

NO PASSING ZONES - FIELD PROCEDURE

INTRODUCTION

This procedure outlines the basic method for the determination of No Passing Zones using the two-car method.

Vehicles: Two required with distance measuring instruments (DMI) attached to the transmission in each vehicle. The vehicles are designated as lead vehicle and trailing vehicle. The DMI in the trailing vehicle has a printer attached for the recording of data.

Personnel: Three people are required for the field operation. The lead vehicle has a driver. The trailing vehicle has two people, a driver and a recorder. The recorder acts as the crew chief. Another person is required in the office to prepare the log of No Passing Zones from the field data.

EQUIPMENT

1. Walkie Talkie: one for each vehicle (spare, if possible).
2. Walkie Talkie accessories: lighter plug in, external attachments, extra batteries.
3. DMI for lead vehicle, DMI with printer for trailing vehicle.
4. Warning sign mounted on top of both vehicles.
5. Roadside warning signs with stands.
6. Rotating amber warning light for each vehicle
7. Wheel or measuring tapes to establish calibration course.
8. Screw drivers, pliers, hammer, etc.
9. Spray paint: three cans minimum.
10. Tape recorder.
11. Tape cassettes: one for every 10 roads to be surveyed (60-minute cassette).
12. Miscellaneous Supplies: Event longs, note pad on clipboard, pencils, sharpener, stapler, paper clips, post-its, file folders, etc.

CALIBRATION COURSE

A calibration course must be established at the start of the project. This course should be at least 1000 feet in length and preferable 200 feet in length. The calibration of the DMI's in the vehicles should be checked at the start of each work day and at the end of the day's work. The pressure of the tires should be as consistent as possible, preferably between 32 and 35 psi for radial tires.

MINIMUM SIGHT DISTANCE (MSD)

The minimum sight distances are in Table 1 (page 1-2). The speed used for determination of MSD is based on the following:

1. Use the posted speed limit or 85th percentile speed, if known.
2. Of no posted speed, use 55 mph.
3. Ignore school speed zone, i.e. "School Speed Limit 25 mph when Children Present".
4. When speed limit changes, the lead driver stops at the speed limit change and advises crew chief. Crew chief determines new MSD. The trailing vehicle adjusts to a separation distance equal to new MSD.

DUTIES OF THE FIELD PERSONNEL

Driver-Lead Vehicle

Maintains consistent speed, as much as possible. An estimation of probable speed or speed range should be made prior to starting a particular survey.

Communicates to the second vehicle his distance from the starting point at designated intervals, 200 feet, 300 feet, or 500 feet depending on the speed of the vehicles.

Advises the trailing vehicle of: approaching physical features, e.g.: crossroad, intersection left, intersection right, railroad crossing, narrow bridge, one-lane bridge, change in speed limit, end of survey, city limits, county line, any other feature that might affect the establishment of the No Passing Zones.

Driver-Trailing Vehicle

Adjusts speed of vehicle to maintain separation distance between vehicles. This is based on communication with the driver of the lead vehicle.

Advises recorder of events as they are about to occur; vehicle out of sight, vehicle returns to view, approaching crossroads, intersection left, intersection right, railroad crossing, narrow bridge, on lane bridge, city limits, county line, etc.

The tail lights of the lead vehicle should be used as the target for the determination of the vehicle being in-sight or out-of-sight if the tail lights are 3.5 feet above the ground; otherwise a target must be placed on the vehicle.

The driver must be aware of the potential for sight restrictions due to vegetation especially on horizontal curves. In other words, if the driver's view might be restricted because of a potential cornfield, an out-of-sight must be recorded. Also, the possibility of overhanging branches, particular on minor county roads, should be observed and noted.

Recorder and Crew Chief

Operates DMI and printer. Records events as they occur utilizing a pre-determined coding system, see Table 3 (page 2-5). Advises driver to adjust separation distance based on communication from lead vehicle driver.

Begin and End of Survey

Utilize physical (observable) mark on pavement or roadside for beginning and end of survey, e.g., painted centerline, changed in pavement (bituminous to concrete), edge of road, traffic sign post, (something recognizable and semi permanent that the layout person can easily identify). Must be noted in field notes and on No Passing Zone log.

Acts as crew chief determining work start time, quitting time, roads to be surveyed, provides supplies – gas, printer paper, etc. Supervises calibration of vehicles.

PROCEDURE

ALTERNATIVE 1

Upon arrival at designated site, the driver of the lead vehicle sets out warning signs along the roadway shoulder indicating to traffic that a survey is taking place in the area. Signs should be placed along the direction of survey where traffic will most likely enter the system, i.e., beginning of survey, major cross roads, etc.

While the lead vehicle is setting out the warning signs, the tailing vehicle surveys roadway features, e.g., change in speed limits, intersection right, intersection left, crossroads, railroad crossings, narrow bridges, one lane bridges, city limits, county line, etc. The survey can be conducted at posted speed limits so as long as the recorder can keep up with incoming information. It is suggested a tape recorder be used for ease of recording where the survey begins, street names, speed limits, roadway features and other unique situations. This information can then be transferred to the event log and retained for later reference if needed. Any missed data is noted and recorded during the in-sight/out-of-sight survey.

Both vehicles meet at the point of beginning. From the beginning point, the lead vehicle advances the separation distance (minimum sight distance), stops, resets the DMI to 0000 and waits for command from the crew chief to proceed. When trailing vehicle is ready, the recorder advises the lead vehicle to proceed. The trailing vehicle maintains the MSD to the best of his ability.

When the lead vehicle approaches a potential out-of-sight event at the beginning of a curve, at crest of hill, driver decelerates to a near stop, communicating he is doing so to the trailing vehicle. When trailing vehicle is in position, both proceed at a speed of 5-15 miles per hour with the lead vehicle communicating at 25-foot intervals until lead vehicle is back in sight. The vehicles then accelerate to the prevailing speed until another out-of-sight condition and the above procedure is then repeated. The locations of out-of-sight and back in sight should be within 50 feet of actual conditions.

ALTERNATIVE 2

From the beginning point, the lead vehicle advances the separation distance (minimum sight distance), stops, resets the DMI to 000 and waits for the command from the Crew Chief to proceed.

When trailing vehicle is ready, the recorder advises the lead vehicle to proceed. The trailing vehicle driver maintains the MSD to the best of his ability.

The driver of the lead vehicle advises the crew chief in the trailing vehicle of roadway features, change in speed limit, farm vehicle in roadway, school bus, etc. that may reduce his speed or affect the establishment of the No Passing Zones.

When lead vehicle approaches an out-of-sight event at the beginning of a curve or the crest of a hill, the driver stops. Crew chief in the trailing vehicle instructs the driver in the lead vehicle to move ahead at 50-foot intervals until target goes out-of-sight. (After working together, the team maybe able to perform this operation at 5 mph or greater if separation can be maintained.) The location of out-of-sight and back in sight should be within 50 feet of actual conditions.

MULTI-LANE ROADS

Sometimes two lane roads are widened at intersections for turn lanes. Two common situations which may be encountered are:

1. Three or more lanes without island.
The beginning of them multi-lane should be noted with event code eight (8) and the end with code nine (9). There is no need to note the end of the auxiliary lane at the intersection. However, the centerline of the cross road must be identified.
2. Three or more lanes with island. An island may be raised concrete, mountable concrete, bituminous, grass median, or painted. There will generally be a painted line along the island which tapers to the double yellow lines or centerline. This is known as a median taper point (MTP). The following should be logged:
 1. MTP at beginning
 2. Beginning of island or median
 3. Centerline of cross street
 4. End of island or median
 5. MTP at end
 6. If it is painted island, note on event log.

There is no need to log the end of the island at the intersection.

TABLE 3
EVENT CODES

1. Out-of-sight
2. Back-in-sight
3. Intersection Both ways
4. Intersection Left
5. Intersection Right
6. Speed Limit Change/MSD
7. City Limit
8. Begin Multi-Lane without Island
9. End Multi-Lane without Island
10. Begin Survey
11. End Survey
12. Begin Bridge
13. End Bridge
14. RR Xing
15. RR Symbol
16. Begin Multi-Lane with Island - MTP
17. End Multi-Lane with Island - MTP
18. Other (note event)

Additional Item to Note

- * If a bridge is one-lane or pasted as “narrow”.
- * Names of roads that intersect, if available.
- * Beginning/ending of county responsibility, if applicable.
- * Stops signs: labeled as two-way; four way.
- * Existing No Passing Zones at minor streets.
- * Name of river or stream.