the intersection for approximately 75 feet to 150 feet. Short vertical curves may be necessary in lieu of grade breaks.

D. **Intersection Sight Distance**

To provide the opportunity for vehicles at an intersection to safely cross or make left or right turns onto a through street, adequate sight distance must be provided at all street intersections and where driveways intersect with streets. Sight distance must also be provided for left turning traffic turning from the main street as described in AASHTO Intersection Sight Distance Case F. If opposing left turn lanes are present, the opposing left turns must be designed having a positive off-set to allow for sight distance when opposing vehicles are present. Refer to Figure 5-3.28.

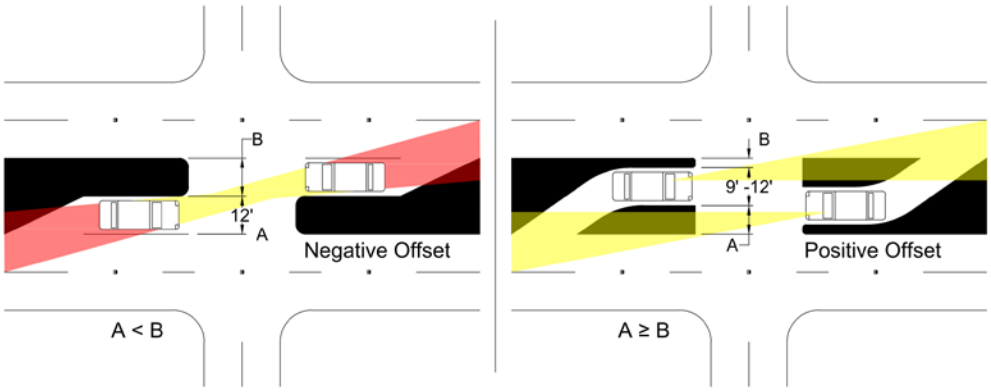
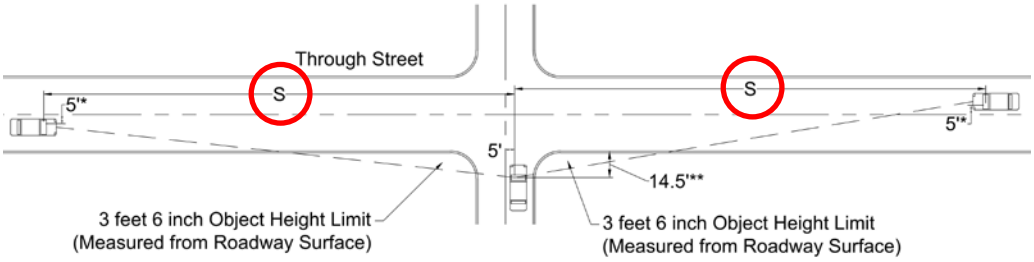


FIGURE 5-3.25 INTERSECTION DEPARTURE SIGHT DISTANCE REQUIREMENTS

Sight distance should be based on the design speed for the roadway. Design speeds for new roadways should conform to those identified in Section 5-3.100. Typically design speeds are 10 mph higher than the anticipated posted speed limit. The sight distance requirements outlined below are required for all private and public street intersections and at all intersections of driveways onto public or private streets. These standards do not apply to driveway intersections located on private property and that are internal to the private property and that do not intersect with streets.

Figure 5-3.29 depicts the technique used to determine the driver's eye location and an approaching vehicle; a line is then drawn to connect these 2 points. Continuous unobstructed line of sight must be provided along this line and throughout the approach to the intersection, providing an unobstructed sight triangle to the side street driver. Sight lines are to be drawn on roadway and landscaping plans to represent the areas that must be free of all objects and topography more than 2.5 feet above the adjacent roadway surface (edge of pavement); however, certain vegetation may be allowed. Vegetation placed within the sight triangle will be of a low height variety that remains below 2.5 feet when mature (measured from the roadway surface). Trees may be allowed within the triangle if the canopies are above 8 feet, they are a single trunk variety, and they are not spaced in a configuration that creates a "picket fence" effect.



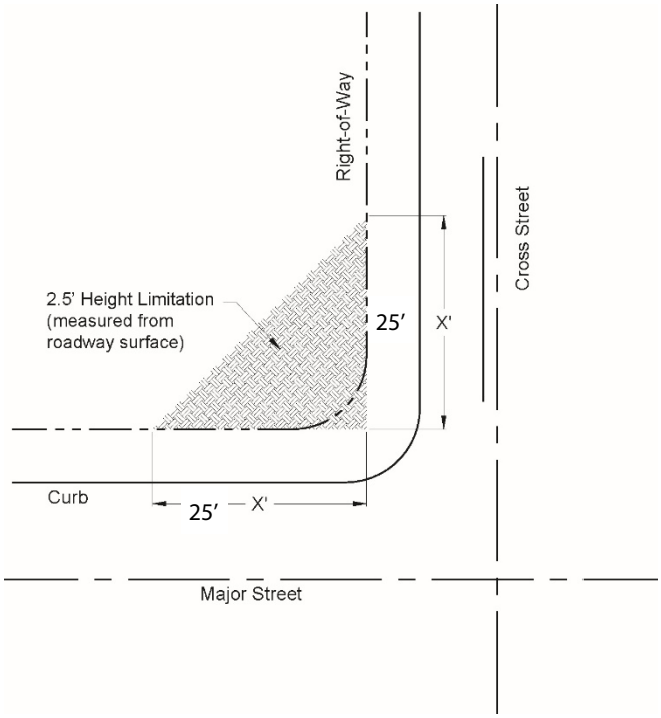
Side Street/Driveway/Alley
Applies to stop controlled side street or all approaches to a signalized intersection for right-on-red traffic.

* 5 feet measured to nearest lane line or centerline.
** 14.5 feet measured from face-of-curb or edge-of-travel way.
S = Intersection sight distance in feet on driver's left and right for right turns, left turns and through traffic.
(See AASHTO Geometric Design of Highways and Streets for additional sight distance requirements)
(See, Appendix 5-3B for distance S)

FIGURE 5-3.26 INTERSECTION DEPARTURE SIGHT DISTANCE REQUIREMENTS

1. Intersection sight distance requirements are as follows:
   a. Right-Angle Intersections
      Right-angle intersections are those whose legs meet at an angle of 88 to 90 degrees. For these right-angle intersections the sight distances shown in and Appendix 5-3B are to be used with Figure 5-3.29 to calculate the sight triangle. Appendix 5-3B presents the sight distance requirements for varying roadway widths and design speeds for passenger cars, single unit trucks and combination trucks. If high volumes of truck traffic are anticipated, sight distances given in Appendix 5-3B will be used. Sight distances for vehicles turning left from the main street should also be considered and calculated based on the AASHTO Geometric Design of Highways and Streets.
   b. Skewed Intersections
      For skewed intersections where the intersection angles are less than 88 degrees, sight distances must be calculated in accordance with the procedures described in AASHTO's Geometric Design of Highways and Streets. Skewed intersection design must include appropriate design for pedestrian crossings and the location of curb ramps.
   c. Intersections Within or Near a Curve
      Sight distance measurements, identified in Figure 5-3.30 need to follow the curved street alignment when the intersection is within or near a horizontal curve.
2. Traffic Safety Triangles
   Traffic Safety Triangles should be used to limit the height of structures, vegetation and other improvements on corner properties immediately adjacent

to all street intersections and where driveways intersect with streets. Safety triangles are not to be used as a substitute for intersection sight distance. Safety triangles provide additional visibility around corners for all intersection approaches and should be applied to the design of walls and landscape features. Fixed objects within the safety triangle cannot be taller than 2.5 feet measured from the adjacent roadway surface (edge of pavement); vegetation should be trimmed to 2.5 feet tall measured from the adjacent roadway surface. Figure 5-3.30 Traffic Safety Triangle on Corner Property depicts the method used to determine the safety triangle location. The safety triangle will follow the curvature of the roadway/right-of-way along curved roadway alignments. The sight distance requirements contained in both Figure 5-3.29 and Figure 5-3.30 are applied at all corner lots.



* If the standard right-of-way (46 ft. local residential, 60 ft. local collector) is not available, the safety triangle (X) shall measure 60 ft. on local residential streets and 70 ft. on local collector streets from the centerlines of the streets.

FIGURE 5-3. 27 TRAFFIC SAFETY TRIANGLE ON CORNER PROPERTY

3. Right-of-Way at Corners
   A minimum of 25-foot radius or 25-foot by 25-foot triangle right-of-way shall be dedicated at street intersections to provide room for traffic control and sight distance.

E. **Auxiliary Lanes**

An exclusive turning lane permits separation of conflicting traffic movements and removes turning vehicles from the flow of through traffic. The requirement for an auxiliary lane may necessitate additional rights-of- way. Modifications to these requirements, including the storage and transition lengths may be allowed by the Transportation Department where the conditions do not allow the full design standard to be met.

ROADWAY DESIGN CRITERIA

STREET DESIGN ELEMENT	DESIGN SPEED (MPH)						
	55	50	45	40	35	30	25
Minimum horizontal curve radius without superelevation, ft [1]	1837	1392	1039	762	510	333	198
Minimum horizontal curve radius with 2% superelevation, ft [2]	1347	1044	764	593	408	273	167
Minimum horizontal curve length, ft	500	500	500	450	400	250	100
Minimum tangent length between reverse curves, ft	300	300	250	200	200	150	100
Minimum tangent length between curves in same direction, ft	660	660	500	450	400	250	100
Minimum tangent approaching intersection, ft	300	300	250	200	200	150	100
Minimum stopping sight distance (< 3% grade), ft [3]	495	425	360	305	250	200	155
Maximum rate of vertical curve, K	114	84	61	44	29	19	12

Intersection sight distance — Refer to Appendix 5-3B

1. *Minimum radii values from AASHTO A Policy on Geometric Design of Highways and Streets (Green Book), 6th Edition, 2011, Table 3-13b for a 2% cross slope or -2% superelevation. Values for 50 and 55 mph calculated using Equation 3-8.*
2. *Minimum radii values from Table 3-13b in AASHTO Green Book, Table 3-13b for a 2% superelevation. Values for 50 and 55 mph calculated using Equation 3-8.*
3. *Stopping Sight Distance from AASHTO A Policy on Geometric Design of Highways and Streets (Green Book), 6th Edition, 201; Table 3-2 for stopping sign distance requirements on grades >3%.*

SITE DISTANCE

SIX LANE ROADWAY[1]

SIGHT DISTANCE						
DESIGN SPEED	PASSENGER CAR		SINGLE-UNIT TRUCK		COMBINATION TRUCK	
	TH	S= LT	TH	LT	TH	LT
25	304	340	403	440	476	513
30	364	408	483	527	572	616
35	425	476	564	615	667	718
40	486	544	644	703	762	821
45	546	612	725	791	857	923
50	607	680	805	879	952	1026
55	668	748	886	967	1048	1128

FOUR LANE ROADWAY[1]

SIGHT DISTANCE						
DESIGN SPEED	PASSENGER CAR		SINGLE-UNIT TRUCK		COMBINATION TRUCK	
	TH	S= LT	TH	LT	TH	LT
25	285	322	377	414	451	487
30	342	386	453	497	541	585
35	399	451	528	579	631	682
40	456	515	603	662	721	780
45	513	579	679	745	811	877
50	570	644	754	827	901	974
55	627	708	829	910	991	1072

THREE LANE ROADWAY[1]

SIGHT DISTANCE						
DESIGN SPEED	PASSENGER CAR		SINGLE-UNIT TRUCK		COMBINATION TRUCK	
	TH	S= LT	TH	LT	TH	LT
25	267	304	351	388	425	462
30	320	364	422	466	510	554
35	374	425	492	543	595	646
40	427	486	562	621	680	738
45	480	546	632	698	765	831
50	267	304	351	388	425	462
55	320	364	422	466	510	554

SITE DISTANCE

TWO LANE ROADWAY[1]

SIGHT DISTANCE						
DESIGN SPEED	PASSENGER CAR		SINGLE-UNIT TRUCK		COMBINATION TRUCK	
	TH	S= LT	TH	LT	TH	LT
25	239	276	313	350	386	423
30	287	331	375	419	464	508
35	335	386	438	489	541	592
40	383	441	500	559	618	677
45	430	497	563	629	695	761
50	478	552	625	699	772	846
55	526	607	688	769	849	930

Notes: [1]

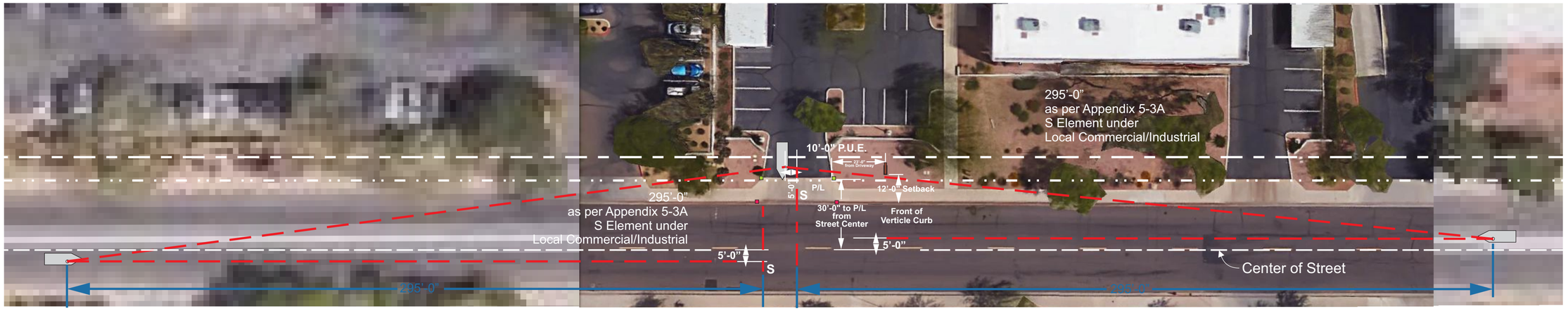
Cross section assumed to include a 12' median/center lane and 6' bike lane

S= TH = Through Movement, LT = Turn Movement

All distances given in feet

Design speed by roadway classification is shown in Appendix 5-3A

For cross sections deviating from the tabulated configurations, refer to the AASHTO Geometric Design of Highways and Streets (current editions) for additional information

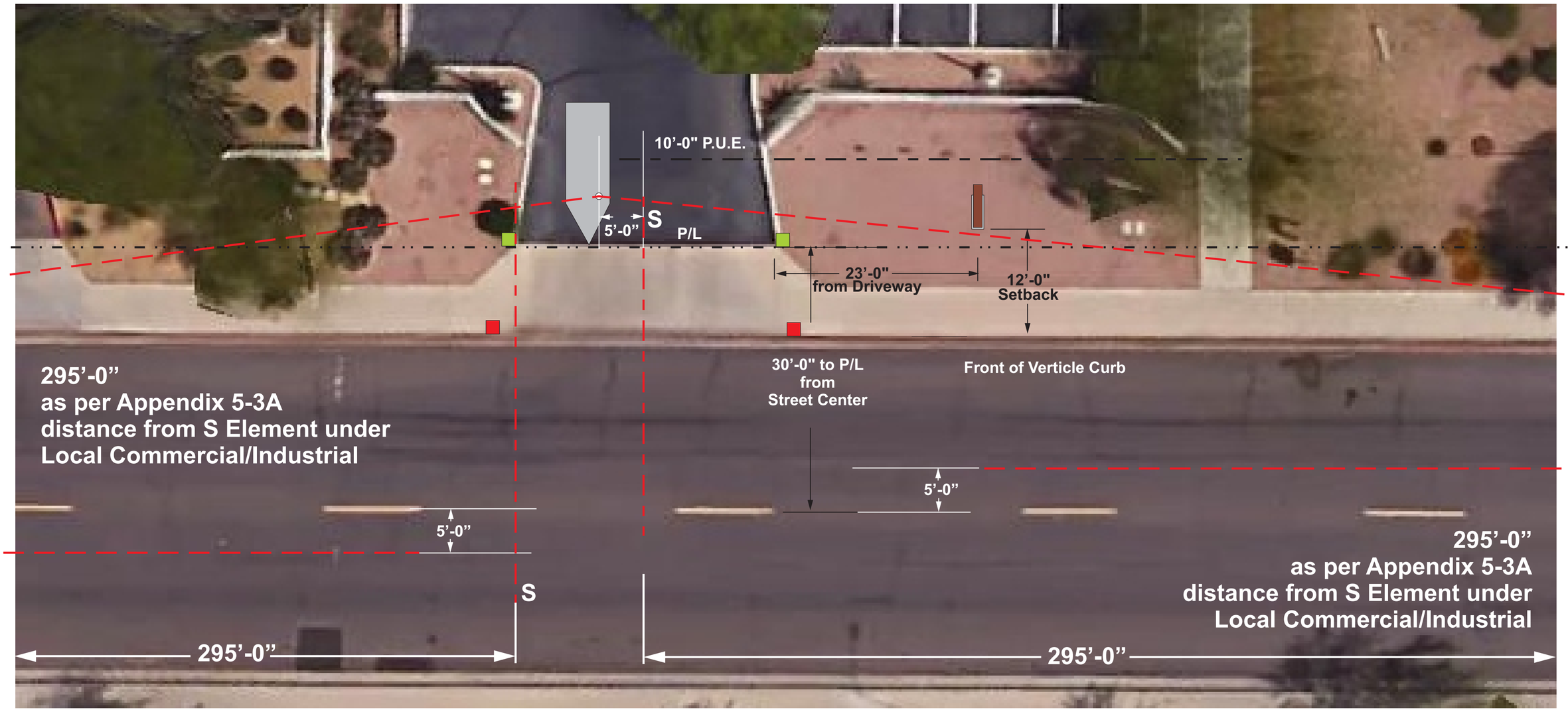


18” Object Height Limit
(Measured from
Roadway Surface)
at Property Line

18” Object Height Limit
(Measured from
Roadway Surface)
at Curb

1/32” Scale

1/8” Scale



EXAMPLE ONLY