

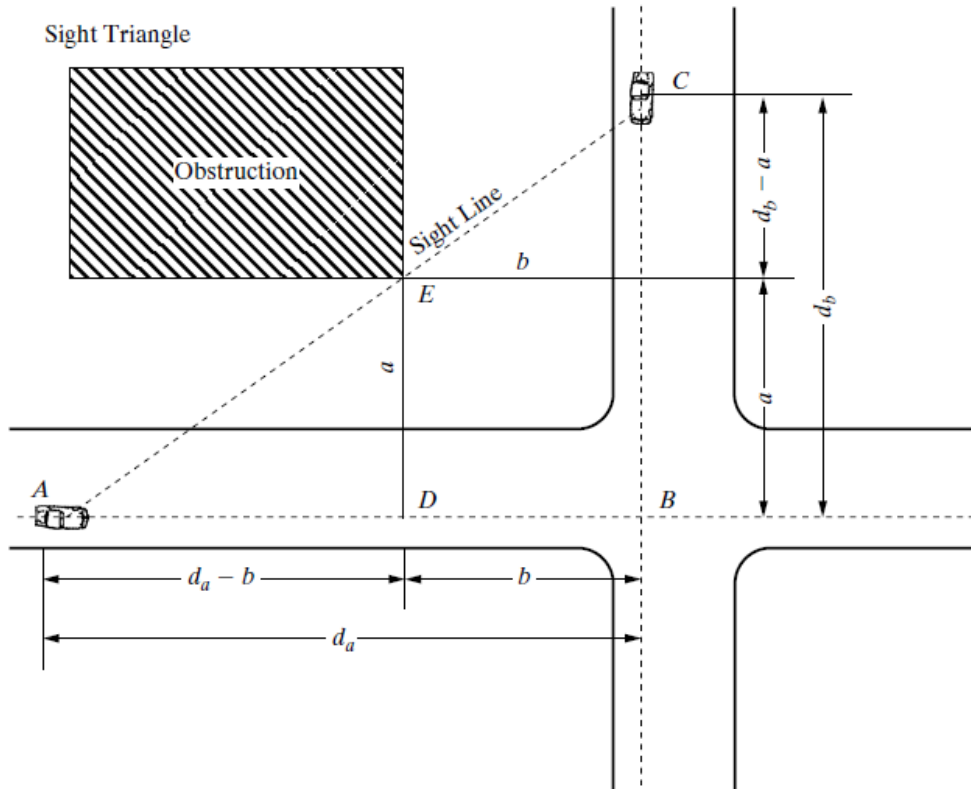
سلام

بنظرم احتمال اینکه از این بخش سوال بیاد خیلی کمه

ولی خب بریم سر اصل مطلب

فرمول اصلی اش اینه و از تشابهی به این شکل بدست میاد

$$\frac{d_b}{d_a} = \frac{a}{d_a - b} \quad (7.4)$$



و بریم سر مثالش

### Example 7.2 Computing Speed Limit on a Local Road

A tall building is located 45 ft from the centerline of the right lane of a local road ( $b$  in Figure 7.20) and 65 ft from the centerline of the right lane of an intersecting road ( $a$  in Figure 7.20). If the maximum speed limit on the intersecting road is 35 mi/h, what should the speed limit on the local road be such that the minimum

sight distance is provided to allow the drivers of approaching vehicles to avoid imminent collision by adjusting their speeds? Approach grades are 2%.

Solution:

با توجه به شیب هر خیابون ( اصلی و فرعی ) اومده پارامتر فاصله دید خیابونی که سرعت مجازش رو داریم رو از جدول حساب کرده و وبعد با اون فرمول اصلی که گفتم حل کرده

**Table 7.7** Suggested Lengths and Adjustments of Sight-Triangle Leg Case A—No Traffic Control

<b>Design Speed (mi/h)</b>	<b>Length of Leg (ft)</b>
15	70
20	90
25	115
30	140
35	165
40	195
45	220
50	245
55	285
60	325
65	365
70	405
75	445
80	485

(a)

<b>Approach Grade (%)</b>	<b>Design Speed (mi/h)</b>													
	15	20	25	30	35	40	45	50	55	60	65	70	75	80
-6	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2
-5	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2
-4	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
-3 to 3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
+4	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
+5	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
+6	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9

(b)

فاصله دید بدست اومده در جدول a باید در ضریب بدست اومده از جدول b ضرب بشه

*Note:* For approach grades greater than 3 percent, sight distances given in Table 7.7a should be multiplied by the appropriate values given in Table 7.7b.

اینم راه حل اش

**Solution:**

- Determine the distance on the local road at which the driver first sees traffic on the intersecting road.

Speed limit on intersecting road = 35 mi/h

Distance required on intersecting road ( $d_a$ ) = 165 ft (from Table 7.7)

Calculate the distance available on local road by using Eq. 7.4

$$\begin{aligned}d_b &= a \frac{d_a}{d_a - b} \\ &= 65 \frac{165}{165 - 45} \\ &= 89.37 \text{ ft}\end{aligned}$$

- Determine the maximum speed allowable on the local road.

The maximum speed allowable on local road is 20 mi/h (from Table 7.7).

No correction is required for the approach grade as it is less than 3%.

اومده اول فاصله دید رو برای اون خیابونی که شیب و سرعت مجازشو داریم حساب کرده بعد از فرمول فاصله دید اون یکی خیابونو حساب کرده بعد باز بکم جدول گفته حداکثر سرعتی که این فاصله دید رو تامین میکنه ۲۰ هستش

بعد اومده فاصله دید رو برای مقاطع استاپ-کنترل که نمیدونم معادل فارسیش چیه ، توضیح داده

گفته ۳ حالت داره

1. **Turning left onto the major road**, which requires clearing the traffic approaching from the left and then joining the traffic stream on the major road with vehicles approaching from the right (see Figure 7.21a on page 306), Case B1
2. **Turning right onto the major road** by joining the traffic on the major road with vehicles approaching from the left (see Figure 7.21b), Case B2
3. **Crossing the intersection**, thereby clearing traffic approaching from both sides of the intersection (see Figure 7.21c), Case B3.

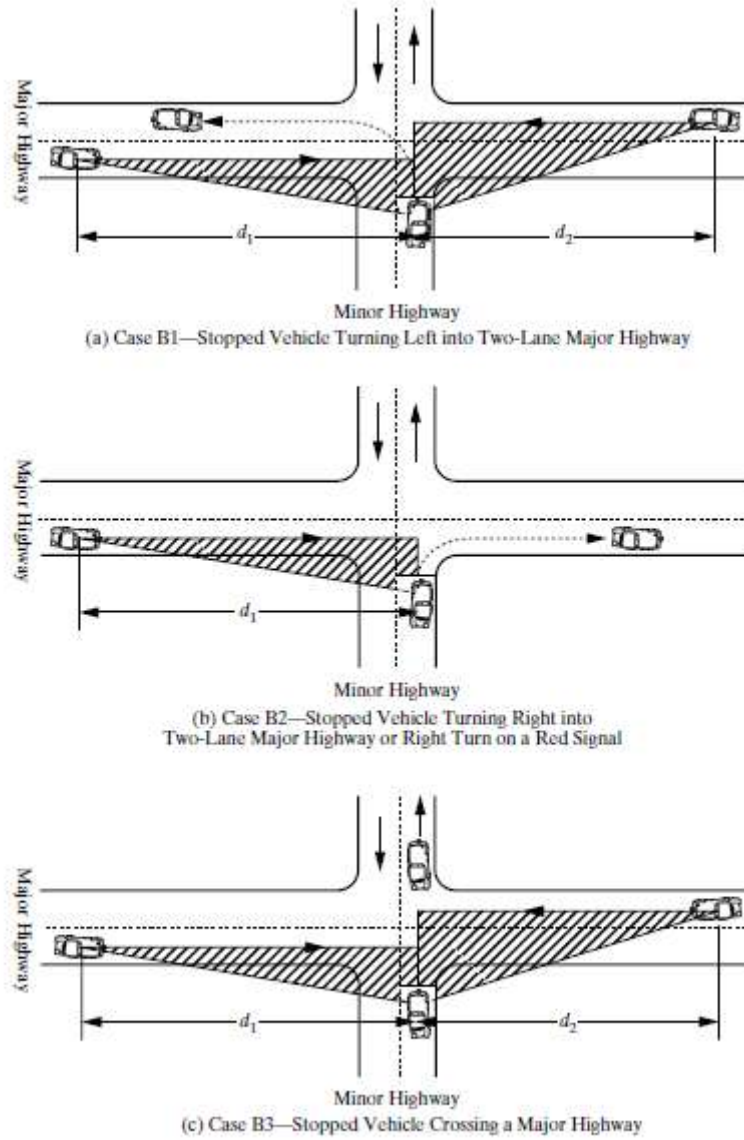
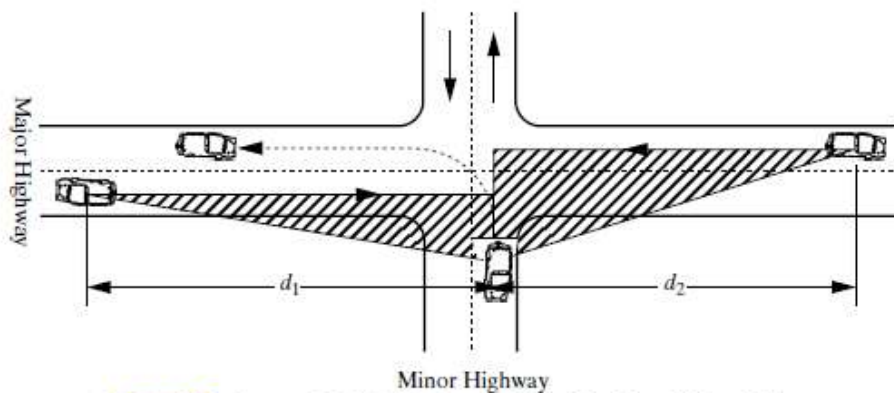


Figure 7.21 Maneuvers at a Stop Control Intersection

بعد گفته برای حالت اول فرمول فاصله دید اینه

**Case B1: Sight Distance Requirement for Left Turns on Stop-Control Intersections on Minor Roads.** The sight distance required for this maneuver depends on the time the vehicle will take to cross the intersection and the distance an approaching vehicle on the crossroad (usually the major highway) will travel during that time. Eq. 7.5 can be used to determine this distance:

$$d_{\text{ISD}} = 1.47v_{\text{major}}t_g \quad (7.5)$$



(a) Case B1—Stopped Vehicle Turning Left into Two-Lane Major Highway

بعد یک تایم گپ معرفی میکنه که میگه به ازای هر خط که به مسیر اصلی major اضافه بشه باید برای گپ ماشین ها ۰.۵ و کامیون ها ۰.۷ به این تایم اضافه کرد که توی مثال میبینید.

**Table 7.8** Time Gap for Case B1—Left Turn from Stop

Design Vehicle	Time Gap ( $t_g$ ) (second) at Design Speed of Major Road
Passenger Car	7.5
Single-unit Truck	9.5
Combination Truck	11.5

Note: Time gaps are for a stopped vehicle to turn left onto a two-lane highway with no median and grade 3 percent or less. The table values require adjustment as follows:

For multilane highways:

For left turns onto two-way highways with more than two lanes, add 0.5 seconds for passenger cars or 0.7 seconds for trucks for each additional lane, from the left, in excess of one, to be crossed by the turning vehicle.

For minor road approach grades:

If the approach grade is an upgrade that exceeds 3 percent, add 0.2 seconds for each percent grade for left turns

SOURCE: *A Policy on Geometric Design of Highways and Streets*, American Association of State Highway and Transportation Officials, Washington, D.C., 2004, p. 660. Used with permission.

where

$d_{ISD}$  = sight distance (length of the leg of sight triangle) along the major road from the intersection

$v_{major\ road}$  = design speed on the major highway from the intersection (ft)

$t_g$  = time gap for the minor road vehicle to enter the major road (sec)

بعد میاد مثال ارائه میده

به خوبی مفهوم فاصله دید رو میگه

میگه فاصله دید خودرو در خط اصلی ، که باعث بشه خودروی مسیر فرعی بتونه بصورت امن

به چپ گردش کنه

**Example 7.3** Computing Sight Distance Requirement for a Vehicle Turning Left from a Minor Road with a Stop Sign Control

A minor road intersects a major four-lane undivided road with a design speed of 65 mi/h. The intersection is controlled with a stop sign on the minor road. If the design vehicle is a single-unit truck, determine the minimum sight distance required

on the major road that will allow a stopped vehicle on the minor road to safely turn left if the approach grade on the minor road is 2%.

بعدد با توجه به خودروی طراحی میاد و تایم گپ رو تعیین میکنه

**Solution:**

- Use Eq. 7.5.

$$d_{\text{ISD}} = 1.47v_{\text{major}}t_g$$

- Determine  $t_g$ .

From Table 7.8,  $t_g = 9.5$  sec (for a single unit truck)

Correct for number of lanes:

$$t_g = (9.5 + 0.7) \text{ sec} = 10.2 \text{ sec}$$

(Note no adjustment is necessary for approach grade as it is not higher than 3%.)

- Determine minimum sight distance =  $1.47 \times 65 \times 10.2 = 974.61$  ft.

**Table 7.8** Time Gap for Case B1—Left Turn from Stop

Design Vehicle	Time Gap ( $t_g$ ) (second) at Design Speed of Major Road
Passenger Car	7.5
Single-unit Truck	9.5
Combination Truck	11.5

بعد اومده با توجه به تعداد خطوط اصلاحش کرده



بین در مسیر اصلی باید بینی در سمت چپش ( لاین های مسیر غرب به شرق ، چندتا اضافه میشه به خطوط

در حالت عادی سمت چپ خودرو یک لاین هست اما در مثال ما که بزرگراه ۴ لاینه است دو تا خط در سمت چپ خودروی ما وجود داره پس یک خط بیشتر از یک ، وجود داره پس یک دونه ۰.۷ به تایم گپ اضافه میکنیم

$$t_g = (9.5 + 0.7) \text{ sec} = 10.2 \text{ sec}$$

**Table 7.8** Time Gap for Case B1–Left Turn from Stop

Design Vehicle	Time Gap ( $t_g$ ) (second) at Design Speed of Major Road
Passenger Car	7.5
Single-unit Truck	9.5
Combination Truck	11.5

Note: Time gaps are for a stopped vehicle to turn left onto a two-lane highway with no median and grade 3 percent or less. The table values require adjustment as follows:  
For multilane highways:

For left turns onto two-way highways with more than two lanes, add 0.5 seconds for passenger cars or 0.7 seconds for trucks for each additional lane from the left, in excess of one, to be crossed by the turning vehicle.

و بعد مقادیر رو در فرمول میذاریم

Solution:

- Use Eq. 7.5.

$$d_{1SD} = 1.47v_{\text{major}}t_g$$

- Determine  $t_g$ .

From Table 7.8,  $t_g = 9.5 \text{ sec}$  (for a single unit truck)

Correct for number of lanes:

$$t_g = (9.5 + 0.7) \text{ sec} = 10.2 \text{ sec}$$

(Note no adjustment is necessary for approach grade as it is not higher than 3%.)

- Determine minimum sight distance =  $1.47 \times 65 \times 10.2 = 974.61 \text{ ft.}$

در مثال بعدی در مسیر اصلی جدا کننده داریم بعلاوه اینکه شیب مسیر فرعی هم بیشتر از ۳٪ هستش

**Example 7.4** Computing Sight Distance Requirement for a Vehicle Turning Left from a Minor Road with a Stop Sign Control

A minor road intersects a major four-lane divided road with a design speed of 65 mi/h and a median width of 6 ft. The intersection is controlled with a stop sign on the minor road. If the design vehicle is a passenger car, determine the minimum sight distance required on the major road for the stopped vehicle to turn left onto the major road if the approach grade on the minor road is 4%.

اومده اول گفته عرض هر خط ۱۲ فوته در حالت عادی

ما ۶ فوت جدا کننده داریم که برابره با نصف یک خط! بعد میاد تایم گپ رو اصلاح میکنه

Correct for number of lanes:

$$t_g = (7.5 + 0.5 \times 1.5) \text{ sec} = 8.25 \text{ sec}$$

(This assumes that the 6 ft median is equivalent to half a lane.)

Correct for approach grade

بعد به ازای شیب جاده اصلاح کرده

If the approach grade is an upgrade that exceeds 3 percent, add 0.2 seconds for each percent grade for left turns

که زیر جدول تایم گپ نوشته بودش

گفته اگر از ۳٪ شیب بیشتر شد به ازای هر درصد شیب ، ۰.۲ ثانیه به گپ اضافه کن

خب الان ۴٪ شیبه که باید ۰.۲ ضربدر ۴ ، به گپ اضافه کنیم

( چون این اصلاحات افزودنه ( جمع ه ) فرقی نداره اول کدوم رو اصلاح کنی ( تعداد خطوط

یا شیب جاده )

Solution:

- Use Eq. 7.5.

$$d_{\text{ISD}} = 1.47v_{\text{major}} t_g$$

- Determine  $t_g$ .

From Table 7.8,  $t_g = 7.5 \text{ sec.}$

Correct for number of lanes:

$$t_g = (7.5 + 0.5 \times 1.5) \text{ sec} = 8.25 \text{ sec}$$

(This assumes that the 6 ft median is equivalent to half a lane.)

Correct for approach grade

$$t_g = (8.25 + 0.2 \times 4) \text{ sec} = 9.05 \text{ sec}$$

(Grade is 1% higher than 3%.)

- Determine minimum sight distance =  $1.47 \times 65 \times 9.05 = 864.7 \text{ ft.}$

مباحث بعدی هم در کلاس بحث نشد