

H. Expressways and Other Higher Classification Roads

In the instance where State or Federal standards exceed these Standards, State and Federal standards shall govern.

I. Sight Distance

Sight distance criteria established in this section are based upon the WSDOT Design Manual. Each new intersection or access point connection must meet the Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD) requirements set forth in Sections 505.I.1. and 505.I.2., respectively, of this chapter. Sight distance requirements in this section are based on passenger car operation and do not account for heavy vehicle operating characteristics. Access points or intersections that will have significant numbers of heavy vehicles or trucks, as determined by the Engineer, shall be designed in accordance with Chapter 1310 of WSDOT Design Manual.

1. **Stopping Sight Distance (SSD)** is the sum of the distance traversed by the vehicle from the instant the driver sights an object necessitating a stop to the instant the brakes are applied and the distance needed to stop the vehicle from the instant brake application begins. Roadway geometrics shall be designed to provide sight distance equaling or exceeding the values given in Table 4. Stopping sight distance is measured from an eye height of 3.50 feet to an object height of 0.50 feet.

TABLE 4 - DESIGN STOPPING SIGHT DISTANCE ON GRADES

Design Speed (mph)	Stopping Sight Distance (ft)						
	Level	Down Grade			Up Grade		
	0%	-3%	-6%	-9%	3%	6%	9%
25	155	158	165	173	147	143	140
30	200	205	215	227	190	184	179
35	250	258	271	288	237	229	222
40	305	315	333	354	289	278	269
45	360	378	401	428	345	331	320
50	425	447	474	508	405	389	375
55	495	520	553	594	470	450	433

Note: Source of Table is WSDOT Design Manual.

For stopping sight distances on grades between those listed, interpolate between the values given.

2. **Intersection Sight Distance (ISD)** is the required length of the roadway visible to the driver for the safe operation of a vehicle entering the intersection. This is the distance a driver of a vehicle approaching an intersection should have as an unobstructed view of the entire intersection, including any traffic-control devices sufficient to permit the driver to anticipate and avoid potential collisions. The intersection sight distance triangle is also provided at intersections to allow the

Intersection Sight Distance Gap Times (t_g)

The t_g values listed may have the following adjustments:

Crossing or right-turn maneuvers: All vehicles subtract 1.0 sec

Multilane roadways:

Left turns, for each lane in excess of one to be crossed and for medians wider than 4 ft:

Passenger cars add 0.5 sec

All trucks and buses add 0.7 sec

Crossing maneuvers, for each lane in excess of two to be crossed and for medians wider than 4 ft:

Passenger cars add 0.5 sec

All trucks and buses add 0.7 sec

Note: Where medians are wide enough to store the design vehicle, determine the sight distance as two maneuvers.

Crossroad grade greater than 3%:

All movements upgrade, for each percent that exceeds 3%: All vehicles add 0.2 sec

3. **Low Volume Approach (LVA)** is designed to accommodate access onto a road with less than 1000 ADT and where the low volume approach leg has an ADT of 160 (16 single family users or equivalent) or less. The intersection sight distance triangle is formed as measured 15 feet from the edge of the traveled way from an eye height of 3.50 feet above the height of the through travel lane to an object height of 3.50 feet and at a minimum distance along the through traveled way as shown on Drawing 505.I-1. It shall be a goal of this section through the site planning and permitting process that the proposed access shall be located to achieve the maximum sight distance available along the county road and shall not be permitted with the sight distance/stopping sight distance less than that referenced above.

4. **Passing Sight Distance (PSD)** for the use in design should be determined on the basis of the length needed to complete normal passing maneuvers in which the passing driver can determine that there are no potentially conflicting vehicles ahead before beginning the maneuver. Passing sight distance for arterials and collectors shall equal or exceed the values given in Table 6. (Sight distance is measured from an eye height of 3.50 feet and an object height of 3.50 feet.)

TABLE 6 - MINIMUM PASSING SIGHT DISTANCE

Design Speed (mph)	Passing Sight Distance (ft)
30	1090
35	1280
40	1470
45	1625
50	1835
55	1985

Note: Source of table is WSDOT Design Manual.

5. Other Considerations:

- a) Provide design stopping sight distance at all points on the roadway including the through traveled way and all intersection legs within the intersection area.
- b) The County Engineer (or Technical Administrator) may require Decision Sight Distance (see WSDOT Design Manual) to be used when warranted by conditions or based upon their judgment.
- c) Use of landscaping plants in median areas or within any portions of the sight triangle(s) or along the sight line(s) shall be evaluated as to height, spread and the foliage density of the proposed plantings mature growth characteristics.

6. Documentation of Sight Distance

To verify acceptable sight distance, the County may require a developer to evaluate and document an existing sight distance condition. The evaluation and documentation of sight distance shall include the following, or such additional information as may be necessary to make a determination:

- Plan, profile and cross-section drawings along the sight line
- Design speed, operating speed and/or speed study data
- Right-of-way and easement limits (existing and proposed)

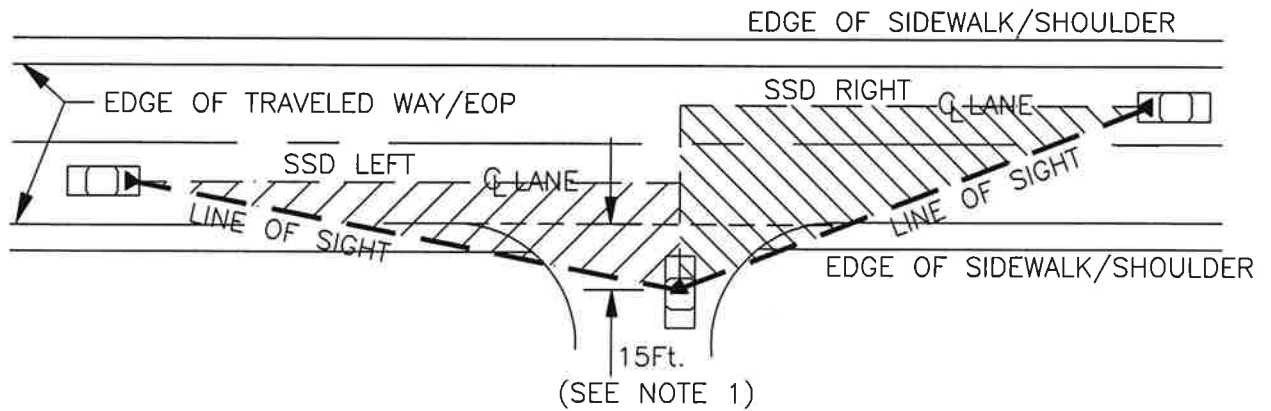
When the Engineer determines from the documentation presented that a location has insufficient sight distance, a plan to improve the sight distance to meet these standards will be required.

J. Roadway Alignment

Horizontal and vertical alignments are the primary controlling elements for roadway design. It is important to coordinate these two elements with design speed, sight distance, drainage, intersection design, aesthetics, land use, physical and environmental features, and availability of rights-of-way in the early stages of design.

1. Design Considerations for Arterial/Collector Roads and Streets

- a) Make the roadway alignment as direct as possible and still blend with the topography while considering developed and undeveloped properties, community boundaries, and environmental concerns.
- b) Make the roadway alignment consistent by using gentle curves at the end of long tangents using a transition area of moderate curvature between the large radius curves of rural areas and the small radius curves of populated areas, making horizontal curves visible to approaching traffic.
- c) Avoid minimum radii and short curves unless restrictive conditions are present and are not readily or economically avoidable. On two-lane



POSTED SPEED LIMIT (mph)	25	30	35	40	45
SIGHT DISTANCE REQUIRED (SSD) (Feet)	155	200	250	305	360

Note: Source of table is WSDOT Design Manual.

NOTES:

1. Sight distance requirements in this section are based on passenger car (design vehicle P) with the drivers eye 15 feet from the edge of traveled way. See WSDOT Design Manual for other design vehicle criteria.
2. These sight distance requirements are based on flat (<3%) grades. For up and down grades in excess of 3% see Chapter 5, Section 505.1.1 (Table 4) for design criteria.
3. For road approaches where left turns are not allowed, a sight triangle need only be provided to the left.
4. For road approaches where left turns or crossing maneuvers are allowed, provide a sight triangle to the right in addition to the one to the left.
5. The sight distance to the right is measured along the centerline of the lane.

DRAWING 505.1-1
LOW VOLUME APPROACH ADT OF 160 OR LESS
WHATCOM COUNTY DEPARTMENT OF PUBLIC WORKS