
Baystate Roads Program

Local Technical Assistance Program (LTAP)

Tech Notes



Tech Note #33 -- 2003

Sight Distance at Unsignalized Intersections

Sight distance of potential new intersections is an important consideration. Appropriate sight distance is related to driver and pedestrian safety and smooth traffic operations, and may be a required step in the land development permitting process. Sight distance is affected by road geometry; such as grades and curves; roadside vegetation or other objects (signs, stone walls, fences, and so forth). In fact, sight distance can be a factor in selecting the location of a proposed intersection.

SSD VS ISD

Policy of the American Association of Transportation Officials (AASHTO) may be used as a guide to sight distance at unsignalized intersections, where the minor street stops or yields.¹ The figure on the next page presents an example of sight distance at a T intersection. Two types of calculated sight distances are generally considered at unsignalized intersections: stopping sight distance (SSD) and intersection sight distance (ISD). Calculated SSD provides for safety, is fundamental to intersection operation, and should be available along the entire length of the road, not just at intersections. AASHTO does not require providing calculated ISD at intersections, although providing calculated ISD is preferable when practicable.

SSD is the calculated distance that:

- allows the major-street vehicle approaching the intersection to perceive and react to the minor-street vehicle pulling out
- provides for minor slowing by the major-street vehicle as the minor-street vehicle pulls out

- even allows the major-street vehicle to potentially stop (with worn tires and wet pavement) if necessary for occasional events such as the minor-street vehicle pulling out and then stalling

SSD is provided for both approaching sight distance, from the major-street driver's eye, and exiting sight distance, from the minor-street driver's eye.

ISD can enhance the operation of an intersection by providing sight distance greater than SSD, reducing the need for slowing by the major-street vehicle. The graph shows ISD values that are greater than SSD for the same major-street speeds.² (The graph applies to left turns from the minor street under STOP-sign control with level grades on the major street. Different calculated sight distances could apply for movements other than left turns; different traffic control, such as a YIELD sign; or non-level grades.)

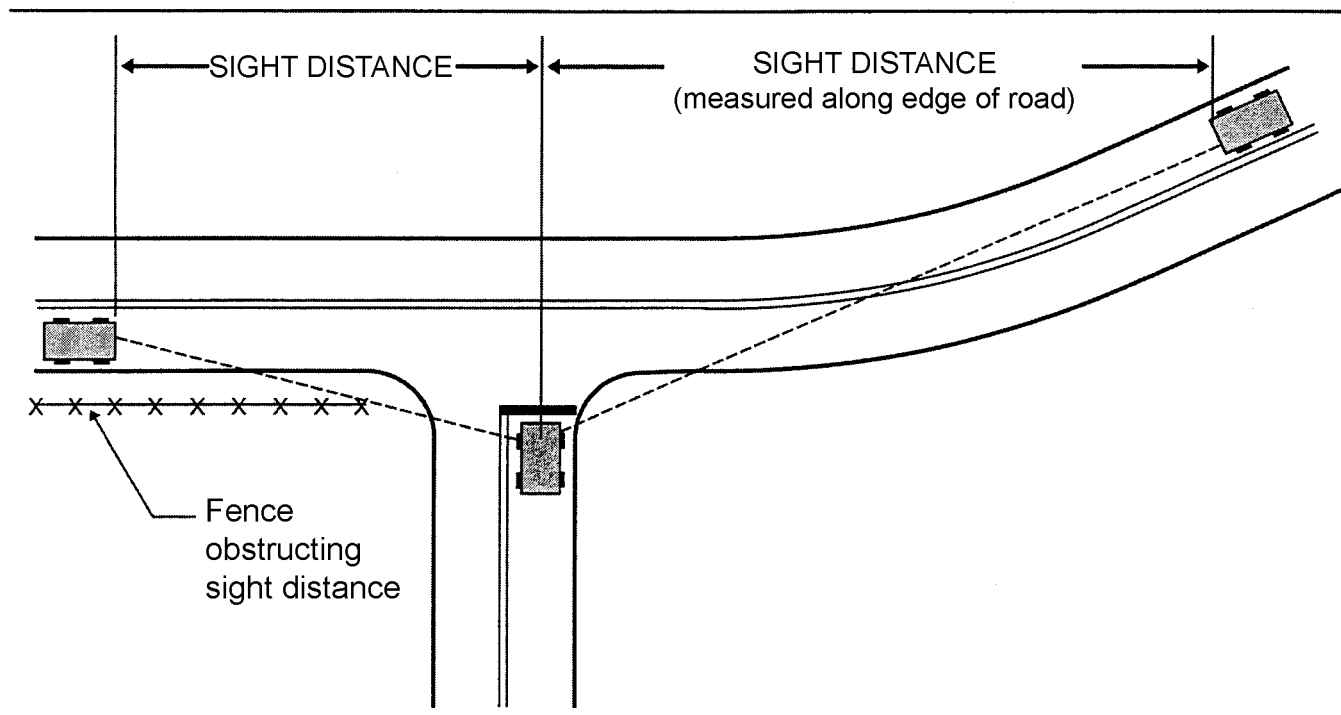
STEPS IN A SIGHT DISTANCE ANALYSIS

A sight distance analysis may include:

1. measuring approaching and exiting sight distances for both directions along the major street
2. estimating the major-street speed in both directions; this can reflect the speed limit or a speed study in the field
3. consulting AASHTO information to find SSD (and perhaps ISD) calculated for the estimated speeds

¹ American Association of State Highway and Transportation Officials, *A Policy on Geometric Design of Highways and Streets*, Washington, DC, 2001.

² American Association of State Highway and Transportation Officials, *A Policy on Geometric Design of Highways and Streets*, Washington, DC, 2001, pp. 231, 655.



The dotted lines represent the sight lines at this T intersection

SIGHT DISTANCE MEASUREMENT

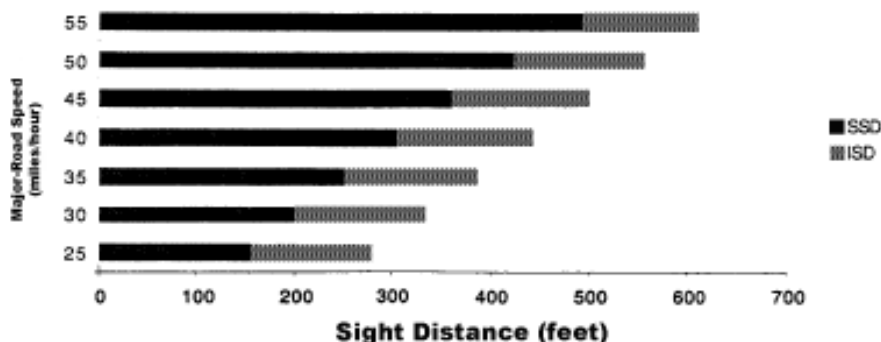
Sight distance measurements normally consider the following:

- 3.5 feet to represent the height of the driver's eye in the vehicle stopped on the minor street
- 3.5 feet to represent the object height of the vehicle approaching on the major street
- placement of the representative minor-street vehicle at an appropriate distance back from major street traffic
- measurements both from the minor-street vehicle to the major-street vehicle (exiting sight distance) and vice versa (approaching sight distance)

CAVEAT

Individual road jurisdictions (municipalities, states) may have policies that differ from the information presented above and exceptions may apply. This information is only representative and is not a substitute for an appropriate engineering study.

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Calculated SSD and ISD at at STOP-controlled intersection for various speeds.