



3DEXPERIENCE®

SOLIDWORKS Certification: Weldments

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Senior Application Consultant
SOLIDWORKS Certification

Who I am...

- ▶ Avelino Rochino, Certification Specialist
- ▶ Member of the SW Product Definition Team for 4.5 years before joining Certification
- ▶ Specialized in defining Sheet Metal, Weldments, Routing, and Core Functionality

CSWP Advanced Weldments Exam (CSWP-WLDM)

Today we'll cover:

- Weldment Exam Topics
- Weldment Basics Lesson
- CSWP and CSWP-WLDM free coupons...

SOLIDWORKS Certification Program

► What are the SOLIDWORKS Certifications?

► Why get certified?

- ▷ Professional development
 - ▶ Management goals
 - ▶ Team member bragging rights
 - ▶ Real goals for salary adjustment
- ▷ Job seeking

► Why now?

- ▷ Full time access to SolidWorks
- ▷ Height of SolidWorks knowledge

SolidWorks **Associate** Certifications

► Core exam:

- ▷ CSWA : Certified SolidWorks Associate

► Advanced Topic Exams:

- ▷ CSDA: Certified Sustainability Design Associate

SolidWorks Professional Certifications

► Core exam:

- ▷ CSWP: Certified SOLIDWORKS Professional

► Certified SOLIDWORKS Professional Advanced (CSWPA) Exams:

- ▷ Sheet Metal (SM)
- ▷ Surfacing (SU)
- ▷ Mold Tools (MT)
- ▷ Weldments (WD)
- ▷ Drawing Tools (DT)

SolidWorks **Expert** Certification

► CSWE: Certified SOLIDWORKS Expert

► Pre-requirements:

- ▷ CSWP Exam
- ▷ 4 of 5 Advanced CSWP Exams

Simulation Certification Products

- ▶ Certified SOLIDWORKS Associate - Simulation (CSWA-S)
- ▶ Certified SOLIDWORKS Professional - Simulation (CSWP-S)
- ▶ Advanced Simulation and Expert Simulation exams to come later in 2015

EPDM Professional Certification

► Administrator exam:

- ▷ CEPA: Certified Enterprise PDM Administrator

Subscription Service Special Offer

► All Subscription Service Customers:

- ▷ One free CSWA or CSWP exam per user
- ▷ One free Advanced CSWP exam per user
- ▷ New coupons every six months



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WHY SOLIDWORKS? PRODUCTS INDUSTRIES HOW TO PURCHASE **SUPPORT** COMMUNITY

- ▷ Subscription Services
- ▷ Technical Support
- ▷ Training
- ▼ **Certification**
 - ▷ CSWP
 - ▷ CSWA

Home > Support > Certification

Certification



SolidWorks certifications can be used as a benchmark to measure your knowledge and competency with SolidWorks software. Exams focus on the fundamental skills necessary to ensure your company's overall success using SolidWorks.

References

- ▷ Training Courses
- ▷ Purchase Exam
- ▷ CSWP Offers for Subscription Service Customers*

CSWP Advanced Weldments Exam (CSWPA-WD)

Weldments Exam Topics:

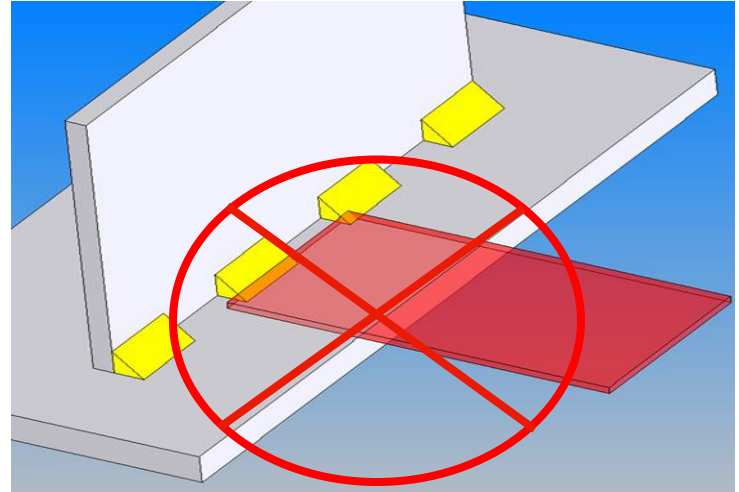
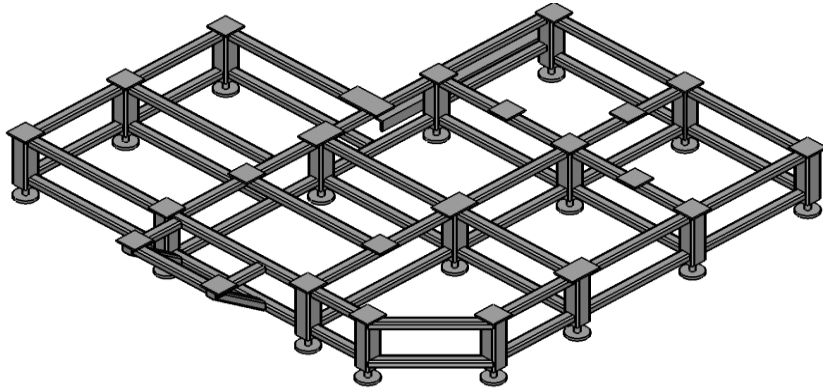
- ▷ Weldment profile creation
- ▷ Placing the Weldment profile in the Weldment profile library
- ▷ Basic and Advanced Weldment Part creation
- ▷ Weldment corner modification
- ▷ Placing gaps at corners and segment intersections
- ▷ End Caps
- ▷ Gussets
- ▷ Weldment Part modification
- ▷ Trim/Extend Command
- ▷ 3D Sketch Creation
- ▷ Cut List Folder management in the Weldment Part
- ▷ Cut List creation in the Weldment Drawing

Inside the CSWPA-WD Exam

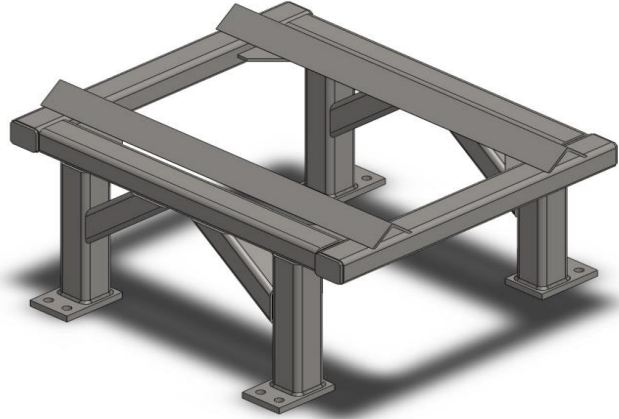
- ▶ Recommended Training Courses: SolidWorks Weldments
- ▶ Recommended SolidWorks Version: SolidWorks 2009 and later
- ▶ Exam Length: 2 Hours
- ▶ Minimum Passing grade: 75%
- ▶ All candidates receive electronic certificates and personal listing on the CSWP directory when they pass.

Weldments Basics

Weldments, not Weld Beads

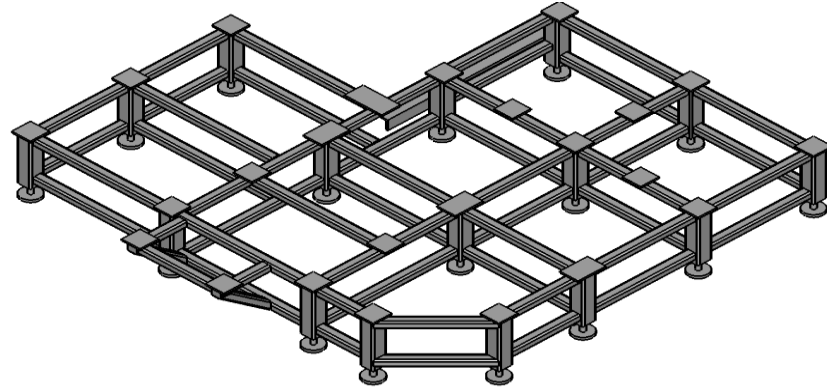


Examples of where you can use Weldments



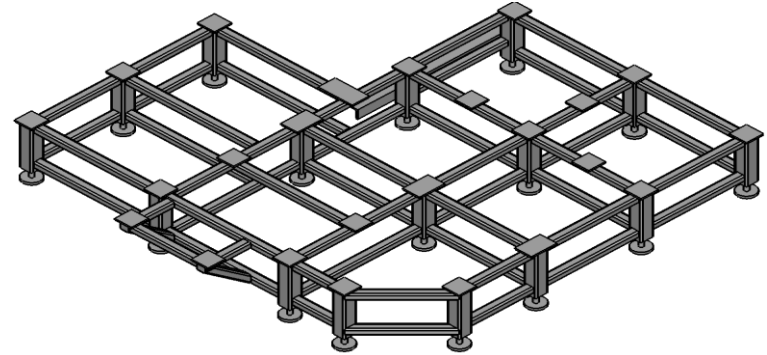
Two Design Approaches

- ▶ Assembly
 - ▷ One part for each weldment member
- ▶ Multi-body part
 - ▷ One body for each weldment member



Why design a weldment as a part?

- ▶ Single top level part
- ▶ Manage one file
- ▶ Easier design changes
- ▶ Automatic cut list generation
- ▶ All required drawing views



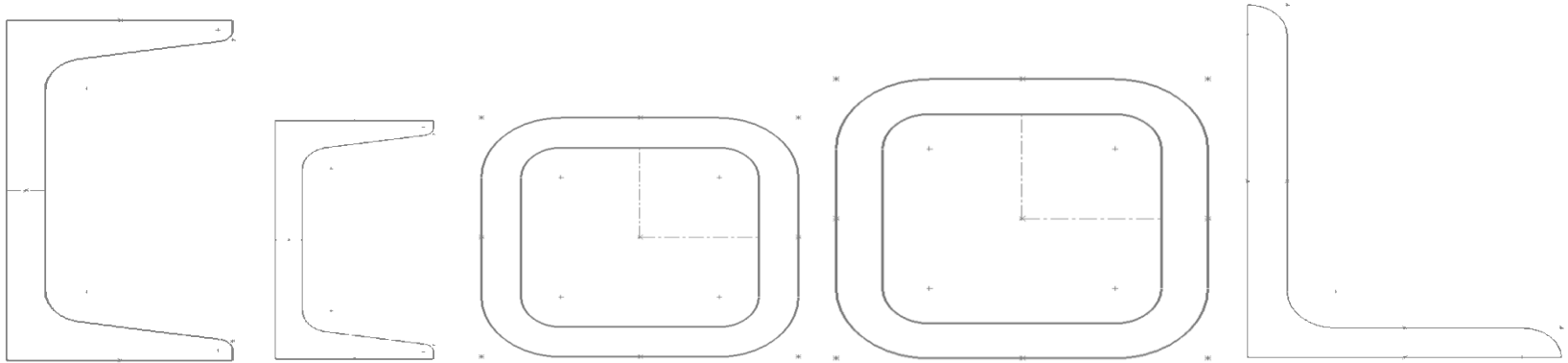
Basic Weldments Lesson

- ▶ Weldment Profile Creation and Management
- ▶ Weldment Creation
- ▶ Weldment Groups
- ▶ Positioning
- ▶ Trimming
- ▶ Cut Lists

Structural Profiles

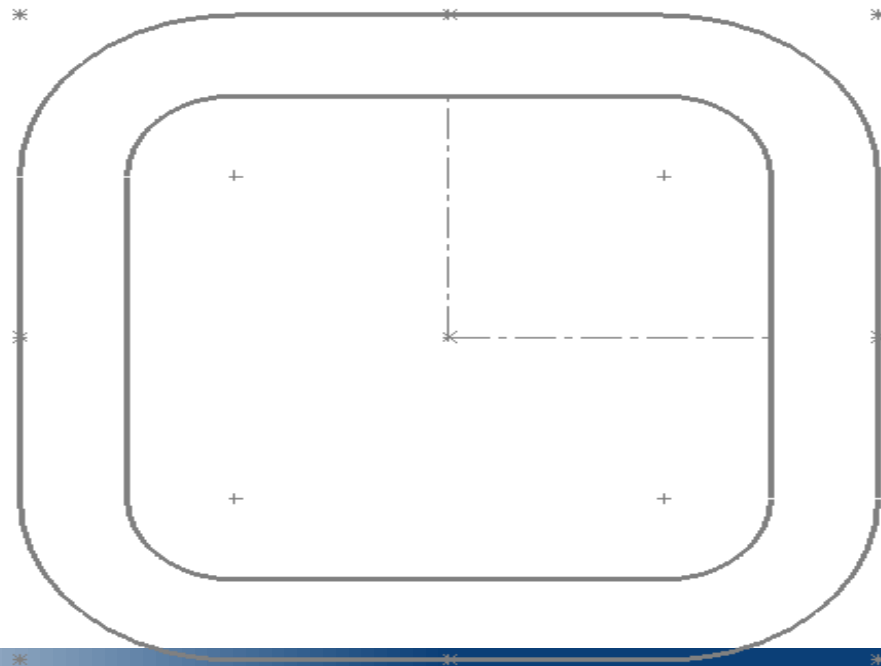
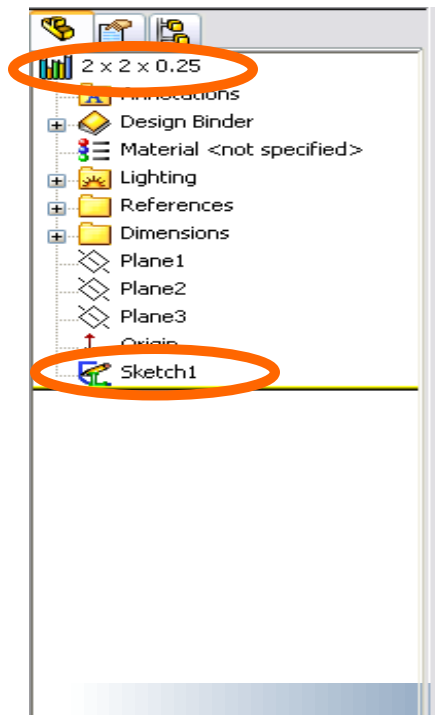
Structural Profiles

- ▶ Sketches stored as Library feature files (*.sldlfp file extension)
- ▶ Separate file for each size of a given profile



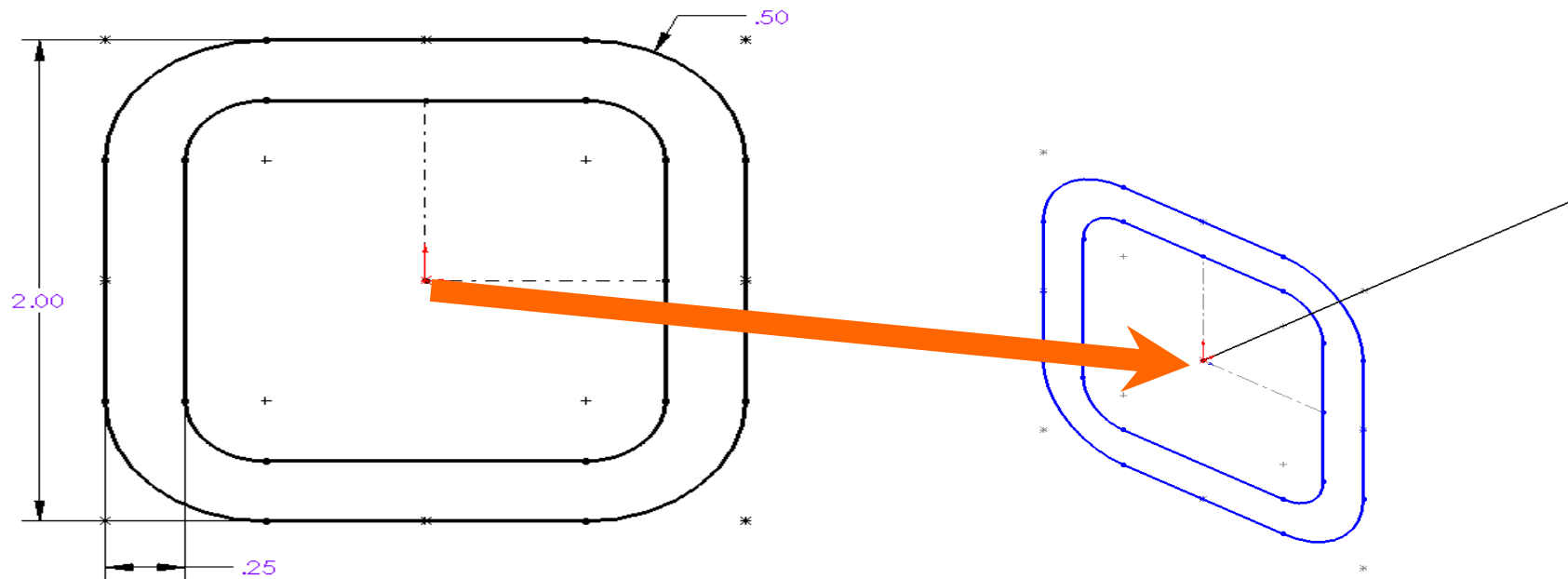
Structural Profile Library Feature Part

- Contains only sketches



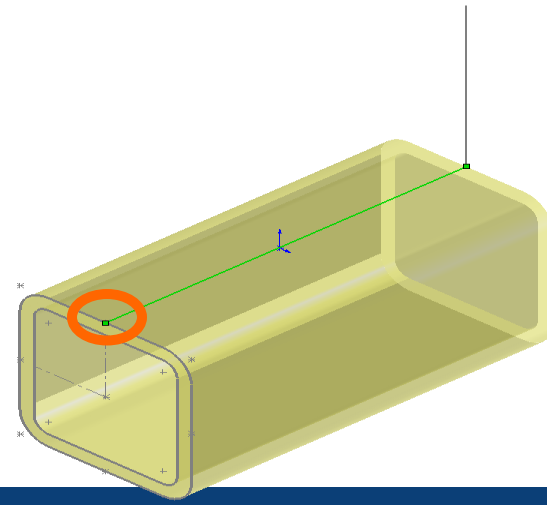
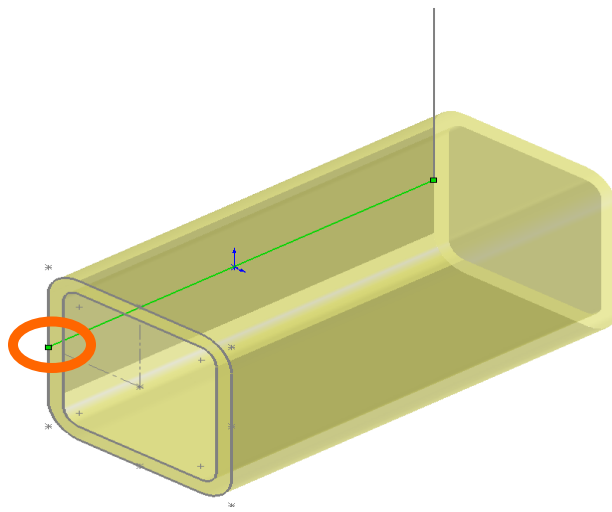
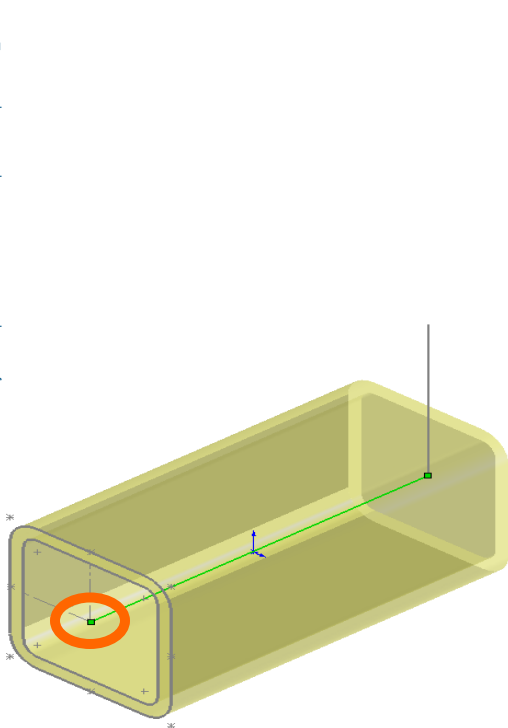
Structural Profiles

- Sketch origin = default pierce point



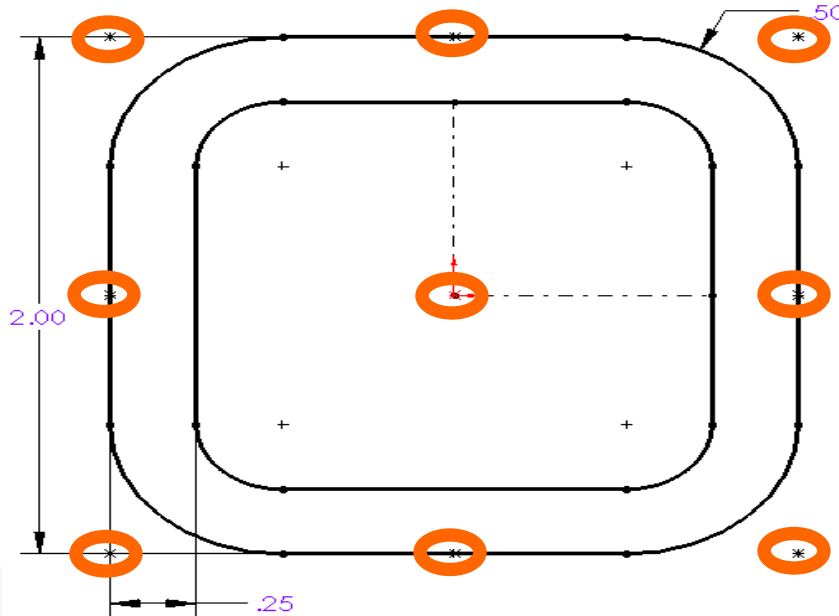
Structural Profiles

- Need flexibility of different profile location points



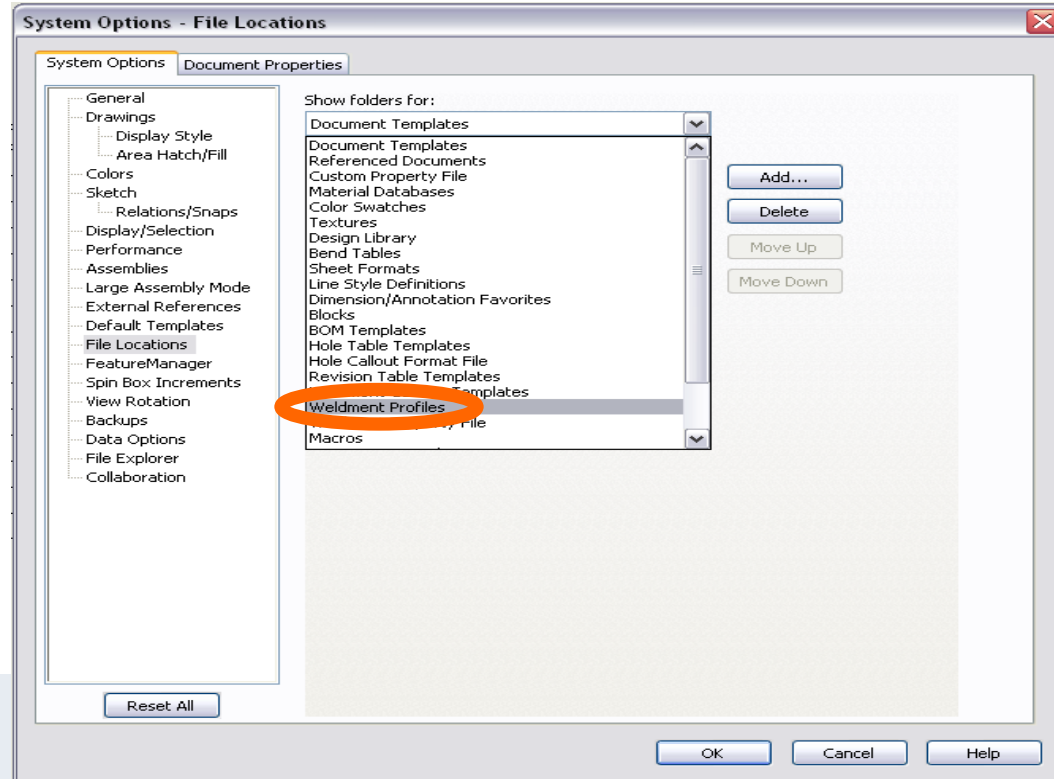
Structural Profiles

- Vertex or sketch point = profile location point



Structural Profiles

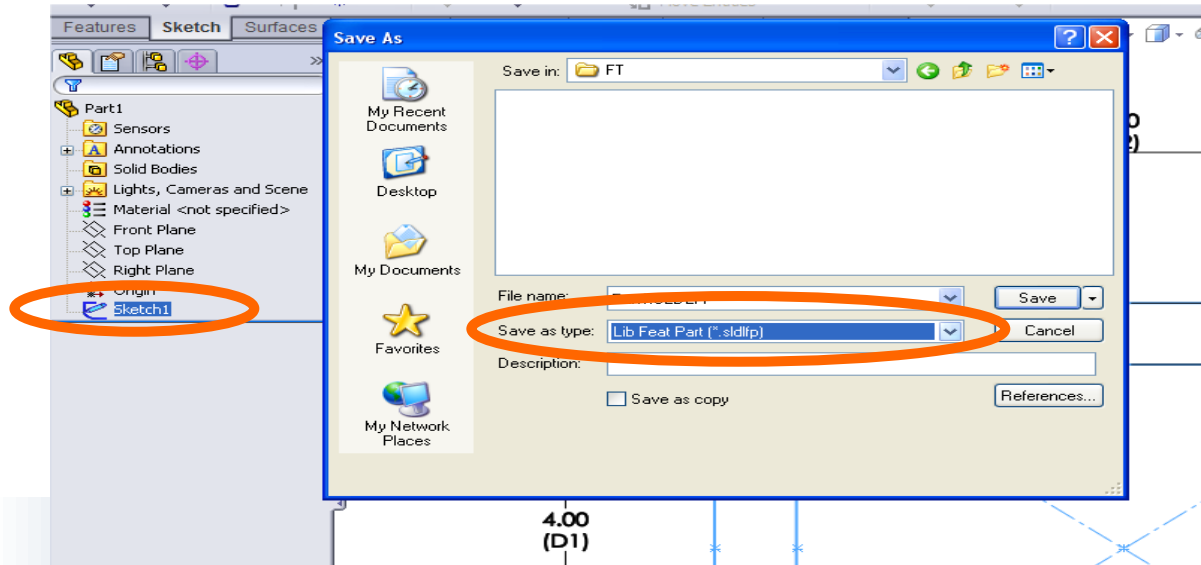
- Save them into your library



Library Feature Part

IMPORTANT: Weldment profiles must be saved as Library Feature Part

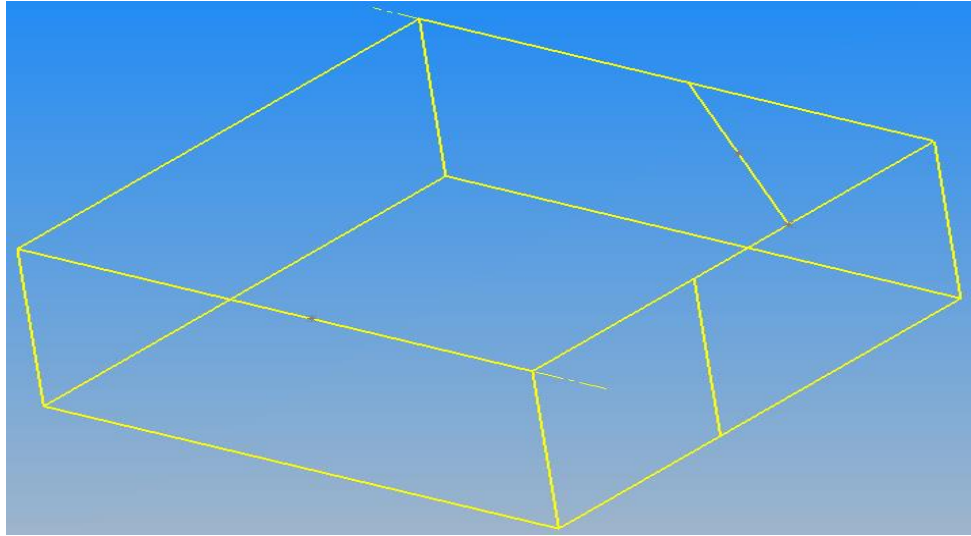
1. Select sketch from Feature Tree
2. Go to File > Save As and select “Lib Feat Part” from the Save As Type drop down list
3. Save profile to Weldment Library Folder



Building the structural frame

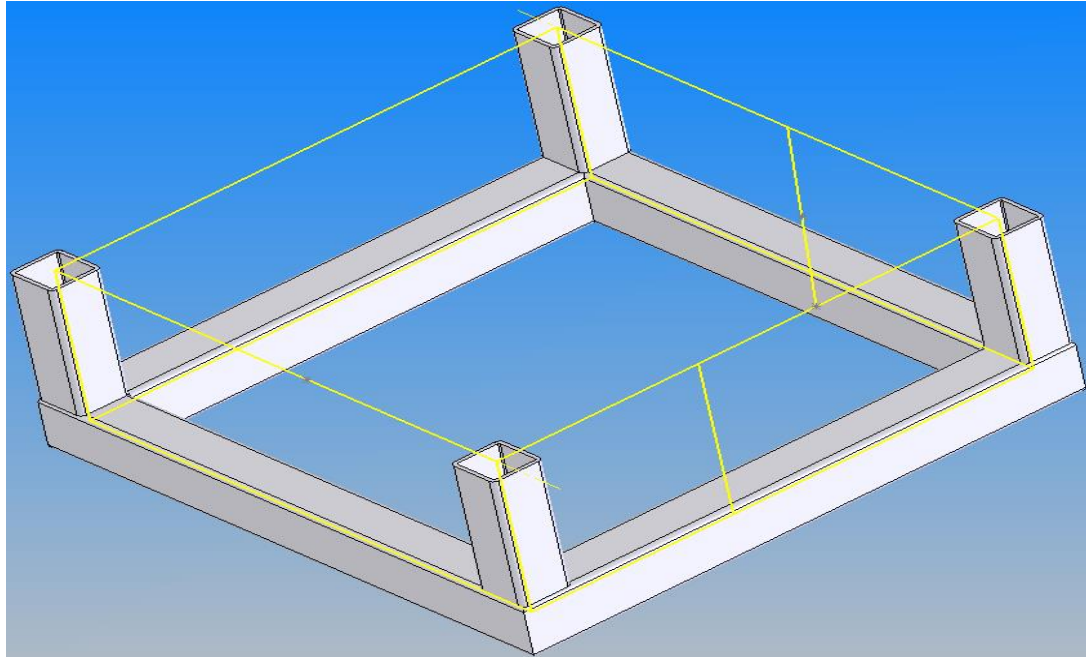
Building the structural frame – Step 1

► Build the sketch skeleton

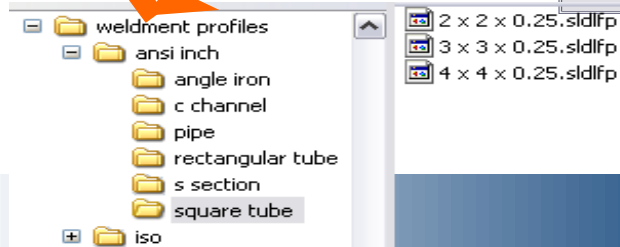
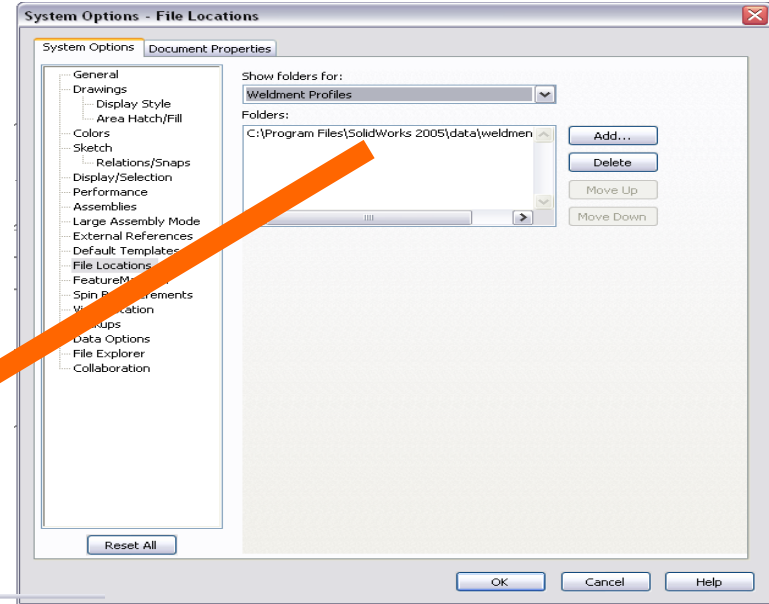
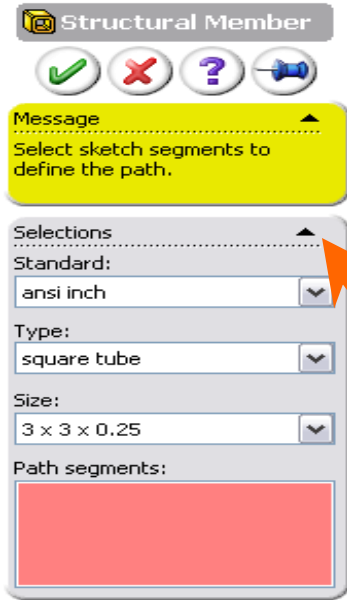


Building the structural frame – Step 2

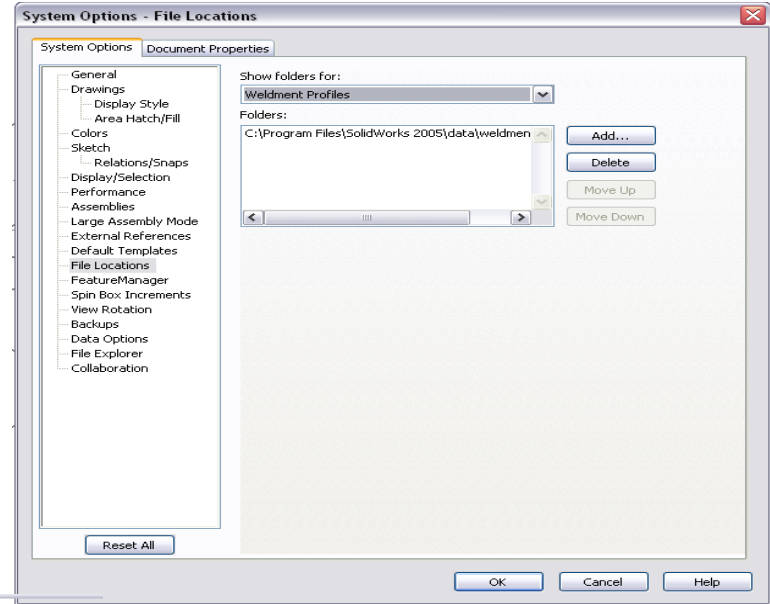
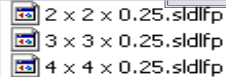
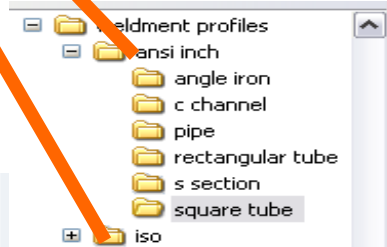
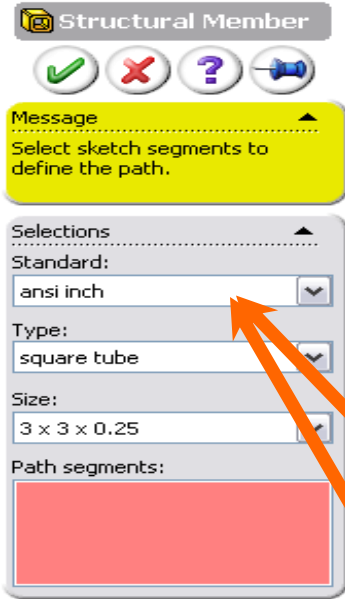
- ▶ Build the sketch skeleton
- ▶ Create Structural Member features



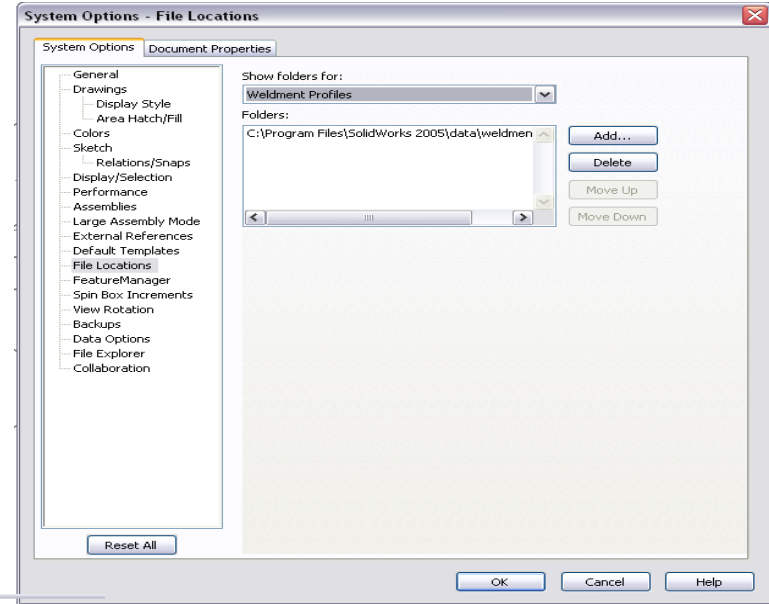
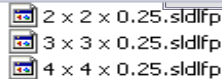
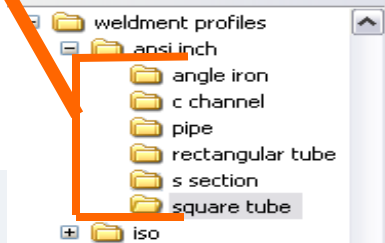
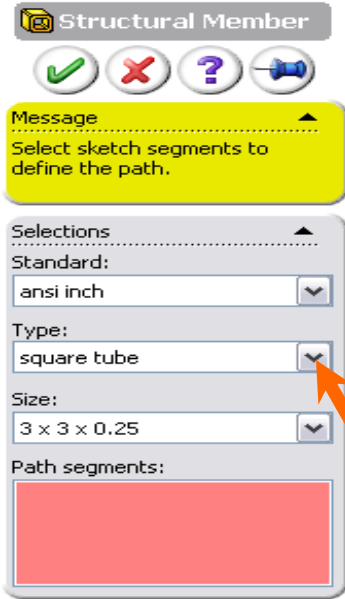
Profile Selection for Structural Member



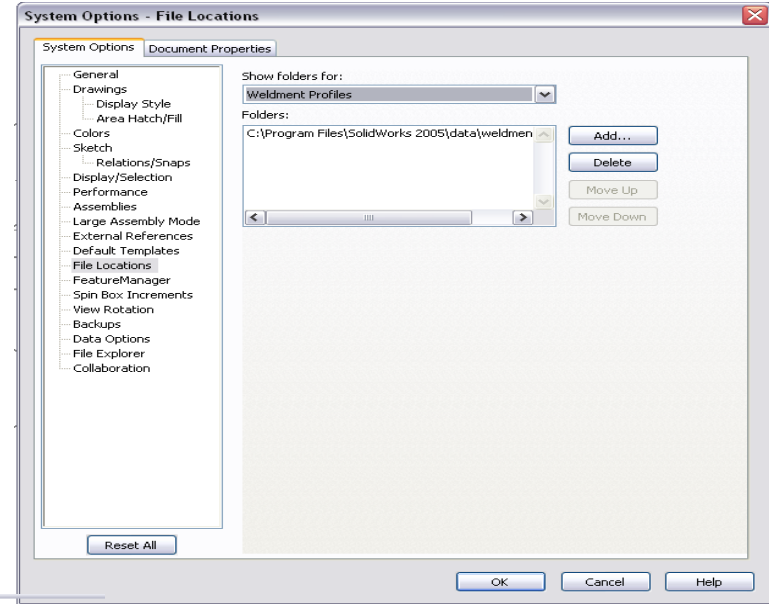
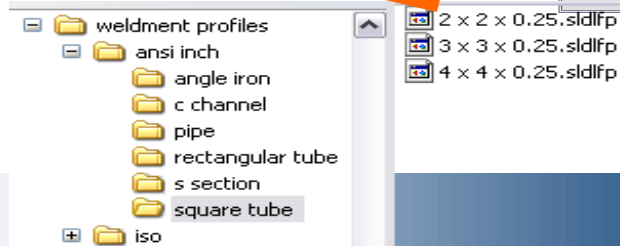
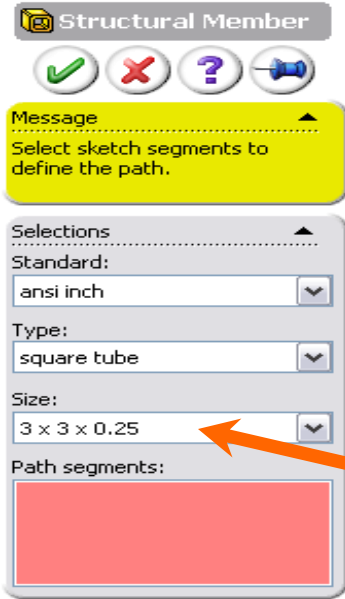
Profile Selection for Structural Member



Profile Selection for Structural Member



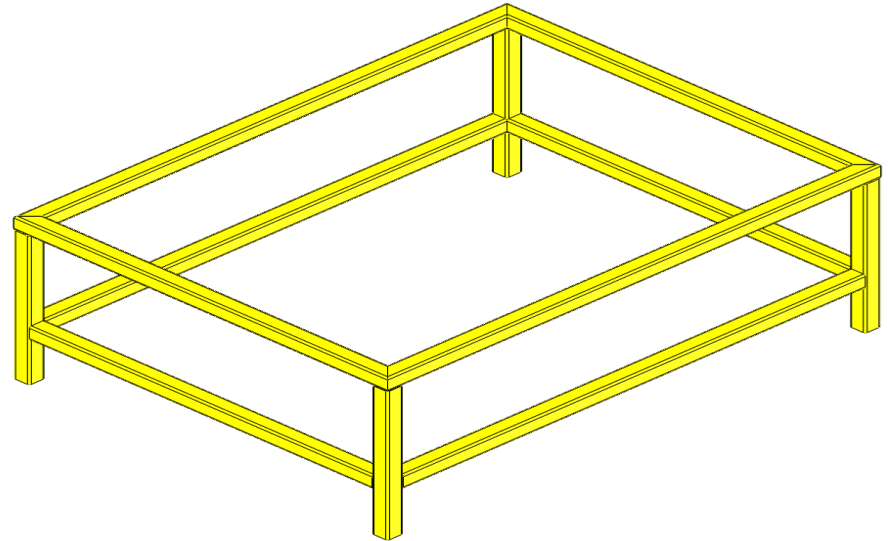
Profile Selection for Structural Member



Weldment Groups

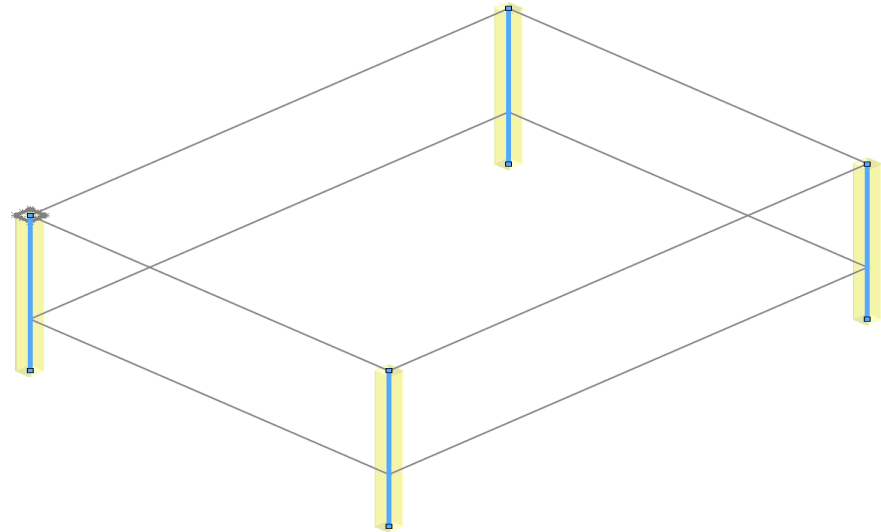
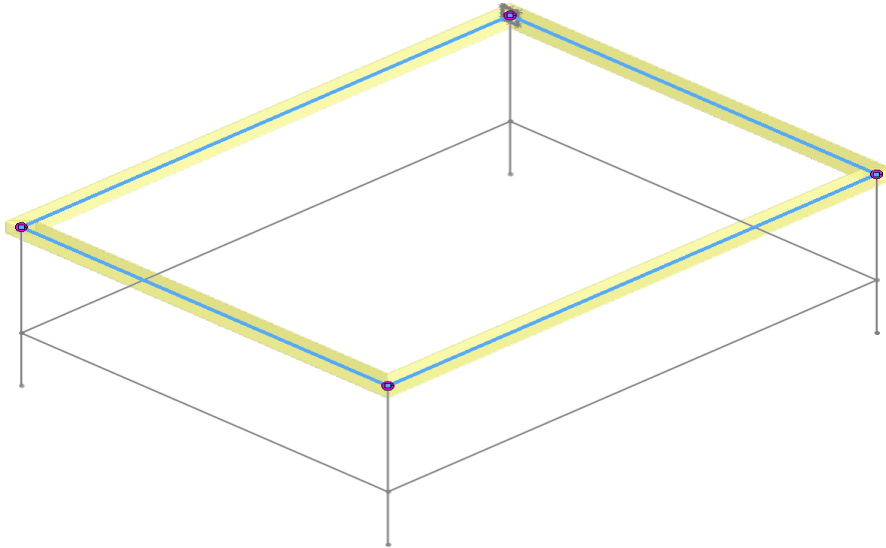
Weldment Groups!!!

- ▶ Released in SolidWorks 2009
- ▶ Key to simplification of Weldment models
- ▶ Prior to 2009: 3 Weldment Features, 3 Trim Features
- ▶ 2009+: 1 Weldment Feature



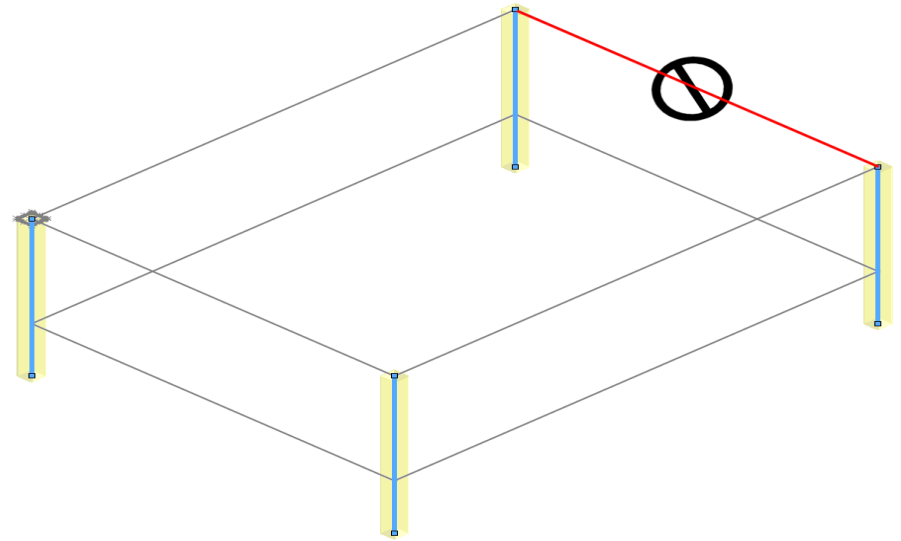
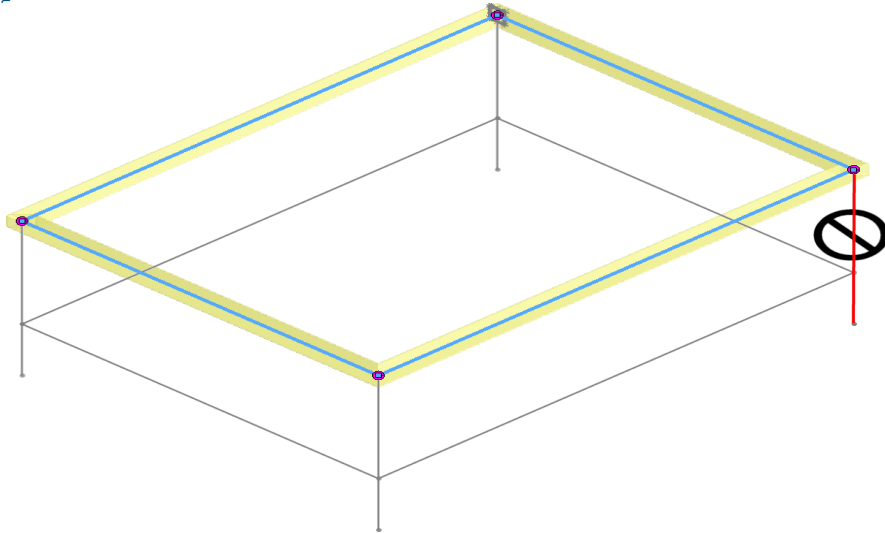
Weldment Groups!!!

- ▶ Segments can be grouped as follows:
 - ▷ Continuous AND contiguous segments (chain of segments)
 - ▷ OR parallel segments
- ▶ Group names are assigned automatically by the system
- ▶ Examples:



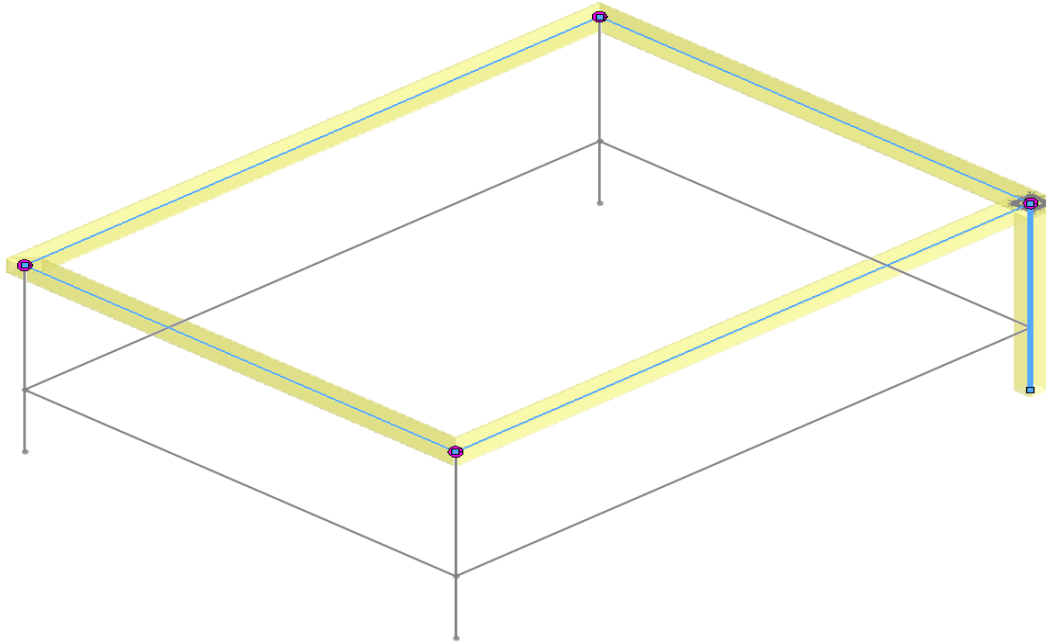
Weldment Groups!!!

- ▶ Any segment can ONLY belong to one group
- ▶ SolidWorks will not allow segments to belong to a wrong group – new group must be started
- ▶ Examples:



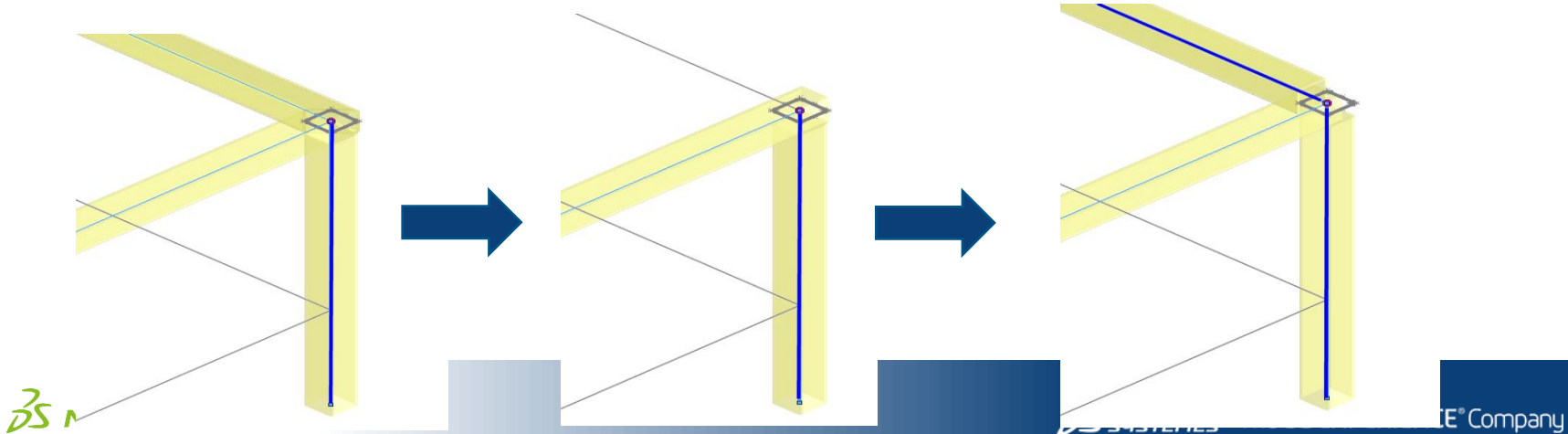
Changing Weldment Groups

- To change a segment's Group, you have to deselect it from an existing Group and reselect it into the current Group



Changing Weldment Groups

1. Make current the Group into which you want to transfer the segment
2. Select the segment you want to transfer – it will leave the first Group
3. Reselect the segment – it will now be part of the current Group



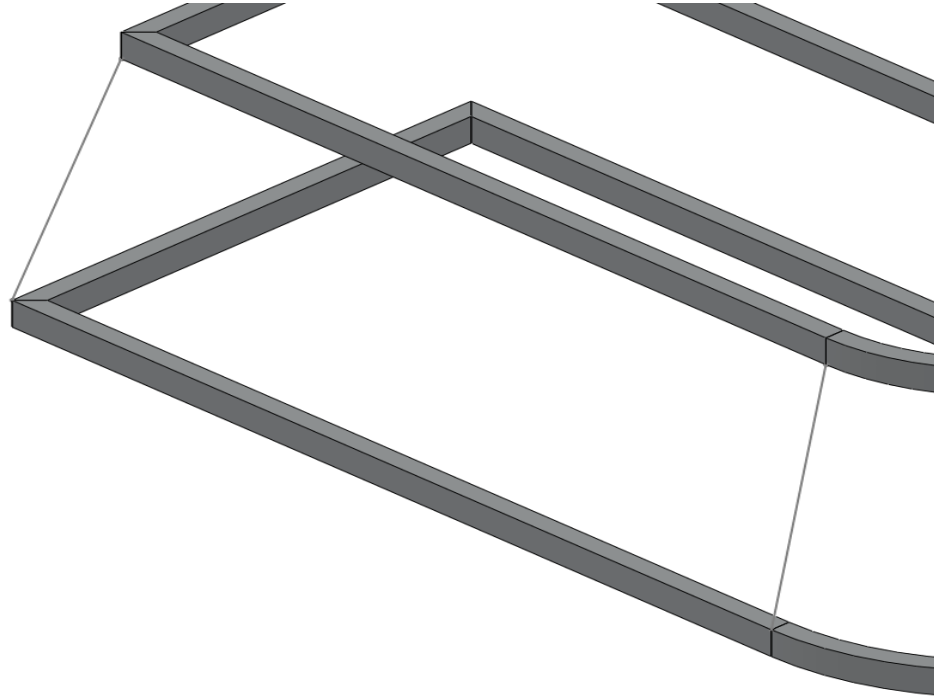
Weldment Segment Positioning

Positioning of a Weldment Segment

1. Create a 3D Sketch that will represent an edge of the segment
2. Align the Weldment profile to the connecting segments
3. Use Trim/Extend to finish Weldment segment creation

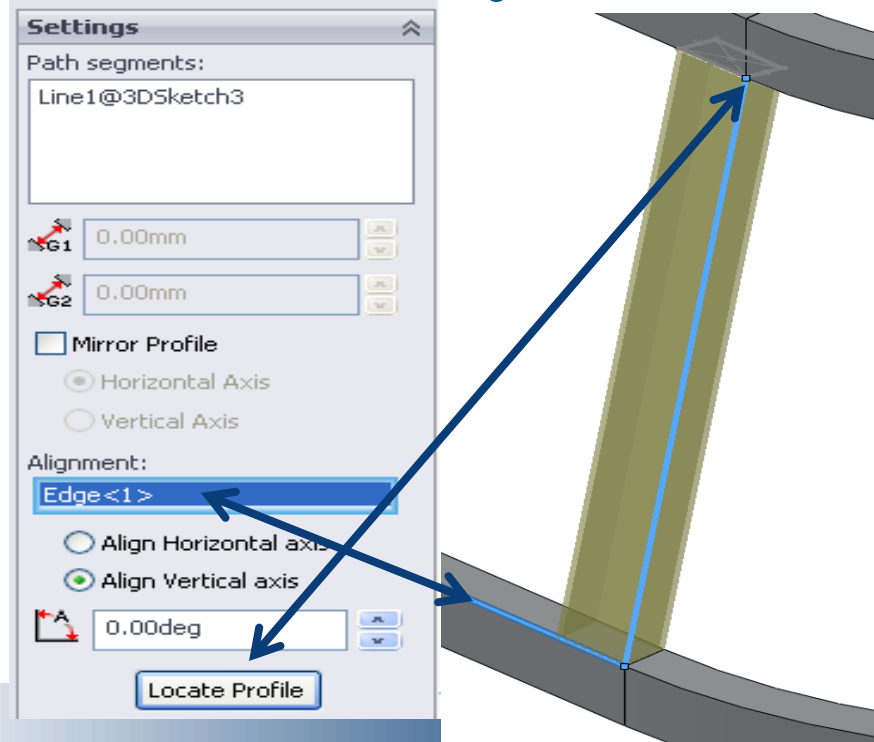
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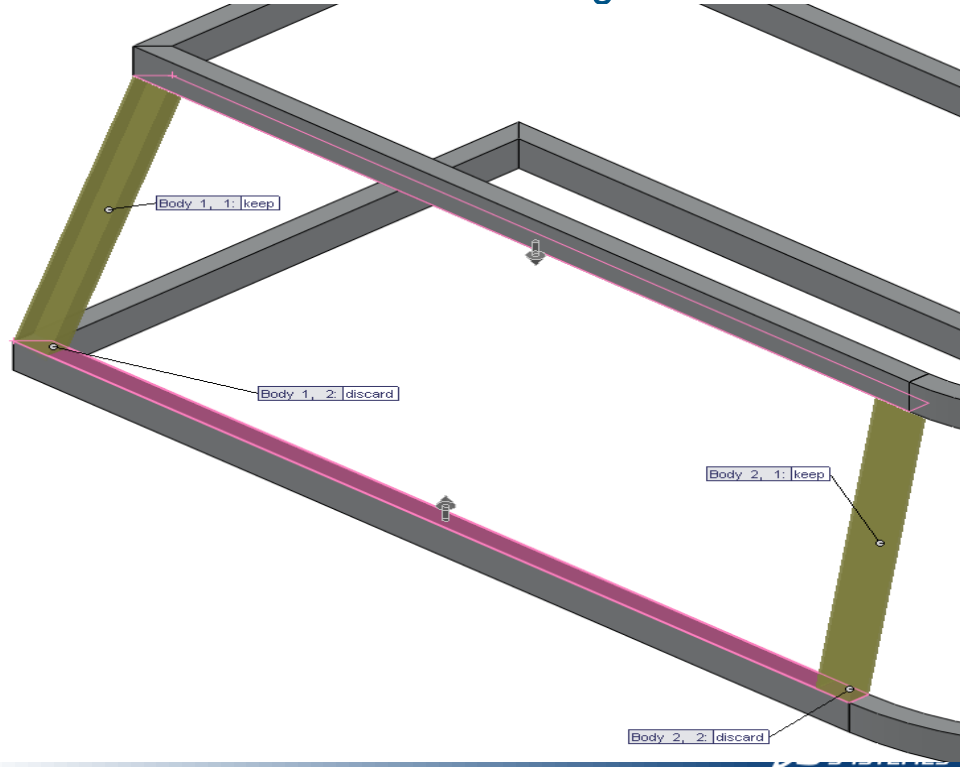
Positioning of a Weldment Segment

2. Align the Weldment profile to the connecting segments



Positioning of a Weldment Segment

3. Use Trim/Extend Feature to finish Weldment segment creation



Weldment Trimming

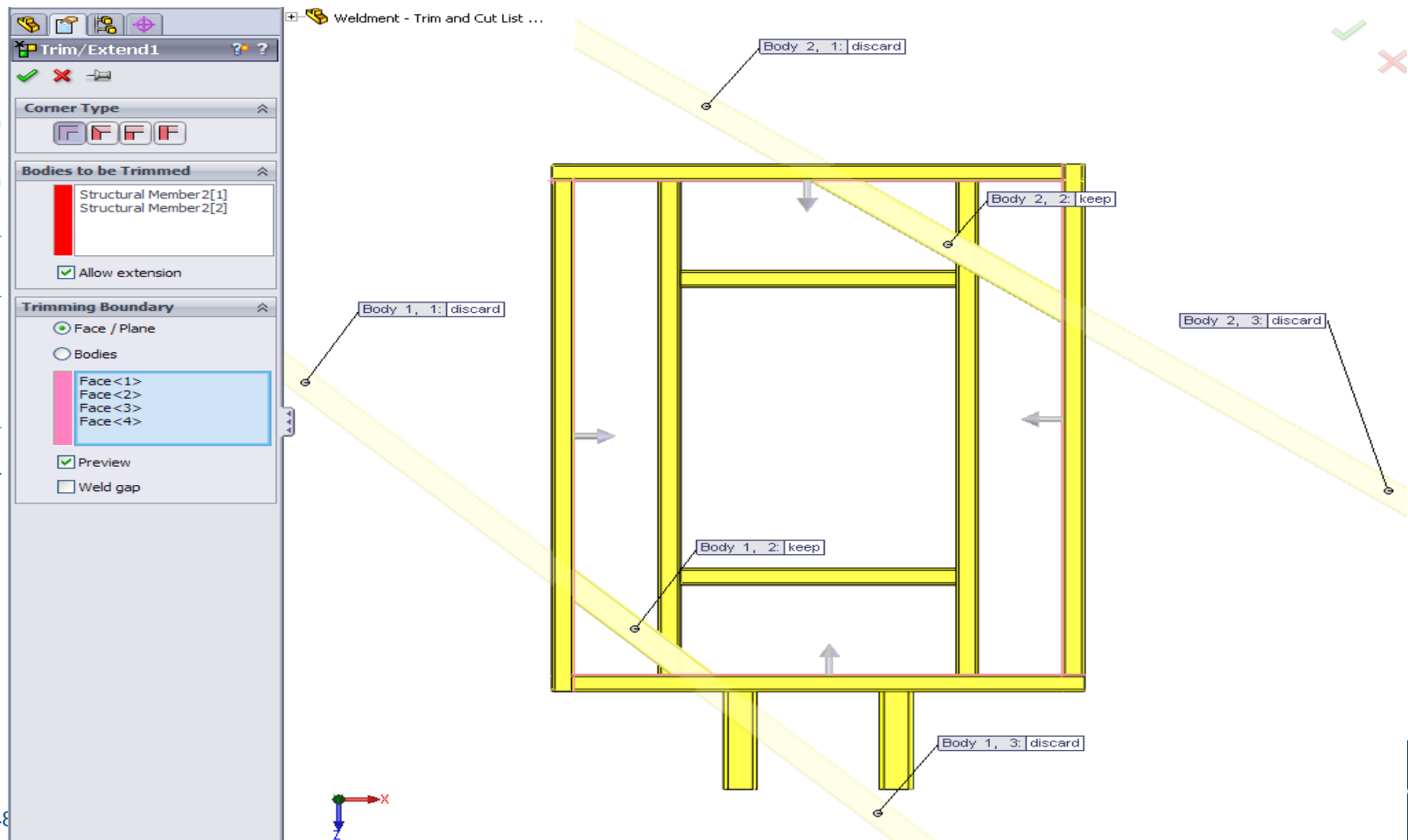
Trimming Weldment Segments

- ▶ As long as segments all belong to the same Feature they will automatically be trimmed to each other wherever two or more segments meet
- ▶ Use intersection Dot to control Trim
- ▶ Use Trim/Extend command to trim Weldment segments to non-Weldment bodies or if segments are in separate features

Trim/Extend Feature

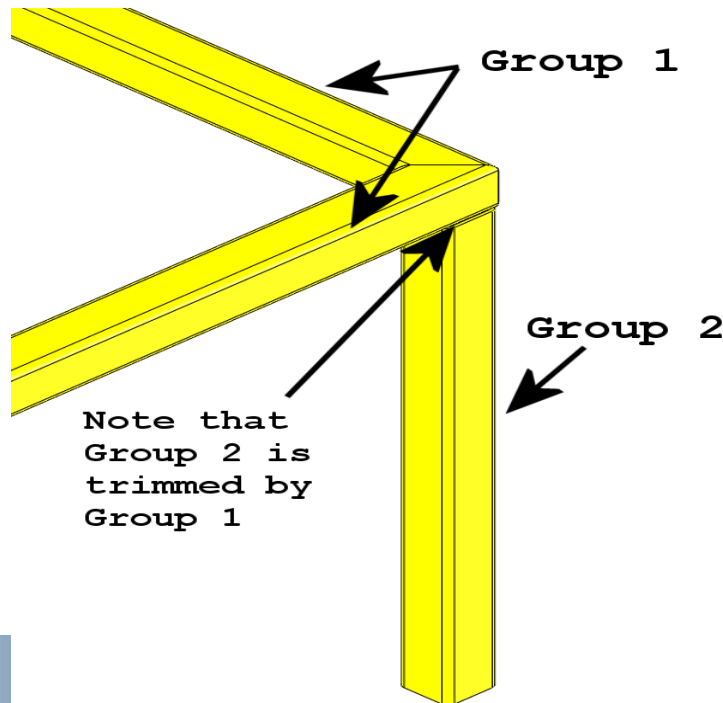
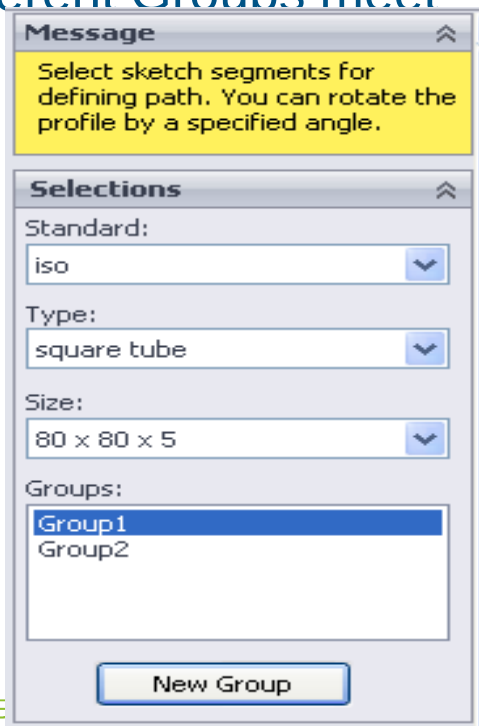
- ▶ Improved with SolidWorks 2009
- ▶ Ability to Trim multiple segments to multiple faces and bodies
- ▶ Keep/Discard functionality

Trim/Extend Feature



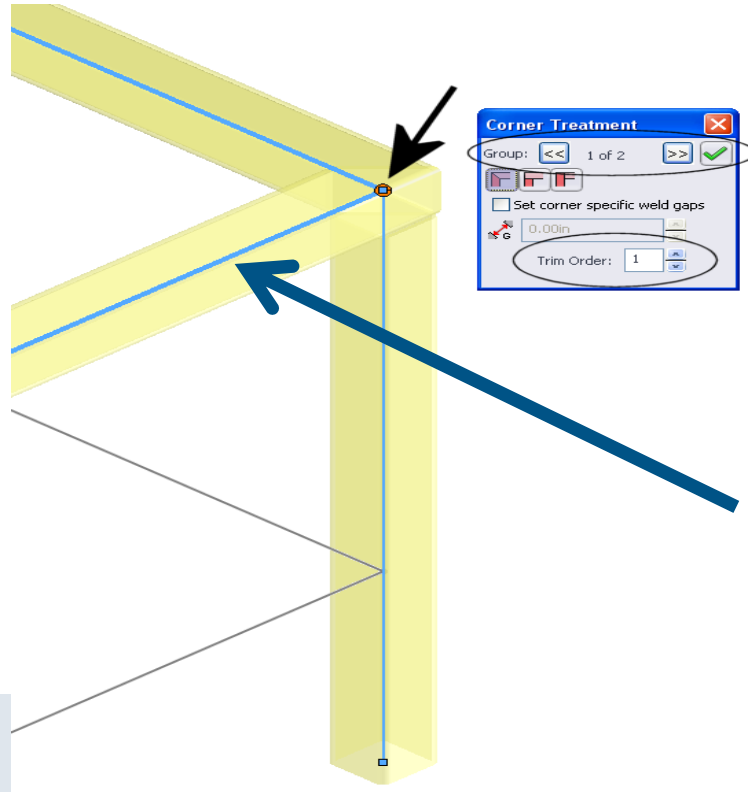
Automatic Trimming within the same Weldment Feature

- ▶ All segments within same Group automatically trim to each other
- ▶ Priority of each Group determines trimming result when segments from two different Groups meet



Weldment Groups and Corners

- Trim Order at points where Groups meet can be changed by selecting corner control icon



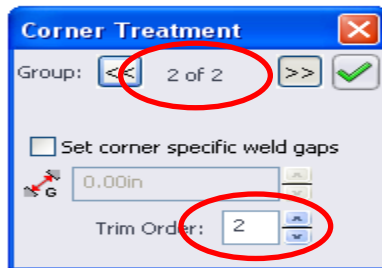
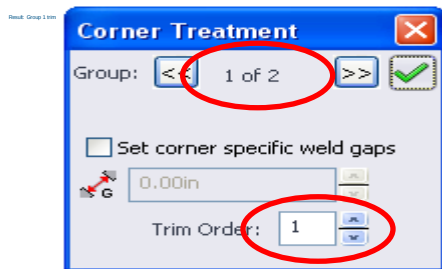
IMPORTANT:

Note which group is highlighted when Group 1 of 2 is selected. Group numbers will change

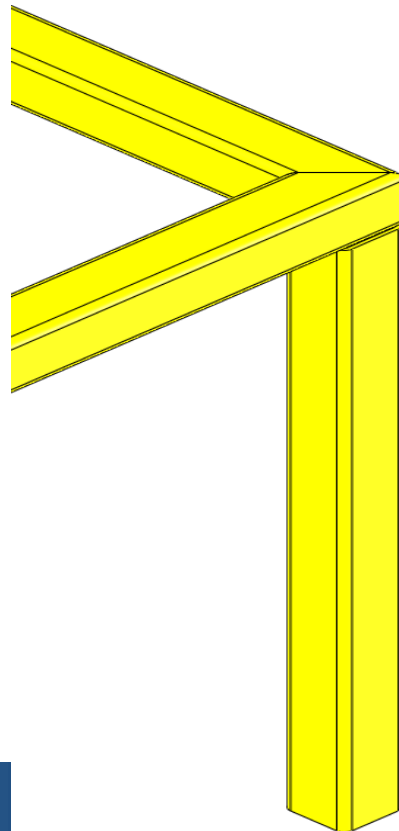
Weldment Groups and Corners

► Default Trim Order:

- Group 1 of 2, Trim Order 1
- Group 2 of 2, Trim Order 2



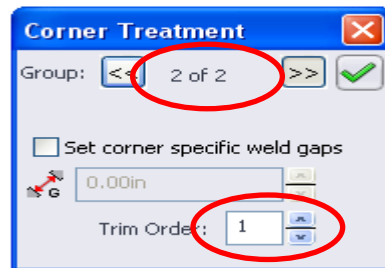
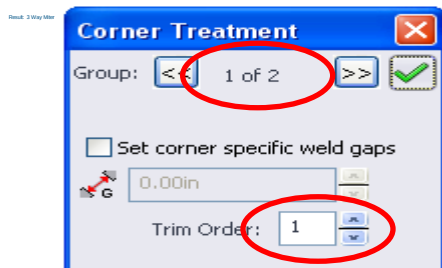
Result:



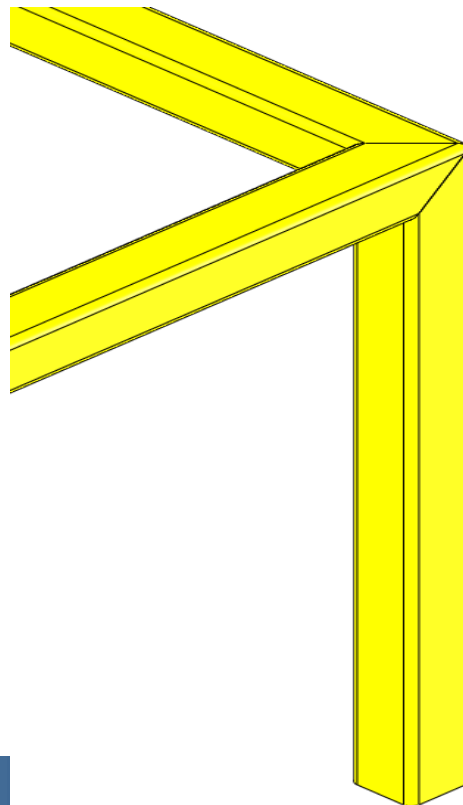
Weldment Groups and Corners

Set Trim Orders to be equal:

- ▷ Group 1 of 2, Trim Order 1
- ▷ Group 2 of 2, Trim Order 1



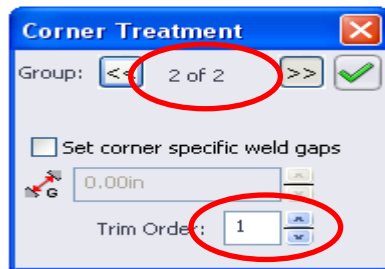
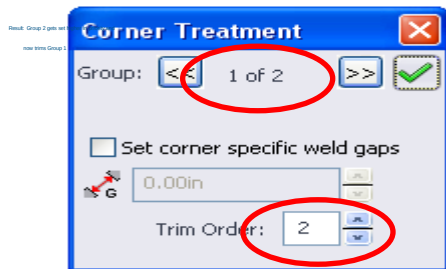
Result:



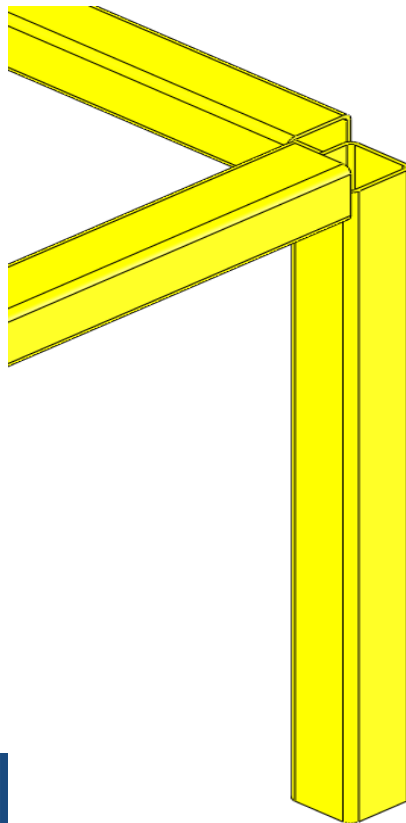
Weldment Groups and Corners

Change each Group's Trim Order:

- ▷ Group 1 of 2, Trim Order 2
- ▷ Group 2 of 2, Trim Order 1



Result:



How to generate a cut list

Typical Drawing Cut List

ITEM NO.	QTY.	DESCRIPTION	LENGTH
1	4	TUBE, SQUARE 4.00 X 4.00 X 0.25	92
2	2	TUBE, SQUARE 4.00 X 4.00 X 0.25	38
3	2	TUBE, SQUARE 4.00 X 4.00 X 0.25	18
4	4	TUBE, SQUARE 4.00 X 4.00 X 0.25	36
5	2	TUBE, SQUARE 4.00 X 4.00 X 0.25	68

Generate this on the model and import into drawing !!

Cut List Generation – Two ways

► Automatic

- ▷ New in SolidWorks 2005
- ▷ System generated list
- ▷ Automatic grouping of like bodies into single cut list item
- ▷ Automatic notification when out of date
- ▷ Automatic update on demand

► Manual

- ▷ Initial implementation in SolidWorks 2004
- ▷ Manually create cut list items
- ▷ Manually group like bodies
- ▷ No out of date notification
- ▷ Manually manage it as design changes

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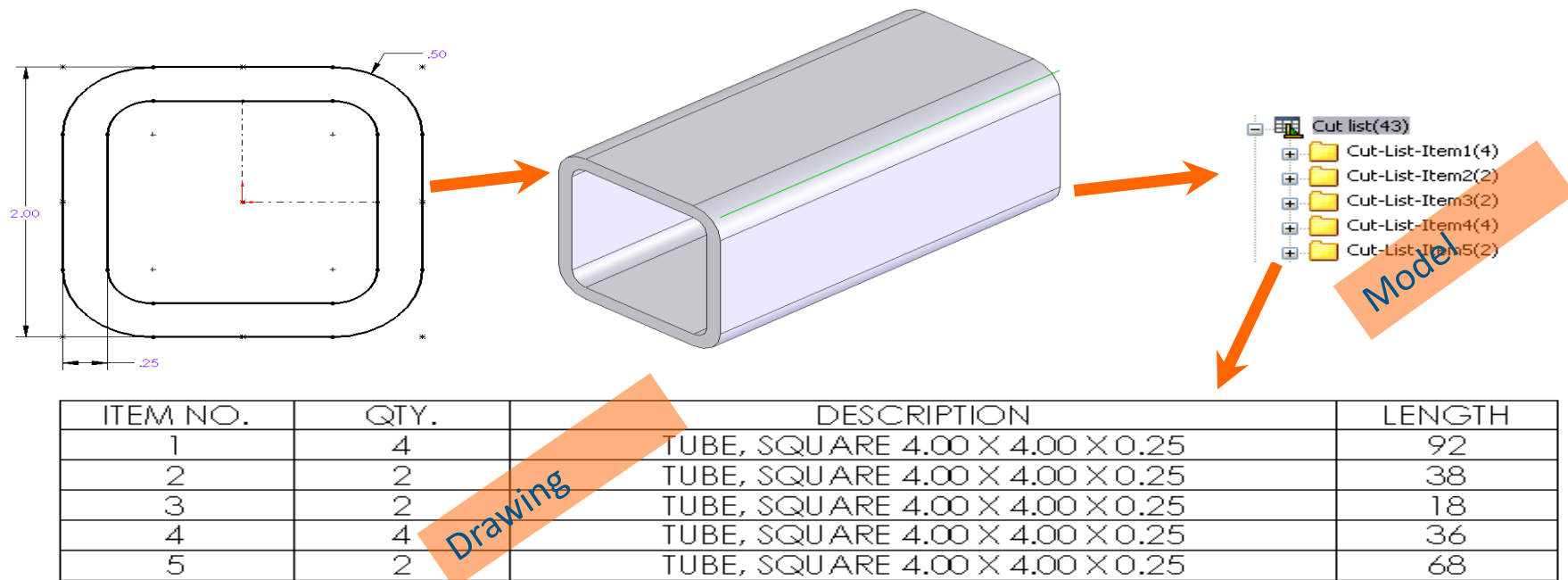
Let us do it !!

Cut List Information

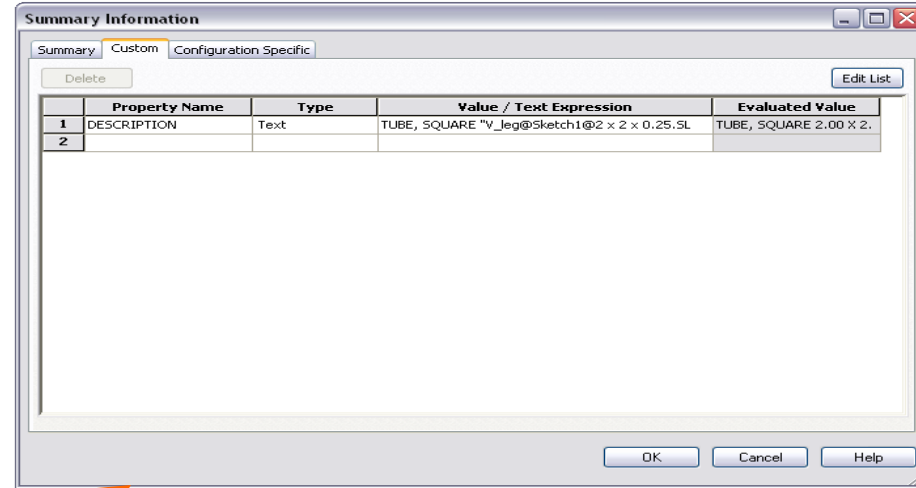
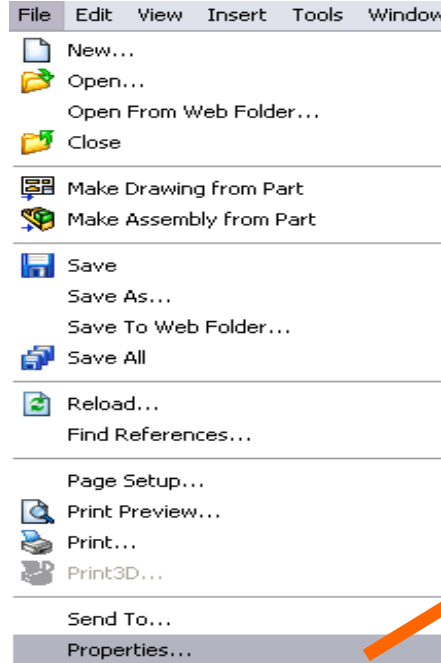
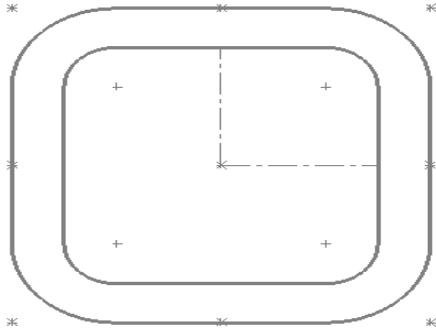
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4	4	TUBE, SQUARE 4.00 X 4.00 X 0.25	36
5	2	TUBE, SQUARE 4.00 X 4.00 X 0.25	68

How do we capture such information?

Flow of Information

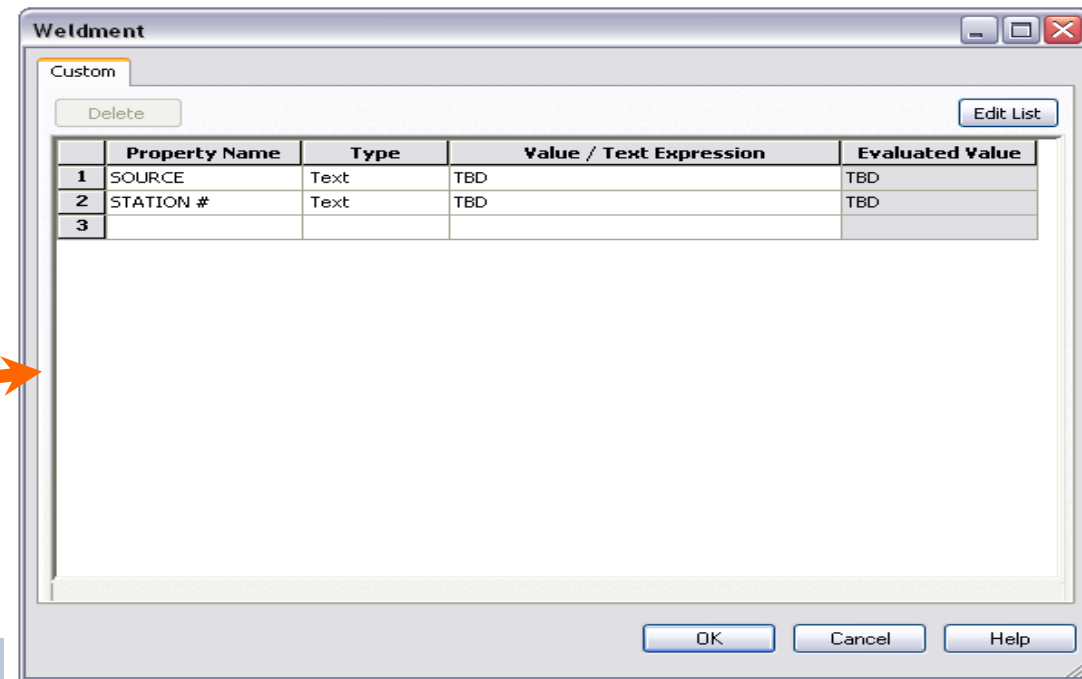
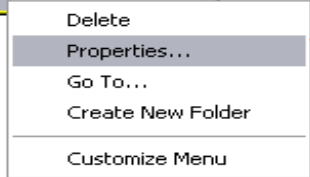
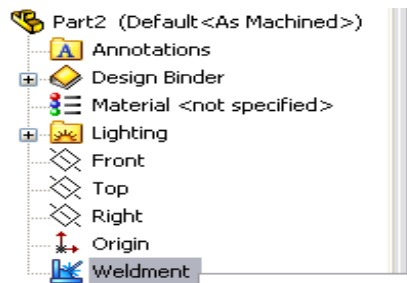


Custom Property in Profile Sketch Parts



Weldment Feature

- Placeholder for common custom properties for each cut list item



Custom Properties on Cut List Item

Structural profile properties

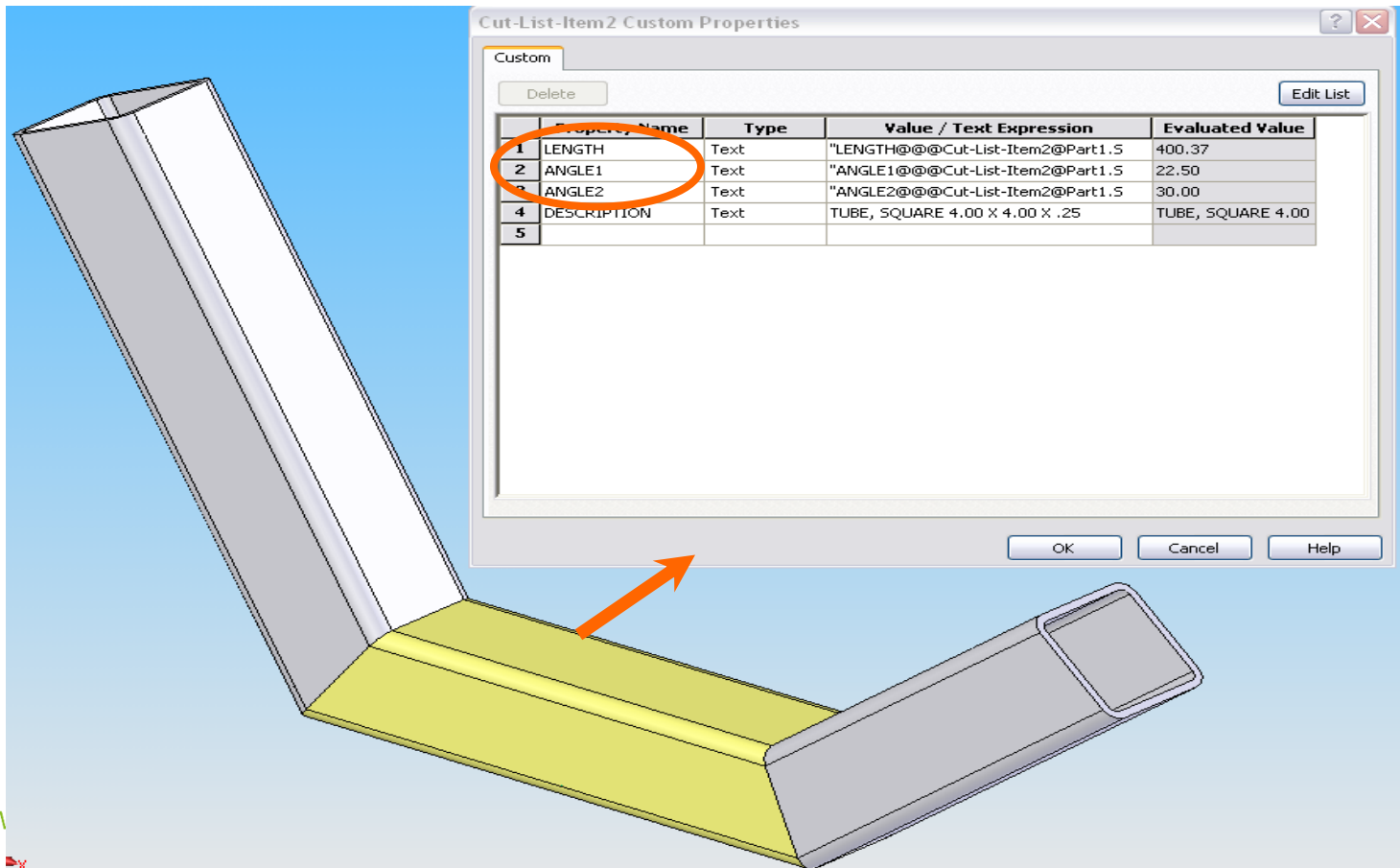
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Weldment feature properties

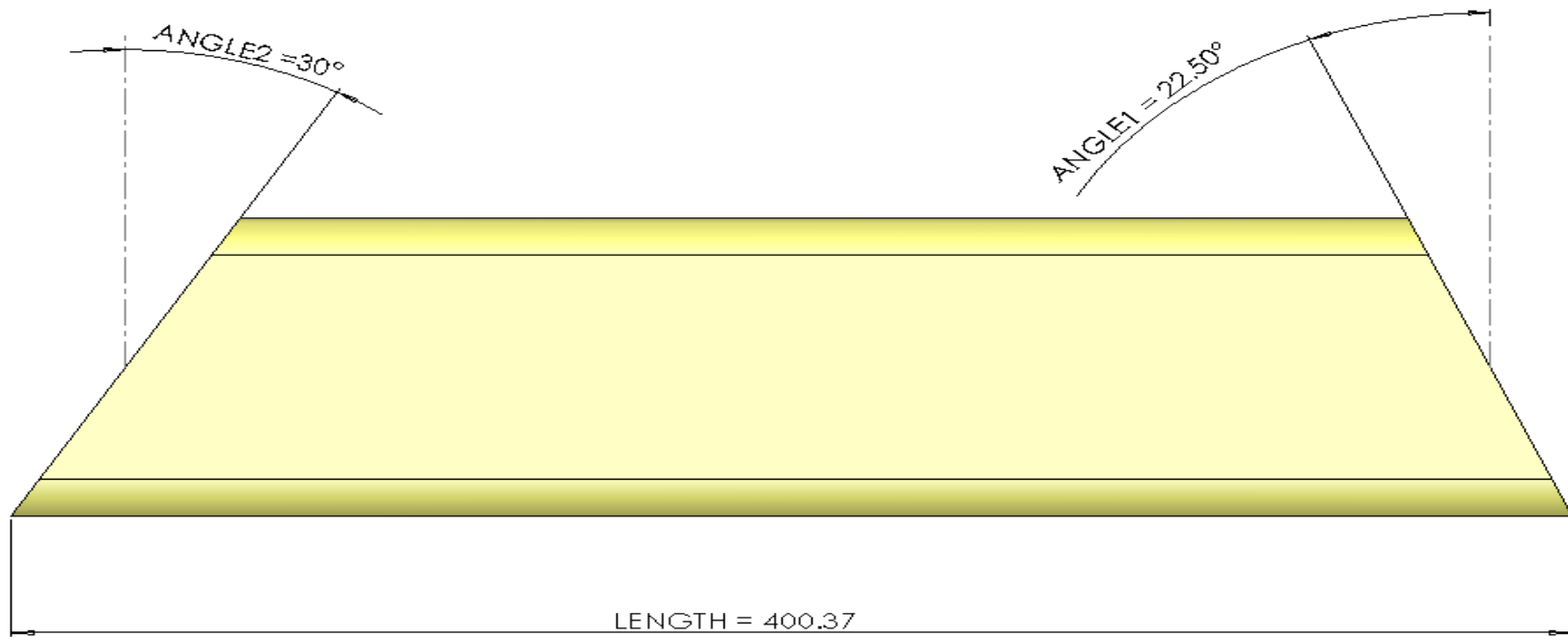
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Cut list item custom properties

System Generated Custom Properties - Structural Members

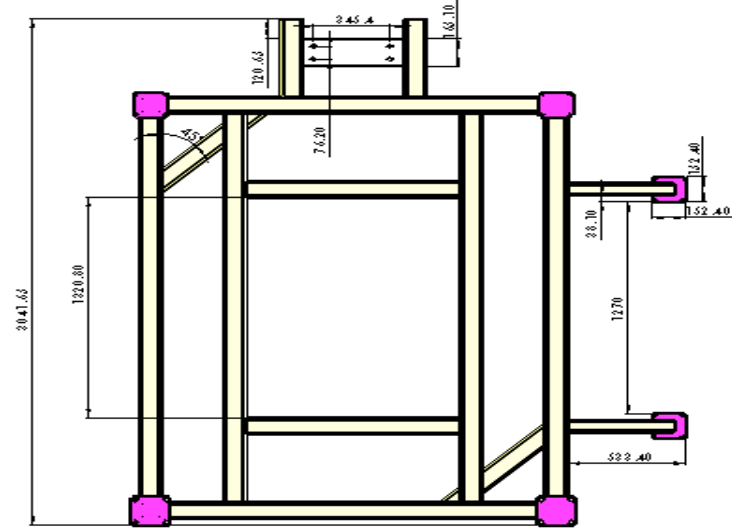
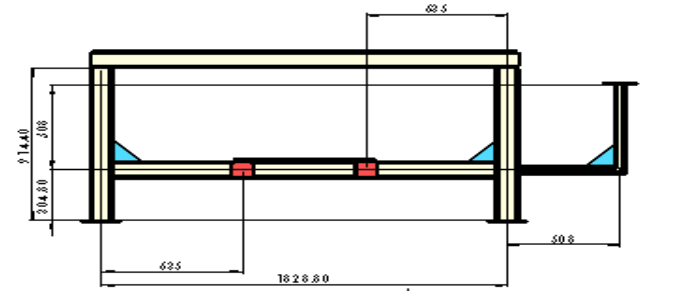
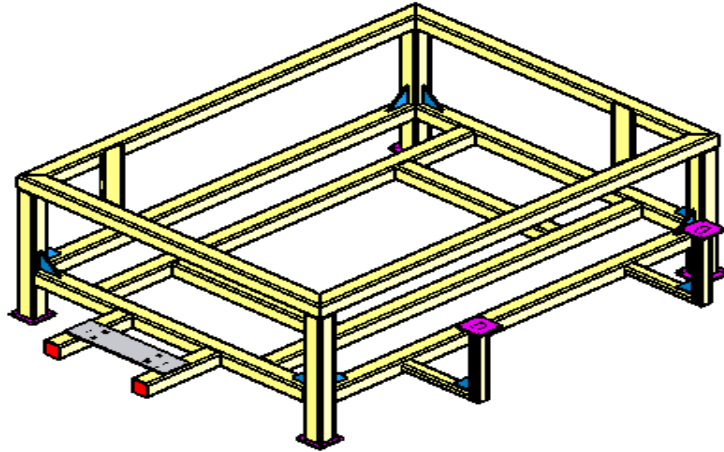


System Generated Custom Properties - Structural Members

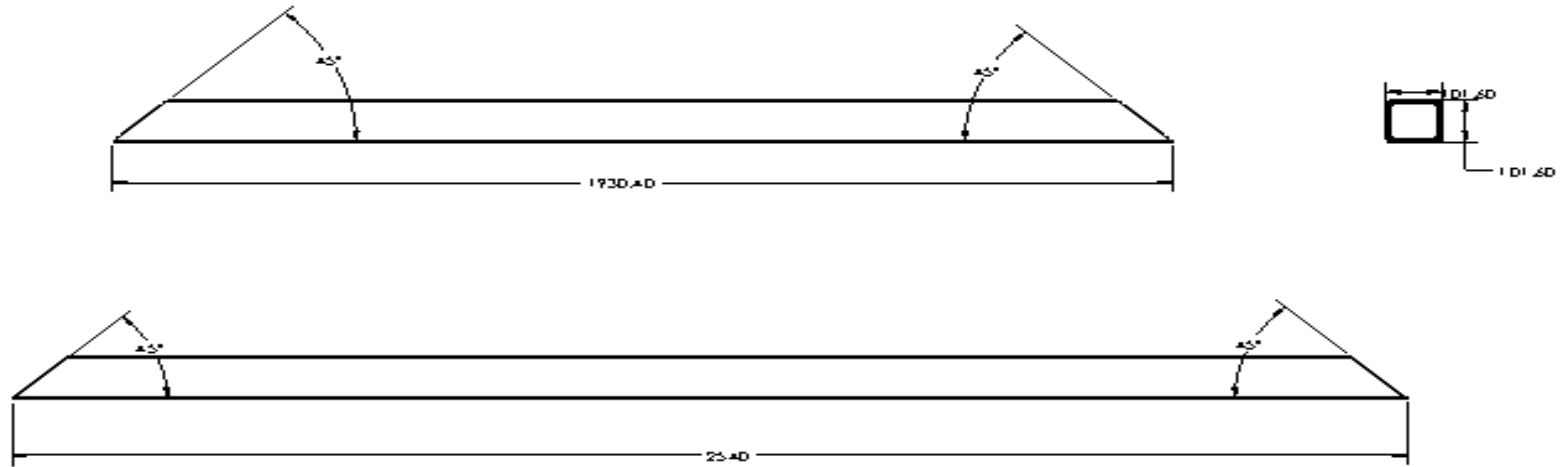


How to create drawings of a weldment

Views of Entire Weldment



Views of Individual Members



Questions?

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