

STOP SIGN PLACEMENT

STOP signs are one of the most common traffic signs and one of the most difficult to position properly. A STOP sign is intended to assign right-of-way at intersecting street locations and must be positioned properly for oncoming road users to react appropriately. This positioning includes the height, lateral offset, and distance from the intersecting road. The positioning can be complicated by large intersection radii, skewed intersections, and roadway geometry.

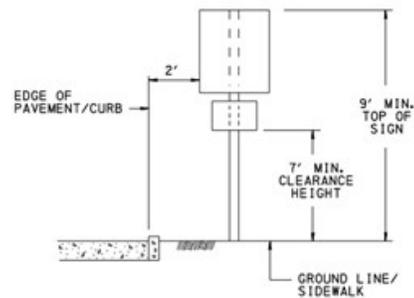
Fortunately, PennDOT Publication 111, *Traffic Control – Pavement Markings and Signing Standards*, and the *Manual on Uniform Traffic Control Devices* (MUTCD) provide guidance for proper and effective placement of STOP signs. Before installing new STOP signs or removing existing signs, a study should be conducted following criteria from PennDOT and the MUTCD.

STOP Sign Height and Offset

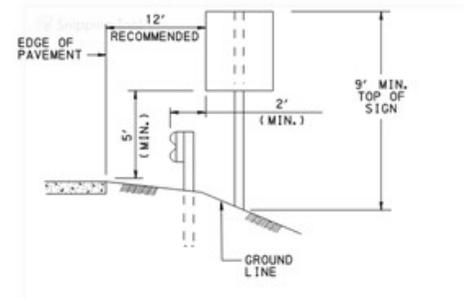
Section 2A of the MUTCD defines the minimum height and lateral offset requirements for traffic signs, including STOP signs.

In urban areas with sidewalks, parked vehicles, and pedestrian traffic, the STOP sign must be mounted a minimum of 7 feet from the ground or sidewalk to the bottom of the STOP sign. The lateral offset is recommended to be 2 feet from the face of the curb to the edge of the STOP sign; however, this can be reduced to 1 foot in tight situations.

In rural areas, the minimum is 5 feet from the edge of the pavement to the bottom of the sign. The recommended offset is 12 feet; however, this may not be practical on many rural roads so a minimum of 2 feet is required. Publication 111 has figures showing the minimum mounting height and offset for urban and rural areas.



BUSINESS OR RESIDENTIAL AREA



**RURAL AREA
 CONVENTIONAL HIGHWAY (NO SHOULDER)**



If there are supplemental signs beneath the STOP sign, the height requirement applies to the bottom of the bottom sign on the post.

STOP Sign Placement

Section 2B.10 of the MUTCD provides STOP sign placement standards and guidance. This section states that STOP signs must be located on the right side of the approach to which it applies, as close as practical to the intersection it regulates, while optimizing its visibility to the road user.

At a minimum, there must always be a STOP sign on the right side of the intersection approach. The STOP sign on the right side can be supplemented with a STOP sign on the left side as an option for increasing the visibility of the STOP control.

STOP Sign Positioning

MUTCD Figure 2A.3 shows the placement of STOP signs for several different intersection configurations. In rural areas, STOP signs should be placed 6 to 12 feet from the edge of the travel way of the intersecting roadway (Figure 2A.3-C). In urban areas with sidewalks and curbs, STOP signs should be placed a minimum of 4 feet in front of crosswalks (Figure 2A.3-D). For wide-throat intersections, the STOP sign can be placed up to 50 feet back from the intersecting roadway (Figure 2A.3-F).



Here are a few other items to consider when placing a STOP sign:

- The STOP sign should be oriented to a right angle to approaching traffic.
- STOP lines, when used to supplement a STOP sign, should be located at the point where the road user should stop (see Section 3B.16).
- Where two roads intersect at an acute angle, the STOP sign should be positioned at an angle, or shielded, so that the legend is out of view of traffic to which it does not apply (Figure 2A.3-A).
- At wide-throat intersections or where two or more approach lanes of traffic exist on the signed approach, observation of the STOP control may be improved by installing an additional STOP sign on the left side of the road and/or using a STOP line.

Unless protected by guiderail or installed beyond the clear zone, all sign posts must be of PennDOT-approved breakaway design. This applies to all new installation and replacement of existing STOP signs.

STOP Sign Visibility

STOP signs should be visible to approaching road users so that they have enough time to see the sign, react to the STOP condition, and stop their vehicle. The minimum stopping sight distance chart from the appendix of PennDOT Publication 212, Official Traffic Control Devices – Chapter 212, can be used to determine the approach sight distance to the STOP sign based on the speed and grade of the approach.

Table B - Minimum Stopping Sight Distance (feet)

85th Percentile Speed (mph)	Coefficient of Friction	Grade = -10%	Grade = -5%	Grade = 0%	Grade = +5%	Grade = +10%
25	0.38	166	155	147	140	135
30	0.35	230	210	196	185	177
35	0.34	299	269	249	233	221
40	0.32	389	345	314	291	274
45	0.31	487	425	383	353	330
50	0.30	600	517	462	422	392
55	0.30	706	605	538	490	454
60	0.29	852	721	634	573	528

For example, on a road with an 85th percentile speed of 30 MPH and a level approach, the STOP sign must be visible for at least 196 feet.

If vegetation is limiting the line of sight, trim or remove the vegetation. If the line of sight is obstructed by a hill, curve, or obstruction that cannot be removed, conduct a study to consider a STOP AHEAD (W3-1) sign and other enhancements.

To increase the conspicuity of a STOP sign to approaching road users, Section 2A.15 of the MUTCD offers several treatments, including:

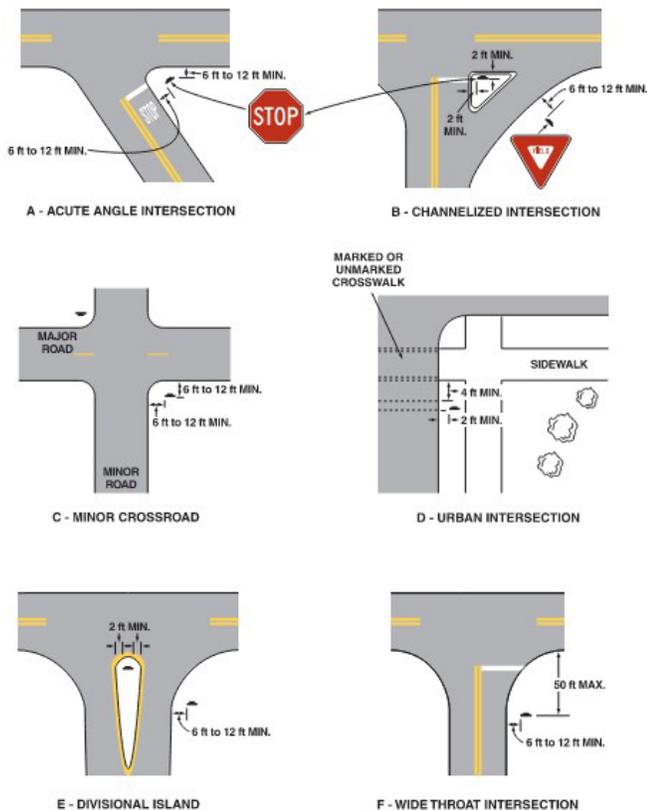
- Increasing the sign size.
- Adding reflective post striping (required to be RED for STOP signs).
- Adding a supplemental sign on the left side of the road.
- Adding a red flashing light—STOP BEACON to the sign (requires a study and PennDOT approval).
- Adding LED flashing lights to the STOP sign.
- Adjusting the sign position or placement.
- Adding pavement markings, such as STOP lines and STOP AHEAD text.

Placing two STOP signs on one post is prohibited. Furthermore, no sign should be mounted back-to-back with a STOP sign in a manner that obscures the shape of a STOP sign.

Lastly, do not forget to monitor the retroreflectivity of the STOP sign, as well as check for other damage that may limit the visibility of the STOP sign.

By following the appropriate installation steps, a municipality may use STOP signs to reduce crashes and properly regulate traffic through an intersection. Furthermore, a municipality should have a routine to periodically check and inspect signs, including STOP signs. Improper signing, deferred maintenance, and ignoring the guidance could create dangerous conditions for both road users and the responsible municipality.

Figure 2A-3. Examples of Locations for Some Typical Signs at Intersections



Note: Lateral offset is a minimum of 6 feet measured from the edge of the shoulder, or 12 feet measured from the edge of the traveled way. See Section 2A.19 for lower minimums that may be used in urban areas, or where lateral offset space is limited.