2025 Spring Pavement Marking Training

JEANNIE SILVER P.E.

WISCONSIN DOT

Contact Information

SPECIAL THANKS TO ENNIS FLINT FOR JOINING US TODAY!

Jeannie Silver

- Pavement Marking Engineer
- 608-246-5408
- jeannie.silver@dot.wi.gov

Regional Contacts

- SW- Kory Keppel, Jeff Holloway
- SE- Chuck Saldivar, Bree Johns-Konkol
- NE- Steven Herlache
- NC- Al Smith
- NW- Ken Jansky

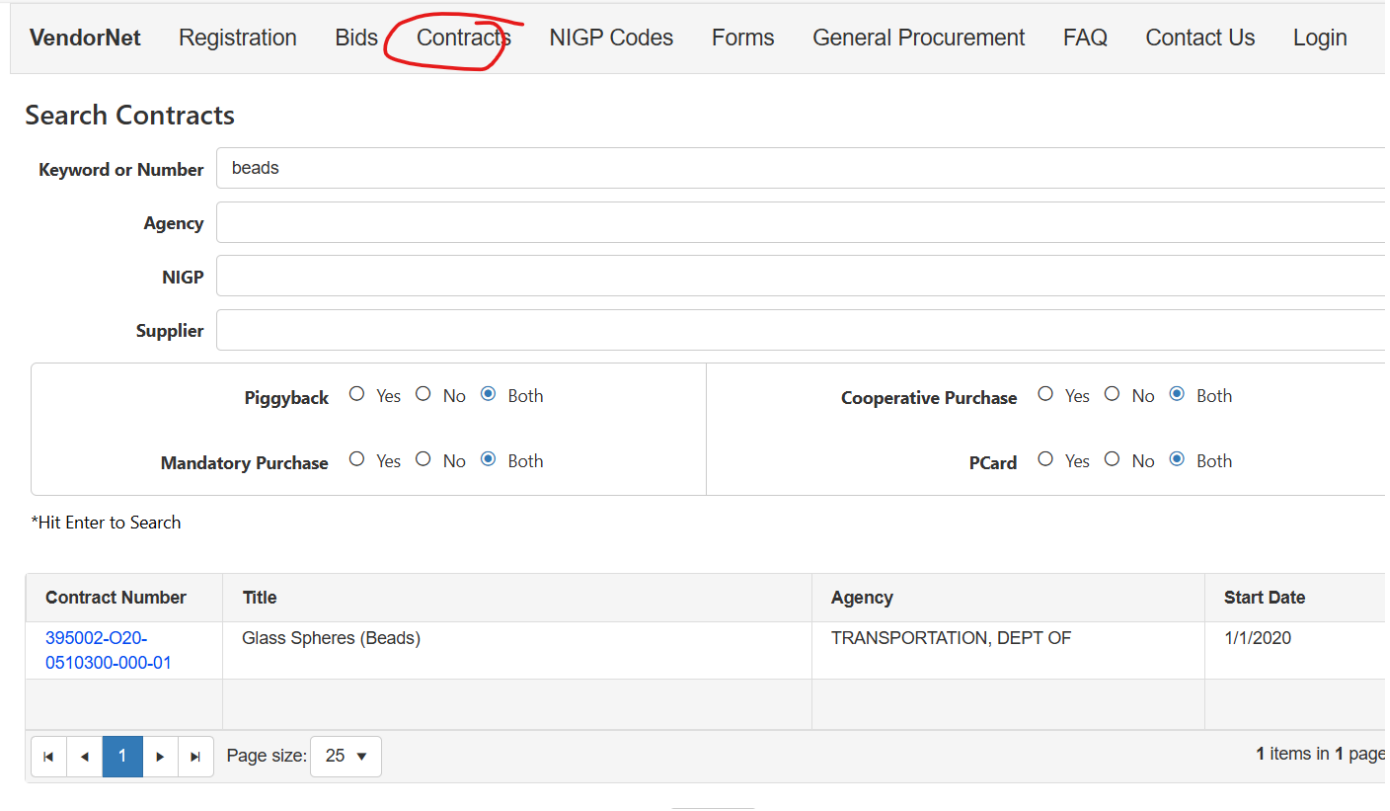
Procurement Contracts

- Use the Procurement Contracts
- Reasons When You Do Not Use Contracts:
  1. Difficulty getting the product
  2. Product substitutions must be:
     - same or better quality (APL)
     - same or better price

Paint	Ennis Flint 10 Calendar Day Delivery
Beads	Potters (Good Until May 1st) 21 Calendar Day Delivery
Tabs	Apex Universal 28 Calendar Day Delivery
Traffic Control Devices	Decker Supply, Inc 28 Calendar Day Delivery
Guardrail Delineators	Decker Supply, Inc 21 Day Delivery

Contract Updates

- Paint
  - Float is no longer included
  - Went from 7 day to 10-day delivery
- Beads
  - Expires May 1st
  - New Contract in the Works



Packaging of Beads

Regular

super/sling sack packaging

Paint/Bead Issues Contact:

Region Marking Coordinator

Jeannie Silver

Mary Kay or Jeremy Crow

Tips: Keep it in WRITING

Keep track of:

*Order Date

*Ship Date

*Batch Numbers

*Pictures

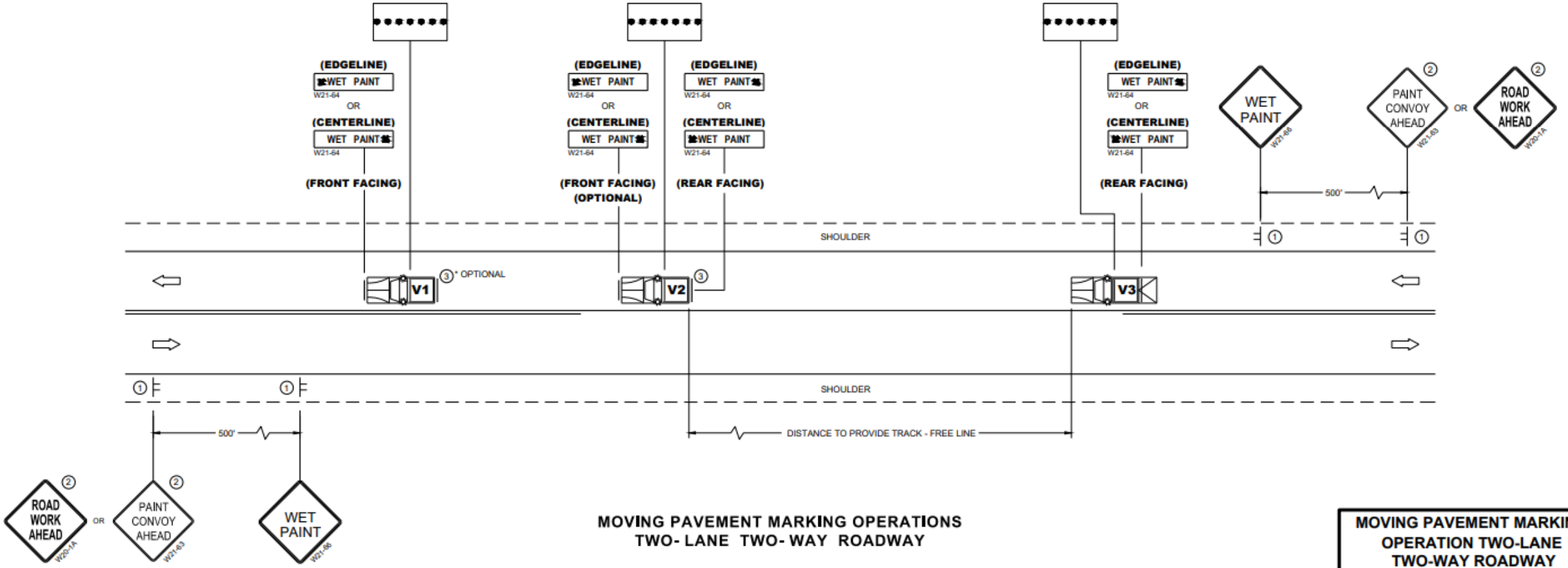
Work Zone Expectations

Follow SDD 15C19

48” Fluorescent Orange Signs

- Required Every 3 Miles
- After every major intersection

Moving Operations Updates



MOVING PAVEMENT MARKING OPERATIONS
TWO- LANE TWO- WAY ROADWAY

MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

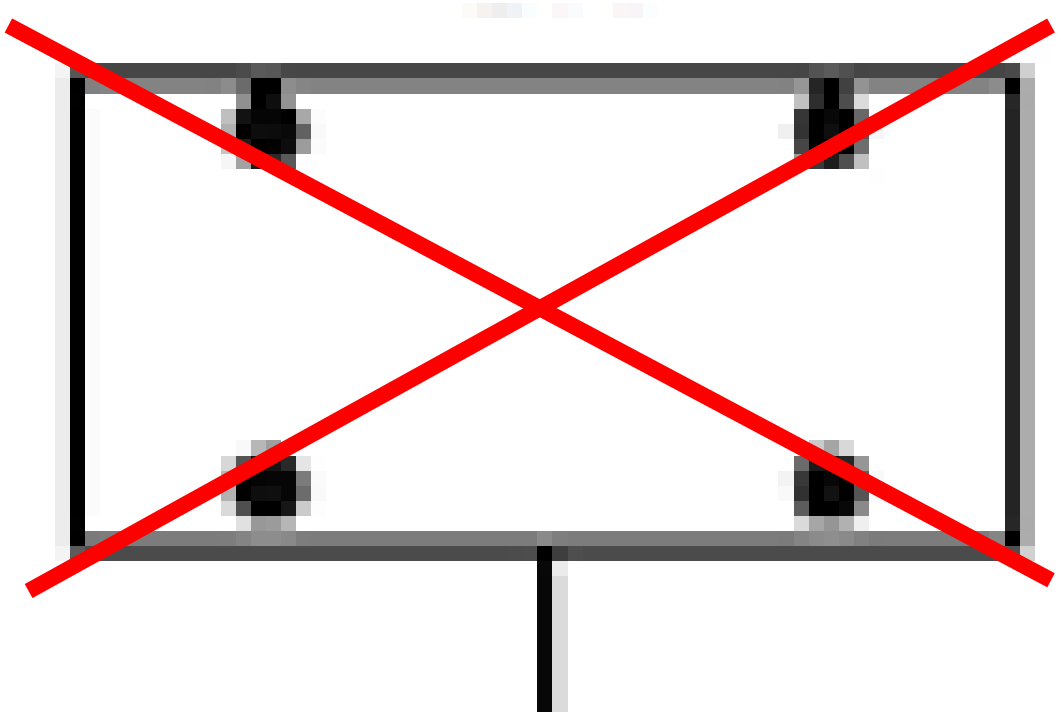

WET
YELLOW
PAINT

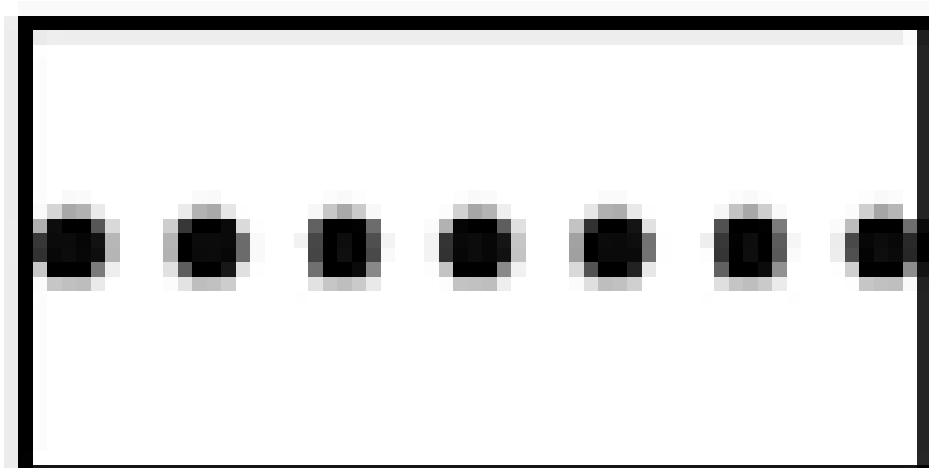

TRINITY
HIGHWAY
SS180M™ / SMT™
TYPE A

Automated TMA Pilot

Dane County – May 12-16

No longer using 4 corners





PCMS DO NOT USE:

*CAUTION

*HAZARD

*DANGER

CONES MUST BE 28”

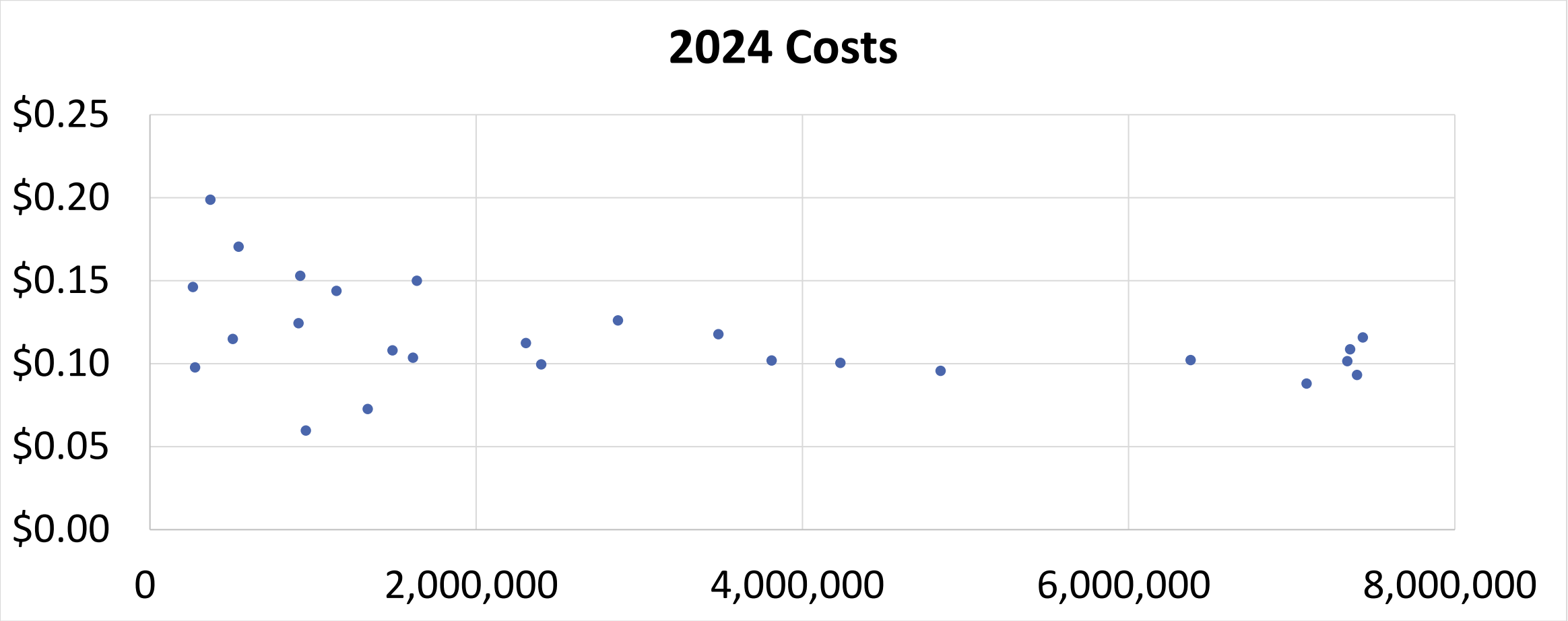
FLAGGERS MUST BE RECERTIFIED EVERY 2 YEARS

New Version Coming

Late Summer 2025

County Waterborne

Statewide average= 11.8 cents/LF

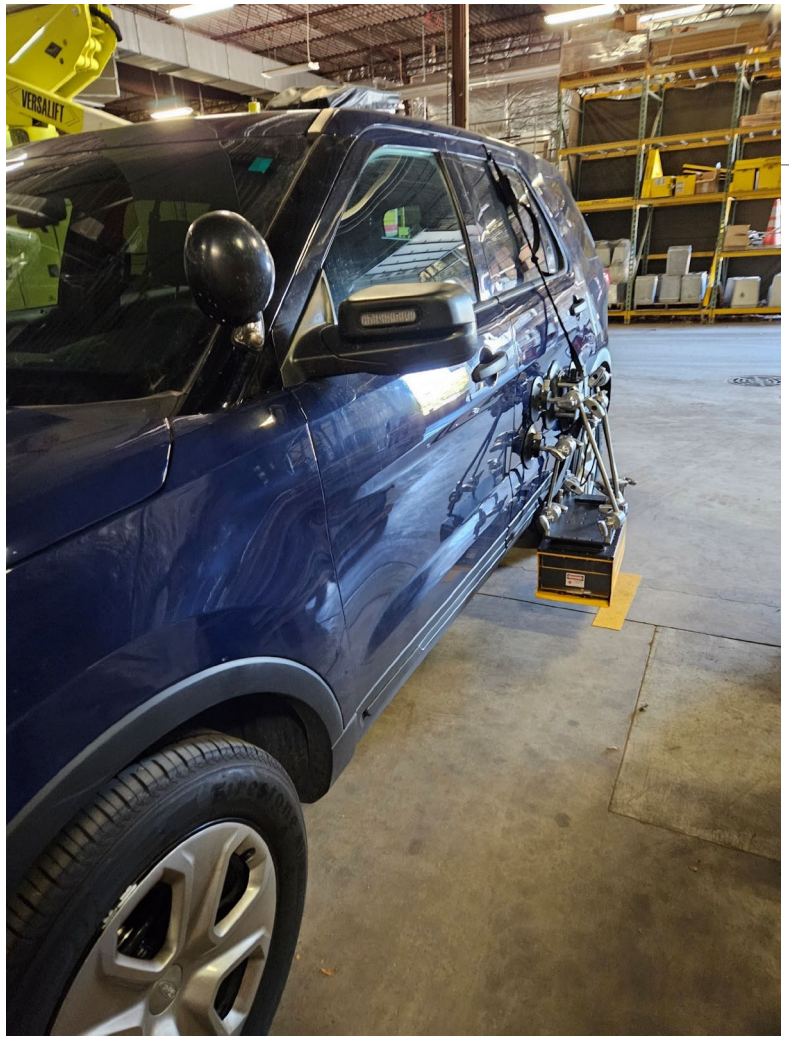


Minimum Retro Requirement

	Standard		*Guidance*
Speed Limit	**<35 mph**	**≥35 mph**	*≥70 mph*
Retroreflectivity Level	**n/a**	**50 mcd/m²/lx**	*100 mcd/m²/lx*

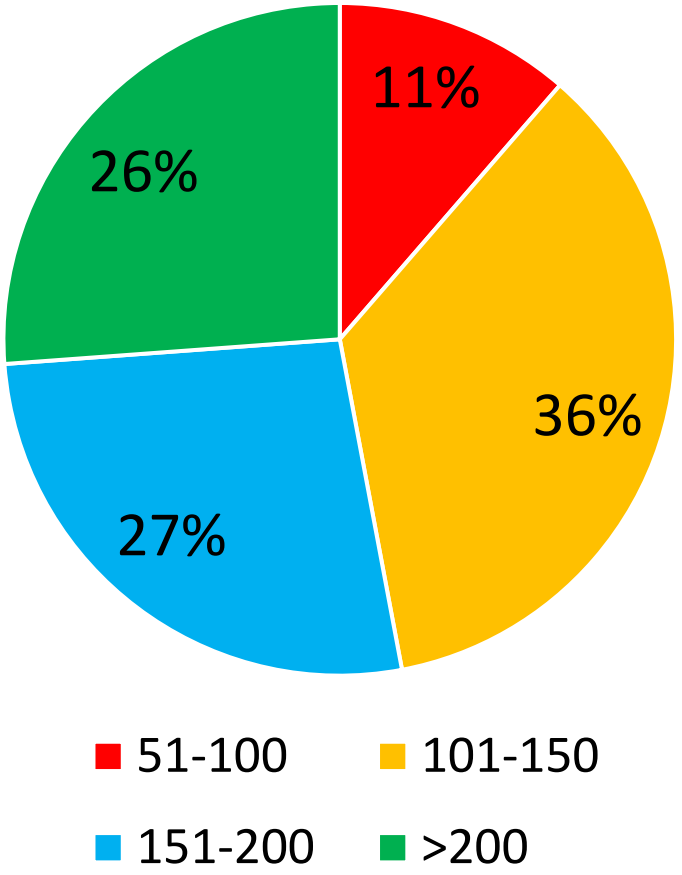
Optional Exclusions:

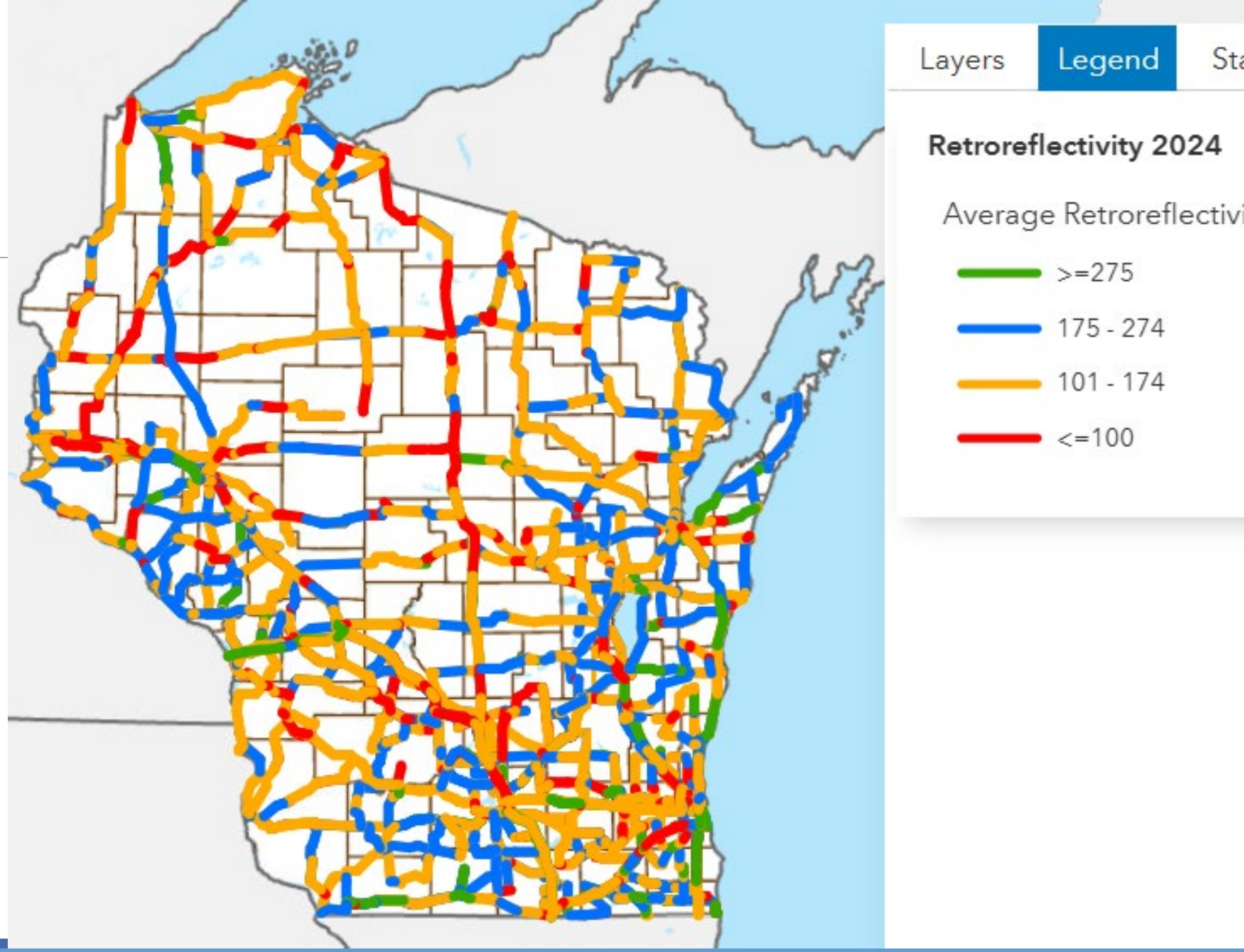
- Ambient illumination
- Less than 6,000 ADT
- Dotted extension lines
- Curb markings
- Parking spaces
- Shared-use paths



Mobile Retro Meter

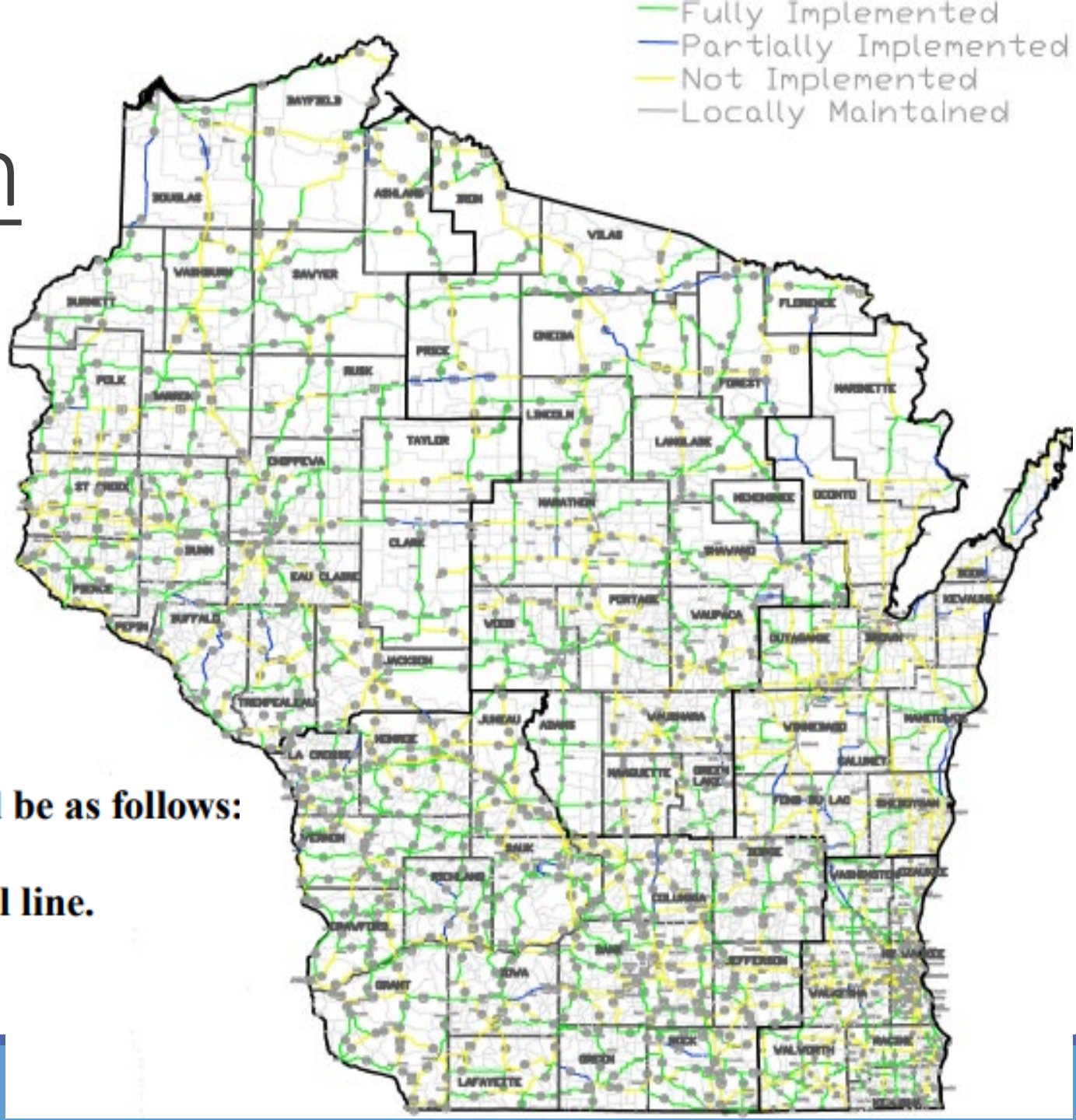
Retros 2024


11%
36%
27%
26%
51-100
101-150
151-200
>200


Layers
Legend
Retroreflectivity 2024
Average Retroreflectivi
>=275
175 - 274
101 - 174
<=100

4” to 6” Conversion

- Started Spring of 2023
- More Detectable
- **36.5% reduction** in fatal and injury crashes on rural two-lane highways

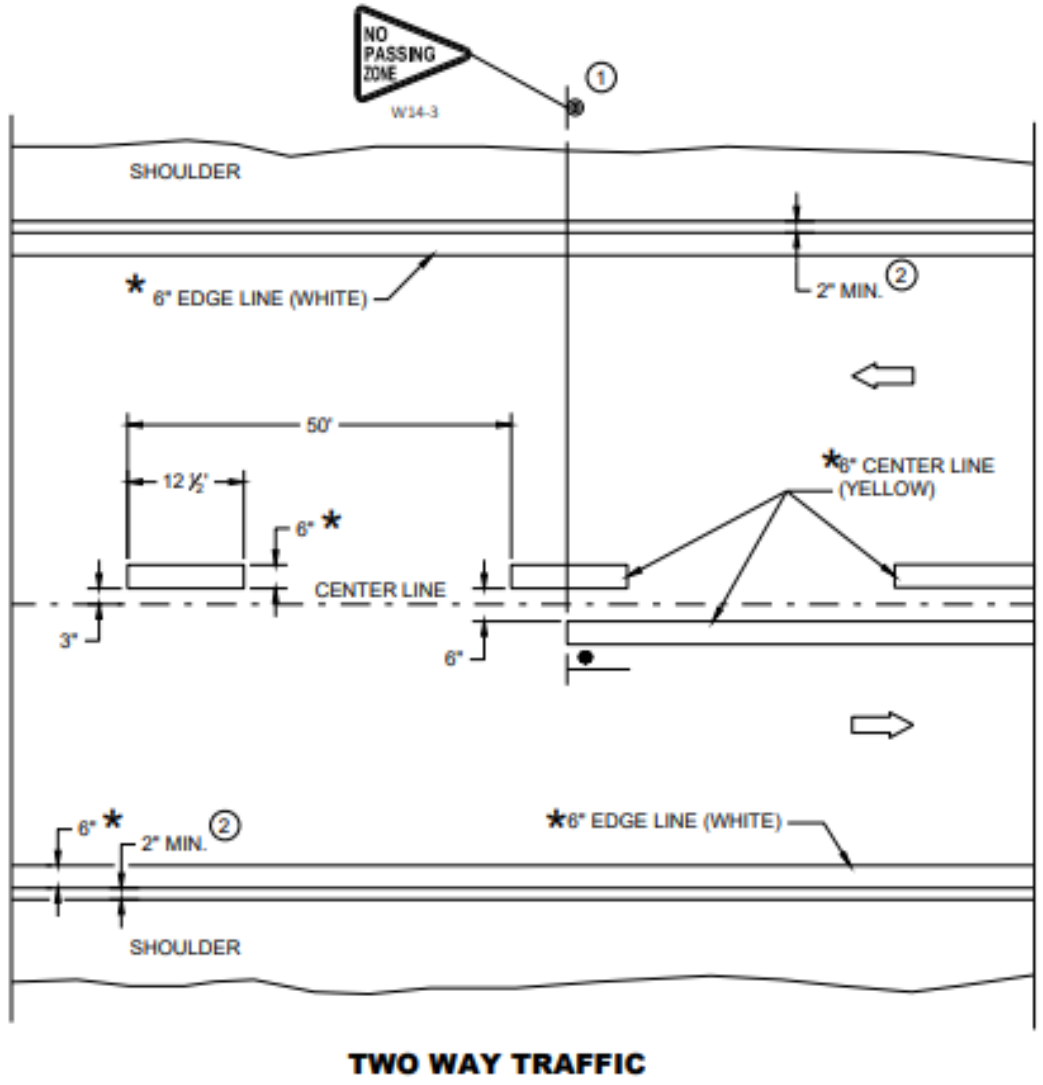


The widths and patterns of longitudinal lines shall be as follows:

A. Normal line—4 to 6 inches wide.
B. Wide line—at least twice the width of a normal line.

Marking Line Width

- 6” Required on State Highways
- 4” or 6” on Non-State Highways



TWO WAY TRAFFIC

Mil Thickness and Beads

Figure 1: No Beads

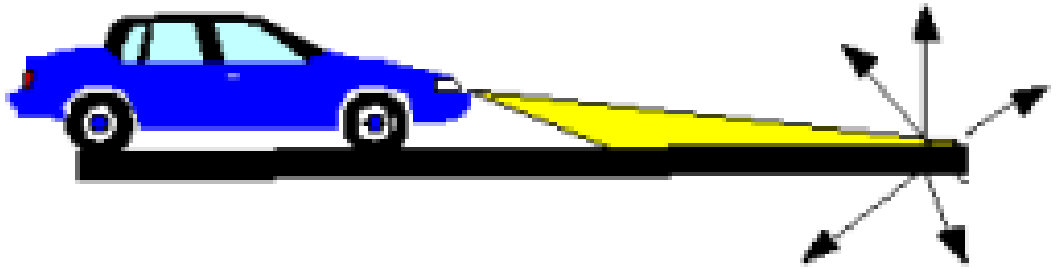


Figure 2: Beads added

Temperature

Refer to manufacture specifications for the temperature the paint *should* be applied at. Typically the ambient temperature *should* be above 50°F.

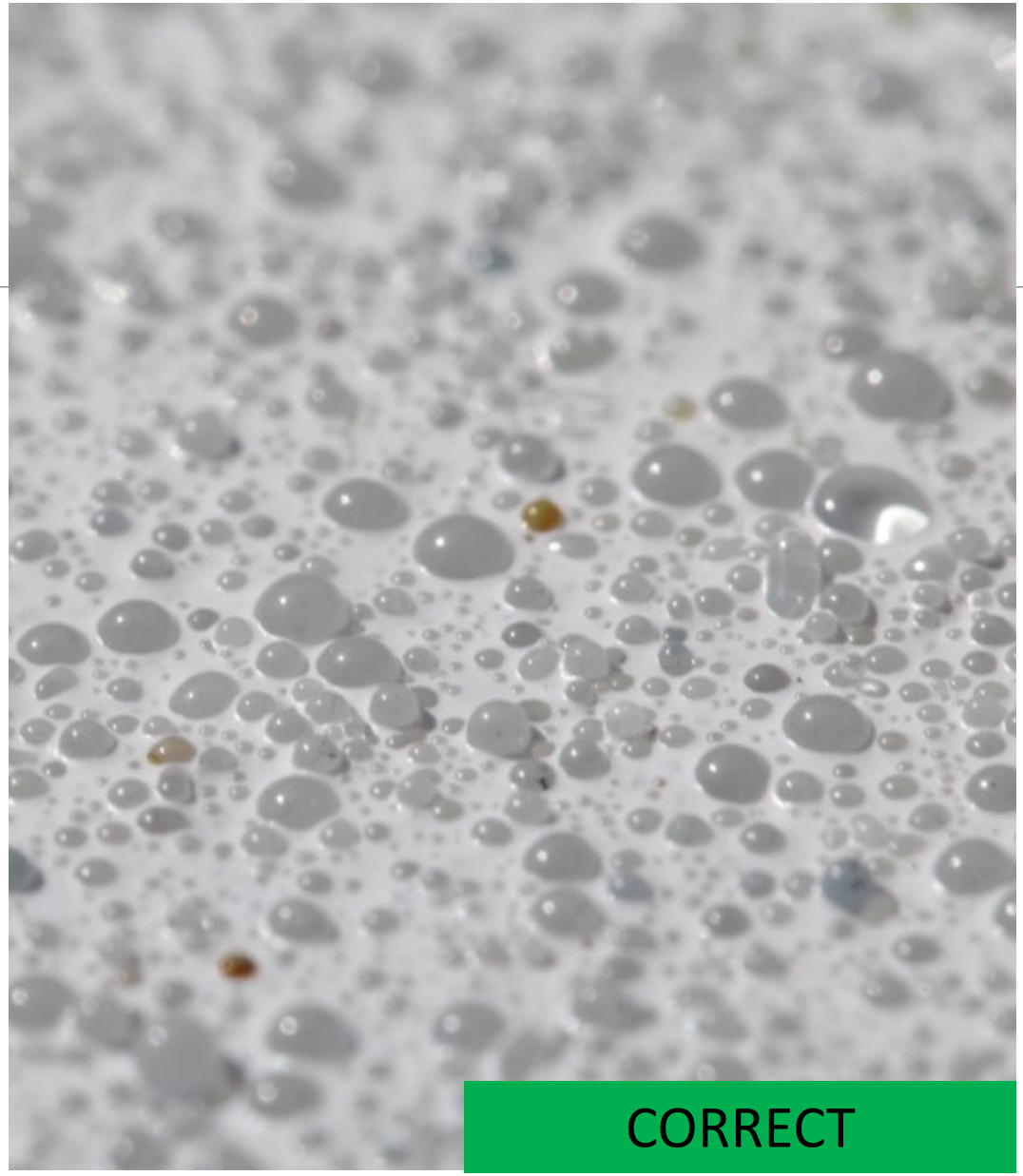
Beads

Wisconsin is currently using the AASTHO Type I bead gradation with 80% rounds. These can also be purchased off of the State Contract.

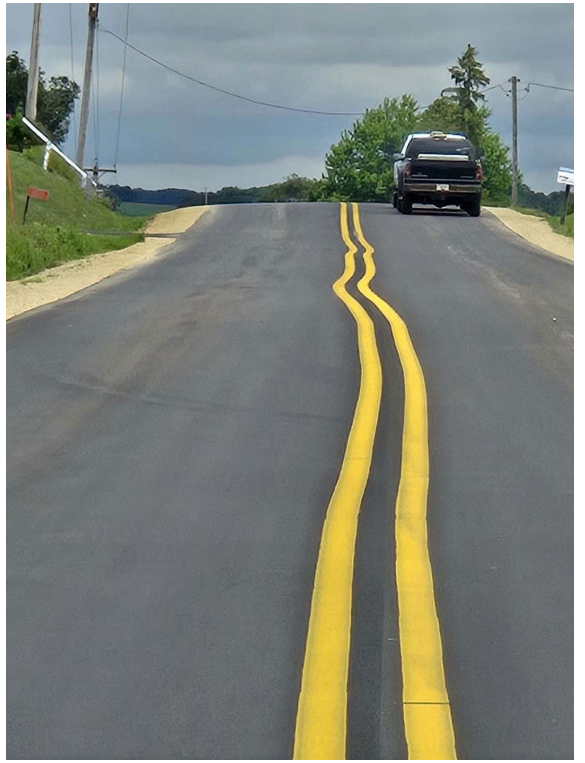
Application

Product	Mil thickness	Gallons per Mile	Feet per Gallon	Lbs Beads per Gallon
Paint	16	26.4	200	10

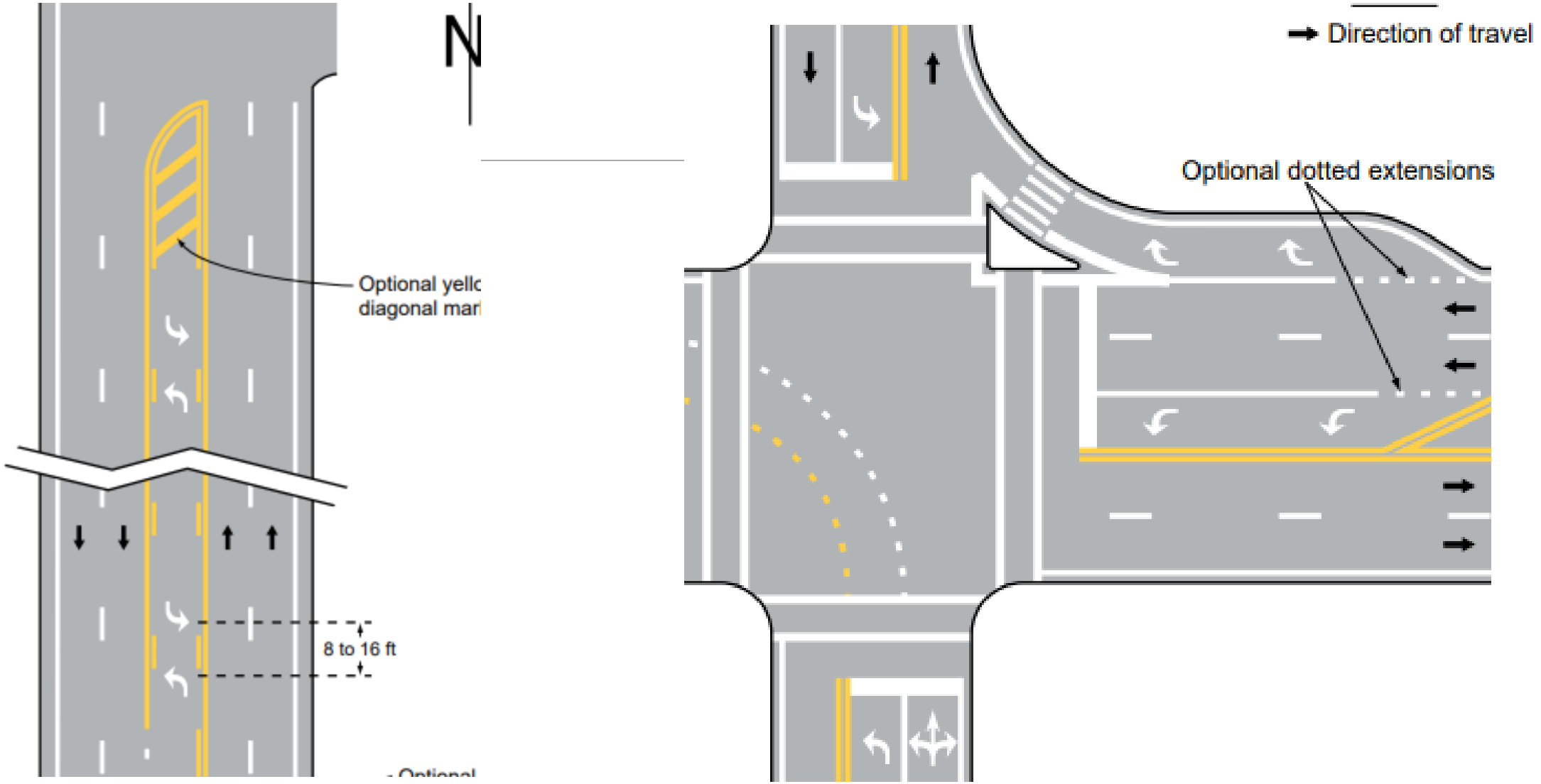
INCORRECT



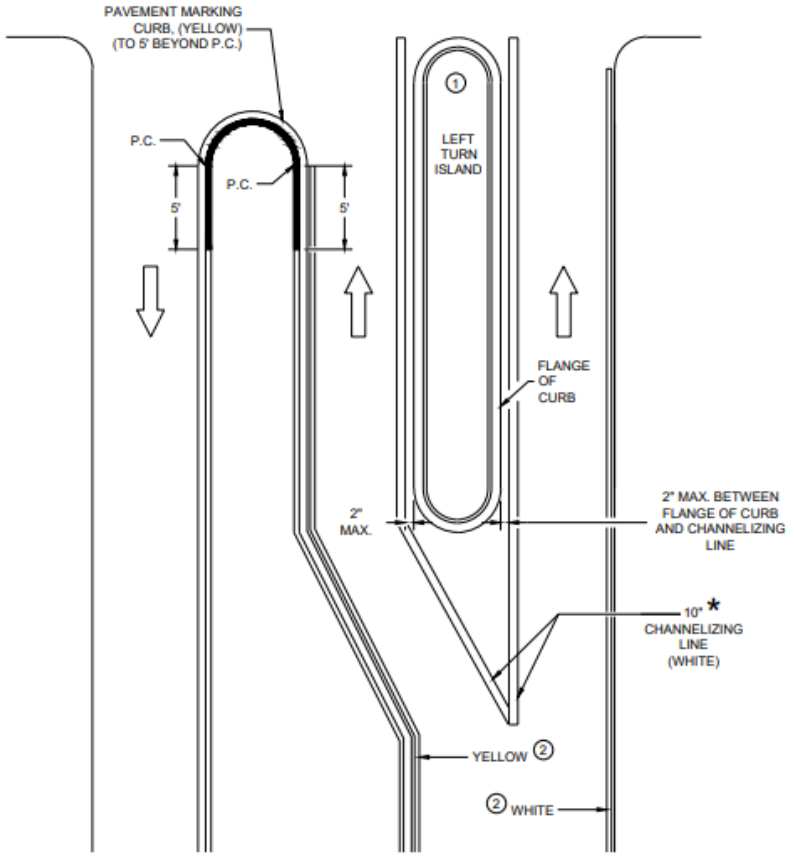
CORRECT



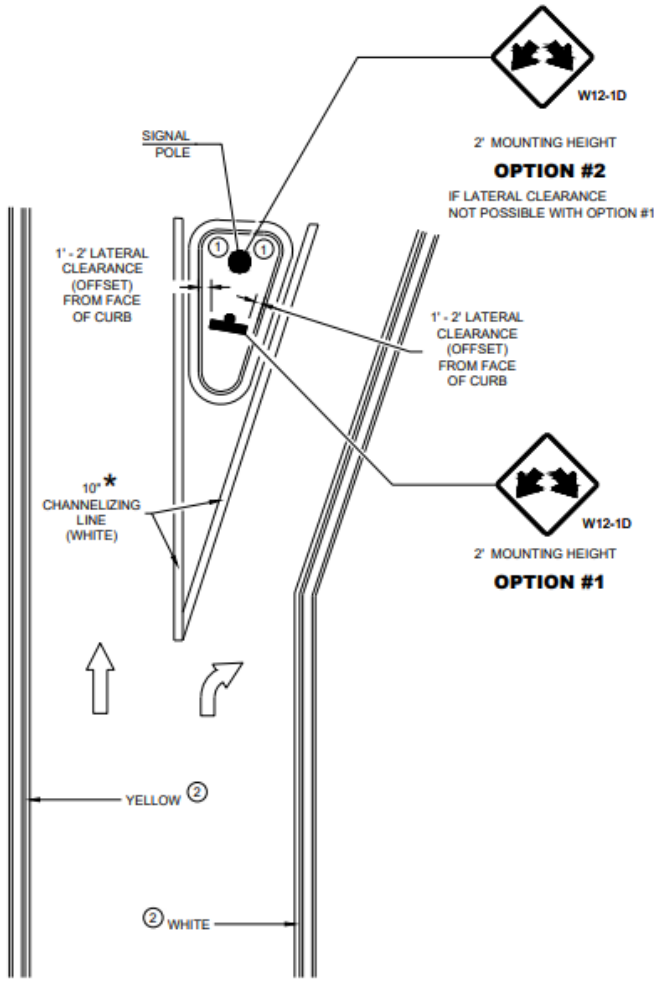
What we don’t want the marking to look like


N
Optional yellc
diagonal mar
8 to 16 ft
Direction of travel
Optional dotted extensions

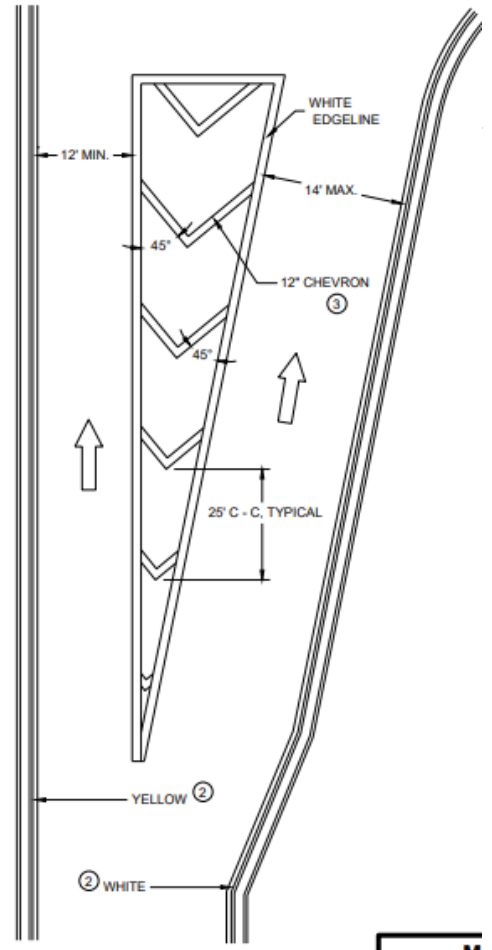
Island Noses SDD 15C18



LEFT TURN & MEDIAN ISLAND

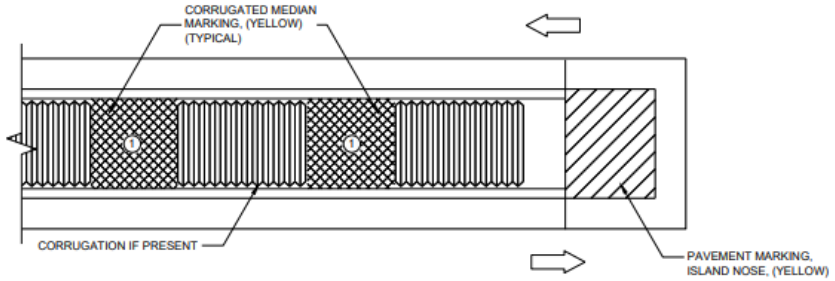


RIGHT TURN ISLAND

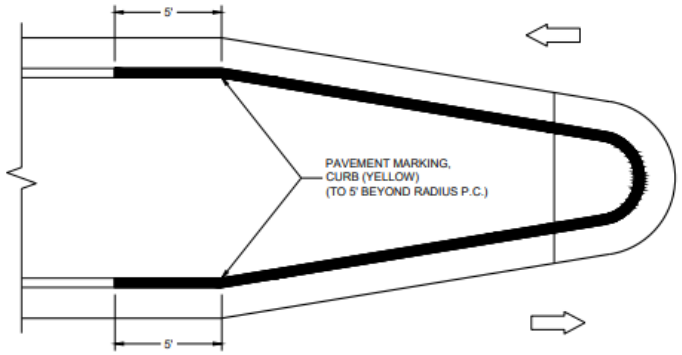


TURN LANE DETAIL

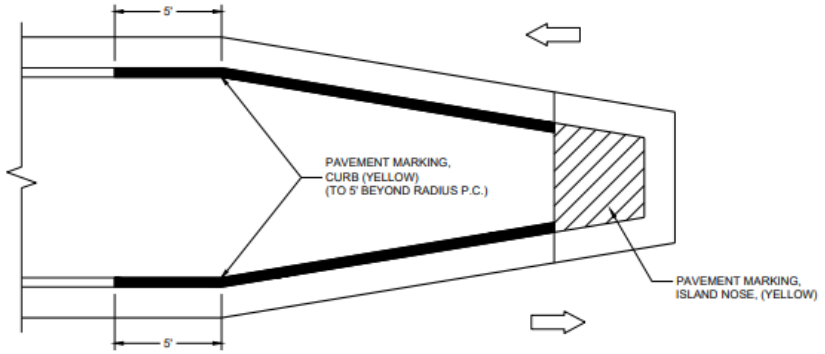
M
MARKI
WARN
DEPAI



MEDIAN ISLAND WITH SQUARE BLUNT NOSE



MEDIAN ISLAND WITH ROUND BLUNT NOSE

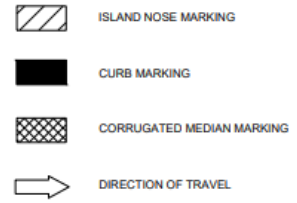


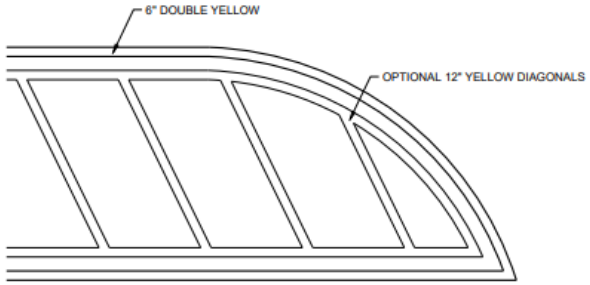
MEDIAN ISLAND WITH SLOPED NOSE

GENERAL NOTES

WHEN CONCRETE CORRUGATED MEDIAN IS CONSTRUCTED TO SEPARATE TRAFFIC OPERATING IN THE OPPOSING DIRECTION, YELLOW PAVEMENT MARKING SHALL BE APPLIED TO THE FLAT PORTION OF THE CONCRETE CORRUGATED MEDIAN. THE ITEM OF PAVEMENT MARKING, CONCRETE CORRUGATED MEDIAN, WILL BE MEASURED IN PLACE AND ACCEPTED IN ACCORDANCE WITH THE CONTRACT AND PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE FOOT.

(1) APPLY PAVEMENT MARKING TO THE FLAT PORTION OF CORRUGATED MEDIAN.





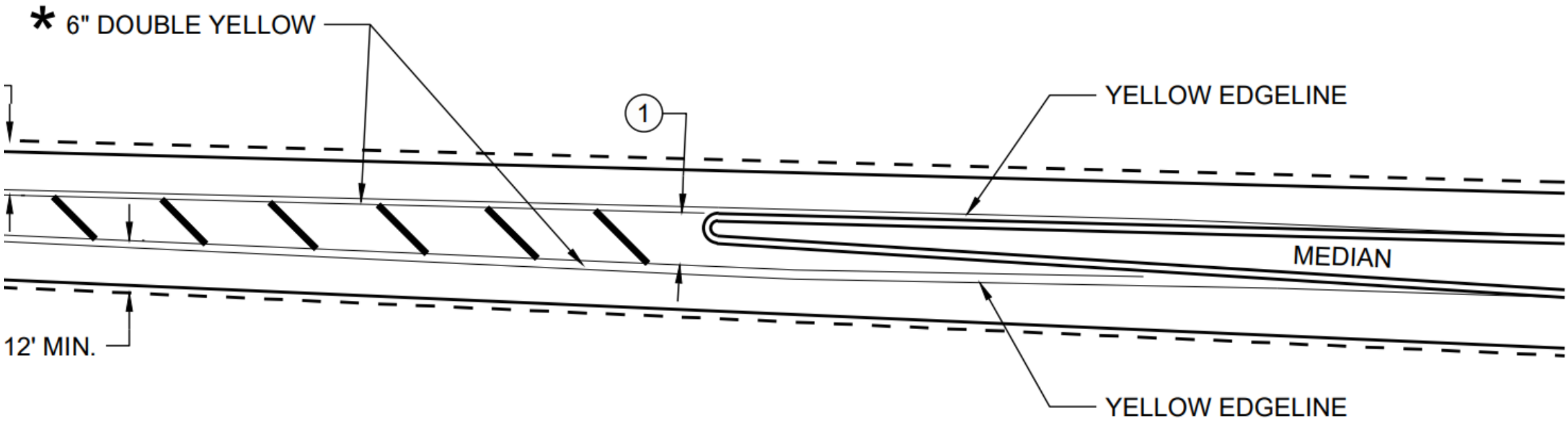
FLUSH MEDIAN ISLAND NOSE

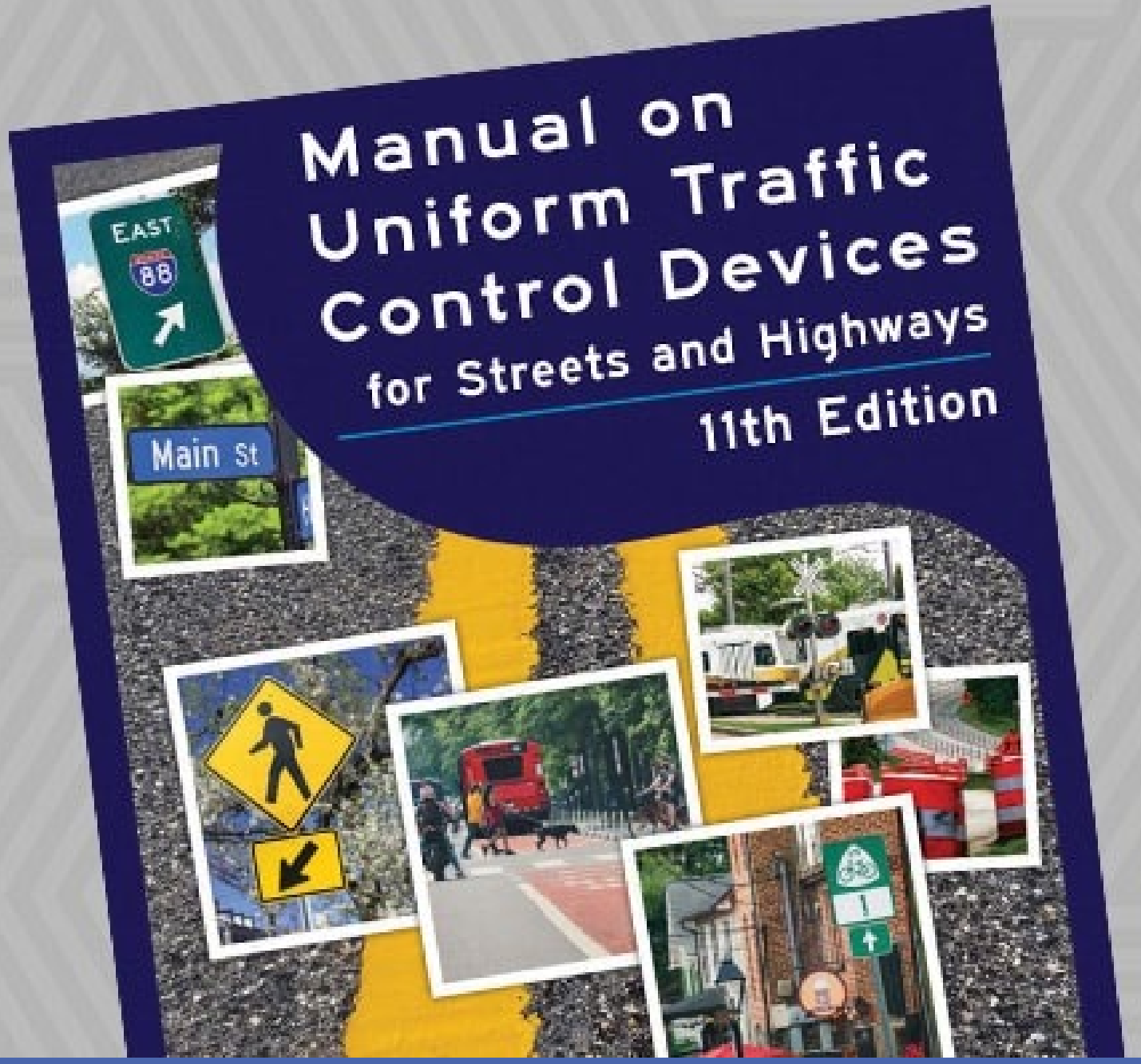
PAVEMENT MARKINGS, MEDIAN ISLAND NOSE

STATE OF WISCONSIN

Island Noses- SDD 15C18

SDD 15C 18 Painted to Physical Median

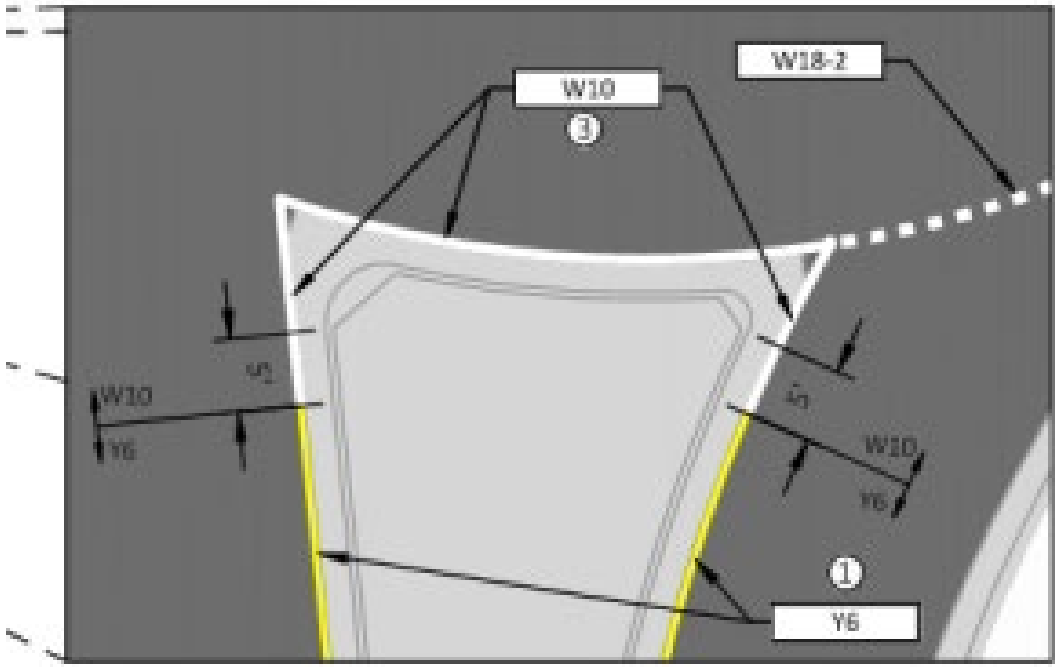


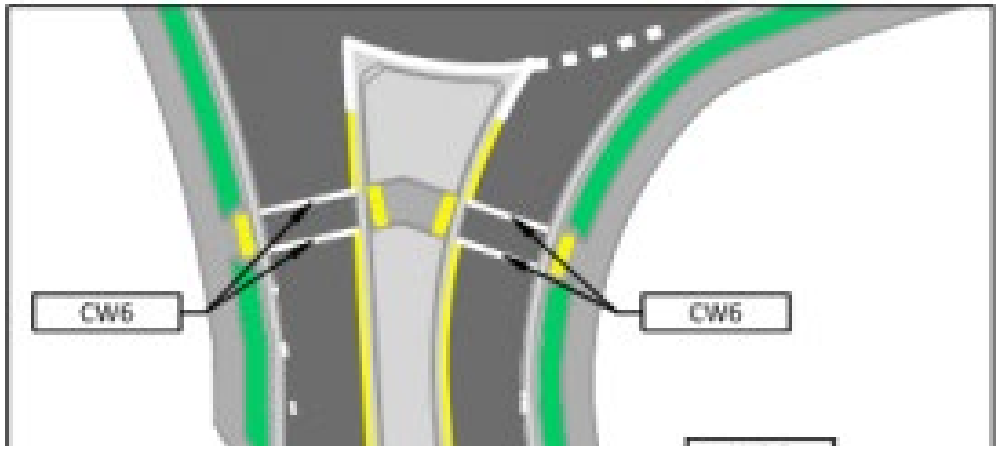

Manual on
Uniform Traffic
Control Devices
for Streets and Highways
11th Edition
EAST
88
Main St

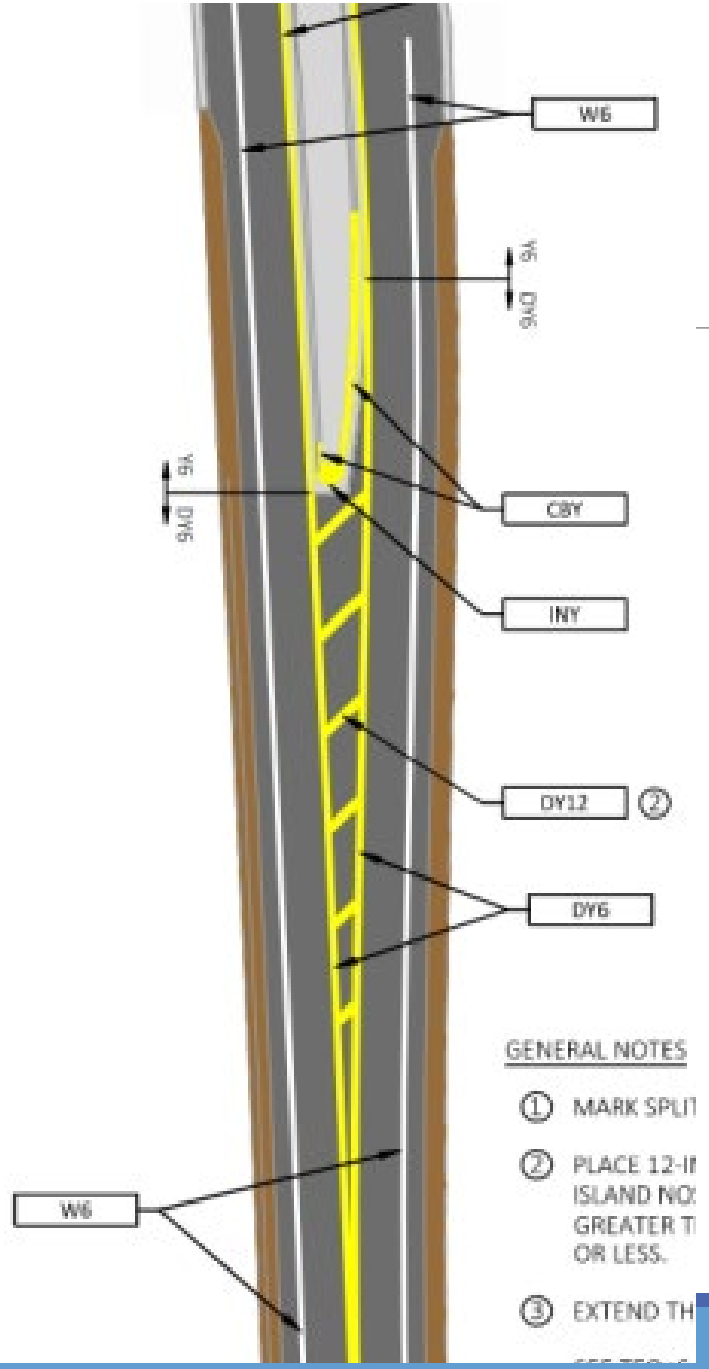
Bike Symbol Update

Roundabouts

No Markings between Crosswalk and Dotted Extension

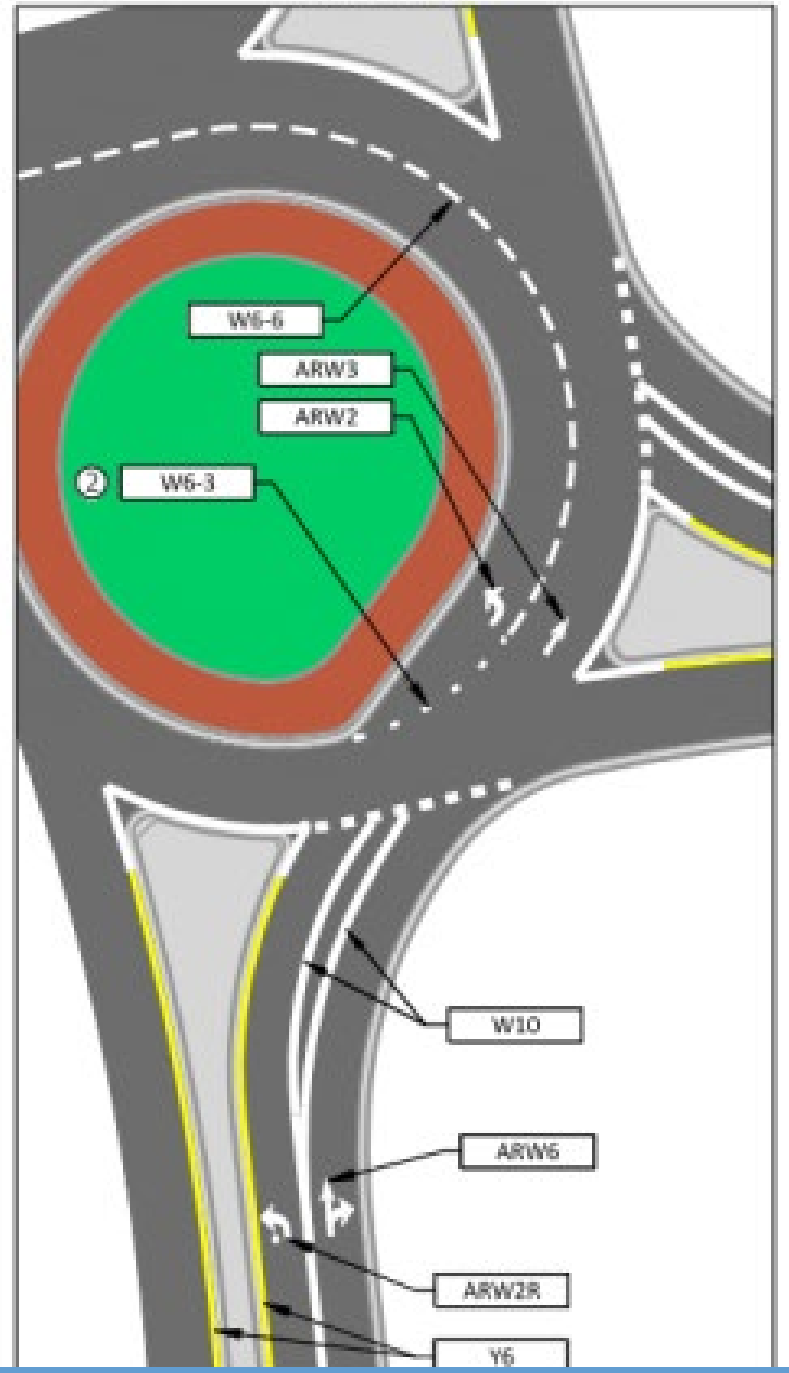

W10
W18-2
3
W10
Y6
W10
Y6
1
Y6


CW6
CW6


W6
Y6
DY6
Y6
DY6
CBY
INY
DY12
2
DY6
W6
GENERAL NOTES
1 MARK SPLIT
2 PLACE 12-IN
ISLAND NOS
GREATER T
OR LESS.
3 EXTEND TH

LEGEND	
ARW1	MARKING ARROW (TYPE 1, WHITE)
ARW3	MARKING ARROW (TYPE 3, WHITE)
ARW3R	MARKING ARROW (TYPE R3, WHITE)
CBY	MARKING CURB, YELLOW
INY	MARKING ISLAND NOSE, YELLOW
WRD	MARKING WORD, WHITE
CW6	MARKING CROSSWALK TRANSVERSE 6-INCH, WHITE
W6	MARKING LINE 6-INCH, WHITE
W6-3	MARKING LINE 6-INCH, WHITE, 3' SEG., 9' GAP
W6-6	MARKING LINE 6-INCH. WHITE, 6' SEG., 3' GAP
W6-12	MARKING LINE 6-INCH, WHITE, 12' SEG., 12' GAP
W10	MARKING LINE 10-INCH, WHITE
W18-2	MARKING DOTTED EXTENSION 18-INCH, WHITE, 2' SEG., 2' GAP
Y6	MARKING LINE 6 -INCH, YELLOW
DY6	MARKING LINE 6-INCH, DOUBLE YELLOW
DY12	MARKING LINE DIAGONAL 12-INCH, YELLOW, 10' SPACING

SPIRAL DESIGN



NE IS

Railroads

No arrows between Stop Bar and Tracks

Section 3B.03 No-Passing Zone Pavement Markings

Standard:

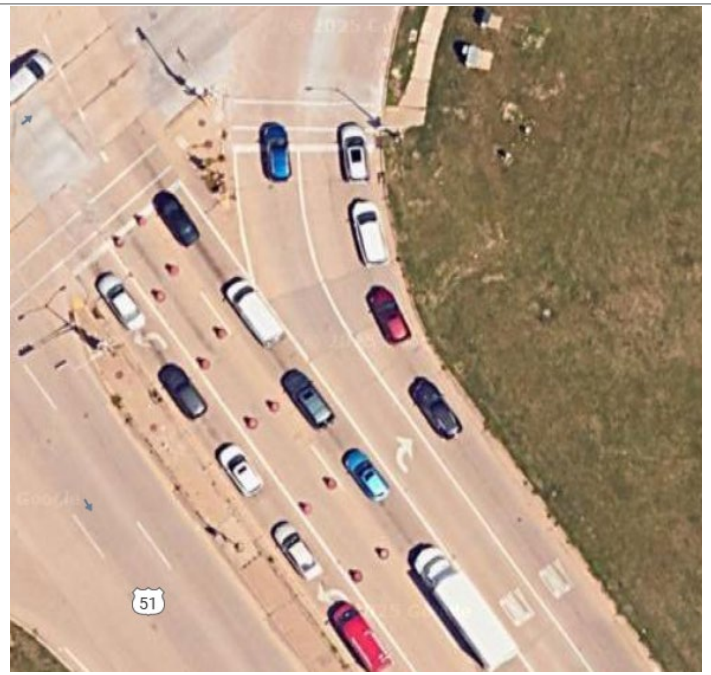
01 **No-passing zones shall be marked by either the one-direction no-passing zone pavement markings or the two-direction no-passing zone pavement markings described in Section 3B.01 and shown in Figures 3B-1 and 3B-3.**

02 **No-passing zone markings shall be used on:**

A. Two-way roadways at lane-reduction transitions (see Section 3B.12),
B. Approaches to obstructions that must be passed on the right (see Section 3B.13),
C. Approaches to grade crossings (see Section 8C.02), and
D. Approaches to crosswalks.

03 **On two-way, two-lane or three-lane roadways where center line markings are installed, no-passing zones shall be established at vertical and horizontal curves and other locations where an engineering study indicates that passing must be prohibited because of inadequate sight distances or other special conditions.**

Solid Line between Dual Turn Lanes



06 **Where crossing the lane line markings is discouraged, the lane line markings shall consist of a normal width solid white line.**

Guidance:

07 *A solid white lane line marking should be used on approaches to:*

A. Intersections to separate a through lane from a mandatory turn lane.

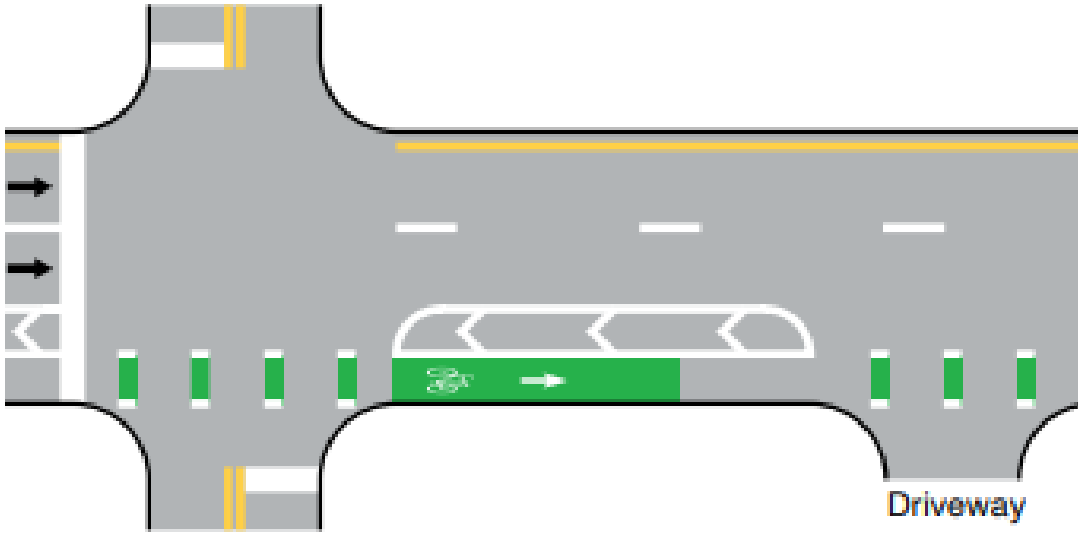
B. Intersections to separate contiguous mandatory turn lanes from each other.

C. Toll collection points to separate toll lanes, payment methods, channelized movements, or obstructions.

Green Bike Lanes and Red Bus lanes

Approved in MUTCD
- No more request to experiment

Limited to Local use



Time Charging for Today

TMA if you have one

RMA if no TMA is available to charge

LINKS

SDDs
- https://wisconsindot.gov/rdwy/sdd/sd-00-00toc.pdf#sdd15

TEOpS
- https://wisconsindot.gov/dtsdManuals/traffic-ops/manuals-and-standards/teops/03-25.pdf

Manuals
- https://wisconsindot.gov/Pages/doing-bus/local-gov/traffic-ops/manuals-and-standards/manuals.aspx

VendorNet
- https://vendornet.wi.gov/Contracts.aspx

DT 2130
- https://wisconsindot.gov/pages/global-footer/formdocs/default.aspx

Questions

Locating No-Passing Zones

Matt Rauch, P.E. WisDOT Bureau of Traffic Operations

April 8 and 9, 2025

No-Passing Zones

- Indicate where a driver cannot safely complete a passing maneuver
  - Inadequate sight distance
- Other conditions for no-passing zone extensions marked by no-passing barrier lines.
  - Passing operation is not appropriate under state law
  - Safety reasons documented by the engineer

Manuals and Guidance:

- Standard Specification 648 specification
  - http://wisconsindot.gov/rdwy/stndspec/ss-06-48.pdf#ss648
- Traffic Guidelines Manual Policy 3-2-2
  - http://wisconsindot.gov/dtsdManuals/traffic-ops/manuals-and-standards/tgm/03/03-02-02.pdf
- Standard No-Passing Zone Log Sheet (DT 2124 Form)
  - wisconsindot.gov/Documents/formdocs/dt2124.doc

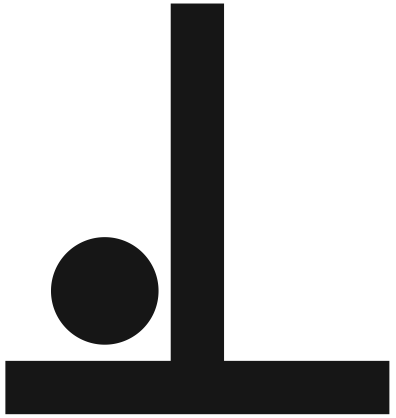
Manuals and Guidance:

- Construction and Materials Manual 6.50.3.1 Checklist
  - http://wisconsindot.gov/rdwy/cmm/cm-06-50.pdf#cm6-50.3.1
- Standard Detail Drawings
  - http://wisconsindot.gov/rdwy/sdd/sd-15c08.pdf#1

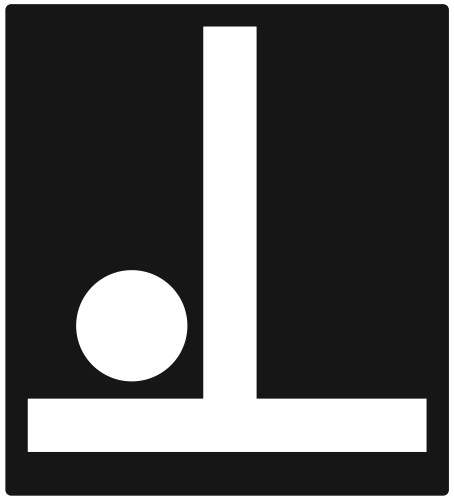
Materials and Equipment

Materials

- Black paint is used on concrete
- White paint is used on asphalt



Concrete Pavement



Asphalt Pavement

Equipment

- Two cars
- Two-way communication devices
- Yellow flashing light bar
- Target
- Distance measuring instruments
- Attenuator truck behind rear vehicle

Vehicle

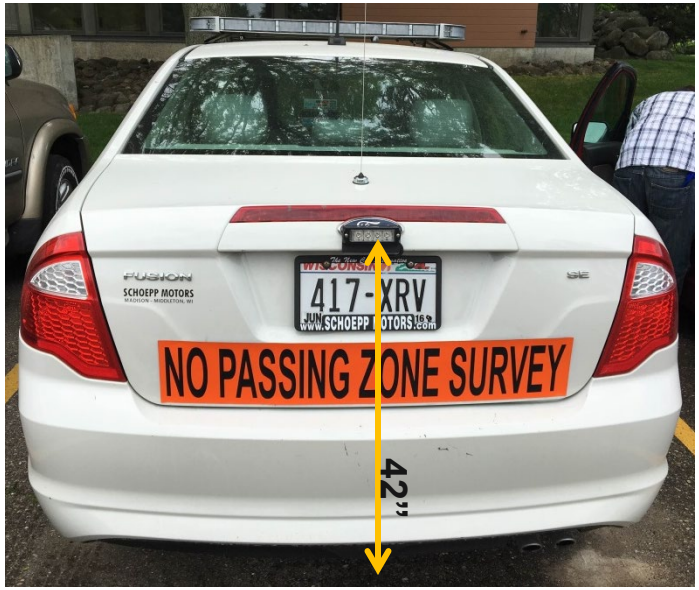
- Use rear vehicle that places the observer's eye at 42 inches above the roadway.
- Front vehicle can be higher. Bottom picture shows the eye height in a truck or SUV is too high for rear vehicle.

Radio

- Two-Way communication equipment is required in both vehicles.

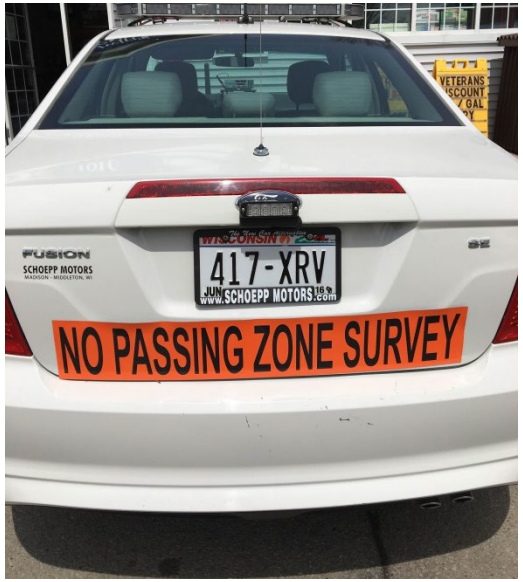
Lights

- Full-width flashing yellow light bar with 360 degree visibility on both vehicles.
- Target should be placed 42 inches above the roadway on rear of the front car.



Lights

- Additional signs and flashing lights are recommended:
  - Slow moving vehicle
  - Warning lights / signs



Distance Measuring Instruments

- Both vehicles should have DMIs that are accurate to 10 feet per mile
- Automatically subtract when traveling in reverse

Locating No-Passing Zones Sight Distance

Sight Distance Chart

POSTED SPEED LIMIT	SIGHT DISTANCE	MINIMUM DISTANCE BETWEEN ZONES
25-30 mph	0.10 miles / 528 feet	0.10 miles / 528 feet
35-40 mph	0.13 miles / 686 feet	0.10 miles / 528 feet
45-50 mph	0.16 miles / 845 feet	0.13 miles / 686 feet
55 mph	~~0.16 miles / 845feet~~ 0.21 miles / 1108 feet 0.26 miles / 1373 feet	0.15 miles / 792 feet

Notes for Designers:

- Special provisions should indicate which sight distance is used in 55 mph zones
  - If not indicated contact Project Engineer or Signing/Marking Engineer

Sight Distance

- Why different distances in a 55 mph zone:
  - No-passing Zone Sight Distance in a 55 mph zone can be 0.21 or 0.26 miles
  - Longer sight distance if:
    - Higher frequency of crashes
    - Excessive speeding

Sight Distance

- Shorter Sight Distance in 55 mph zones:
  - Concern for driver compliance in higher percent of solid yellow
  - Adequate lane and shoulder widths
  - Infrequent intersections and access conflicts
  - Lower ADT
  - Lower prevailing speeds, or greater speed differential
    - Due to large agricultural machinery, heavy trucking, significant tourism traffic and sightseers, etc.
  - Below average crash history

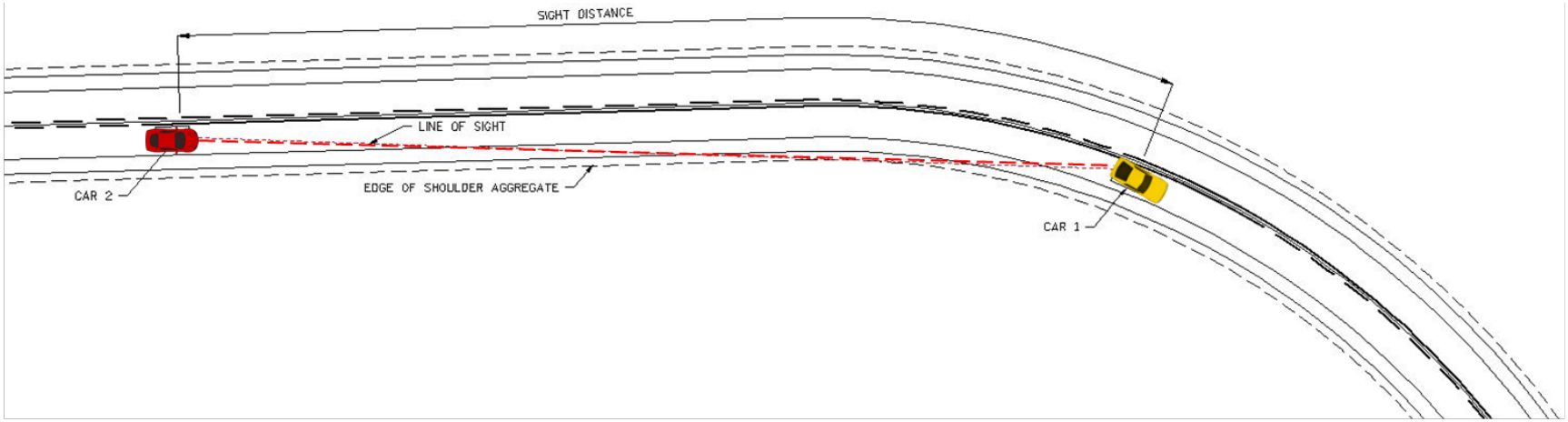
Old Rules vs. New Rules

- Old Rule: Line of sight could extend outside the right of way
  - Shown with the red dot
- New Rule: Line of sight must stay within shoulder of the road also known as the grass gravel line
  - Shown with the green dot

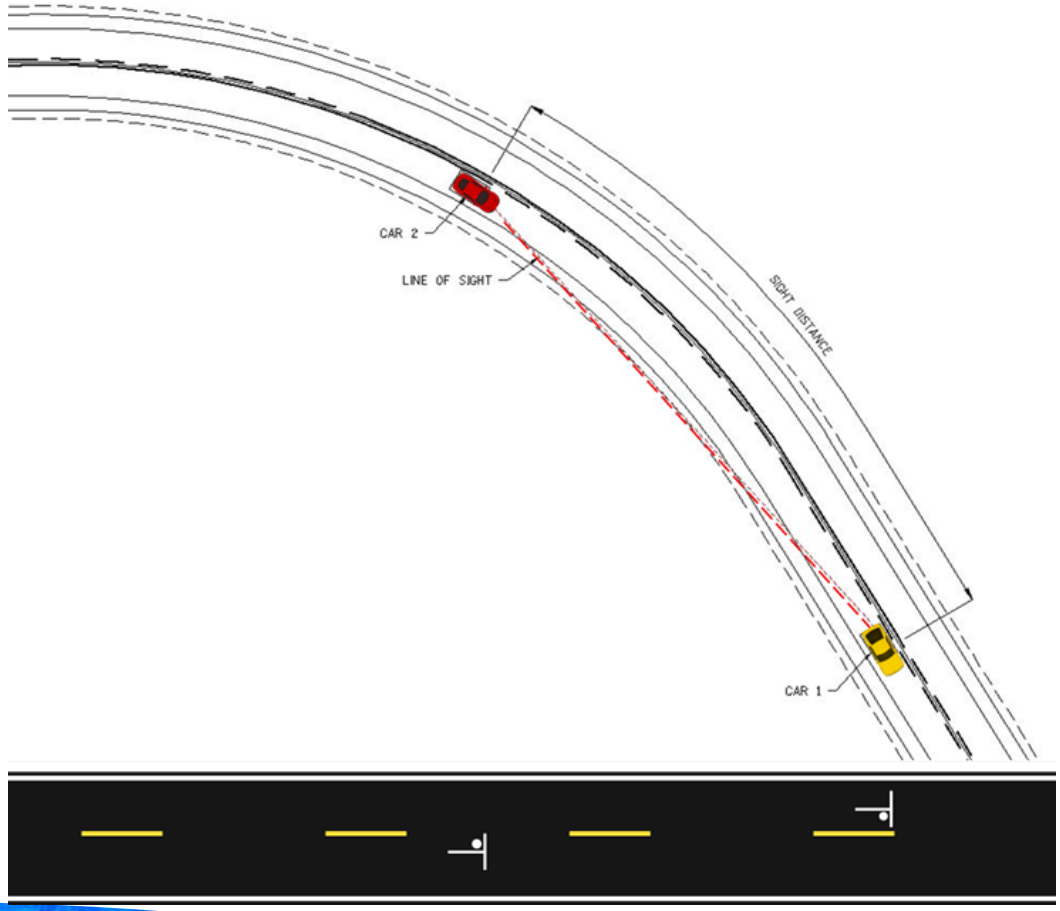
Horizontal Curves

- Line of sight shall not extend outside the shoulder.
- Locate no-passing zones on inside radius of curves. For left curves in cardinal direction, locate zone in reverse direction.
- No-passing zones shall be recorded on the log in cardinal direction.
  - Northbound or eastbound

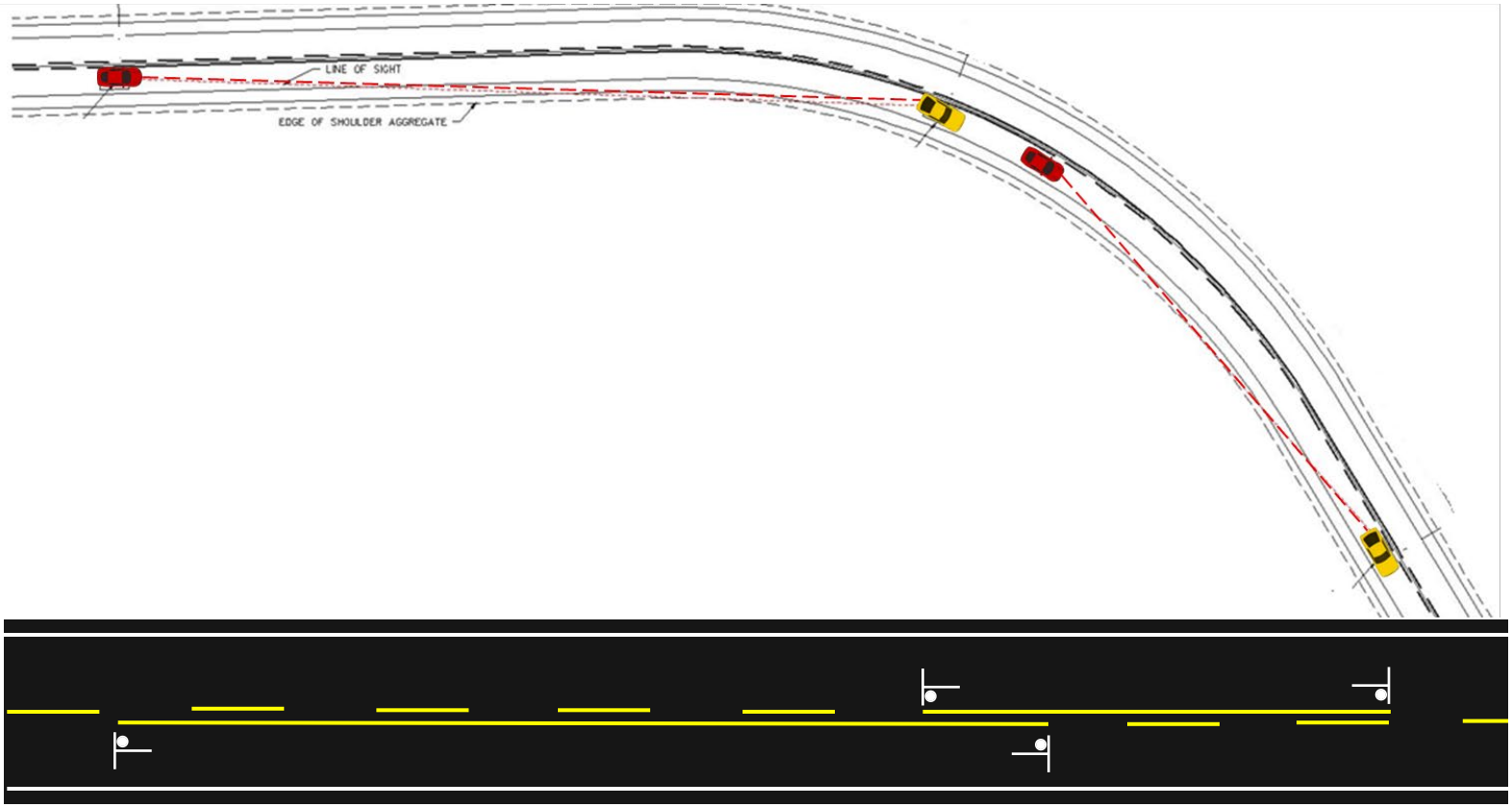
Position 1:


SIGHT DISTANCE
LINE OF SIGHT
CAR 2
EDGE OF SHOULDER AGGREGATE
CAR 1

Position 2:

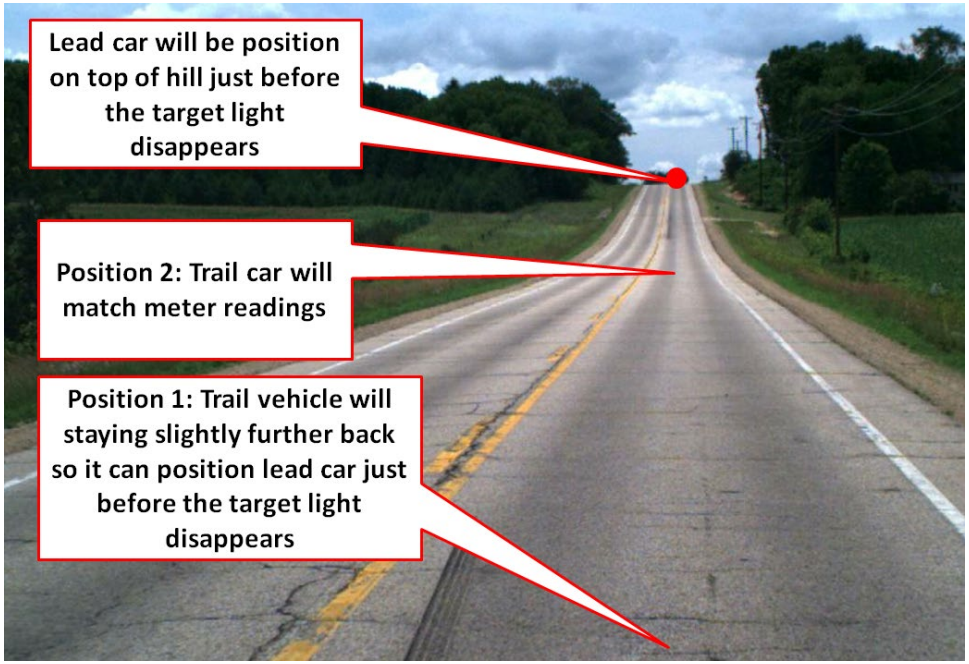


Spotted Horizontal Curve

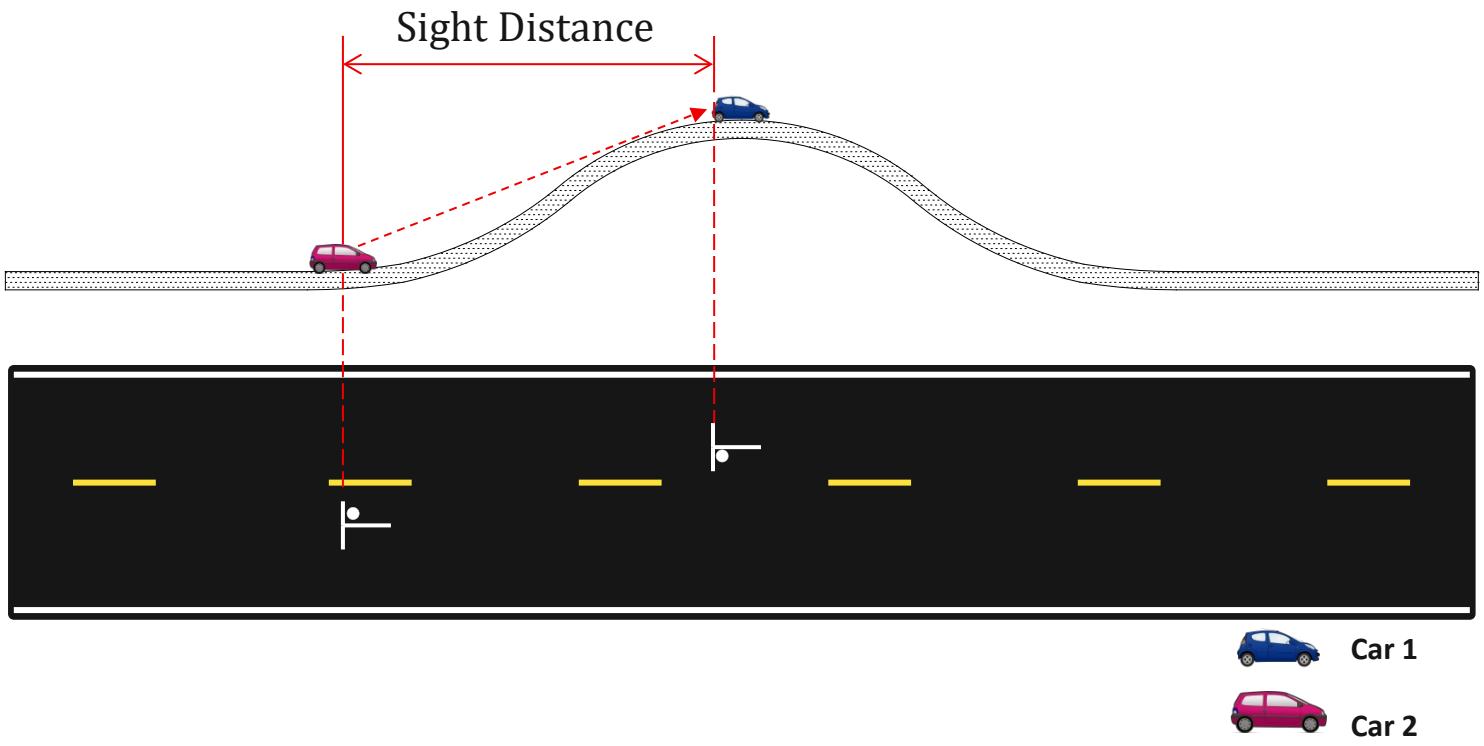


Crest Vertical Curves

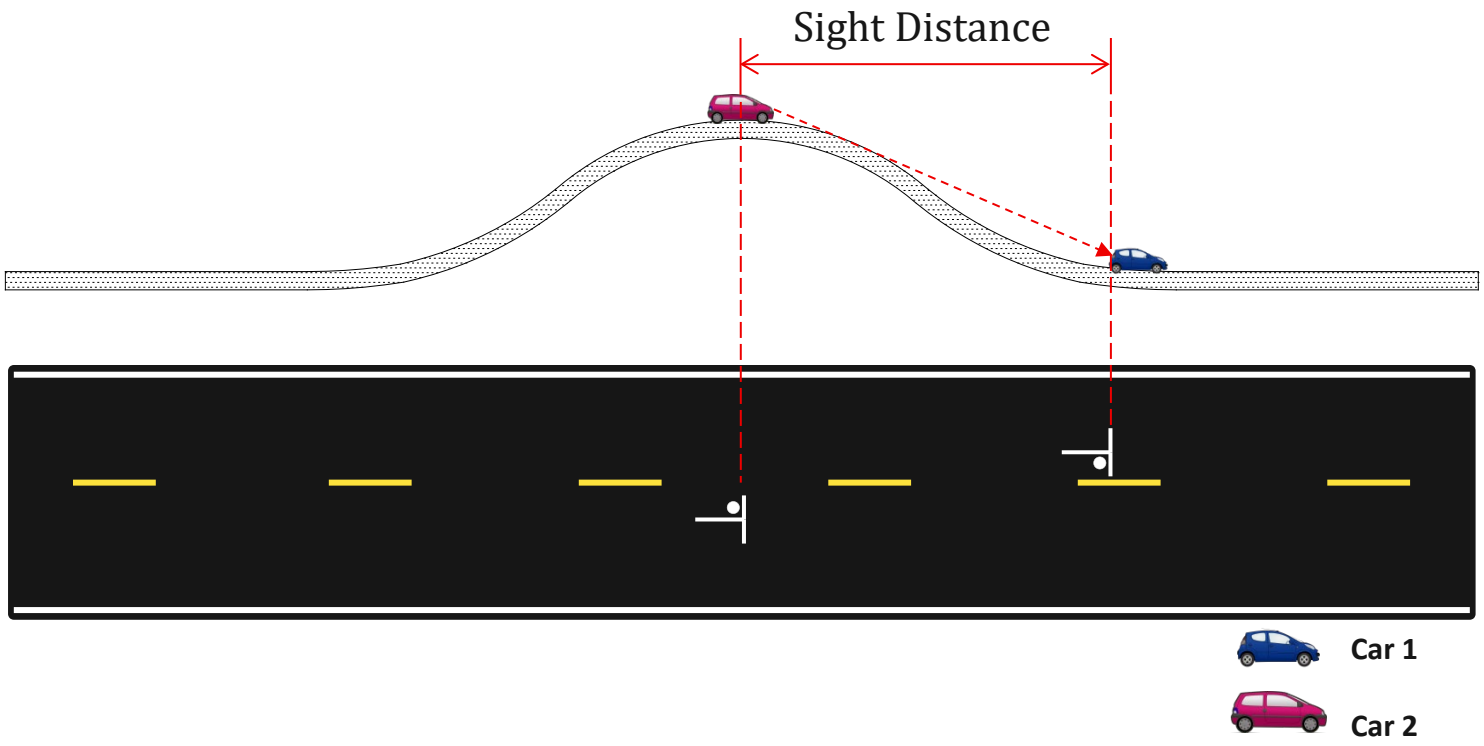
- Trail car positions at base of hill to position lead car silhouette before the target light disappears
- Trail car will establish the sight distance and match meter readings with lead car



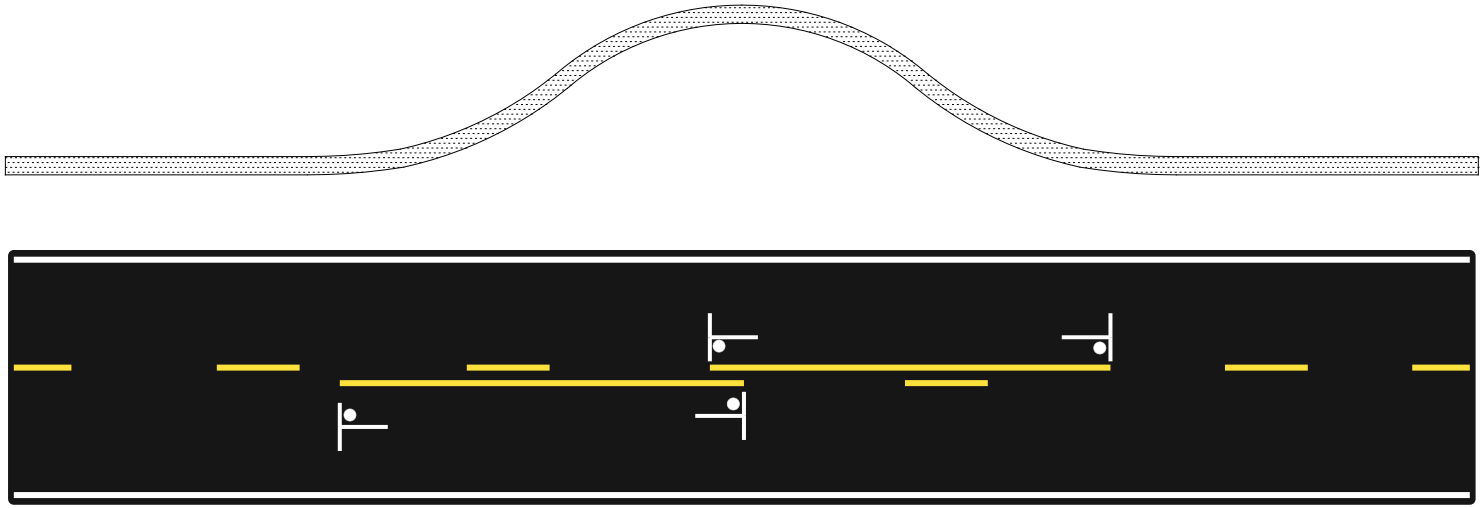
Position 1:



Position 2:



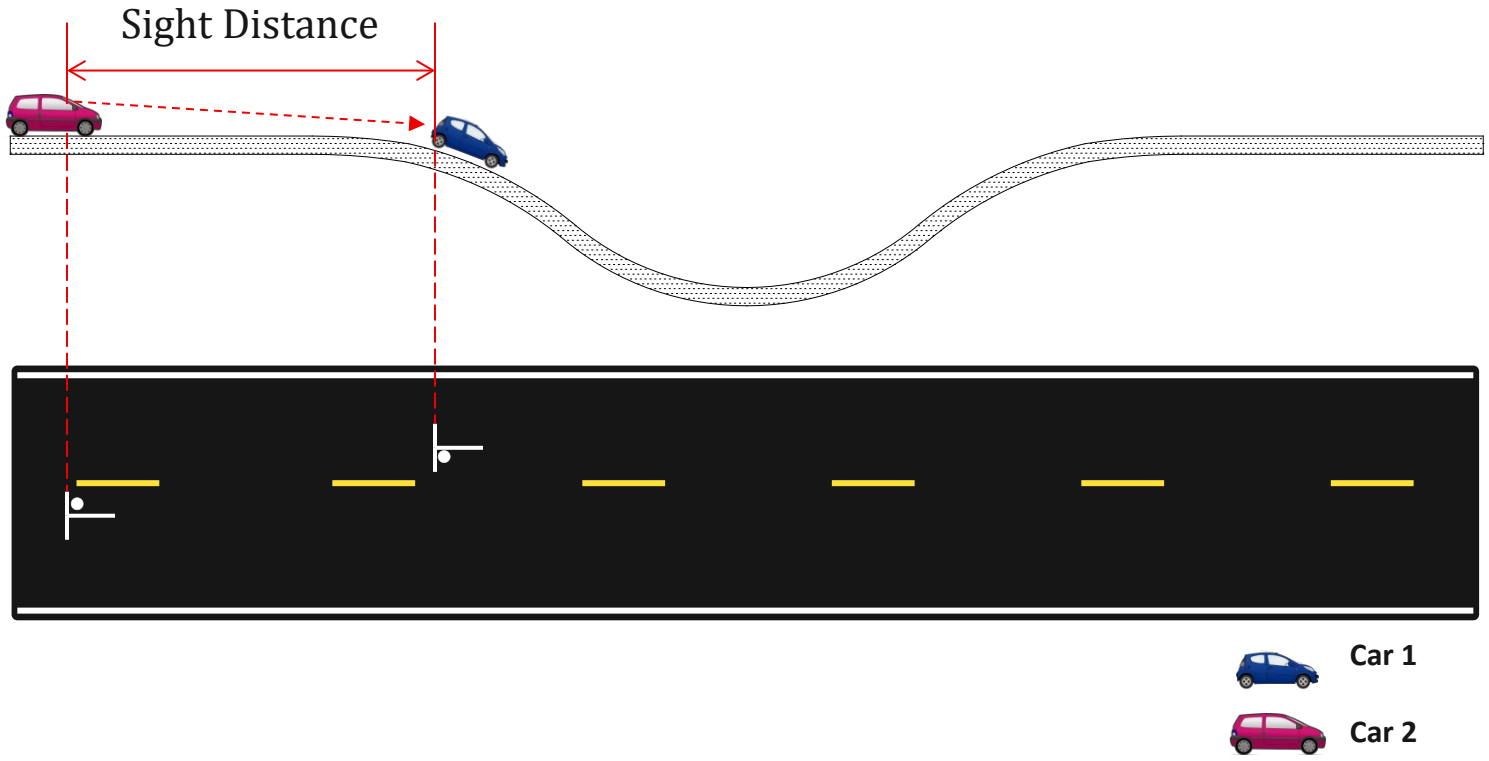
Spotted Vertical Curve:



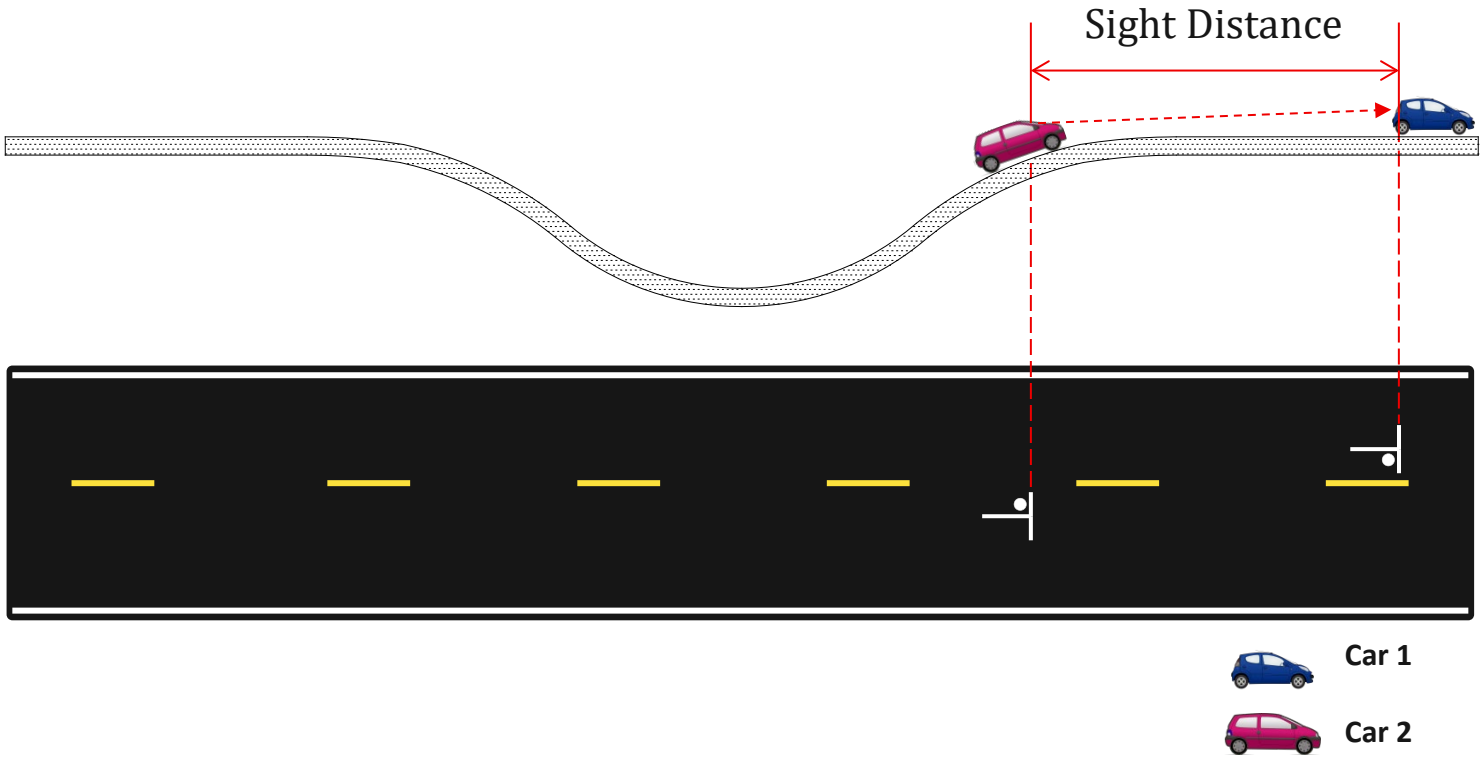
Sag Vertical Curves

- The lead vehicle stops in the sag
- The trail vehicle pulls forward until they see a full silhouette of the lead vehicle.
- The lead vehicle pulls forward to establish the sight distance.

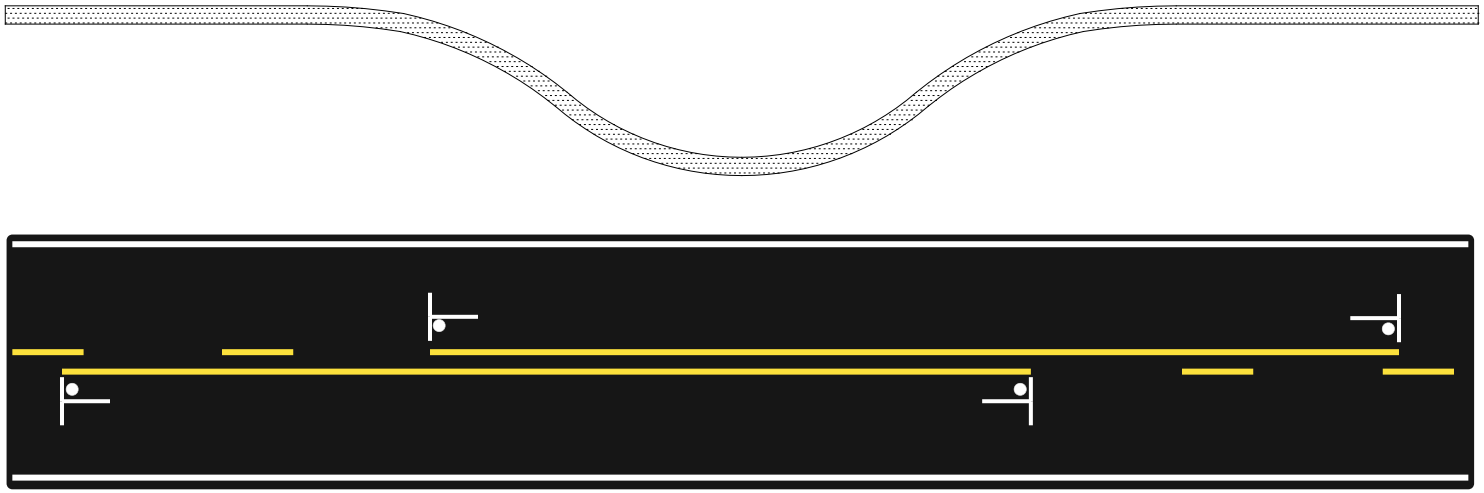
Position 1:



Position 2:



Painted No Passing Zone



Locating No-Passing Zones Barrier Lines

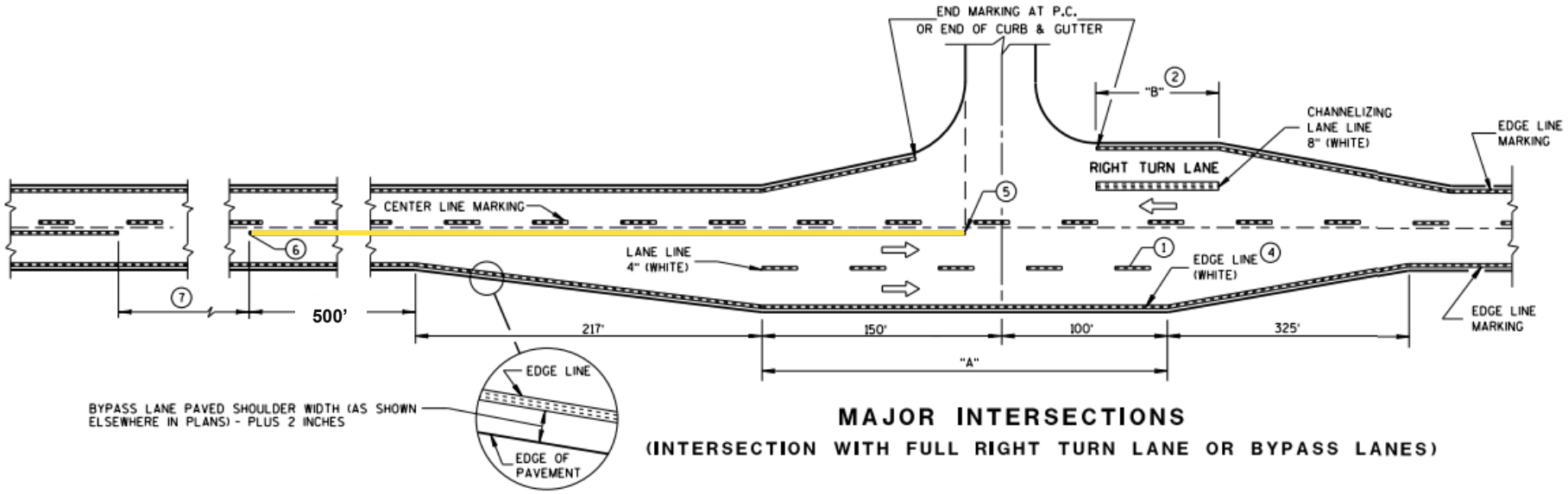
Barrier Lines:

- 500 foot no-passing zones

Establish No-Passing Barrier Lines

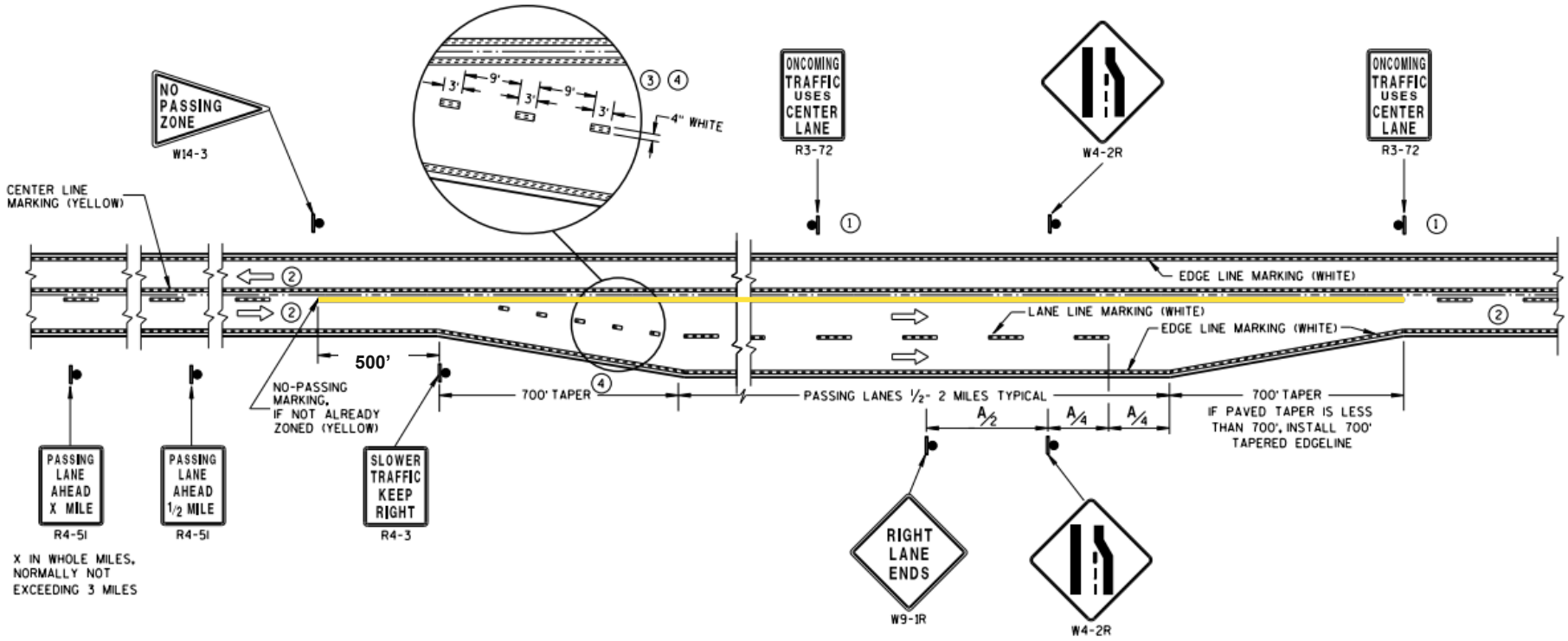
- Bypass lanes
- Climbing lanes
- Passing lanes
- Divided highways
- Median islands
- Narrow two-lane bridges
  - Total width of bridge less than 24 feet
- Railroad crossings
- Major intersections
  - STH traffic controlled by stop sign, traffic signal or roundabout

Barrier Lines: Major Intersection With Bypass Lane



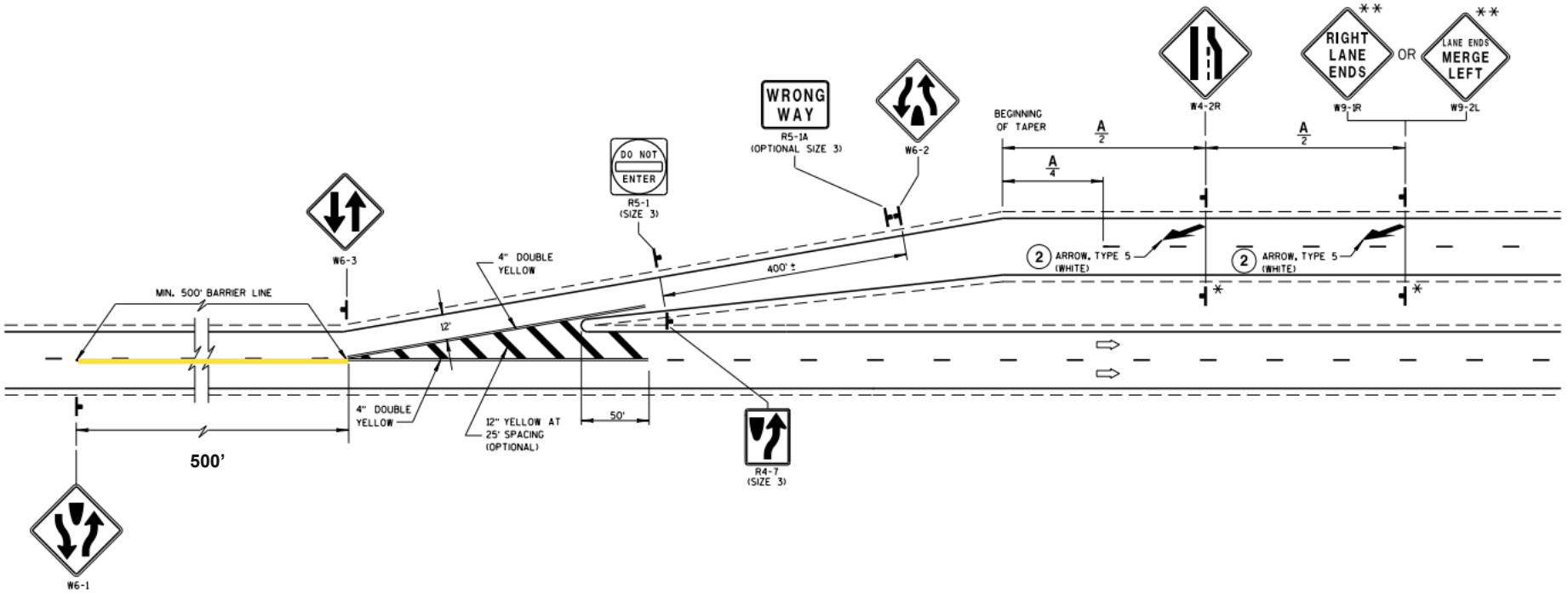
Bypass Lane

Barrier Lines: Climbing or Passing Lane



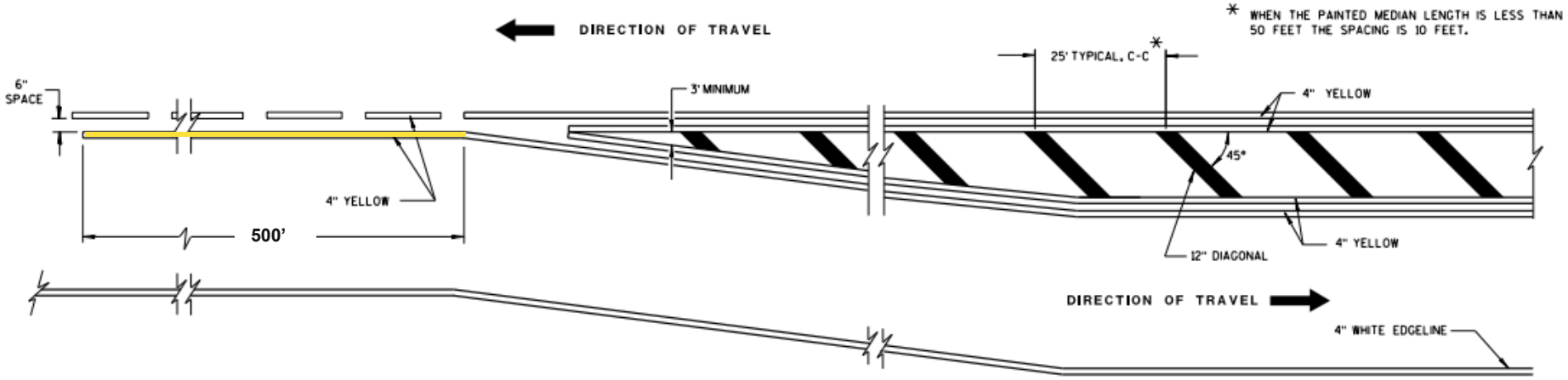
Climbing or Passing Lane

Barrier Lines: Approaches to Divided Highway



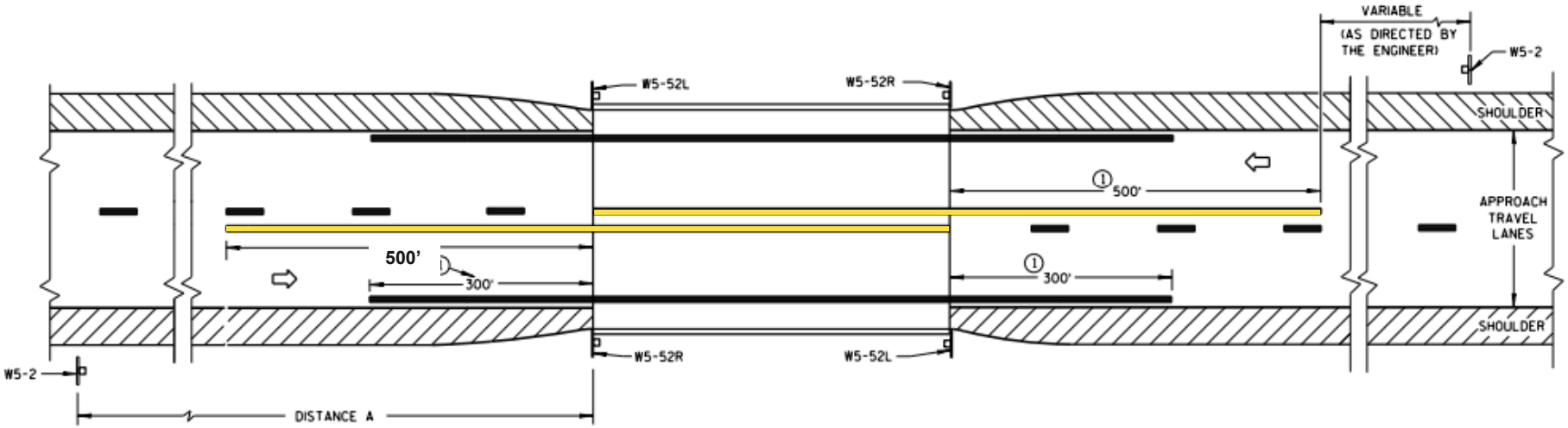
Divided Highway

Barrier Lines: Median Islands

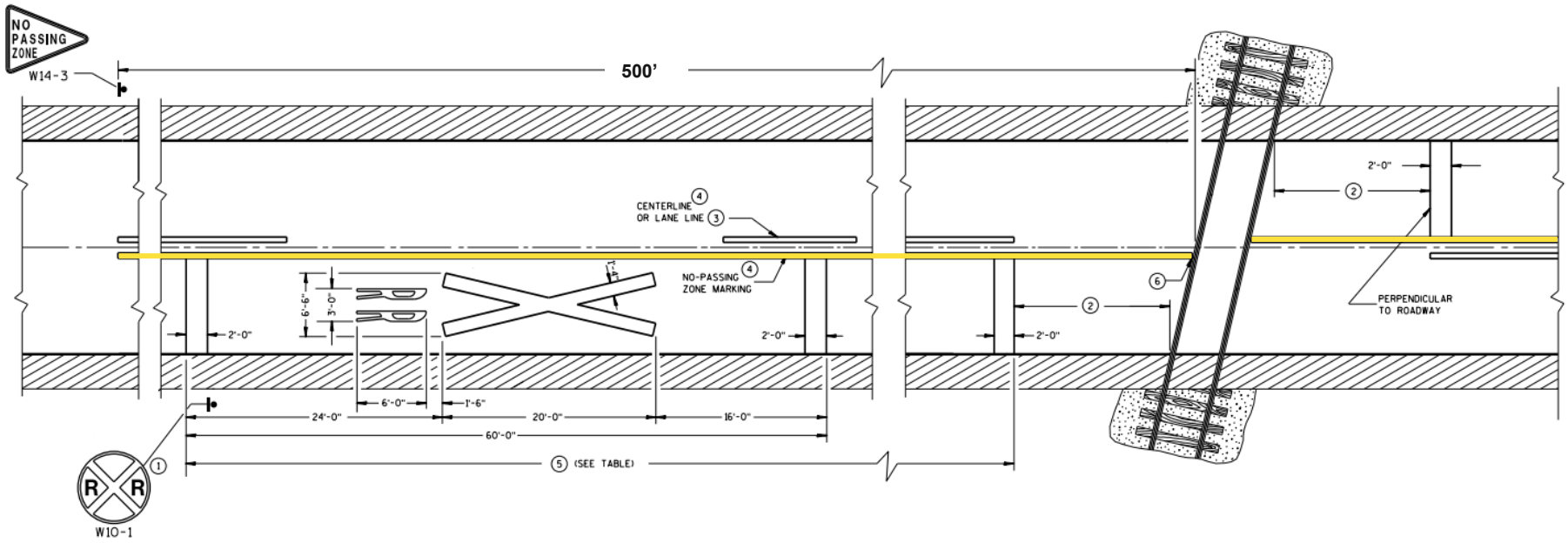


Median Islands

Barrier Lines: Approaches to Bridges

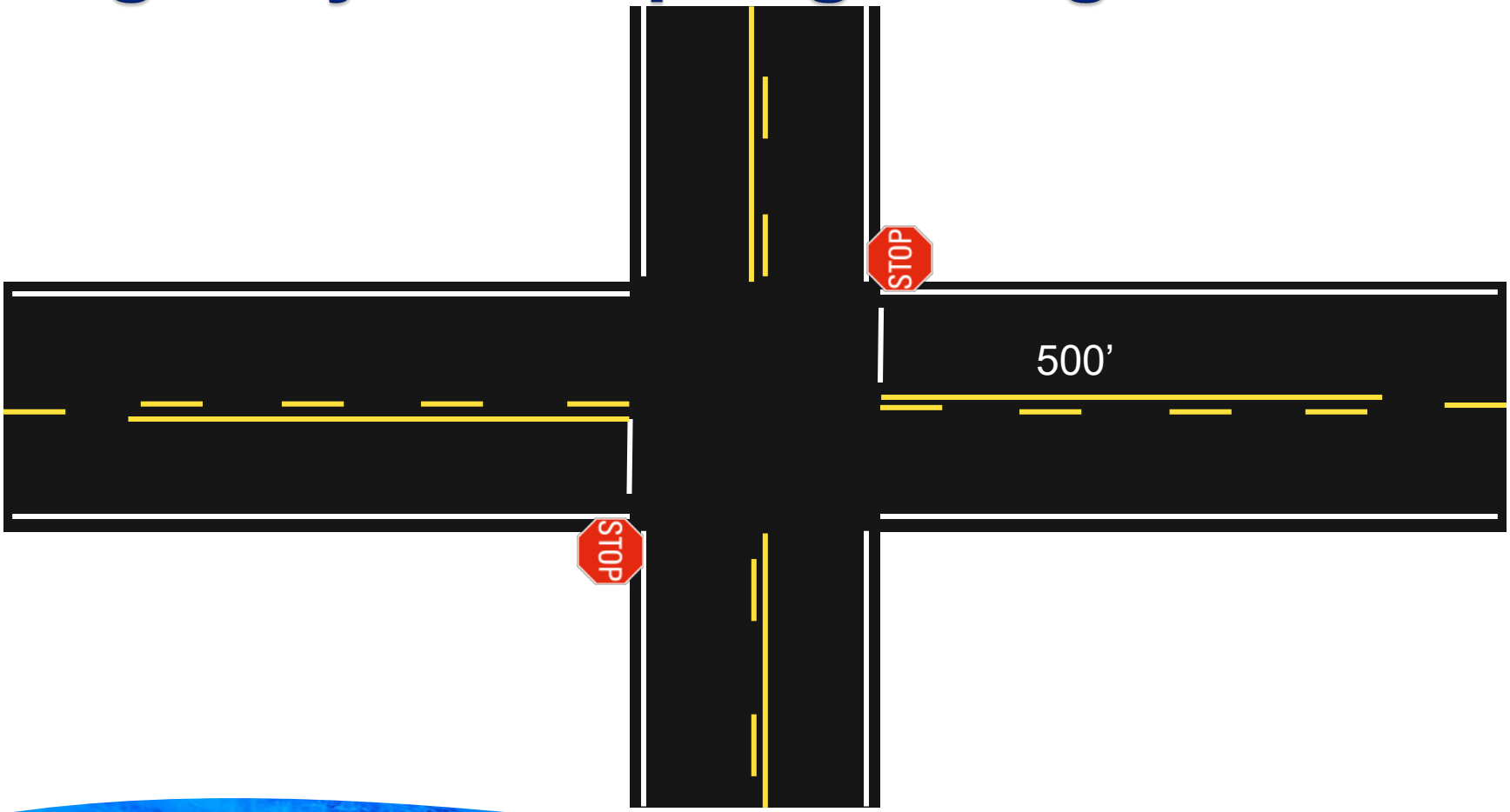


Barrier Lines: Approaches to Railroad Crossings



Railroad Crossings

Barrier Lines: State / Federal Highway or Stop Sign / Signal



State / Federal Highway or Stop Sign / Signal

Roundabout

Special No-Passing Zones

- There are times that no-passing zones may be installed, even if there is adequate sight distance.
  - Contractor should check with the project engineer to see if there are any special no passing zones.
  - Region Pavement Marking Coordinator has records of special no-passing zones.

Minimum Distance Between Zones

Sight Distance and Minimum Distance Between Zones Chart

POSTED SPEED LIMIT	SIGHT DISTANCE	MINIMUM DISTANCE BETWEEN ZONES
25-30 mph	0.10 miles / 528 feet	0.10 miles / 528 feet
35-40 mph	0.13 miles / 686 feet	0.10 miles / 528 feet
45-50 mph	0.16 miles / 845 feet	0.13 miles / 686 feet
55 mph	0.16 miles / 845feet 0.21 miles / 1108 feet 0.26 miles / 1373 feet	0.15 miles / 792 feet

Close Zones if Minimum Distance Not Met

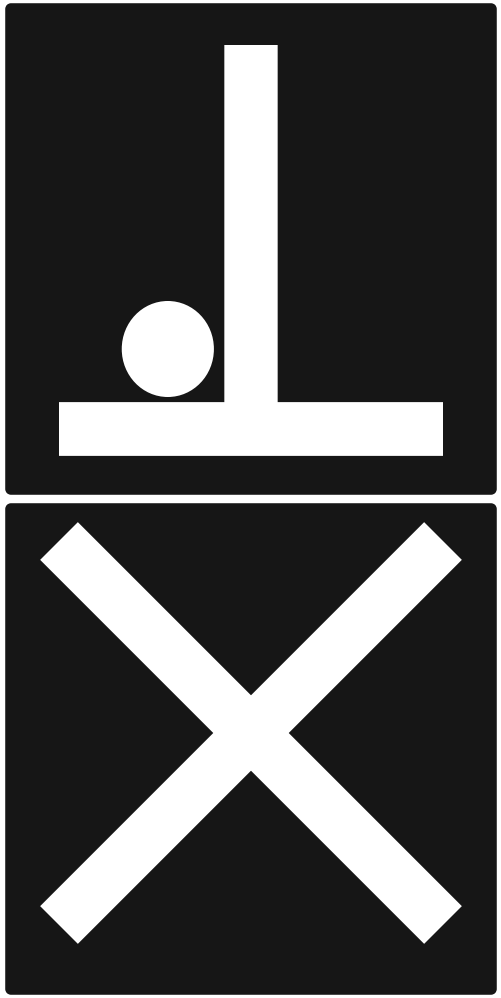
Closing Zones if Minimum Distance Between Zones Not Met

- Visibility Restrictions
- Check Distance to Nearest Barrier Lines
- At start and end points of the NPZ survey, check distance to the next nearest no-passing zones
  - Improvement project limits – check distance to adjacent no-passing zones and barrier lines
  - Maintenance projects

No-Passing Zone Marks

No-Passing Zone Marks

- "T"s mark the beginning and end of all no-passing zones
  - T's are 12" X 12" and 2" stroke
- Dots mark the centerline
  - Dots are 3" - 4" in diameter
- "X"s mark extension and removal of zones
  - X's are 12" X 12" and 2" stroke
- Paint marks should be visible for one year after application (alkyd paint should be used)



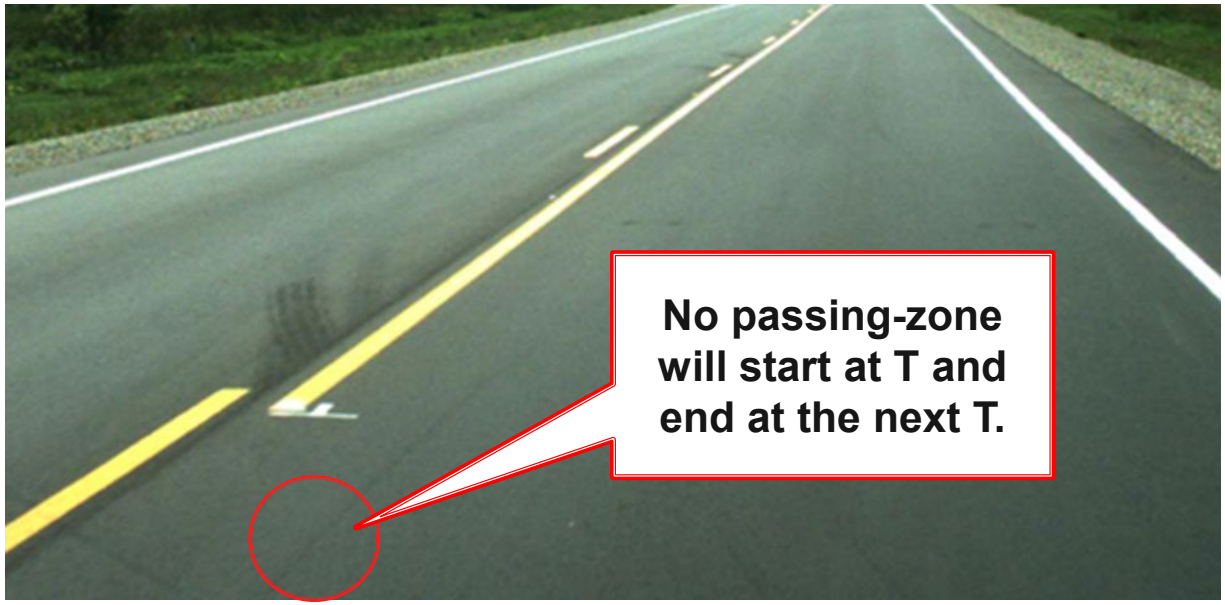
Dot

Base

Tail

Typical No-Passing Zone

Typical No-Passing Zone



If new T location is less than 50 feet from existing, mark the new T at existing location.

Closing Passing Zones

Closing Passing Zones

- “X”s are placed on the ends of the lines of the previous and proceeding no-passing zone
- The no-passing zone will be painted shut from “X” to “X”

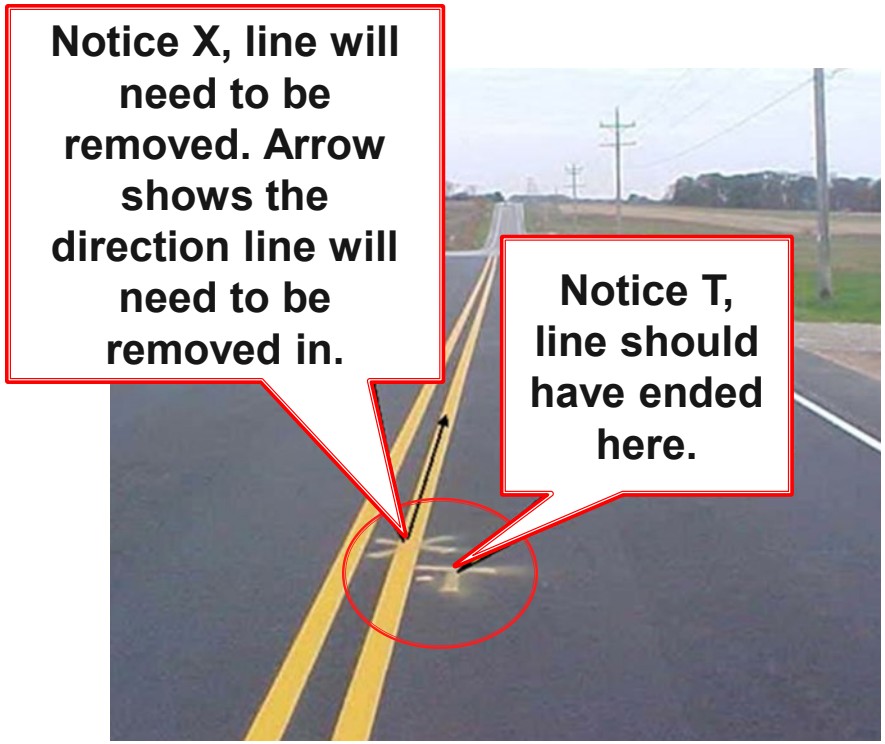
Reasons for Closing Passing Zones

- Sight restriction has developed
  - Tree, brush, grass…etc.
  - Building
  - Billboard
- Sight distance increase was made
  - Higher frequency of crashes
  - Excessive speeding

Removal of No-passing Zone

Removal of No-passing Zone

- The “T” is placed to indicate the end of a zone
- The “X” indicates removal
- The arrow depicts direction of line removal



Removal of No-passing Zone

- This is the other end of the line that needs to be removed.
- The second “X” on the line indicates to remove the line back to the first “X” in the previous photo.

Extending No-Passing Zone

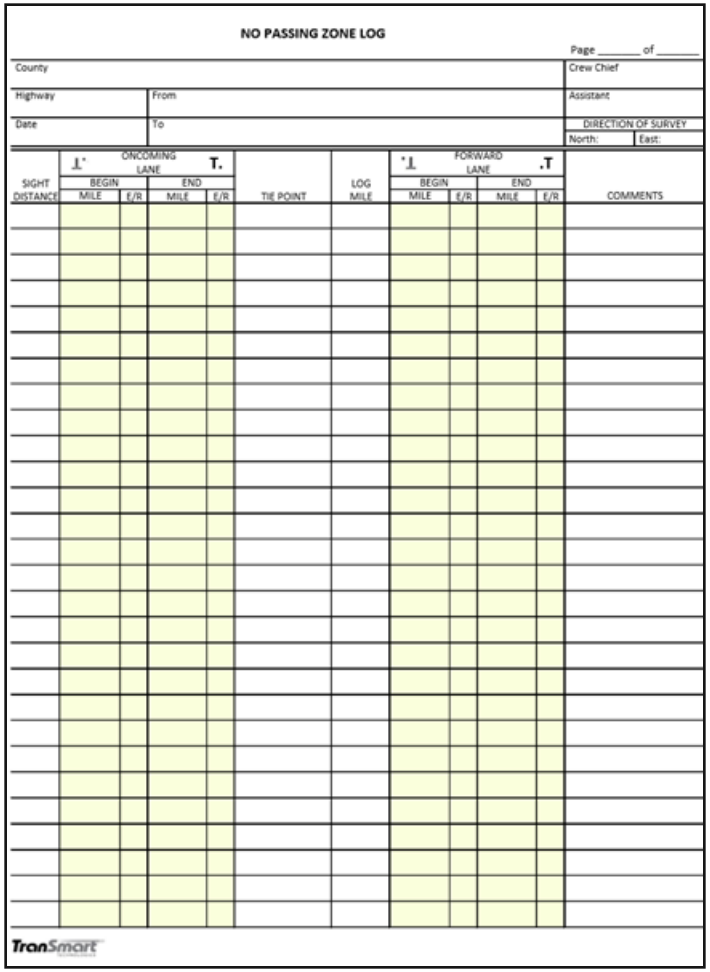
Extending No-passing Zone

- A “X” will be placed on the end of original zone
- A “T” will be placed where new zone should end
- The extension of no-passing zone will be from “X” to “T”

No-Passing Zone Log

No-Passing Zone Log

- Date
- Cardinal direction
- Beginning and ending of each no-passing barrier line
- Sight distance and speed
- County and Route
- Location of features required in 648.3.2
- Geographical references



NO PASSING ZONE LOG

Page _____ of _____

County														Crew Chief	
Highway		From												Assistant	
Date		To												DIRECTION OF SURVEY	
														North:	East:
	ONCOMING LANE							FORWARD LANE							
SIGHT DISTANCE	BEGIN MILE	BEGIN E/R	END MILE	END E/R	TIE POINT	LOG MILE		BEGIN MILE	BEGIN E/R	END MILE	END E/R	COMMENTS			

TranSmart

Procedures

- Check special provisions or contact the Project Engineer to determine if there are any special no-passing zones
- The no-passing zone sight distance should be followed

POSTED SPEED LIMIT	SIGHT DISTANCE	MINIMUM DISTANCE BETWEEN ZONES
25-30 mph	0.10 miles / 528 feet	0.10 miles / 528 feet
35-40 mph	0.13 miles / 686 feet	0.10 miles / 528 feet
45-50 mph	0.16 miles / 845 feet	0.13 miles / 686 feet
55 mph	0.16, 0.21, 0.26 miles	0.15 miles / 792 feet

Procedures

- The termini of no-passing zones should be accurate to +/- 50 feet (0.01 mile).
- When the distance between two successive no-passing zones is less than the minimum distance shown in the table the two zones should be connected

POSTED SPEED LIMIT	SIGHT DISTANCE	MINIMUM DISTANCE BETWEEN ZONES
25-30 mph	0.10 miles / 528 feet	0.10 miles / 528 feet
35-40 mph	0.13 miles / 686 feet	0.10 miles / 528 feet
45-50 mph	0.16 miles / 845 feet	0.13 miles / 686 feet
55 mph	0.21, 0.26 miles	0.15 miles / 792 feet

Procedures

- For speed limit changes, the proper no-passing zone sight distance should be maintained and changed only at the location of the speed limit sign, except where near transition to higher speed.

POSTED SPEED LIMIT	SIGHT DISTANCE	MINIMUM DISTANCE BETWEEN ZONES
25-30 mph	0.10 miles / 528 feet	0.10 miles / 528 feet
35-40 mph	0.13 miles / 686 feet	0.10 miles / 528 feet
45-50 mph	0.16 miles / 845 feet	0.13 miles / 686 feet
55 mph	0.16, 0.21, 0.26 miles	0.15 miles / 792 feet

  - The trail vehicle should stop at the speed limit sign and record the location on the no-passing zone log.
  - The lead vehicle would pull forward or back up to establish the proper no-passing zone sight distance.

Summary

- Standard specifications should be referenced when surveying a no-passing zones
- To survey no-passing zone you will need
  - Two cars
  - Two-way communication
  - Yellow flashing light bar and target
  - Distance measuring instruments
  - Paint

Summary

- No-passing zones are located where a driver cannot safely complete a passing maneuver under normal conditions.
- Barrier lines are 500-foot no-passing zones
- Check special provisions or contact design engineer for special no-passing zones and sight distance
- No-passing zones markers tells when to turn paint gun on and off.