

# UNIT 5 - PASSING AND NO-PASSING ZONES

## ASSIGNMENT

Read and study Section 3B-5 of the MUTCD and the North Carolina Supplement to the MUTCD; read and study Section 3E-2 of the Traffic Control Devices Handbook, Two Vehicle Method; read and study One Vehicle Method in “Procedure for Establishing No Passing Zones” by Brown/Hummer. Answer review questions. Take and pass the written test.

## KEY POINTS

### Criteria for Establishing No-Passing Zones

1. No-Passing zones installed on roadways marked in accordance with G.S. 136-30.1, due to restricted sight distances caused by curves, grades, or other obstructions, should be placed according to the schedule shown below:

Posted Speed Limit (mph)	Minimum Passing Sight Distance (feet)
30	500
35	550
40	600
45	700
50	800
55	900
60	1000

2. Passing sight distance on a vertical curve is the distance at which an object 3.50 feet above the pavement surface can just be seen from a point 3.50 feet above the pavement. Similarly, passing sight distance on a horizontal curve is the distance measured along the center line between two points 3.50 feet above the pavement on a line tangent to the ditch line or other obstruction that cuts off the view on the inside of the curve.
3. At intersections on roadways to be marked in accordance with G.S. 136-30.1, no-passing solid yellow lines should be installed on all approaches to the intersection a minimum distance of 500 feet in rural areas and 100 feet in urban areas.
4. If it is determined that a no-passing zone established under the above schedule measures less than 500 feet, the zone shall be extended to a minimum length of 500 feet.
5. If in the same direction of travel there exists a gap of 400 feet or less between successive zones of restricted sight distance, the gap shall be closed with yellow lines.

6. The Traffic Control Devices Handbook describes several methods for establishing no-passing zones on the pavement using the criteria above. Currently in North Carolina, both the two-vehicle and the one-vehicle methods are being used.

### **Two Vehicle Method**

For this method, two vehicles equipped with two-way radios and calibrated distance measuring devices are used. It is common to use a target located on the rear of the lead vehicle at a height of 3.50 feet above the pavement and a system of mirrors on the trailing vehicle to project the driver's eye height at 3.50 feet.

To set the minimum sight distances interval, both vehicles should stop abreast on the roadway and set both meters to zero. The lead vehicle will then move ahead the minimum passing sight distance for the speed for the particular area. When the lead vehicle has gone the required distance, it should stop and the meter reset to zero. From then on, radio contact should be maintained between the two vehicles to coordinate their movement. Upon a signal from the trailing vehicle, both vehicles can move forward. The vehicles are to be kept at the correct distance and speed by the lead vehicle driver calling of readings often enough to keep identical readings on the measuring devices of the two vehicles.

While making measurements, the driver of the trailing vehicle should stop both vehicles just before the lead vehicle goes out of sight. At this time, the trailing vehicle can move up to assure that both vehicles have identical meter readings. From this point, each vehicle will move forward in short increments until the target on the lead vehicle goes out of sight over the crest of a hill or is obscured by "obstructions" along the roadside of horizontal curves. At the point where the lead vehicle's target disappears, the pavement should be marked with spray paint or by some other method.

The trailing vehicle operator should mark to the right of the centerline; the leading vehicle operator to the left. The trailing vehicle marks will represent the beginnings and ends of no-passing zones for vehicles traveling in the direction of the survey; the lead vehicle marks will represent the no-passing zone for the opposite direction of travel.

The two vehicles should then move forward with identical meter readings until the driver of the trailing vehicle sees the top of the lead vehicle. Both vehicles are then stopped and the trailing vehicle moves forward to adjust to the correct meter reading. Then both vehicles move forward in short "steps" until the target appears. Both drivers should then stop and make two more marks on the roadway.

It is possible for vehicles positioned in-between the survey vehicles to become "lost" in depressions although the vehicles are spaced the minimum sight distance apart and the drivers can see each other. Care must be taken to identify these locations and drive carefully through them and install no-passing zones as appropriate at them.

The minimum passing sight distance used during a survey run may be changed to accommodate a change of speed zone by either stopping and beginning as previously noted or by continuing the run with different readings if the operators are skilled in adjusting the meter distances while continuing the survey.

At the slow vehicle pace necessary to conduct surveys for passing zones, care must be taken to ensure that traffic does not become confused or congested. Both vehicles should

pull over on the shoulder when the rear driver notices several vehicles being “stacked” by the work operation.

### **One Vehicle Method**

For this method, one truck with a distance measuring instrument is used. The truck should preferably be a medium sized vehicle to ensure that driver eye heights are not exaggerated.

Drive slowly through the curve or hill. Mark the point where the vista “opens” (where the driver can see ahead at least as far as the required minimum sight distance) and set the meter to zero.

Drive forward the required minimum sight distance and mark that point.

The two marks correspond to the ending of the no-passing zone in the current direction and the beginning of the no-passing zone in the opposite direction, respectively.

Repeat the steps noted above for traveling in the opposite direction.

As with the two vehicle method, the driver must be aware of the traffic behind him and pull off the roadway occasionally to prevent large backups of traffic.

Remember that the presence of properly marked passing zones are a positive safety feature for a road. Do not eliminate legal passing zones without due consideration and proper measures of their effectiveness.

### **Steps on How to Preline**

First, find the center of the road. Then make three or more marks 40 to 50 feet apart, measuring the center, which will give you an idea of where the center is. Next you set up your pointer; it will follow the edge of the road. Set the back of the truck up with the first mark you have made. You then move your carriage out to the center of the road. Go down the road to insure the carriage lines up with the other marks. When you see that it does, push the skipper switch to paint the marks as you go down the road.

Stop every 1,000 feet, or when you see the road has narrowed or widened to make sure you are somewhat near the center of the road. When double marking, if the road widens; going down your carriage will be to the right of center and coming back the carriage should be to the right of center. If the road has narrowed; going down the carriage will be to the left of center and coming back it should be left of center. If the road stays the same; your double markings should line up with or mark over your first markings.

When you get done, work on places where your double markings are more than a foot apart to help the driver that paints the road. Also, check any curves that may need working on. The curves tend to widen, so you may have to give them special attention.

## *REVIEW QUESTIONS*

1. What is the minimum passing sight distance required for a 55 mph speed zone?
2. What is the object height used to determine passing sight distances?
3. No-passing barrier lines should extend a minimum distance of 600 feet from an intersection.  
True                      False
4. If the length of a passing zone is 400 feet or less, the area must be marked as a no-passing zone.  
True                      False
5. The mirrors used in a two vehicle method are mounted at 3.50 feet above the pavement.  
True                      False
6. Two-way radios and distance measuring devices are important tools for the two vehicle method.  
True                      False
7. The size of truck used for the one vehicle method is not important.  
True                      False
8. Passing zones have no bearing on highway safety.  
True                      False

## *ANSWERS TO REVIEW QUESTIONS*

1. 900 Feet. MUTCD (3B-5) and NC Supplement to MUTCD (3B-5).
2. 3.50 feet. MUTCD (3B-5) and NC Supplement to MUTCD (3B-5).
3. False. No passing solid yellow lines should be installed on all approaches to the intersection a minimum distance of 500 feet in rural areas and 100 feet in urban areas. NC Supplement to MUTCD (3B-5).
4. True. NC Supplement to MUTCD (3B-5).
5. True. MUTCD (3B-5) and NC Supplement to MUTCD (3B-5).
6. True. Traffic Control Devices Handbook (Section 3E-2).
7. False. A small to medium sized truck should be used so that the driver's eye height will approximate the 3.50 feet object height.
8. False. The presence of properly marked passing zones is a positive safety feature for a road.