

No Passing Zones

As Section 3B.02 of the *MUTCD* provides, where center lines are installed, no passing zones should be established at vertical and horizontal curves and other locations on two- and three-lane roads where engineering study has indicated passing must be prohibited due to inadequate sight distance or other special conditions. The *MUTCD* describes applications of markings and warrants for no passing zones. Section 321.304 of the Code of Iowa also describes conditions where passing should be prohibited on two-lane roads. The following table lists recommended minimum passing sight distances for various speeds.

<i>Minimum passing sight distances</i>	
Posted or Statutory Speed Limit (mph)	Minimum Passing Sight Distance (ft)
25	450
30	500
35	550
40	600
45	700
50	800
55	900
60	1,000
65	1,100
70	1,200

Several methods of determining no passing zones have been developed and used successfully, including

- line of sight (eyeball)
- walking
- towed target
- two vehicle
- distance measuring equipment

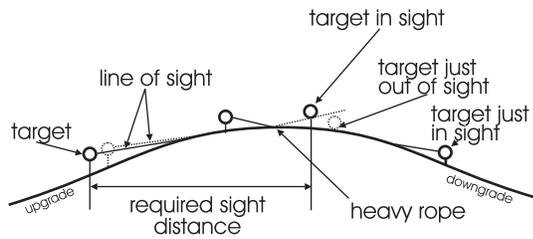
Suggested procedures for two of these methods are described here: a variation of the towed target or rope method and the distance measuring equipment method.

Towed Target or Rope Method

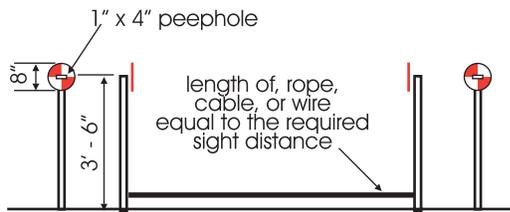
This procedure requires a two-member crew, two vehicles, targets of 3.5 feet height, and a rope, cable, or wire with a minimum length of 1,000 feet for a 55 mph road. The length of rope will vary based on the posted speed limit of the road as shown in the table at the end of this article.

1. The first crew member proceeds along the road with the rope trailing behind and the second crew member following the rope. Both vehicles should have a target 3.5 feet in height attached for observation by the other crew member. When sight of the targets is hampered by a crest or obstruction in or just outside the right of way, both crew members stop and stretch the rope between them.
2. With one member sighting the other's target, a location that provides adequate sight distance for approaching traffic can be determined. From that point, the advance member will walk toward the trailing member until a clear view over the crest or around the obstruction from a height of 3.5 feet is found. This is the end of the no passing zone for traffic approaching from the opposite direction. Simultaneously, the trailing crew member walks a recommended 100 feet away and marks the beginning of the no passing zone for traffic traveling in the same direction as the crew.
3. Again the crew proceeds along the road to determine the location where line of sight is no longer broken by the crest or obstruction. At this point the rope is extended to locate the point where traffic from the opposing direction will encounter restricted sight distance. The advance crew member then paces a recommended 100 feet away to mark the beginning of the no passing zone for traffic coming from the opposite direction. The trailing crew member walks forward until

clear sight is available from an eye height of 3.5 feet. This point is marked as the end of no passing for the same traffic direction as the crew.



profile - vertical curve



targets

Method of establishing no passing zones on vertical curves using sight targets

Note that the leading crew member always marks no passing zones for opposing traffic while the trailing member marks for traffic in the same direction as survey travel.

When using this procedure on horizontal curves, the crew should work from the inside wheel path for improved simulation of the anticipated location of a driver's eye. Also it is recommended to extend the beginning point of no passing zones 100 feet as with vertical crests, but it may not be necessary to extend the ending point.

Distance Measuring Equipment Method

This method requires a two-member crew with vehicles equipped with distance measuring instruments, range finder, two-way radios, and targets 3.5 feet high. The crew will proceed along a road separated by a distance based on posted speed (shown in the table at the end of this article). The separation distance of the two

observers is established by matching readings on the distance measuring instruments in each vehicle and is continuously maintained with radio communications.

1. The procedure begins with the crew proceeding along the road with each member observing the 3.5-foot target on the other vehicle. When line of sight is interrupted by a hill crest or obstruction in or near the right of way, both should stop.
2. With one observer sighting through the range finder, the other holding a 3.5-foot height target, and both using radio communications, the crew can determine the location with adequate sight distance for approaching traffic. From that point, the lead observer should walk toward the trailing crew member until a clear view over the crest or around the obstruction from an eye height of 3.5 feet is obtained. This point is marked as the end of the no passing zone for traffic approaching from the opposite direction. The trailing member then walks a recommended 100 feet back and marks the beginning of a no passing zone for traffic traveling in the same direction as the crew.
3. The crew then proceeds along the road until line of sight between them is no longer broken by the crest or obstruction. Separation distance is verified with the distance measuring equipment and communicated by radio. At this location, again one observer uses the range finder to sight a 3.5 foot target held by the other and, with radio communication, determines where necessary sight distance is not available for oncoming traffic. The lead observer then paces a recommended 100 feet away and marks the beginning of the no passing zone for opposing traffic. The trailing member walks forward until clear sight from a 3.5-foot height is available. This point is marked as the end of the no passing zone for traffic traveling in the same direction as the crew.

Note that the leading crew member always marks no passing zones for opposing traffic and the trailing observer marks for traffic traveling in the same direction as the crew.

When marking no passing zones for horizontal curves, it is recommended that crew members work from the inside wheel track to better simulate the location of a driver’s eye. Also it is suggested to extend the beginning point of the zone 100 feet from observed sight restriction, but it is probably not necessary to also extend the ending location.

It is suggested that no passing zones on 55 mph roads be a minimum of 500 feet in length with any necessary extensions added at the beginning. No passing zones of 50 feet or less probably need not be marked.

Crew safety when making observations and establishing no passing zones should be addressed with appropriate warning signs and signals. Refer to Part 6 of the *MUTCD* and “Temporary Traffic Control During Operations” (K1) in this manual for suggested traffic control.

No passing zones may be adjusted under these situations for 55 mph posted speed:

- a. When adjacent no passing zones are located within 400 feet or less, connection of the two zones is recommended.
- b. When a no passing zone ends within 300 feet of an at-grade intersection, consider extending the zone to the intersection.
- c. When a no passing zone ends 300 feet or less from a narrow structure, consider extending the zone through the structure.
- d. When a no passing zone begins 1,000 feet or less from a stop sign, the zone can be extended back to the intersection and the No Passing pennant possibly eliminated.
- e. For traffic approaching a stop intersection, a no passing zone line should begin 600 feet in advance of the Stop sign.

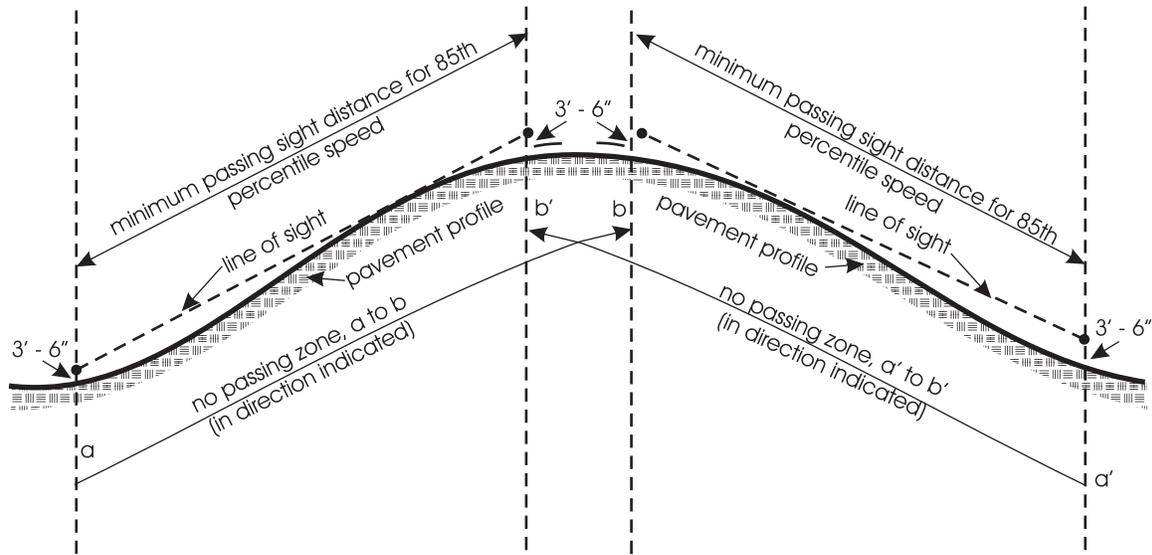
For additional information on this subject, please refer to Section 3B.02 of the *MUTCD* and to the Iowa Department of Transportation *Manual On Pavement Marking Program*. The following table and figures are included for reference.

No passing zone adjustments for slower speeds

Minimum Passing Sight Distance		Adjusting Length of Special Zones and Extensions for Various Speeds				
Posted or 85th Percentile Speed	Survey (Rope) Length	Minimum Length	(a)	(b, c)	(d)	(e)
55	1,000	500	400	300	1,000	600
50	1,000	500	400	300	1,000	600
45	800	400	320	240	800	480
40	800	400	320	240	800	480
35	600	300	240	180	600	360
30	600	300	240	180	600	360
25	500	250	200	150	500	300
20	500	250	200	150	500	300

For a, b, c, d, and e, note explanations above.

Vertical Curve



a, a' begin no passing zone

b, b' end no passing zone

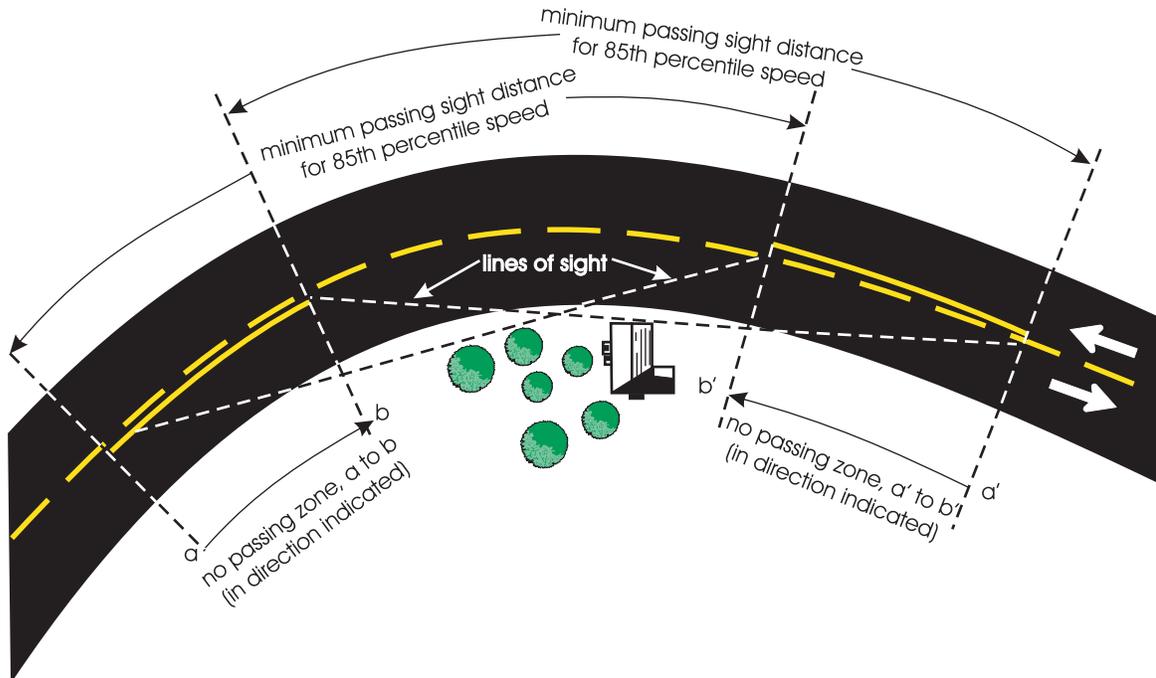
Sight distance becomes less than minimum measured between points 3' - 6" above pavement.

Sight distance again exceeds minimum.

Note: No passing zones in opposite directions may or may not overlap, depending on alignment.

Method of locating and determining the limits of no passing zones at vertical curves

Horizontal Curve



a, a' begin no passing zone

b, b' end no passing zone

Sight distance, measured along center line (or right-hand lane line on three lane road) becomes less than minimum.

Sight distance again exceeds minimum.

Note: No passing zones in opposite directions may or may not overlap, depending on alignment.

Method of locating and determining the limits of no passing zones at horizontal curves