutte d'eau
Construction
Syn. with DRIP; DRIPSTONE; DROP OF WATER; THROAT; THROATING

WEATHERED CLAY
Argile d'altération
Geology
A material that is the result of the disintegration of rocks by natural erosion (wind, rain, etc.).

WEATHERING
Altération; Erosion; Météorisation
Geomorphology
1. A phenomenon of transformation of eruptive and sedimentary rocks nearby the surface of the ground which gives originate to more or less thick surface deposits, less resistant than the parent rock.
2. The wearing away, degradation produced by any what attacks in surface and in depth the terrestrial crust. Modes of action of weathering agents (wind, rain, frost, etc.) can be chemical or mechanical (one also says *physical).* We can distinguish:
- **rain wash** *(l'érosion pluviale),* due to the action of raindrops that erode the superficial stratum. Particles of ground thus detached are dragged out by surface waters;
- **wind erosion** *(l'érosion éolienne),* due to the action of winds.

3. Phenomena of the rock or ground ablation due to atmospheric agents.

WEATHERING OF JOINTS
Dégradation des joints
Defects (Masonry)
The alteration of the pointings of a masonry due to dissolution of the binder by seepage water or to the action of atmospheric agents (rain, wind, frost, etc.).

WEATHERING OF ROCKS
Altération des roches
Geomorphology
A degradation that results from erosion in its action of disintegration and which appears according to the nature of the rock by a picking off, an exfoliation, a loss of elements bringing about a change of consistency and, sometimes, of coloring, which can do believe in different layers but corresponds actually to a facies of deterioration. Any rock is the more sensitive there since it is divided: it can be it naturally, it also can be it on occasions of joint work, even distant enough. This work sometimes disturbs the circuits of water which they can divert or seal, or whose they can accelerate the natural course.

WEATHERING STEEL
Acier patinable
Metallurgy
A product presenting the special feature to cover itself with a very resistant layer of oxide when it is put in contact with air or water and without having undergone surface treatment. This very compact crust is a kind of patina, hence the origin of the name, which protects subjacent metal from corrosion. The weathering steels are low alloy steels with copper, chromium, vanadium, and so on. Syn. with PATINABLE STEEL

WEATHERMETER
Weatheromètre
Assaying Equipment
An instrument that allows to evaluate a paintwork's resistance to aging agents (or any other coating) and, by extension, of materials exposed at various corrosive conditions.
The simplest test consists in exposing the samples in laboratory reflecting various climates (urban, rural, industrial, marine, desert) or using machines which simulate action of natural aggressive agents and allows to carry out accelerated tests.

WEATHEROMETER
Altérimètre
Equipment for Measure and Control
An instrument intended for trying out the behavior of certain materials facing of the time and comprise primarily an arc lamp

emitting rays of the same wavelength than those of the sun, but with a higher intensity and according to some cycle variously combined of light, darkness, sprinkling of water, etc., to simulate in a restricted time what can to take place in the open air.

WEB
Joue; Nervure; Ame
Construction; Nomenclature of Materials
1. The side part of a beam.
2. A prismatic element of R.C. or P.C., linked to a concrete slab and projecting on it (most frequently of the rectangular section and situated under the concrete block) and whose role is to make up a T-beam by association with the concrete slab.
3. The central part of a girder or an I-section which is connected perpendicularly to the wings, flanges or booms whichever it may be. **See Figure 13**

WEB ALLOWANCE
Blochet
Construction of P.C.
Surplus web thickness at the extremities of some prestressed beams.

WEB COVER PLATE
Couvre-joint d'âme
Metal Construction
A recovery steel plate intended either for stiffening the webs of beams, or for covering the joint and connecting two pieces positioned end to end. Generally, the assembly or the strengthening been made to double cover plate, namely that it is made up of two cover plates put in on either side of the web (twin cover plates). **See Figure 15**

WEB MEMBER
Barre
Metal Construction
A triangulation element positioned between two neighboring nodes in a metal truss girder. Syn. with BRACING; TRUSS MEMBER

WEB OF ELECTRODE WELDING
Ame d'une électrode de soudage
Welding
The central part of an electrode formed by a wire whose purpose is to:
- carry the current,
- constitute the weld metal.

WEB PANEL GIRDER
Panneau d'âme
Metal Construction
The part of the web of a metal beam delimited by the flanges and vertical stiffeners.

WEB PLATE
Ame
Metallurgy
An oblique or vertical part, solid or hollowed (lattice, etc.) of a beam, a box girder, or a shaped or built-up universal beam (the web plate connects tables, wings, or flanges). Syn. with LATTICE WEB; SOLID WEB. **See Figure 14**

WEB PLATE GIRDER
Poutre à âme pleine
Construction
A prismatic piece, whose rectilinear or curvilinear longitudinal axis is mostly contained in a plan that cuts each transverse sections according to the direction of the one of its main axes of inertia; this plan is often called the *main plan,* it is in general a symmetry plan of the beam and it contains its bearing leans.
Web plate girders mostly are metal products obtained either by hot-rolling of a section called *bloom* or by assembly in a workshop of a web with two flanges or two packets of flanges (the beam of equal strength). Among the main types of metal web plate girders we can distinguish:
- **riveted beams** *(les poutres rivées),* made up of corner irons, sheet metals and flats and that are the U-girders, double-T-girders, box girders and the plated girders or analogs:
  - *U-girder* (*les poutres en U*) comprises a web formed by a sheet metal and two corner irons assembled at its end,
  - *I-girder* or *double-T-girder (les poutres à double-té (ou en I))* itself made up of two plates, or flanges, constituted each one by one or several superposed flats, of a web formed by a sheet metal, some corner irons surrounding the web along its longitudinal edge and assembling it on the two plates, **See Figure 16**

- *box girders (les poutres à caisson)* comprise two twin webs that form with the plate a box completely close, **See Figure 16a**
- *plated girders (les poutres à ornières)* that are constituted by two vertical webs connected with the base by a flange, the set being to jointed with corner irons; See **Figure 16b**
- **welded girder** *(les poutres soudées),* which has the same morphology as the riveted beams, but in which the connecting corner irons have disappeared.

WEB STIFFENER
Montant raidisseur
Metal Construction
In the steel decks with solid-webbed girders, vertical piece mostly made up of corner irons assembled vertically on the structure to be stiffened and which is put in to the points of concentration of the loads applied to the beams.

WEB THICKNESS
Epaisseur de l'âme
Metallurgy
The minimal dimension of a beam or a metal girder measured in a perpendicular plan to the axis of the web.

WEDGE
Caler; Picoter; Pipe
Construction; Work; Equipment and Tools
1. To level a structural element.
2. To keep, straighten, etc ., with the help of shims.
Syn. with ADJUST
3. To insert the striking wedges between ledger strips and the timbering frame of a well in progress of boring.
4. A small shim.

WEDGE CUT
Pic
Equipment and Tools
A cutting tool equipping mechanical working machines for the work in soft rock.
Pick moves on the rock to a speed of few meters per second by digging a chase in front of it. It perishes by shock or wear when the rock becomes too hard, heterogeneous, or abrasive. Among the primary kinds of pick are the:
- **tip pick** *(le pic à plaquettes),* of a rectangular section, used in soft rocks; the tungsten carbide tip protects the body of the tool, which would wear highly quickly in abrasive rocks;
- **rod pick *or* stick pick** *(le pic à bâtonnet),* of a rectangular section, used in rocks comprising hard insertions or in tough rocks;
- **conical pick** *(le pic conique),* of a circular section, concentrating the strains on the point of the tool. It is adapted for hard, but fragile rocks. It cannot, however, be used in tough rocks where it warms up much too much. It is free to turn around its axle and its wear is thus theoretically the same in every point of the cone and preserves to the tool its initial shape. One meets it thereby under the denomination of *self-sharpening pick;*
- **ploughing pick** *(le pic laboureur),* used in soft ground;
- **cutter pick** *(le pic haveur ou griffé),* used to cut down solid rocks.

Syn. with PICK

WEDGE EFFECT
Effet de coin
Defects (Masonry)
Damage typical in structures built of quarry stones, caused by the presence of a triangular-shaped stone placed point down shifting in response to vertical pressure sideways against other stones.

WEDGE FOR MAST HOLE
Coin d'étambrai
Equipment and Tools
A slanted wooden or metal piece that is used to put wedge under and to position a vertical piece inside its hole before its sealing. One uses generally several wedges in the same hole. Syn. with MAST QUOIN

WEDGE IN
Enclaver
Masonry
To fulfill a gap in a masonry by supply of a quarry stone or a brick that will be sealed with mortar or cement grout. Syn. with FIT IN

WEDGING
Clavette
Foundation
Any mortar injected between two successive panels of a diaphragm wall and that ensures tightness at this joint.

WEEPHOLE
Chantepleure
Construction
Syn. with WATERING; SPOUT

WEIGHT ON THE BIT
Poids au trépan
Work
Syn. with BIT WEIGHT

WEIGHING OF THE BEARING REACTIONS
Pesage des réactions d'appui
Civil Engineering Structure
A check operation of the value of the bearing reaction which is mostly intended for distributing them on each bearing according to the indications provided by the design note. Herewith intention, the work is put, bearing by bearing, on jacks with the pressure gauge put in under jacking braces expected in the structure; the reactions are then obtained by playing on the jacks. During this operation the bridge support apparatus is suspended at the deck. When the wished values are obtained, the supports are sealed.

WEIGHT
Renard
Masonry
A stone intented for keeping taut the line used to guide the alignment of materials implemented at the time of the construction of a masonry wall.

WEIR
Barrage
Civil Engineering Structure
Syn. with BARRAGE; DAM

WELD
Souder
Welding
To carry out an operation of welding.

WELD BEAD
Cordon de soudure
Welding
Syn. with CORD; WELDING SEAM

WELDABILITY
Soudabilité
Welding
The physical and chemical ability of a material to undergo an assembly operation by melting or any other process ensuring the continuity of the matter.
Concerning steels, the weldability is not an intrinsic quality of metal, because it depend not only of its development and of its shaping into pieces, but also of the practice of welding, the nature of the weld metal, the skill of the welder, the temperature, the rigidity of the work and thickness of part to be assembled. A metallic material is known as *weldable,* at a temperature, by given process and for a given type of application (with the corresponding precautions), when it lends itself to the achievement of a construction whose the metal continuity between its elements is ensured; this metal continuity depends of the constitution of the welded joints which must satisfy, by their local characteristics and the total aftermath on their presence, at the necessary and selected properties as base of judgement. For any given steel, three essential aspects of weldability are:

- **operative weldability** *(la soudabilité opératoire),* relating to the difficulties that encounters the welder to obtain the continuity of the pieces to be assembled;
- **local *or* metallurgic weldability** *(la soudabilité locale ou métallurgique)* in which one attempts to obtain from the metallurgic perspective an assembly as homogeneous as possible in its physicochemical properties. It takes account of the modifications of the basic (or parent) steel in the welded joint owing to the melting and localized heating that constitutes the welding. This aspect is mainly united:
  - with the chemical composition of the parent metal,
  - with the conditions of cooling which can modify the properties of the neighbor zones of the molten metal,

- with the choice of the contribution products.

An insufficiency of connection creates a risk of premature breaking due to what the execution of a welding causes localized cycles of heating and cooling which locally modify the properties of the metal after welding; the premature breaking can occur by flaw of resistance and, more frequently, by flaw of ductility.

In the concept of the metallurgic weldability, one can still distinguish three aspects of judgment, which depend on the noted metallurgical flaws:

- hot cracking,
- cracking by "lamellar tearing",
- cold cracking;

• **global weldability** (*la soudabilité globale*), that is to say the possibility for the metal to adapt itself, during the welding and in service, to the particular stresses which occur in the welded construction industries and which are due to the monolithic character of these last.

WELDABLE
Soudable
Welding
Of a material which has qualities necessary to undergo welding.

WELDED RECONSTITUTED BEAM
Poutrelle reconstituée soudée (PRS)
Metal Construction
A steel product made up of a web and two chords assembled by welding.

WELDED SEAM CRATER
Cratère de soudure
Defects (Welding)
A defect affecting the weldings characterized by the appearance of a small cavity that can be due to a contraction of the metal during its cooling or at the place of a stop during the change of the electrode for example

WELDED STUD
Goujon soudé
Construction
A connector appearing as a smooth or threaded cylinder being able to be crowned by a head or a crook and that are welded with the gun on the top boom of the beams of a mixed bridge (metal beams supporting a reinforced concrete slab).

WELDED WIRE MESH
Treillis soudé
Building Materials
A flat reinforcement made up of wire or bars welded together and forming a grid. Welded wire mesh comes in the form of rolls or panels with square or rectangular meshes. In civil engineering structure, it is especially used as reinforcement for pneumatic mortars and shotcrete as well as for subgrades of roof decking. Syn. with REINFORCEMENT MAT

WELDER
Soudeur
Welding
Syn. with SOLDERER

WELDER QUALIFICATION
Qualification d'un soudeur ou d'un opérateur
Welding
Syn. with OPERATOR QUALIFICATION

WELDING
Soudage
Welding
The assembly by localized fusion or/and by pressure of two materials to ensure the continuity or strengthening of a part, a structure. Welding can be carried out with or without welding products. In steel construction, we can distinguish homogeneous welding from heterogeneous welding. Welding is homogeneous when the two parts to be assembled (as well as the welding metal if it is used to make the joint) have an identical or close chemical composition.

In that case, the metal of the two pieces to be assembled, known as parent metal, is the same.

Welding is known as heterogeneous when the two pieces to be assembled have a distinctly different chemical composition, or when only the welding metal is different. In that case, the welding metal is always an alloy with a melting point inferior to the parent metal's.

Welding is characterized by a thermal cycle comprising an important, fast and located heat

supply, followed by cooling. Because of the brevity of this heat supply, the zone concerned remains of small dimension and during the process of cooling, we notice a phenomenon of quenching, more or less violent according to whether the energy of welding is low or strong. After total cooling of a welded joint, we can distinguish by a metallographic test five distinct zones:

- the molten zone corresponding to the welding metal,
- the zone adjacent to the weld bead,
- the zone of transformation,
- the zone without transformation,
- the unprocessed metal zone or parent metal.

Among the main processes of welding, we can distinguish:

- **manual arc welding with coated (or covered) electrode** *(le soudage à l'arc manuel avec électrode enrobée*), application of the Slavianoff process whose principle is as follows: an electric arc bursts between a metal electrode connected to a terminal of the welding set and parts connected to the other terminal. The arc melts both the electrode and the edge of the parts to be welded;
- **continuous welding with semiautomatic welding gun** (le soudage en continu au pistolet semi-automatique) (MIG and MAG processes);
- **continuous welding with automatic metal-arc welding** *(le soudage en continu automatique à l'arc),* used in the making in workshop, of the parts or elements of parts going into the construction of bridges or frames. The processes used are welding with a bare or coated metal electrode, welding with a graphite electrode in reduced gaseous atmosphere or in the air, and welding by conducting flow. The most frequently used practice is bare wire and pulverulent flow with direct current;
- **welding with tungsten electrode, inert gas (TIG) and D.C. current, with or without deposited metal** *(le soudage avec électrode de tungstène, gaz inerte (TIG) et courant continu, avec ou sans métal d'apport),* mainly reserved for welding stainless steel and special types of steel (with the MIG process) and for welding fine sheet metal of soft steel;
- **aluminothermic welding** (*l'aluminothermie*) for welding rails;
- **resistance welding** *(le soudage par résistance),* especially by points;
- **stud welding** *(le soudage des goujons),* mainly used in mixed construction steel/concrete;
- **electroslag welding** (le soudage vertical sous laitier), for very thick parts.

WELDING (in K-, X-SHAPED, ETC.)
Soudure en K, à clin, etc.
Welding
1. A welded joint whose morphology of the preparation of the joints before the welding operation has various forms among which the most representative are K-, V-, U-, X- shaped with square butts.
2. A welded joint whose morphology of the shape of the joints after welding depends on the position of the assembled parts. We can mainly distinguish: butt, lap, fallen butt, fillet, plug weld. **See Figures 17 and 17o**

WELDING BATH
Bain de soudure
Welding
A metal locally in fusion during the welding operation.
Concerning fusion welding, the bath is formed only by the parent metal (if and when welding is carried out without welding metal) or by a mixture of the parent metal and the welding metal. The metal composing the melting bath takes, after solidification, the name of *molten metal* and the volume it occupies is called *molten zone.*

WELDING BLOWPIPE
Chalumeau soudeur
Equipment and Tools
A device intended for the welding of metal pieces. Syn. with WELDING TORCH

WELDING BLUEPRINT
Programme de soudage
Welding
A contractor's account with drawings or sketches, which describes and justifies in minute detail the preparations necessary to carry out the welding operations.

For the whole work or only a part of it, the blueprint indicates the order of the welding operations as well as the precautions which may be necessary to reduce the stresses and deformations resulting from welding.

For each type of joint, different by the grade or quality of steel, thicknesses or respective positions of the elements to be assembled, the blueprint indicates:

- the process and mode of welding,
- the preparation of the elements to be welded,
- the relative positions and mode of fastening for welding,
- the order or simultaneity of the weld beads,
- the orientation of the pieces in relation to the vertical, the detail of

the expected reversals and the precautions to be taken in order to carry out the latter without damage.

For each joint bead, the blueprint indicates:

- he dimensions,allowing for the adoption of dimensions superior to those of the working drawings, with necessary justifications,
- the detail of the material used, in particular commercial designation and diameter of electrode or of wire, commercial designation of powder, designation and proportion of protective gas, trademark and characteristics of the welding set or type of machine and of its generatrix, characteristics of alternating or direct, pole placed on the electrode,
- the precautions to be taken in the event of a welding interruption. The welding program can also specifiy the expected thermal processing and means of ensuring them; finally it describes the checks suggested and how to carry them out.

WELDING BY MELTING
Soudage par fusion
Welding

A welding process comprising a localized melting, carried out with or without use of the weld product and intervention of pressure. Syn. with FUSION JOINT

We can distinguish several families from them:

- **gas welding** (*le soudage au gaz*), a process in which necessary heat for the welding is provided by combustion of a gas or gaseous mixture with oxygen. The contribution product is a naked stick. The name of the process varies according to the gases used: oxyacetylene welding (oxygen/acetylene), oxy-hydrogen (oxygen/hydrogen), and so on;
- **arc welding *or* electric-arc welding *or* metal-arc welding** *(le soudage à l'arc),* a process in which heat is necessarily provided by one or several electrical arcs between one or several electrodes and the piece. The electrode can be fuse (or edible); it is then it which, by melting, provides the deposited metal. Fuse electrodes appears as coated sticks with flow, bare wire or filled a tubular wire of flow. The electrode can also be refractory; it is then mostly of tungsten or graphite. The primary processes of arc welding are:
  - *metal-arc welding with covered electrode (le soudage avec électrode enrobée)* which is a welding process mostly manual. The coating of electrode, by melting, form on the surface of the weld bead a detachable slag that protect the melting bath during the welding operation,
  - *submerged-arc welding (le soudage sous flux de poudre),* a process in which the arc is surrounded by a flow of powder whose the part melt by forming on the weld any detachable slag. The flow remaining nonmolten can be recovered. For this process, mostly automatic, the electrode is, either a massive bare wire, or a filled wire, or a strip iron. The welding under flow in powder can be done with several electrodes, in series or parallel,
  - *shielded-arc welding with fusible wire (le soudage sous protection gazeuse avec fil fusible),* a process in which the arc and molten bath are protected from the surrounding air by a gas coming from an outside source. According to the nature of this gas, we can distinguish MIG (metal inert gas) welding, in which protection is ensured by an inert gas (argon or helium), and the MAG (metal activates gas) welding, in which protection is ensured by a gas or active gas mixture, mostly containing CO_2. In both cases, the electrode can be either a massive bare wire or a tubular wire filled of flow. The process is either semiautomatic (with hand-driven guidance of the torch) or automatic,
  - *TIG welding* (Tungsten Inert Gas) *(le soudage TIG),* which comes true with a

refractory electrode of pure or activated tungsten and in which arc and the molten bath are protected by an inert gas coming from an external source. One can use a supply product that is then a massive bare stick in hand-driven welding or a massive bare wire in automatic welding,

- *plasma arc welding (le soudage plasma),* a process in which a strangled arc gushes between the refractory tungsten electrode and the piece (transferred arc) or between the electrode and the edge of the nozzle (arc not transferred). Protection is ensured by an auxiliary gas flow. A supply product (massive bare wire) can be possibly used,
- *electrogas welding (le soudage électrogaz)* (in climbing vertical position), a process in which one uses a fusible wire electrode surrounded by a gas of protection to lay down some metal in a molten bath retain in the joint by some skates cool that displace upward as they advanced with the forming of the welding,
- *atomic hydrogen welding (le soudage à l'hydrogène atomique) (Langmuir process),* whose the principle consists in directing a stream of hydrogen on the electrical arc gushing between two tungsten electrodes. The high temperature of the arc dissociates molecular hydrogen in atomic hydrogen; during of this dissociation the reaction is endothermic, namely that it derives calories from the arc. The hydrogen atoms concentrate near the arc and appear as a purple butterfly that is the active part of the flame. At the touch the pieces to be welded there is the reversibility of the reaction, atomic hydrogen turns again into molecular hydrogen by releasing the calories derived from the arc; the temperature is higher, it exceeds 3000°C and the metal of the pieces is molten. Outside the zone of the arc where appears the purple butterfly, a secondary flame, brought about by combustion of recombined hydrogen, protects the welded metal from oxidation;

- **welding by beam of particles** *(le soudage par faisceau de particules)* in which heat necessary at the welding is provided by a focused beam of particles; we can distinguish:
  - *electron-beam welding (le soudage par faisceau d'électrons),* a process from afar more used, in which heat is necessarily provided by a focused beam of electrons. The operation takes place under vacuum, in an enclosure containing all the parts or in a local enclosure, called a *plunger,* protecting only one portion of a piece. More rarely, one operates except vacuum. Usually, one does not use weld metal. An alternative of the process consists in using two electron beams placed one behind the other,
  - *ion beam welding (le soudage par faisceau d'ions)* which uses a focused beam of ions;
- **welding by light beam** *(le soudage par faisceau lumineux),* in which necessary heat for the welding is provided by a focused beam of light. According to the type of light we can distinguish:
  - *laser welding (le soudage laser),* most largely used, in which source of light is, either a gas laser, therefore emitting in continuous and producing a continuous welding, or a solid laser, therefore not emitting round the clock; in the latter case, one obtains points of welding which, by correctly regulating the advance speed of the piece, can overlap and form also a continuous welding,
  - *one can also use other sources of light:* electrical arc (welding arc image), gas-discharge lamp, solar light (welding by solar energy);
- **electroslag welding** *(le soudage sous laitier ou soudage vertical sous laitier),* a process of welding by melting using the combined effects of the current and electric resistance in one or several fusible electrodes, as well as a bath of conducting molten slag of the electricity through that the electrode penetrates in the molten bath. The two baths are retained in the joint by cooled skates, either fixed or gradually moving upward. After one initial period of arc beginning, the end of the electrode is surrounded by slag and the melting continues to completion of the welding. Electrodes can be massive bare wire, filled tubular wire, strip iron, or plates;
- **aluminothermic welding** *(le soudage aluminothermique),* a process in which heat necessary for the welding is provided by reaction of a mixture of metallic oxides with an aluminum powder in fine particles. The combustion of this charge leads to an exothermic reaction, the molten metal that it results constitutes the product of supply. One

can possibly preheat the pieces. In certain alternatives of the process, a pressure is exerted.
Syn. with AUTOGENOUS WELDING; OXYACETYLENE WELDING

WELDING CONNECTION
Liaison
Welding
A more or less good continuity obtained between two or several pieces after welding.

WELDING DEFECTS
Défauts des soudures
Defects (Welding)
Faults, vices, or defects that can affect some welded joints. We can identify: internal or emerging cracks, deficiency of penetration, blowholes or porosities, slag inclusions, undercuts, angular deformations, incomplete fusions, differences in level of edges. **See Figure 18**

WELDING GENERATOR
Générateur de soudage
Welding
An electrical feeder for arc welding.

WELDING GUN
Pistolet de soudage
Equipment and Tools
A device having the same functions of a welding torch but that has a more ergonomic shape (it resembles the shape of a pistol).

WELDING LAYER
Passe
Welding
A weld bead deposited in only once into the joint of the pieces to be joined. When the weld requires several passes, the first takes the name of *bottom welding pass,* the following ones take the name of *filling welding passes.*

WELDING NODE
Noeud soudé
Welding
The point of intersection of two or several elements joined by welding.

WELDING OPERATOR
Opérateur
Welding
Syn. with OPERATOR

WELDING PENETRATION
Pénétration de soudage
Welding
The depth of molten metal reached during a welding operation (by the melting of the metal of pieces to be welded and/or by the weld metal).

WELDING POSITION
Position de soudage
Welding
The way in which a joint appears to the welder. There are four basic welding positions: flat (horizontal and weld bead accessible by its upper face), in ceiling (horizontal and weld bead accessible by its lower face), in cornice (horizontal weld bead and its symmetry plan), vertical (vertical weld bead and its symmetry plan). There are also tilted welding positions intermediate between the four quoted above or completely different.

WELDING RELAXATION
Relaxation des soudures
Welding
An operation that consists in decreasing at the maximum the contraction stresses due to the weldings, either by maintenance of a certain temperature with the blowtorch, or by taming, with the smooth butt iron, each welding pass except the last.

WELDING ROD
Baguette de soudure
Welding
A rod of pure metal or alloy, used as weld metal to carry out the jointing of steel pieces, aluminum pieces, various alloy pieces, and so on. Syn. with FILLER ROD

WELDING SEAM
Cordon de soudure
Welding
The lengthened part of standardized steady shape (flat, bulged, in coving) obtained by the melting of an electrode or a wire welding,

then of recrystallization of the deposited metal between two surfaces to be joined.
The main types of weld beads are:
- **angle weld beads** *(les cordons de soudure d'angle),*
- **end-to-end weld beads** *(les cordons de soudure bout à bout).*

The weld bead is elaborated during the foundry, heat treatment, and metallurgy operations:
- foundry operations correspond to the phenomena of fusion, solidification, crystallization, shrinkage, release of gas, with the particularity that the walls of the mold participate in the fusion;
- heat treatment operations occur in the contiguous zone with the molten zone. This proximity is at multiple places and possibly several times, heated to solid state then cooled, the temperatures reached and speeds of cooling depending on the distance between the related zone and the molten zone. It is therefore subjected to quenching phenomena, annealing, temper, crystallization, precipitation to solid state;
- metallurgic operations are characterized by chemical reactions that occur between the molten metal and surrounding medium.

Syn. with WELD BEAD; CORD

WELDING SHIELD
Masque de soudeur
Equipment and Tools
A protective accessory that welders apply in front of their face to protect them, in particular the throat and eyes, from the radiations and gas gave off during the welding operation.

WELDING TORCH
Torche de soudage
Equipment and Tools
1. A tool fitted with a refractory electrode and a nozzle, ensuring, in TIG welding, the electric connection with the welding circuit, as well as the intake and gas flow of the protective gas.
2. A tool fitted with a nozzle and contact tube, intended, in MIG or MAG welding, for guiding the wire fusible electrode while ensuring the electric connection with the welding circuit as well as the intake and gas flow of the protective gas.
3. A tool fitted with a refractory electrode and a nozzle, ensuring, in plasma welding, the electric connection with the welding circuit as well as the plasma-producing gas and gas flow of the protective gas. (It is designed to enable the formation of an arc plasma in consequence of the constriction of the arc).

WELDING WIRE
Fil-électrode
Welding
A deposited welding metal, appearing in the form of wire rolled up on a bobbin, a crown, or a rim and which is mainly used in the MIG or MAG process, under powder flow and slag. Welding wire can be full or filled. In the latter case, it is filled with a flow playing a role similar to that of the electrode coating used in hand-driven welding (ionizing, refining, generating a slag and protective gas).

WELDING WITH CONSUMABLE INSERT
Préparation avec bague fusible
Welding
A V- or U-preparation, comprising the addition of a fuse ring of varied section that comes inserting at the root of the welding and that allows to ensure a good connection and a good penetration of the first pass mostly carried out by TIG process, the supply product being formed by the fuse ring.

WELL
Cage
Construction
The space reflecting at the litter of a staircase.
Syn. with STAIRWELL

WELL BORER
Puisatier
Foundation
A worker specialized in the boring of wells.

WELL DRAIN
Puits pleureur
Sanitary Engineering and Drainage
An excavation dug in a ground and intended for collecting seepage waters of the ground.

WELL OF AQUEDUCT
Puisard d'aqueduc; Puits d'aqueduc
Construction
Syn. with AQUEDUCT INSPECTION HOLE

WELL SHOE
Rouet
Material
A knife whose are supplied the caissons deepened by mechanical cutting, with the aim to facilitate the penetration into the ground; it is made of metal or reinforced concrete. Syn. with CUTTING CURB; DRUM CURB

WELLPOINT
Pointe filtrante; Wellpoint
Equipment and Tools
A device used for the sinking of groundwater, used in the ground whose coefficient of permeability ranges from 10^{-3} cm/s to 10^{-6} cm/s. The wellpoint consists of a tube from 50 to 60 mm in diameter which is sunk into the ground; spacing between each point being about 1 m. The base of the tube is perforated and covered with a metal cloth playing the role of filter on 1 m height. The tube is positionned by drilling or jetting. The head of each tube is connected to a pipe in which a vacuum is created, which has the effect of drawing up the drained water out of the ground (ejectors can also be used). Sinking with vacuum well points does not exceed 6 m; on the other hand, in the process with ejectors, sinking can reach 30 m. **See Figure 19**

WESTERGAARD MODULUS
Détermination du module de réaction dit *module de Westergaard*
Geotechnics
Syn. with DETERMINATION OF REACTION MODULUS

WET
Abreuver
Masonry
To humidify at refusal a masonry wall that must receive a rendering in order to facilitate the adhesion of it. The aim of this operation is also to head off that the wall does not absorb a too greatly quantity of water contained in the mortar.

WET CONCRETE
Béton jeune ; Béton frais
Building Materials
Syn. with FRESH CONCRETE; GREEN CONCRETE; IMMATURE CONCRETE

WET METHOD
Méthode humide
Welding
Syn. with MOIST METHOD

WET MIXTURE
Mélange mouillé
Building Materials
Any concrete or mortar whose components are mixed with mixing water before the insertion into the air-placing machine. Syn. with MOIST MIXTURE

WET MORTAR
Gâchis
Building Materials
Any mortar manufactured with plaster, cement, lime, and sand.

WET PERIMETER
Périmètre mouillé
Hydrology
The perimeter of the part of the wetted cross section of a waterway, in contact with the walls, the banks.

WET PRACTICE
Méthode humide
Welding
A check process by the magnetic-particle inspection using the ferromagnetic particles in suspension in a light oil, a water, etc.

WET SHOTCRETING
Projection par voie humide
Building Materials
See CONCRETE.

WETTABILITY
Mouillabilité
Welding
In the check operations by sweating, the power of a liquid with low superficial tension to spill themselves on surfaces or to wet them; the angle defined by the drop and the basic

surface is designed to measure the degree of damping.

WETTED CROSS SECTION
Débouché superficiel; Section mouillée
Civil Engineering Structure; Hydrology
1. The vertical surface, perpendicular to the direction of the current, which is contained between levels of water, opposite facings of piers or abutments of a work and the bottom of the river (the wetted cross section varies with the regime of waters).
2. The part of the section of a waterway limited by walls and the free surface (cross cut of the waterway).

WETTING
Mouillage
Painting
The power that shows a binder to more or less quickly coat the pigments of a paint.

WETTING AGENT
Agent mouillant; Déprimant
Painting; Materials
1. A surface-active product whose basic property is to bring down the interfacial tension between liquid and solid phases.
2. A reactive used in the separation of solids by flotation, and possessing the property to increase considerably the ability that present some bodies to let oneself be wet by water.

WETTING OF FORMWORKS
Humidification des coffrages
Construction of R.C. and P.C.
The water sprinkling of the formworks with the aim to tighten their joints, to make so that the swelling of the woods of formwork, which could be detrimental at the green concrete, precedes the concreting instead of following it and finally to avoid the too fast excessive drying of concrete on its facings.

WETTING OF A SUPPORT
Humidification d'un support
Masonry
An operation that consists in sprinkling or making stream water on a support of masonry (or concrete) before the application of a plastering containing a hydraulic binder (rendering, shotcrete, etc.) in order to avoid excessive absorption of water of the rendering brought back by the support.

WHEEL LAUNCHING
Lancement par conversion
Handling
The launching of a work across a river, which consists in building a boat bridge (barge, floating pontoon) along a bank. The work is built on an appropriate area so that one of its ends rests on its abutment. First, The launching operation is performed by positionning the work on the boat bridge (the end of the work always resting on its abutment), then the boat bridge moves in a circular movement making the work swivel on the abutment. The bridge thus joins the other bearing point (abutment of other bank or an intermediate pier). When the work has arrived at the right of its final position, it is lowered back down on its bearings by jacking. Syn. with ROTATION LAUNCHING; TURNROUND LAUNCHING

WHEEL RIM
Jante
Equipment and Tools
A flanged-cylinder on which is winded the electrode wire in the systems of welding with electrode wire. Syn. with FELLY

WHEELBARROW
Brouette
Equipment and Tools
One-wheel vehicle used to transport materials.

WHEELBASE
Empattement
Construction
1. The distance separating the two axles of a wagon of a (overhead) traveling crane.
2. The distance between the extreme rollers of a breastsummer of (overhead) traveling crane.

WHEELED DOZER
Bouteur à pneus
Equipment and Tools
Syn. with TOURNADOZER; TURNADOZER

WHETSTONE
Pierre à faux
Geology
A schist being used to sharpen. Syn. with GRINDSTONE

WHIP
Palanquer
Handling
To lift or take down a load with a pulley block. Syn. with HOIST (WITH PULLEY BLOCK)

WHIPPING LOAD
Palanquée
Handling
A load lifted up in one only once by a hoist.

WHIPSTOCK
Sifflet déviateur
Equipment and Tools
A tool that allows the drilling of sloping wells. It is a steel bevel placed on the bottom of drilling, on which the bore bit becomes based to attack the wall of the hole. The presence of this device makes deviate the tool in the direction and according to a definite angle.

WHIRLPOOL
Remous d'exhaussement
Hydrology
Syn. with RAISING EDDY

WHIRLPOOL PASS
Mouille
Hydrology
Syn. with CHANNEL

WHITE
Blanc
Painting
The term given to the surface colors that loosely reply to next conditions:
a) - they must to be practically achromatic for the chosen source, namely that it corresponds them none dominant substantial;
b) - their luminous luminance Y is always neighbor than 100.

WHITE ANT
Termite
Defects (Building Materials)
Syn. with TERMITE

WHITE CEMENT
Ciment blanc
Hydraulic Binders
A.P.C. (artificial Portland cement) that results from the baking of very pure raw materials that contain a minimum of coloring metallic oxides (mainly of the oxide of iron) and that have not undergone stain by ashes of solid combustibles.

WHITE LEAD
Céruse
Painting
Syn. with LEAD SPAR

WHITE PERFECT
Blanc parfait
Painting
The ideal surface color having the property to distribute the totality of the luminous flow that it receives from the source, of equal manner in all extend of the visible spectre and, this, in all directions of the half-space located of the same side of the surface that this source.

WHITE SHEET *or* SCOURED SHEET METAL
Tôle blanche *ou* Tôle décapée
Metallurgy
A product removed from its smithsonite by pickling with an acid.

WHITE SPIRIT
White spirit
Painting
A solvent formed by a complex mixing of aliphatic, aromatic, and naphthenic hydrocarbons in variable proportions, coming from the divided distillation of oils. Syn. with MINERAL SPIRIT; TURP SUBSTITUTE

WHITEN
Blanchir
Painting
To paint white.

WHITEWASH
Badigeon
Painting
A product that contains lime water and/or calcium caseinate mostly used for the roughly done painting work.

WHOLE TIMBER
Bois de brin
Temporary Construction
Round pieces that constitute poles and scaffold ties of a scaffolding.

WICKET
Hausse; Haussoir; Haussoire
Foundation
A vertical element of sheet metal heightening the plating of a pneumatic caisson and serving as cofferdam. Syn. with FLOODGATE

WIDE FLAT
Large plat
Metallurgy
Syn. with UNIVERSAL PLATE

WIDE GRAIN SIZE
Granularité étalée
Building Materials
The dimensional grain distribution of an aggregate into which the sizes of various grains are contained inside a very large grading range.

WIDEN
Ebiseler
Work
To ream a hole in a manner to give it a truncated profile.

WIDENING OUT
Evasement
Construction
The widening between the facings in opposite of two wing walls, starting from the tympan and continuing gradually up to the end of these walls. Syn. with SPLAYING

WIDTH OF A BRIDGE
Largeur d'un pont
Construction
The open distance between the main planes of the railings (of a bridge).

WIDTH OF A JOINT
Largeur d'un joint
Construction
The distance separating the lips of a joint.

WILD STEEL
Acier sauvage
Metallurgy
A ferrous alloy rich in carbon, of an intermediate composition between that of a steel and a cast iron.

WINCH
Treuil
Equipment and Tools
A pulling or lifting appliance mainly constituted of a drum on which is rolled up a rope or a cable to which the load to be lifted or to be pulled is hung. Winches can be actuated mechanically and/or manually by a crank.

WINCH STAND
Chevalet de levage
Equipment and Tools
A device inspired of the jack, enabling the raising of important loads, often used by group of four units. Syn. with GANTRY

WINCHING
Treuillage
Handling
The lifting or going down of loads using a rope sued by a winch.

WIND ABRASION
Abrasion éolienne
Geomorphology
All the phenomena due to the action of the wind. These phenomena take the name of *deflation* or *corrasion* according to the type of erosion. Syn. with EOLIAN ABRASION

WIND BRACE
Contreventement; Hauban
Temporary Construction; Equipment and Tools
1. A definitive or temporary structural element of wood, metal, and so on, that allows to ensure the solidity of a construction from the bendings (out of shape) due to the

transverse or horizontal strains. Syn. with CROSS BRACING
2. Syn. with ANCHORING WIRE

WIND BRACING
Contreventement
Construction
Devices that strengthen the elements of a structure to oppose to its bendings (out of shape) through the agency of lateral forces, especially due to the wind.
In decks with beams, we can distinguish:
- **vertical wind brace** *(le Contreventement vertical ou transveral),* or transverse wind brace, constituted by distance pieces or cross beams; it heads off the deformations of main beam by twist;
- **horizontal wind brace** *(le Contreventement horizontal),* or longitudinal wind brace, constituted in the modern bridges by temporary elements in the process of assembly and by the cover slab afterward, and, in former bridges with lateral beams, by a horizontal lattice girder placed at the level of compressed chords of main beams; it heads off the deformations by lateral bending;
- **mixed wind brace** *(le Contreventement mixte),* or complete, that consists in using the double longitudinal wind brace in zones of the work where the height left freely for the traffic allows it, and the unique longitudinal wind brace with the transverse wind brace, in the other zones. This mode of wind brace is sometimes used in the metal camelback trusses.

Syn. with LATERAL BRACING

WIND CARVING
Corrasion
Geomorphology
Syn. with CORRASION

WIND STOPPER
Butée au vent
Construction
A piece that limits or prevents the lateral movement of a suspension bridge deck or some movable bridges under the wind effect.

WINDING DRUM
Tambour
Construction
The cylindrical element of a winch on which cables are rolled up.

WINDOW
Fenêtre
Construction
An opening usually a parallelepiped made in a material or a wall.

WINDPROOF CABLE
Câble au vent
Construction
In some suspension bridges, cable situated on the side in comparison with the deck and intended for taking up the transverse strains due to the winds.

WINDWORN PEBBLE
Caillou à facettes
Geology
A stone that one meets frequently in the desert regions and that shows very smooth faces due to polishing by sand grains. Syn. with GIBBER

WING NUT
Ecrou à oreilles
Equipment and Tools
Syn. with BUTTERFLY NUT

WING OF BRIDGE
Aile de pont
Construction
A wall built along the banks of a waterway to protect abutments from the blockages or boat shocks and from gullying due to the action of water.

WING WALL
Mur en aile
Construction
A supporting work built in the prolongation of the main plane of an abutment; it may be straight, oblique or curve. The wall is mostly ended by a coping of ashlars forming pitch. Syn. with RAMP WALL; SLOPING WALL.
See Figure 20

WINNOWING
Vannage
Geomorphology
Sifting of soil by wind; it separates small particles from large.

WIRE
Fil; Fil métallique
Building Materials; Welding; Metallurgy
1. An elementary reinforcement of high-tensile steel being designed for the making of cables, or straight operational as concrete reinforcements prestressed by pretensioning.
2. A weld metal as appears as cylinder of a constant cross section and continuous length. The welding wire is delivered in rings or in bobbins.
3. A product stemming from wiredrawing having a circular cross section, of small diameter, but great length.

WIRE DETECTOR AT THE TUNNEL VAULT
Détecteur par fils fixes à la voûte d'un tunnel
Equipment for Measure and Control
An instrument intended for detecting the crumblings in tunnel and whose principle is the following. On the length of the tunnel to be overlooked, two or several isolated electric conductors are fixed, connected to a power source and assembled in series with a signaling relay that is found thus normally excited. A possible crumbling in this zone would provoke one or several breakings of wire. This cut would release an alarm.

WIRE NETTING
Grillage; Fer maillé
Masonry; Metallurgy
1. A wire mesh fitting tacked on a facing and that be used as reinforcement to a rendering or a shotcrete. Syn. with WIRE MESH
2. Syn. with LATTICE

WIRE SPRAYING GUN
Pistolet métalliseur à fil
Equipment and Tools
A device used to carry out the metal spraying; it consists of an oxyacetylene blowtorch into the axis whose passes a metal wire to be sprayed conveyed by two wheels. A nozzle surrounds the blowtorch and pleasing around this one the compressed air necessary to the pulverization of the molten metal. The gun carries out the melting and spraying.

WIRE TIE
Ligature
Construction of R.C. and P.C.
A soft steel wire being designed to connect and keep the reinforcement bars at their crossing or in the recoveries. Ties can be of two types: simple or crossed. Crossed ties are used in places to rigidify the totality of the bar setting. Syn. with BINDING WIRE; TIE; TYING WIRE

WIRY WOOD
Bois nerveux
Defects (Building Materials)
A material which has a strong coefficient of retractability and which is subject to the cracking and the split. This limits its possible use.

***WÖHLER* PLOT**
Courbe de *Wöhler*
Strength of Materials
A plot that represents the time of a cyclic load test up to break according to the load applied. The fatigue limit (fatigue strength) is given by the asymptote of this curve.

WOOD
Bois
Building Materials
A solid and hard substance found under the bark of trees. Wood is a natural material, heterogeneous and anisotropic, composed of cellulose (50%), lignine (20 to 30%). The rest is made of hemicellulose, albuminoids, resins, tannin, starch and mineral matters.
Wood is mainly used in temporary constructions. A good wood must have a homogeneous texture, no incipient decays, a minimum of knots, and it must have regular concentric rings and straight fibers. Wood divides into two great categories:
- **hardwood *or* leaf wood** *(les bois feuillus)* with deciduous leaves. It includes hardwoods and soft woods (group of angiosperms);
- **coniferous wood *or* resinous wood *or* softwood** *(les bois résineux)* (also called

green trees) with evergreen needle-shaped leaves (group of gymnosperms).

WOOD BLOCK
Cale
Masonry
Syn. with BONING PEG; DOWEL

WOOD CHISEL
Ciseau de menuisier
Equipment and Tools
A tool with a single bevel being used to cut by percussion the wood.

WOOD (FIBER) CONCRETE
Béton de bois
Building Materials
A material into which wooden fibers replace traditional aggregates.

WOOD CUTTER
Hachereau
Equipment and Tools
Syn. with FELLING AXE

WOOD DEFECT
Vice du bois
Defects (Building Materials)
A blemish that affects a wooden piece.

WOOD LIFE SPAN
Durabilité du bois
Nomenclature of Materials
Group of properties (chemical, physical, anatomical, etc.), whether natural or conferred by a whichever process, possessed by a wood of a given species that enable it to withstand attacks of biological agents (insects, dry rot, etc.). Syn. with WOOD DURABILITY

WOOD IMPREGNATION
Imprégnation des bois
Building Materials
A wooden treatment process by penetration of a product (bath or pulverization) to secure them from attacks of the xylophagous insects and fungi, what enables to prolong their working life.

WOOD PRESERVATION
Préservation du bois; Conservation du bois
Building Materials
1. A term retained in France to qualify the chemical formulations (preservative), and their processes of application, which aim in endowing to a given wood, in a given use, an upgraded strength to the deterioration by biological agents. This term was adopted conventionally preferrably to *protection* or *conservation.*
2. A maintenance of the properties (mechanical, physical, aspect, etc.) of a wooden object, necessary in a given use for all the evaluated lifetime of this object. Syn. with TIMBER PRESERVING

WOOD SAWS
Scies à bois
Equipment and Tools
Tools that enable the cutting of wood and which can be portable saws (tools with hand or mechanized) and saws on fixed frames or table.

WOOD SHRINKAGE
Retrait du bois
Building Materials
The diminishing in dimensions of a wood when its state of dampness changes negatively.

WOOD WITH CROOKED FIBERS
Bois tors
Building Materials
A wood whose fibers, instead of being oriented parallel to the axis are inclined so that their set draws helixes around the axis. Splits of shrinkage make the helixes easily visible. Syn. with BULGED WOOD

WOODEN HAMMER
Maillet
Equipment and Tools
Syn. with BEETLE; MALLET; MAUL;

WOODEN PLANKING
Platelage
Construction
An area traffic made of wood of the former bridges and footbridges. Syn. with BRIDGE COVERING

WOODEN PROACTIVE TREATMENT
Traitement préventif du bois
Building Materials
Operations that endows a good life span at the wood in the employment for which it is intended, preventing the development of agents of the biological deteriorations:
- when this is possible and if the condition of uses of wood require it, carrying out the impregnation of all parts which are not naturally durable; or,
- mostly, while creating a protective impregnated wooden barrier, by an adequate process, of a preservative.

We can distinguish: proactive treatment from the attack of insects (insecticide treatments), proactive treatments from the attack of the mushrooms (fungicide treatments) and proactive treatments from the attack of the insects and mushrooms (insectofungicides treatments).

WOODEN SCAFFOLDING
Echafaudage en bois
Temporary Construction
A temporary construction built for security and acceptable work comfort enabling access and the ability to work at all necessary heights. Scaffoldings of wood are generally constituted by:
- the assemblage of two ranks of uprights (vertical elements) parallel, regularly spaced, held in place by the putlogs and resting on the ground on intermediary soles;
- of horizontal elements (main beams) supporting the intermediary putlogs on which rest the scaffold (floor);
- of diagonal wind braces connecting between uprights to ensure the rigidity of the whole.

The assemblage of the different elements is realized with the help of ropes. (This type of scaffolding is less and less used in Europe.) **See Figure 21**

WOODWORM
Ver du bois
Defects (Building Materials)
A misnomer term used to describe the larva of insects which feed on wood.

WOOLY GRAIN
Laineux
Defects (Building Materials)
Of the surface aspect of a timber after sawing due to the wrenching and fraying of its axial fibers by cutting tools.

WORK
Travaux
Work
Operations which involve the construction, maintenance of structures, grounds, channel of communication, and so on. We can distinguish great work and small work.

WORK FOREMAN
Conducteur de travaux
Work
A manager or supervisor of an enterprise responsible of one or several building sites and that is in charge the technical achievement, management of the personnel and equipment, in the range of materials as the payment of work. Syn. with SUPERVISOR

WORK PROCEDURE
Procédure d'exécution
Contract
A document describing the means, materials or products, practices or procedures and checks necessary to the carrying out of a given task or a part of work. The procedure forms the inherent part of the quality plan.

WORK SETTING UP
Mise en place d'ouvrages
Handling
The placing at its final position of one or a part of work by a means of any handling (launching, sliding along, jacking, etc.).

WORK SCHEDULE
Plan de phases de travaux
Work
A document that defines the order of the various construction phases on a site.

WORKABILITY
Maniabilité; Workabilité; Ouvrabilité
Building Materials
The ability of a mortar or a fresh concrete to fill correctly a mold or a formwork thanks to a well-studied batching of its constituents that give him a sufficient fluidity without harming its strength and its homogeneity.
The workability is a factor of the first magnitude because it conditions among other things: good filling, simplicity of placing, good covering of reinforcements. The workability depends on the batching in fine elements, quantity of water, temperature, batching in cement, and so on; it is given by means of measuring instruments such as the concrete workability meter, slump cone, and so on.

WORKABILITY AGENT
Fluidifiant
Materials
Syn. with FLUIDIFIER; PLASTICIZER

WORKABILITY METER
Ouvrabilimètre
Equipment for Measure and Control
An equipment for classifying fresh concretes according to their plasticity in a way more precise than with the slump cone.

WORKING
Front d'abattage; Abattage
Earthwork; Masonry
1. Syn. with BREAST; WORKING FACE
2. Syn. with CUTTING; STRIKING DOWN

WORKING (MATERIAL)
Ouvrable
Building Materials
Of a material to implement easily into a mold, a formwork, owing to its qualities of workability. One says, for example, working concrete.

WORKING DESIGN
Projet d'exécution
Drawing
Syn. with PRODUCTION DESIGN

WORKING DRAWING
Dessin d'exécution
Drawing
A representation that defines of detailed, precise and complete way, the structure to be carried out.

WORKING FACE
Parement de taille; Parement ouvragé; Front d'abattage
Masonry ; Construction of R. C. and P. C.; Earthwork
1. The visible face of ashlar dressed with the granulating hammer and the chisel or with a comb hammer. **See Figure 22**
2. The face of a concrete work that satisfies to the requirements of a decorative and architectural nature; it generally shows drawings in relief that are obtained with special formworks.
Syn. with TOOLED FACE
3. Syn. with BREAST; WORKING

WORKING FACTORY
Usine de façonnage
Construction of P.C.
A permanent plant, which is especially equipped and organized to manufacture ready for use prestressing units.

WORKING GATE
Vannelerie; Ventellerie
Construction
Syn. with WORKING PADDLE

WORKING LENGTH OF A PILE
Longueur utile d'un pieu
Foundation
Syn. with LIVE LENGTH OF A PILE

WORKING LIFE
Temps de travail
Adhesives
Syn. with LIFETIME; WORKING TIME

WORKING LIFE
Durée Pratique d'Utilisation (D.P.U.)
Polymers
Syn. with POT LIFE

WORKING LOAD
Charge de service
Handling
The total weight of elements suspended at the lifting cable of a crane, a gantry crane, and so on, and that contains the useful load *L,* the weight *W* of elements belonging inherent part of the apparatus such that pulley blocks, hooks, and length of cable corresponding to the autonomy height of transfer.

WORKING TIME
Temps de travail
Adhesives
Syn. with LIFETIME; WORKING LIFE

WORKMAN REGISTRATION
Calepineur
Masonry
A specialist that carries out the bond memorandum book.

WORKS DRAWING
Plan de calepinage
Drawing
A drawing which determines the nature, dimensions and the arrangement of a masonry or any job. Syn. with SKETCHING

WORM MARK
Vérot
Defects (Metallurgy)
A superficial imperfection that affects some cast metal pieces, which show similar marks to those left by worms.

WORMEATEN
Vermoulu; Bois mouliné
Defects (Building Materials)
1. Of a wood dug inside its structure by many small galleries carried out by larvae of xylophagous insects. (They are in particular softwoods which suffer of these attacks.)
2. A wood attacked by worms, leaving orifices on its surface.

WORSENING
Pourrissement
Defects (Building Materials)
An alteration in the mass of a timber piece (bridge covering, pile, etc.) by physicochemical, bacteriological, cryptogamic decomposition and which appears as a softening of the wood that takes a fluffy or woolly aspect and changes of coloring.

***W* -PREPARATION**
Préparation en W
Welding
A U- or V-preparation in which the root of the weld consists on each edge of a thin lip which is machined perpendicularly to the surface of the material to be welded. The weld is usually done using the TIG process by fusing only the lips.

WREATH
Débillarder
Building Materials
To give a curved form to an ashlar or a timber piece.

WRENCH
Tourne-à-gauche
Equipment and Tools
A tool to unscrew drill rods.

WRENCHING
Arrachement
Metal Construction
A strain that solicits the bolts or rivets in a direction parallel to the axis of their body (or shank). It results from them a wrenching strain of the heads or nuts whose fillets are then solicited to the shearing.

WRINKLE PREVENTIVE
Antiride
Painting
An admixture, mixed into a paint, avoiding the forming of ripples in the film after its application.

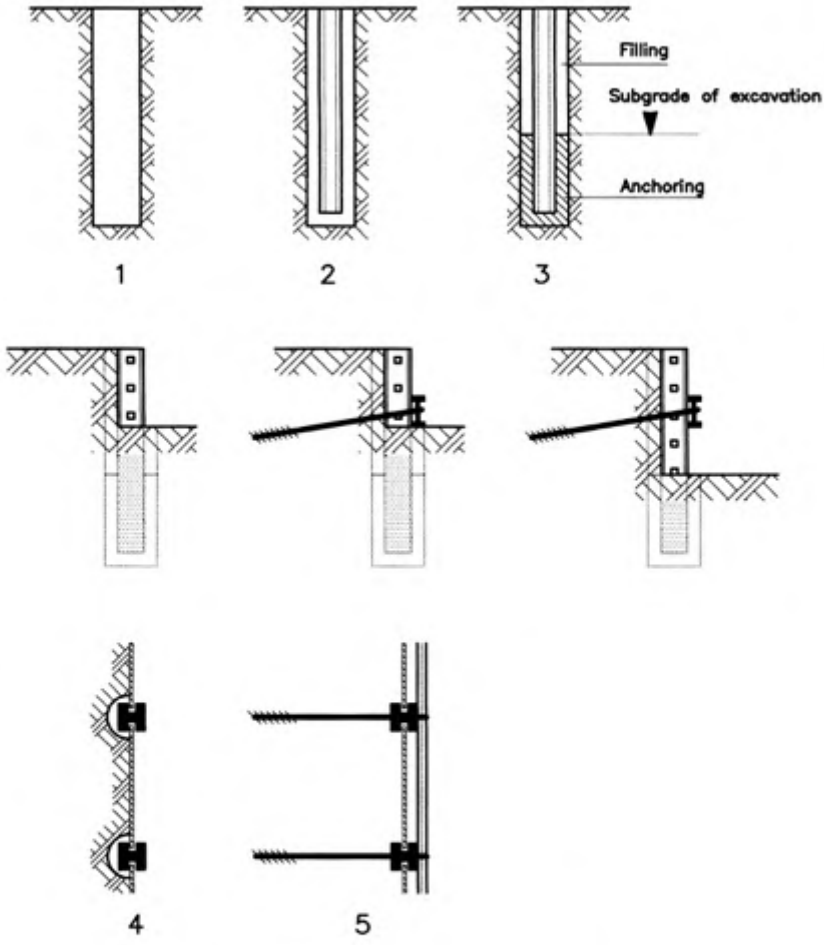
WRINKLING
Flambement; Plissage
Strength of Materials; *Defects*
1. Syn. with BUCKLING; LATERAL FLEXION
2. The forming of folds in a slender piece brought about by the buckling.

WRONG WAY
Rebours
Defects (Building Materials)
Grains (of wood) not parallel to the surface and directed in the wrong way.

Figures of the letter



Fig. 1

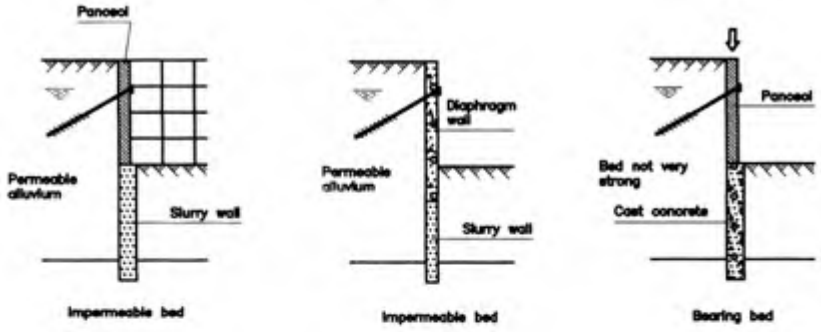


1 = Execution of a drilling
2 = Installation and adjustement of the section
3 = Sealing of the section
4 = Banking on a level. Casing between sections
5 = Installation of tie rods

Berliner wall

WALL

Fig. 1a



Composite walls (examples)

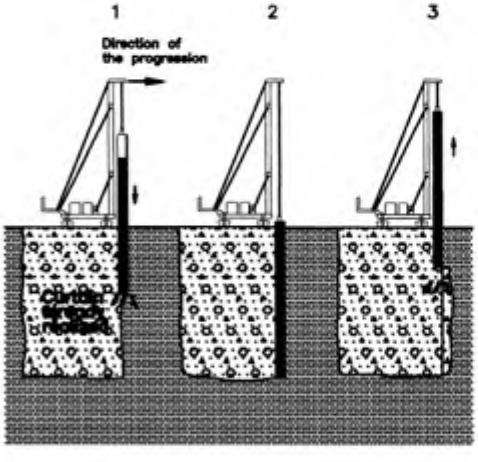
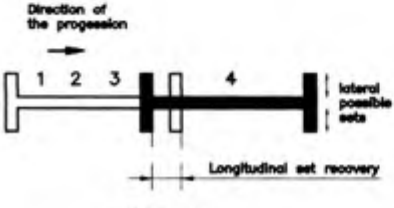


Fig. 1b

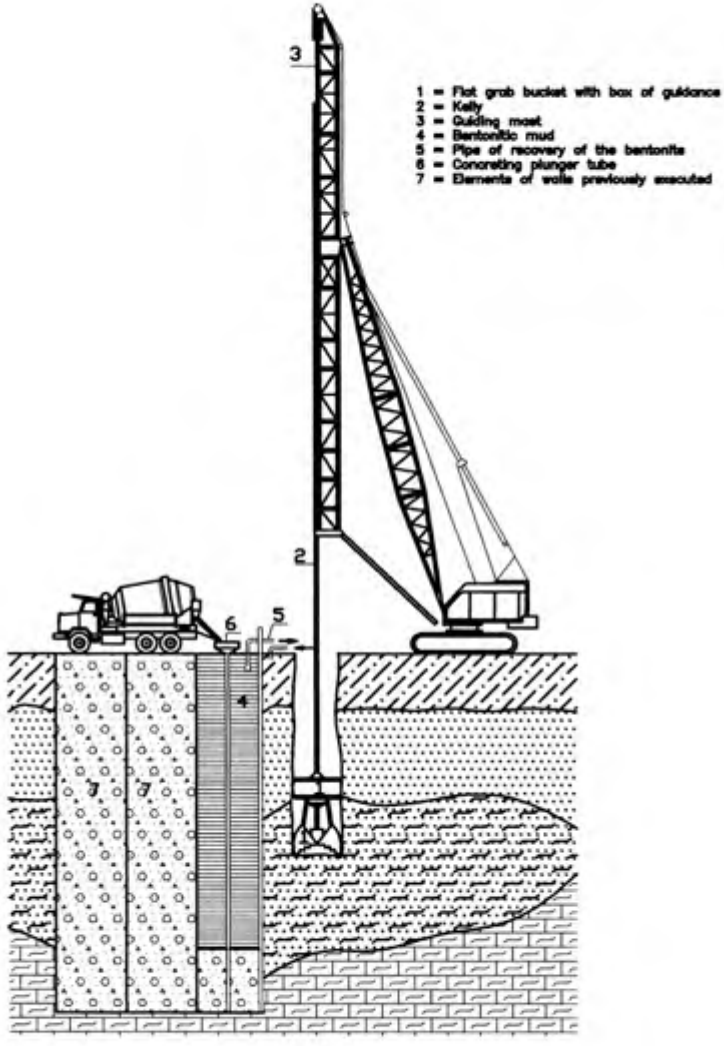
1 – Descent of the section
2 – Section descended to the level
3 – Ascent of the section



Thin wall

WALL

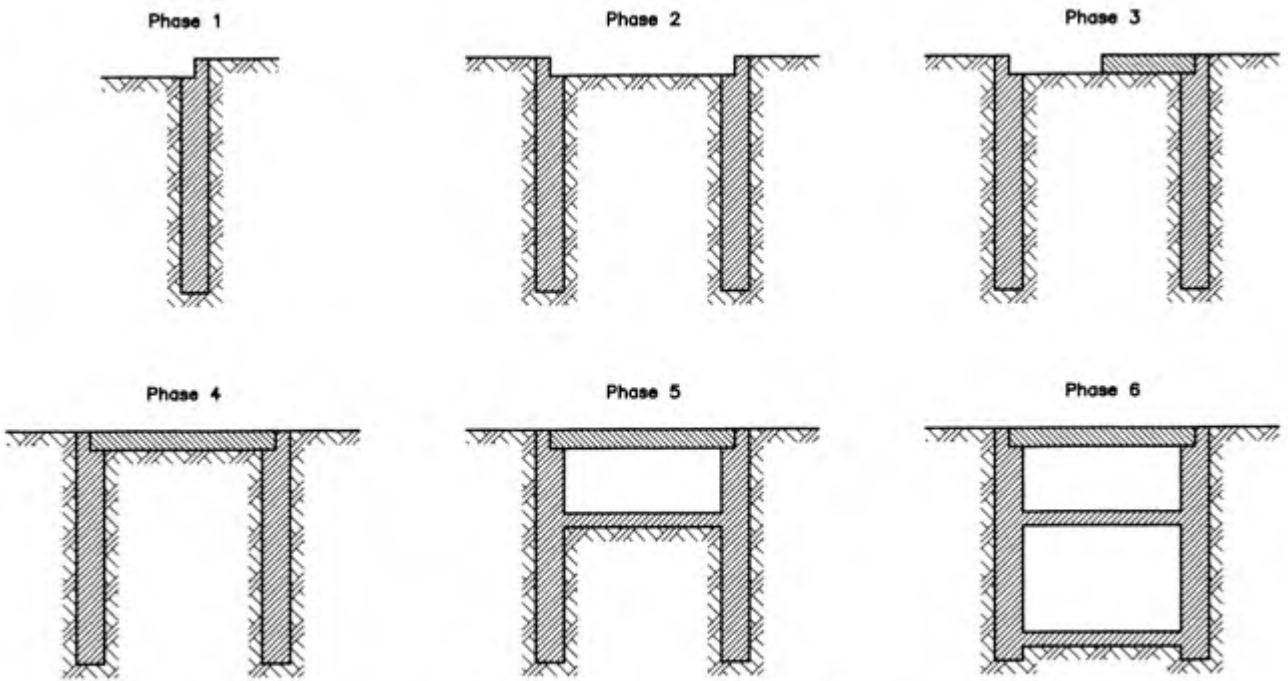
Fig. 1c



Diaphragm wall (phases of execution)

WALL

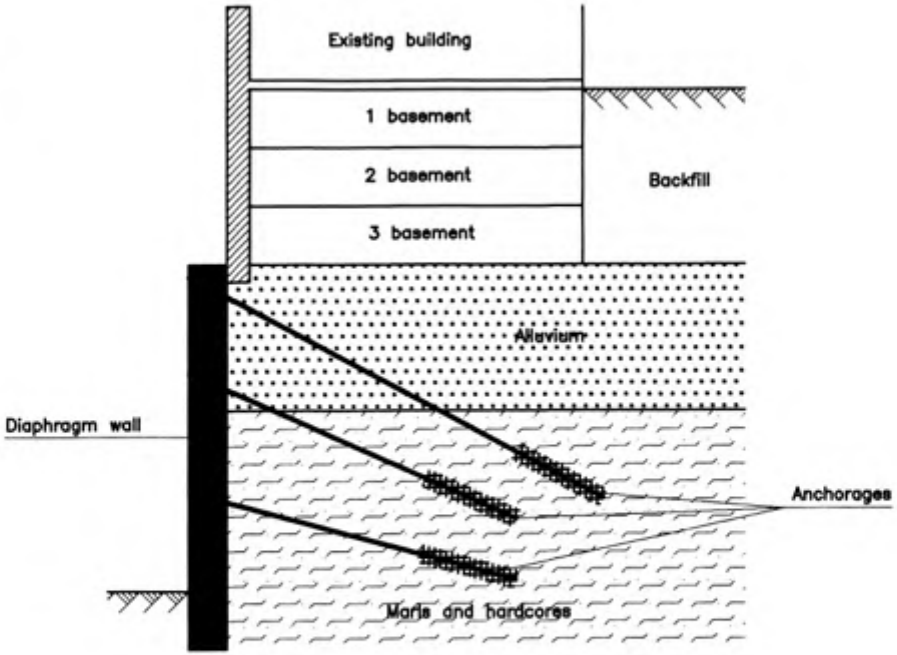
Fig. 1d



Diaphram wall – Bruxelloise heading method

WALL

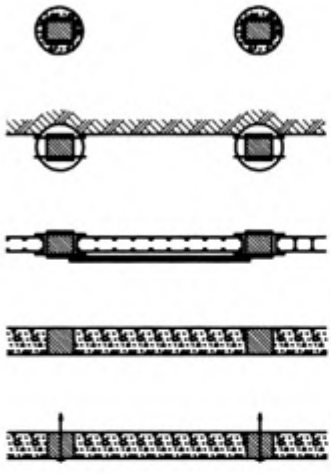
Fig. 1e



Anchored diaphragm wall

WALL

Fig. 1f



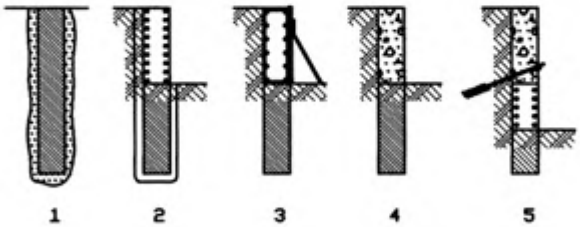
1 – Drillings. Installation of poles of reinforced concrete

2 – Banking. Unfolding of the reinforcements

3 – Reinforcement and formwork installation

4 – Concreting

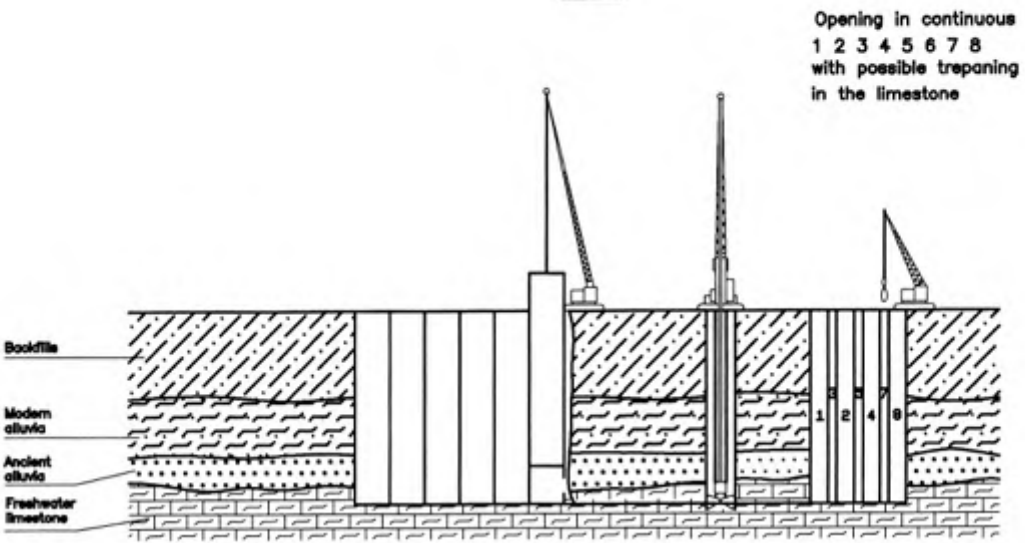
5 – Installation of the tie rods and pursuit of work



Parisian wall

WALL

Fig. 1g



Perforation in continuous and simultaneous slab pose

Prefabricated wall

WALL

Fig. 1h

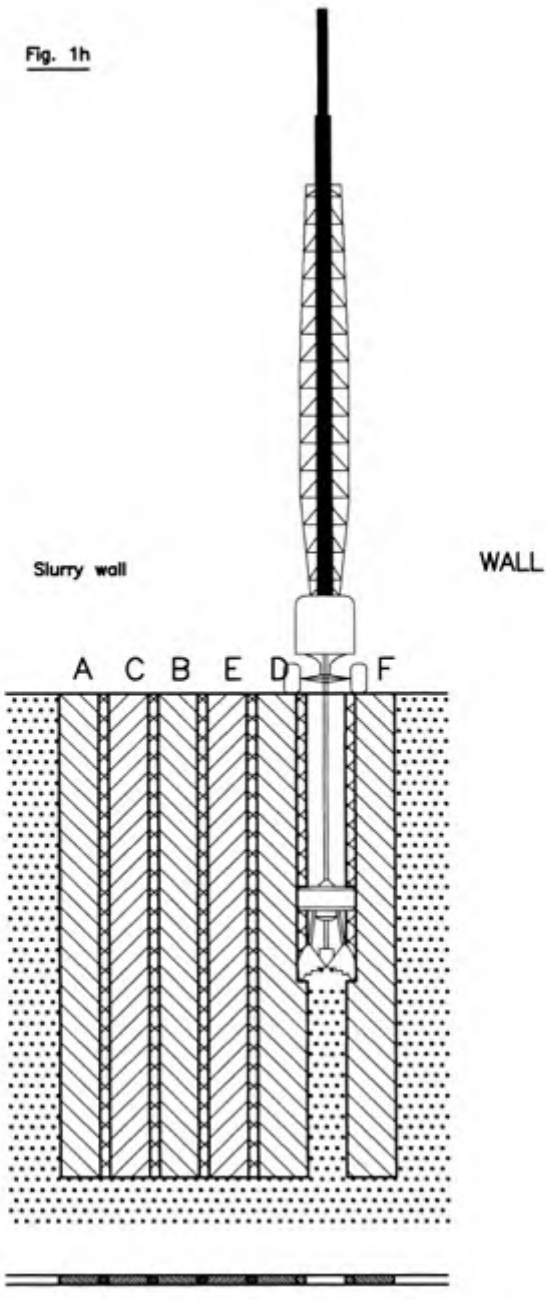
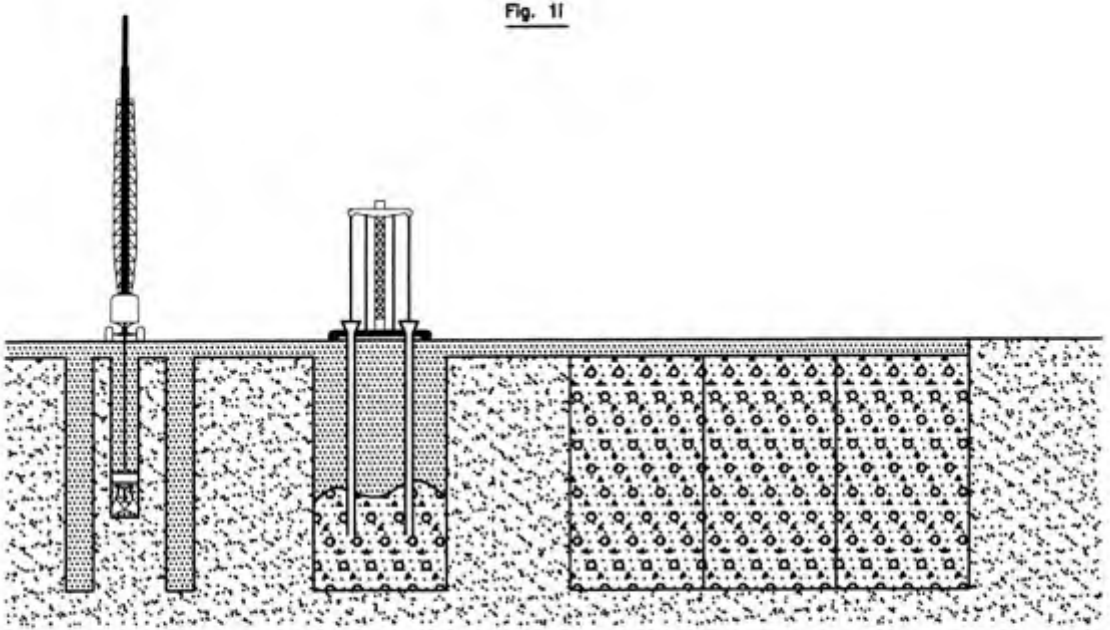


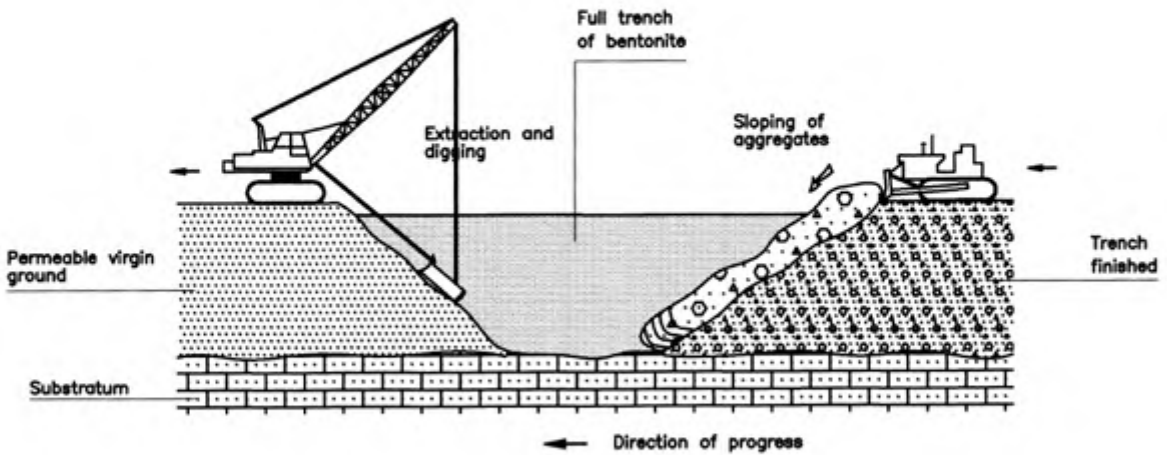
Fig. 11



Plastic concrete wall

WALL

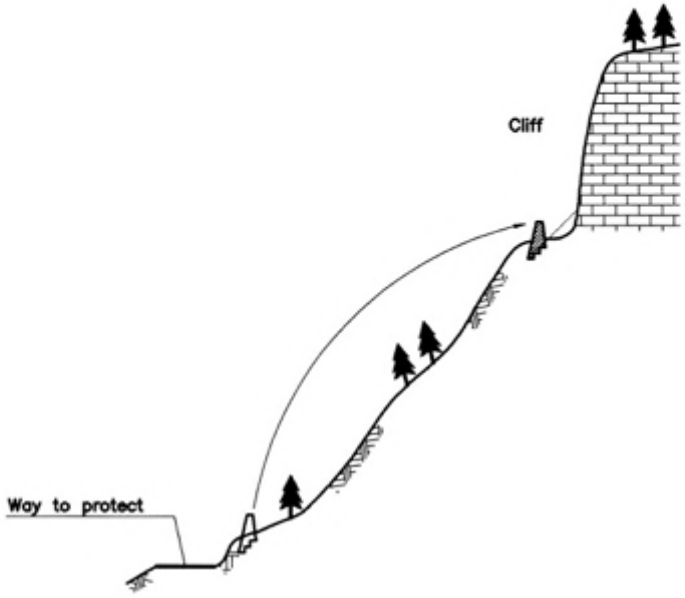
Fig. 1j



Slurry trench

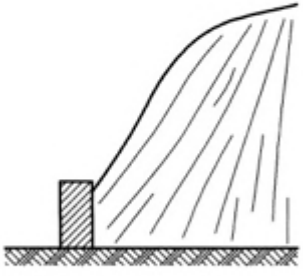
WALL

Fig. 2



Barrage wall

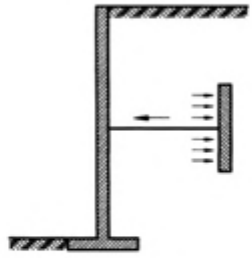
Fig. 2a



Embankment wall

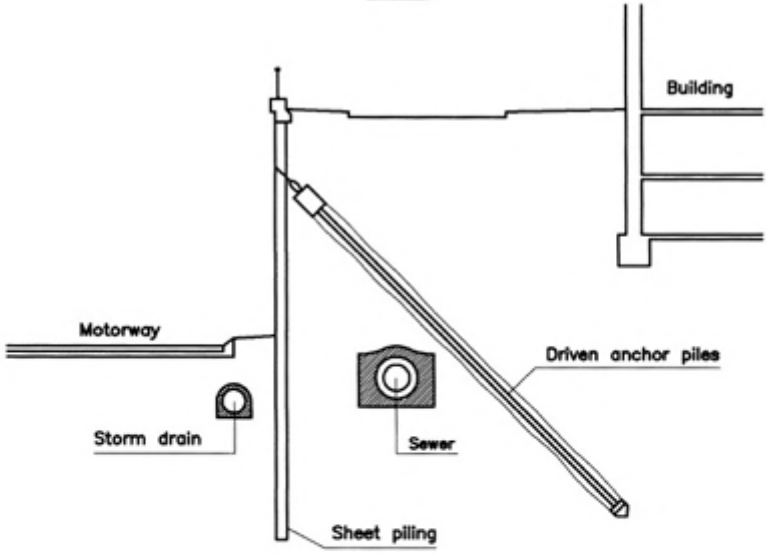
WALL

Fig. 2b



Tied retaining wall with anchoring slab

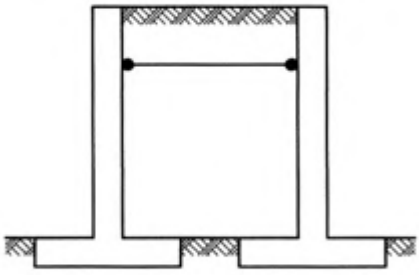
Fig. 2c



Tied breast wall of sheet piles

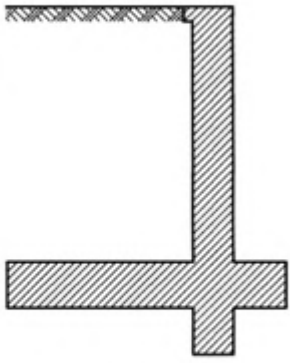
WALL

Fig. 2d



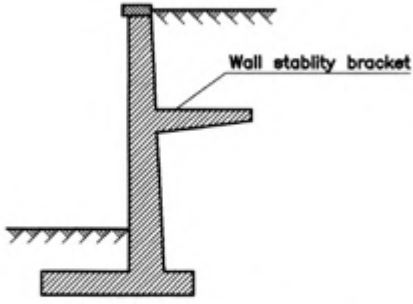
Tied retaining wall

Fig. 2e



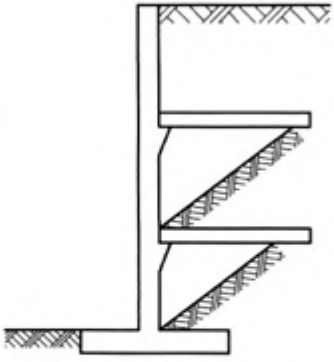
Cantilever retaining wall

Fig. 2f



Shelf retaining wall

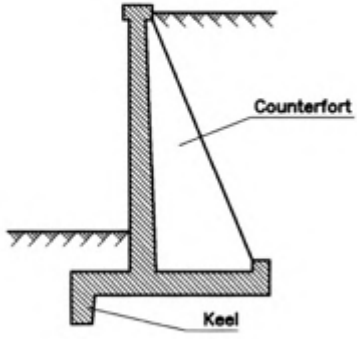
Fig. 2g



Shelf retaining wall

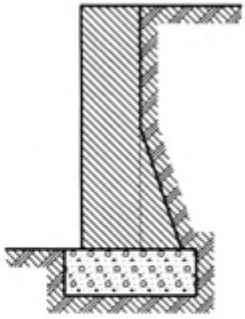
WALL

Fig. 2h



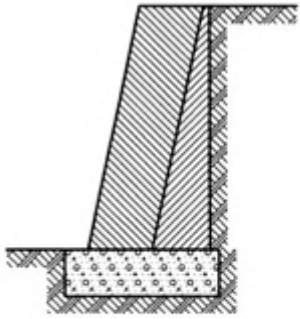
Counterfort retaining wall

Fig. 2i



Counterfort upright retaining wall

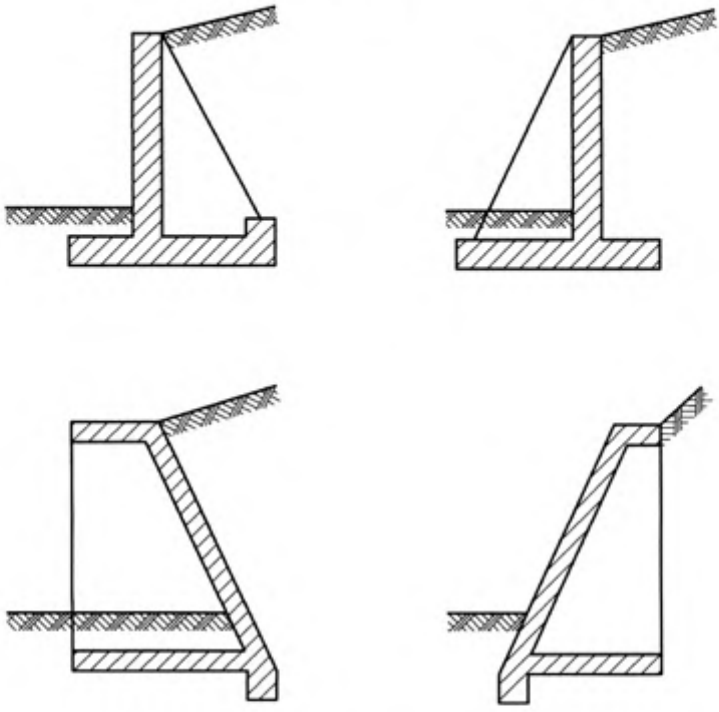
Fig. 2j



Counterfort retaining wall

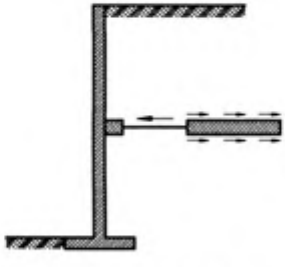
WALL

Fig. 2k



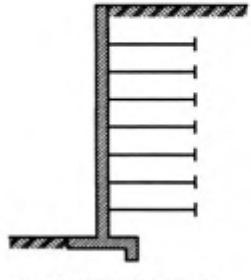
Counterfort retaining wall of reinforced concrete (different types)

Fig. 2l



Retaing wall with friction deck

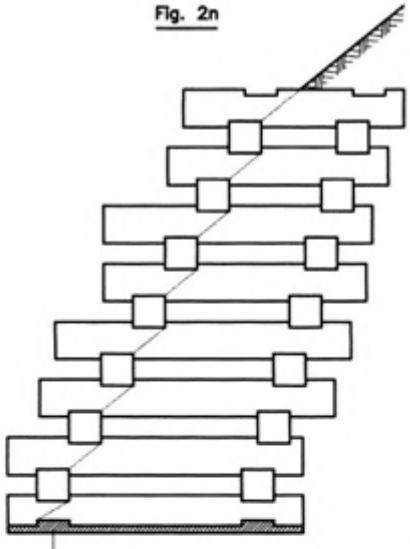
Fig. 2m



Ladder retaining wall
(process Coyne)

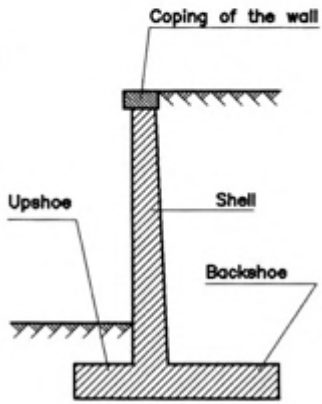
WALL

Fig. 2n



Peiler retaining wall

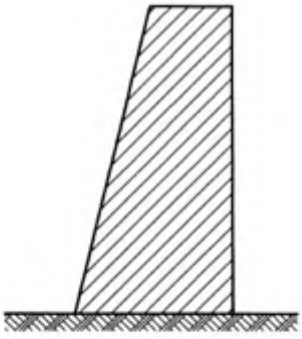
Fig. 2o



Inverted–T retaining wall

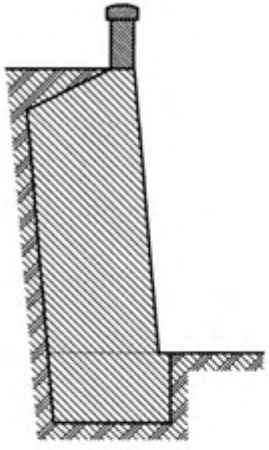
WALL

Fig. 3



Wall at an angle

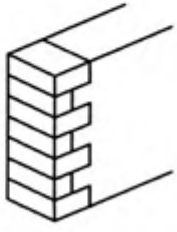
Fig. 3a



Wall at an angle with parapet and integrated foundation slab

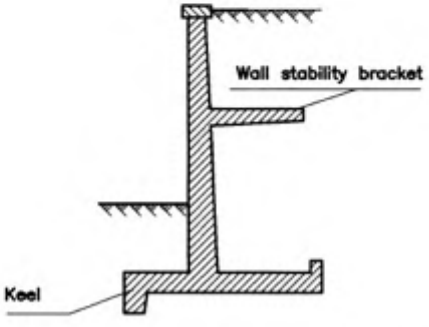
WALL AT AN ANGLE

Fig. 4



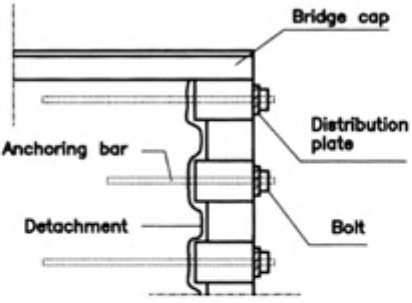
WALL HEAD

Fig. 5



WALL STABILITY BRACKET

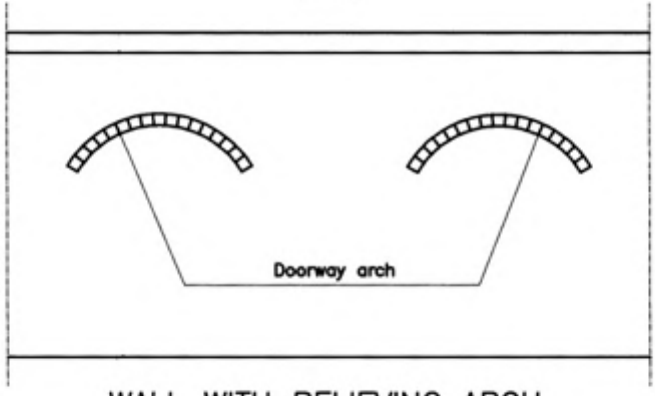
Fig. 6



Wall tie of coin stone

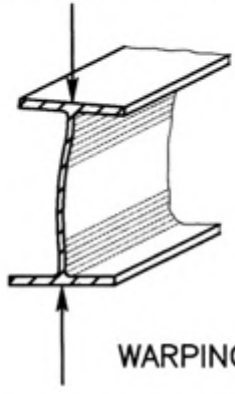
WALL TIE

Fig. 7



WALL WITH RELIEVING ARCH

Fig. 8
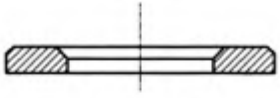


WARPING

Fig. 9



Tapered washer

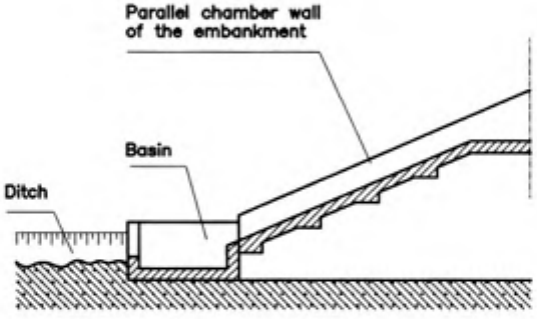
Fig. 9a



Flat washer

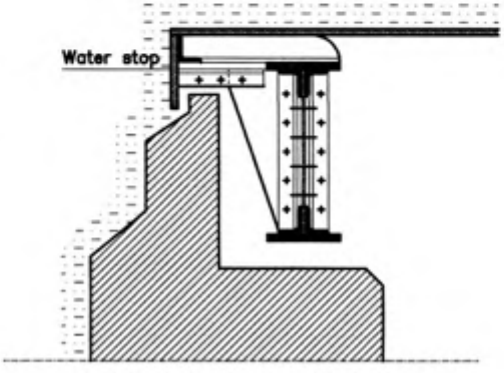
WASHER

Fig.10



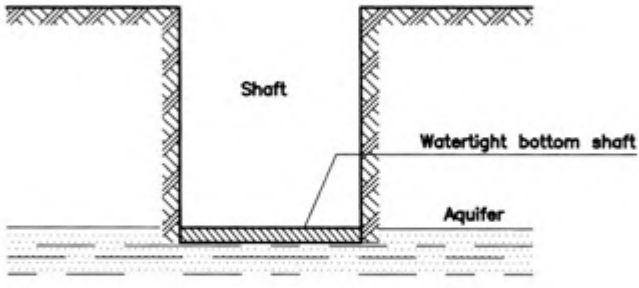
WATER CUSHION

Fig.11



WATER STOP

Fig.12



WATERTIGHT BOTTOM SHAFT

Fig.13

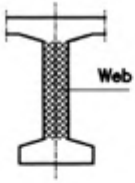
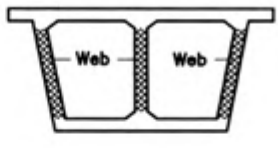
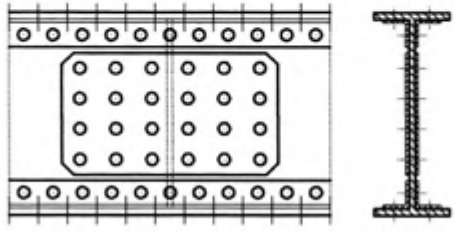


Fig.14



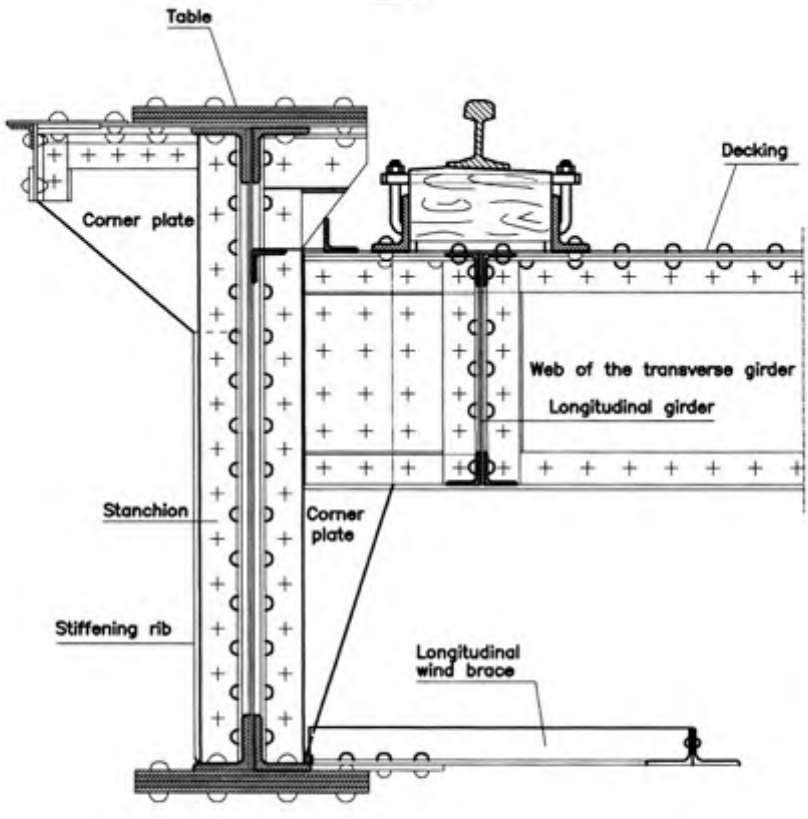
WEB

Fig.15



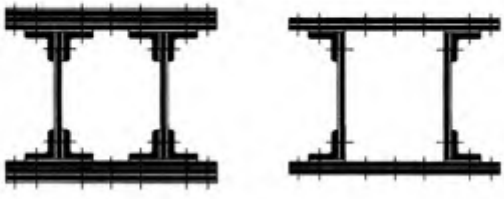
WEB COVER PLATE

Fig.16



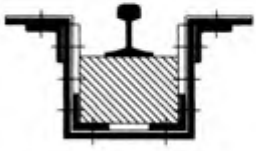
Riveted girder

Fig.16a



Box girders

Fig.16b



Plated girder

WEB PLATE GIRDER

Fig.17



Lap weld

Fig.17a



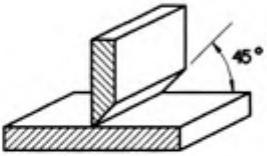
Welding on fallen edges (or turn-up)

Fig.17b



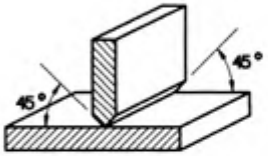
Internal fillet weld

Fig.17c



Single-tee butt weld in 1/2 V

Fig.17d



Double-bevel butt weld

Fig.17e



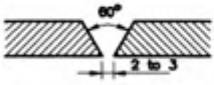
Square butt weld, contiguous edges

Fig.17f



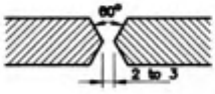
Square butt weld, parallel edges

Fig.17g



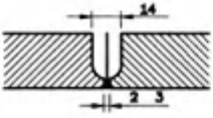
Single-V butt weld

Fig.17h



Double-V butt weld

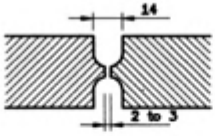
Fig.17i



Single-U butt weld

WELDING (k-welding ap weld, etc.)

Fig.17j



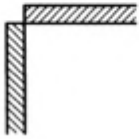
Double–U butt weld

Fig.17k



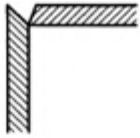
Plug weld

Fig.17l



External fillet weld, ordinary

Fig.17m



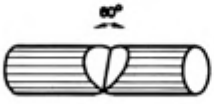
External fillet weld, special

Fig.17n



Internal fillet weld, ordinary

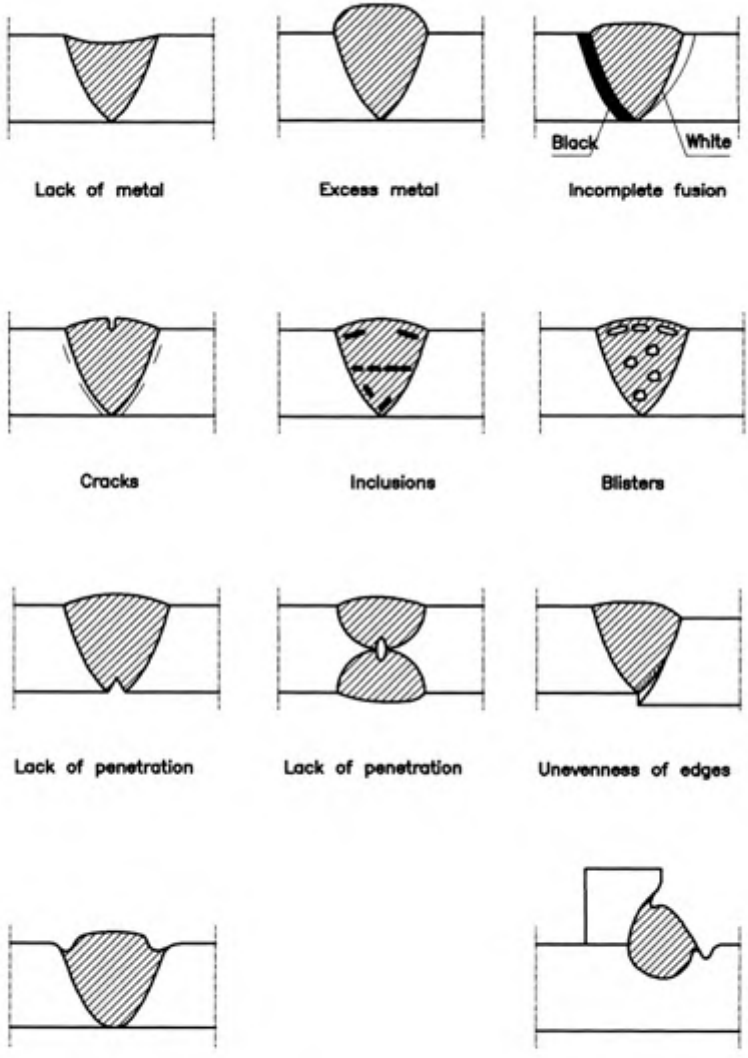
Fig.17o



Snaping away butt weld

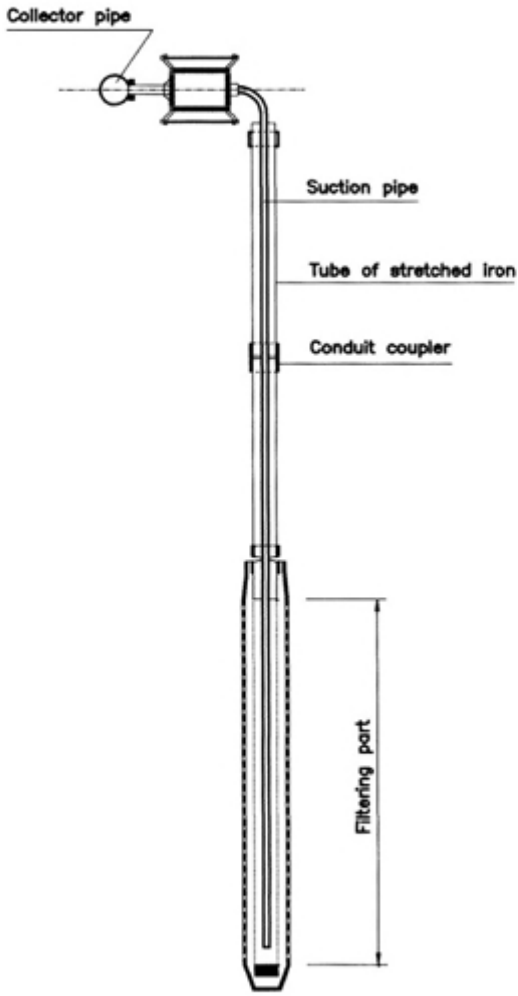
WELDING (k–welding lap weld, etc.)

Fig. 18



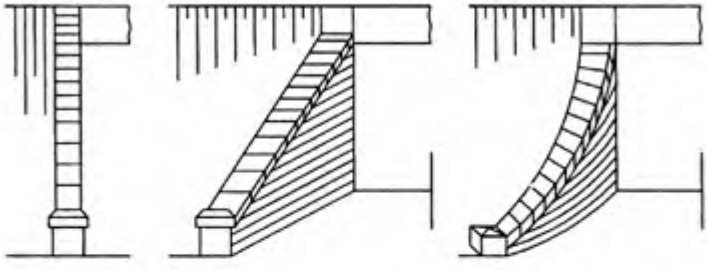
WELDING DEFECTS

Fig.19



WELLPOINT

Fig. 20

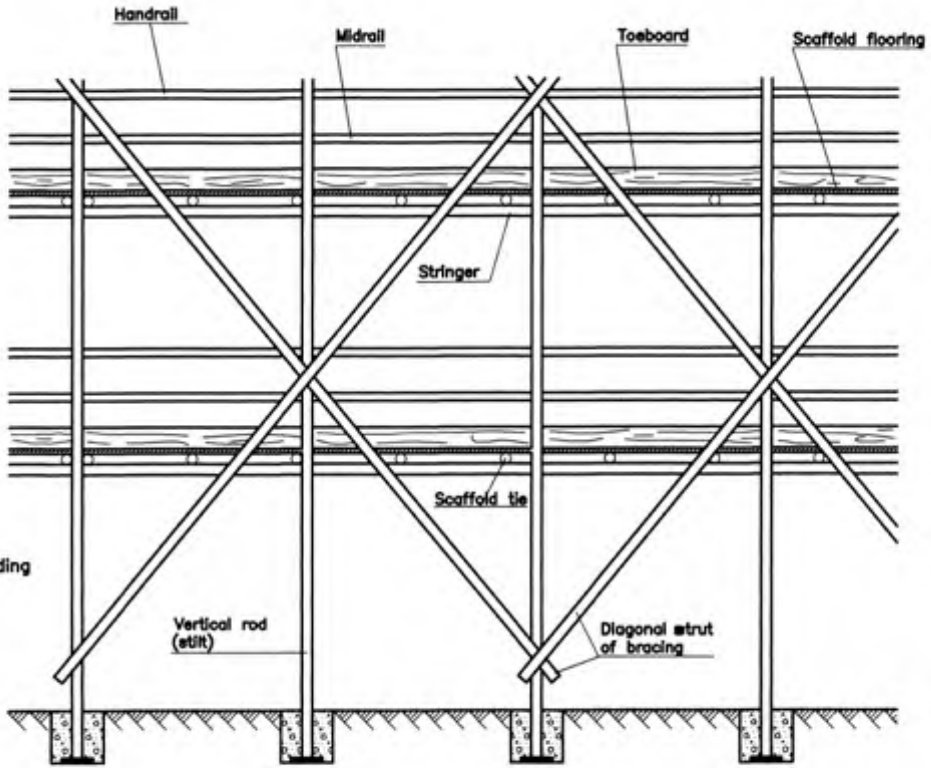


Straight wing wall Oblique wing wall Curved wing wall



WING WALL

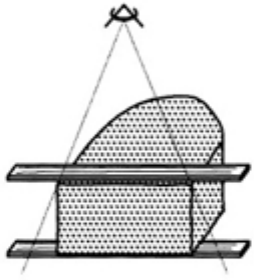
Fig.21



Independent scaffolding

WOODEN SCAFFOLDING

Fig.22



WORKING FACE



X-BRACING
Croisillon
Construction
Syn. with CROSS BRACE; HERRINGBONE STRUT

***X* CROSS BRACING**
Contreventement en *X*
Metal Construction
An element in the shape of Saint Andrew's cross whose bars, if they have great inertia in the two directions xx and yy, are fixed to a central panel point. If, by contrast, the bars offer little inertia in the two directions (round bar) or in a lonely feel (flat iron), the central panel point is eliminated.

XENOTEST
Xenotest
Test of Materials (Polymers)
An accelerated test of aging in which one exposes synthesis materials to the radiation emitted by a xenon lamp.

XYLOPHAGE
Hylophage
Defects (Building Materials)
Of, or relating to, an insect or its larva which feed by digging into wood.

X-RAY PHOTOGRAPHY
Radiographie
Test of Materials
Syn. with RADIOGRAPHY



YARN
Fil
Building Materials
General term indicating, whether if has a simple or complex structure, an assembly of a great length of textile fibers, filaments (continuous thread) or discontinuous fibers (spun) ready to use in textile manufacturing.

YEAR RING
Cerne
Building Materials
Syn. with ANNUAL RING; GROWTH RING

YELLOWING
Jaunissement
Defects (Painting)
A range of the color deterioration of a paint film characterized by a comparison of the color point toward the zone of representation of the yellows on the spectral place.

YIELD
Farder
Defects (Civil Engineering Structure)
Syn. with SINK

YIELD LIMIT
Limite élastique
Metallography
Syn. with ELASTIC LIMIT

YIELD OF A BINDER
Rendement d'un liant
Hydraulic Binders
The volume of paste obtained by mixing to the normal consistency the unit of weight of a binder, usually about 1 kg.

YIELDING
Affaissement (de fondation)
Defects (Foundation)
Syn. with SETTLEMENT

YIELDING (OF GIRDER)
Fléchissement
Strength of Materials
The permanent or elastic deformation that a beam undergoes when bending from the load that it supports. Syn. with DEFLECTION

YIELDING PROP
Etançon
Temporary Construction
Syn. with PROP; RIB; SHORE; STAY

Y-JUNCTION
Saut-de-mouton
Civil Engineering Structure
Syn. with FLYOVER; RAILWAY CROSSOVER

YOKE
Cadre
Temporary Construction
A framed support structure made of timbers connected between them by bolts, rods and stirrups. It is to support the formworks of a pole during the concreting. This temporary structure is kept in place until the concrete is sufficiently hardened for it to be removed.

Y-PREPARATION
Préparation en Y
Welding
A V-preparation with a flat part or heel higher than 3 mm.

Y-PREPARATION WITH BACKING
Préparation en Y avec support à l'envers
Welding
A Y-preparation with a remaining support or not, on the side of the root of the weld.



ZAMAK
Zamak
Metallurgy
An alloy of zinc containing aluminum, copper, and magnesium.

Z-BAR
Zède
Metallurgy
A standard section whose straight section resembles the letter Z. The height of this rolled-iron product is at least equal than 38 mm; the flanges equal or not, are orthogonal to the web but directed in opposite direction one of the other.

Z-CONTRACTION OF CROSS SECTION FACTOR
Coefficient de striction Z
Metallography
A ratio that concerns the tensile tests on steel test bars. The Z-contraction of the cross section factor is the ratio, expressed as a percentage of the initial section of the change of section after breaking of this initial section.

Z-GRADE
Qualité Z
Metallurgy
The grade of the sheet metal and universal beam plates that have guaranteed levels of ductility in their thickness directions.

ZINC
Zinc
Metallurgy
A white or bluish metal, resistant to corrosion. Syn. with SPELTER

ZINC BATH
Galvin
Metallurgy
A bath of molten zinc used to galvanize ferrous metal pieces.

ZINC PLATING
Zingage; Electrozingage
Metallurgy
1. An operation which consists in covering something with zinc.
2. A technique of applying a protective coating on a steel piece with a zinc film. The zinc plating can be carried out by various processes which are galvanization, electrolysis, sherardizing, or metal spraying with the gun. The types are:
- **plating by gun** (*le zingage au pistolet*) (*Schoop* or *Schori* process), which consists in depositing a coat of zinc on a steel surface

suitably prepared (by sanding or shot blasting), by firing melted zinc from a special gun. The zinc used can be in the wire or powder form;

- **electrolytical zinc plating** *(le zingage électrolytique),* which consists in depositing a coat of zinc on a metal part by electrolysis of a zinc salt in solution. This process leaves a coat of pure metal of which the thickness seldom exceeds 25 micrometers;
- **plating by matoplasty** *(le zingage par matoplastie),* which consists in covering a metal piece by crushing with zinc particles using a means of impact (balls of glass) within a chemical medium.

3. Syn. with ELECTROGALVAN1ZING

Z-PREPARATION
Préparation en Z
Welding
A preparation in which the edges of two pieces are chamfered in a dissymmetrical X without flat part or heel, and are presented in opposition to ensure an overlapping of the faces of the largest chamfer, so that the profile of the joint forms a Z.

ZINC OXIDE
Blanc de zinc
Materials
Syn. with ZINC WHITE

ZINC SULFATE
Sulfate de zinc
Materials
A product manufactured by a sulfuric acid attack on oxide or roasted ore. After neutralization and purification, it is crystallized by evaporation.

ZINC SULFIDE
Sulfure de zinc
Painting
A white salt that results either from the hot reaction of sulfide with zinc, or by precipitation of a zinc salt solution by sulfurated hydrogen with a suitable pH. This product is used to manufacture lithopones (lithopones are pigments for paints made up of a mixture of zinc sulfide and barium sulfate).

ZINC WHITE
Oxyde de zinc; Blanc de zinc
Painting; Materials
1. A pigment used in paint. It is a white powder.

2. A pigment which is 95% zinc oxide, made by fusing zinc plates in special furnaces. It is used to manufacture some paints. Syn. with ZINC OXIDE

ZINC-PLATED IRON
Tôle électrozinguée
Metallurgy
A product covered with a zinc film made by an electrolytic bath.

ZINC-RICH PAINT
Peinture à haute teneur en zinc (HTZ)
Painting
A paint containing a minimum of 90% zinc metal powder in the dry extract. The zinc-rich paint is of the sacrificial type and is used to reconstitute the continuity of the protective zinc layer on sheet metals or galvanized parts at the places of the arc welding, or as undercoats on large surfaces.

ZONE
Zone
Hydrology
The difference between maximum and minimal levels of an unspecified water table. The following zones have been established:

- **supplying zone** *(la zone d'alimentation),* place where the water table is supplied by penetration of meteoric water; the zone of aeration is covered there, at the time of rains, by a vertical seepage;
- **percolation *or* circulation zone** *(la zone de circulation ou de percolation),* in which the water of the water table is driven toward the downstream side. The zone of feeding encroaches on this one or even completely covers it in the case with a superficial water table;
- **discharge zone *or* emptying zone** *(la zone d'évacuation),* which corresponds to the downstream side end of the water table. Water is thrown in another water table due to the presence of an underground sill (zone of pouring out) or it rises to the surface of the ground in the form of a spring (zone of emergence);
- **medium zone** *(la zone amphibie encore appelée zone de circulation permanente ou zone moyenne),* which corresponds to the underground rivers that escape from karst by resurgences or exurgences. Water circulates there in a horizontal or slightly inclined plan. The water level

oscillates between the piezometric surface of low water level and the level of very variable high waters;

- **sunken zone** *(la zone noyée encore appelée zone inférieure),* which is always filled with water (called *deep water)* because it rests on an impermeable stratum. It contains considerable water reserves;
- **zone of saturation *or* phreatic zone** *(la zone de saturation),* which, in a permeable ground, is a zone full of water corresponding to the ground water table. This zone approaches or moves away from surface of the ground following the importance of the seepage waters.

ZONE OF BULGING
Loupe de glissement
Civil Engineering
The downstream side of a landslide that forms a protuberance in the localized topography.

ZOOLITHIC
Zoolithique
Geology
Of the soils, rocks, that contain a great number of animal fossils.

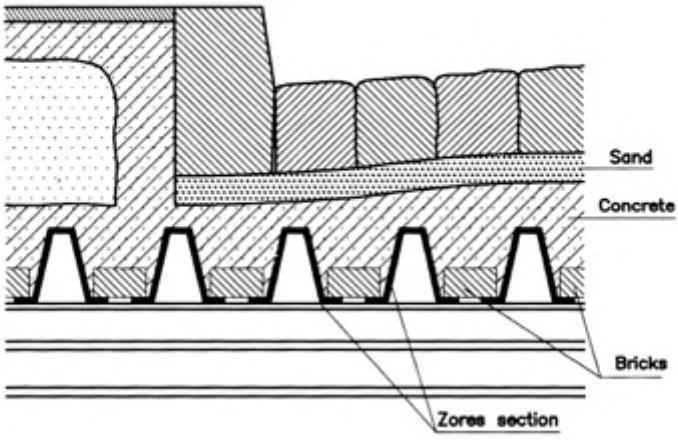
***ZORES* PROFILE**
Fer *Zorès*
Metallurgy
Syn. with *ZORES* SECTION

***ZORES* SECTION**
Fer *Zorès*
Metallurgy
A steel section of the shape of the capital Greek letter omega with a flat base. Zores sections were used on ballasted metal railway bridges to serve as decking. Syn. with ZORES PROFILE **See Figure 1**

Figures of the letter



Fig. 1



ZORES SECTION

THE AUTHOR

Jean-Paul Kurtz, born in 1945 in Sarrebourg (the Moselle), France. He is a consulting engineer for civil engineering structures. He entered the National French Railway in 1964 and began his career in Rheims (the Marne). He is a specialist in the maintenance and restoration of ancient masonry works such as viaducts.