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Traffic Guidelines Manual

ORIGINATOR State Traffic Engineer		2-2-45
CHAPTER 2	Signing	
SECTION 2	Regulatory Signs	
SUBJECT 45	Move Over or Slow Down Signs	

A. Purpose

The intent of this guideline is to restrict the usage of signs that inform the public about Moving Over or Slowing Down for Stopped Emergency Vehicles to locations that are most helpful to motorists.

Signs with the message “MOVE OVER OR SLOW DOWN FOR STOPPED VEHICLES WITH FLASHING LIGHTS” (R5-60) are installed on state highways as a reminder to motorists to slow down or move over for emergency/law enforcement vehicles that are on the roadway. These signs were installed in a partnership between Bureau of Traffic Operations and Bureau of Transportation Safety to educate motorists of this law. While signs can be a useful tool to help re-enforce a law, education and enforcement are also effective and essential tools that must be used with highway signing. These signs are primarily focused to motorists entering the state and *may* be unfamiliar with the Move Over or Slow Down Law. As for a reminder tool, other, more effective educational efforts have been employed in lieu of signs. These educational efforts often times consist of public service announcements through the media, reminders included in DMV vehicle registration notices and driver education. However, due to budgetary concerns and the concern about over signage, signs *should* only be installed in locations that are the most effective for motorists.

B. Definitions

Freeways are defined as divided arterial highway facilities that have full controlled access, by means of grade separation at interchanges only.

Expressways are defined as divided arterial highway facilities that have partial control of access and generally with grade separations at major intersections.

Conventional Highways are defined as either divided or undivided roadway facilities that have no control of access with grade separations at intersections. These highways can be two lane or multilane facilities.

C. Policy

1. Any requests to install –“MOVE OVER OR SLOW DOWN FOR STOPPED VEHICLES WITH FLASHING LIGHTS” (R5-60) signs **shall** be reviewed by the statewide Traffic Incident Management Committee and approved by the State Traffic Engineer prior to installation.
2. The following locations have been approved for installation of “MOVE OVER OR SLOW DOWN FOR STOPPED VEHICLES WITH FLASHING LIGHTS” (R5-60). Signs **shall** be installed at these locations:

SW Region:

- IH 39 northbound in Rock County north of the state line
- IH 39 northbound in Dane County north of USH 51 in Madison
- IH 39 northbound in Columbia County north of IH 90-94
- IH 39 southbound in Columbia County south of IH 90-94
- IH 39 southbound in Dane County south of USH 12-18
- IH 90 eastbound in La Crosse County east of the state line
- IH 90 eastbound in Monroe County east of IH 94
- IH 90 westbound in Columbia County west of IH 39
- IH 90 westbound in Monroe County west of IH 94
- IH 94 eastbound in Dane County east of IH 39-90
- IH 94 westbound in Monroe County west of IH 90
- USH 18 westbound in Dane County west of Dairy Ridge Rd
- USH 151 northbound in Grant County north of the state line
- USH 151 northbound in Dane County north of IH 39-90-94

SE Region:

- IH 41 northbound in Washington County north of USH 45
- IH 43 northbound in Milwaukee County at Holt Ave
- IH 43 northbound in Ozaukee County north of STH 60
- IH 94 eastbound in Milwaukee County east of 84th St
- IH 94 westbound in Kenosha County west of the state line
- IH 94 westbound in Waukesha County west of the Milwaukee County line
- USH 12 westbound in Walworth County west of the state line
- STH 119 westbound in Milwaukee County east of IH 94

NE Region

- IH 41 southbound in Outagamie County south of the Brown County line
- IH 43 southbound in Brown County south of STH 172
- USH 10 westbound in Winnebago County west of IH 41
- USH 41 northbound in Brown County north of CTH B
- USH 41 southbound in Marinette County south of Marinette
- USH 41 southbound in Brown County south of CTH B

- STH 29 westbound in Brown County west of IH 41

NC Region

- IH 39 northbound in Portage County at Stevens Point
- IH 39 southbound in Marathon County south of Business 51
- IH 39 southbound in Portage County at Stevens Point
- USH 51 northbound in Marathon County north of STH 29
- USH 45 southbound in Vilas County south of the state line
- STH 29 eastbound in Marathon County east of USH 51
- STH 29 westbound in Marathon County west of USH 51
- STH 153 westbound in Marathon County east of IH 39

NW Region

- IH 94 eastbound in Saint Croix County east of the state line
- IH 94 eastbound in Eau Claire County east of USH 53
- IH 94 westbound in Dunn County west of STH 29
- USH 2 eastbound in Douglas County south of Superior
- USH 53 northbound in Chippewa County north of STH 29
- STH 29 eastbound in Chippewa County east of USH 53



Traffic Guidelines Manual

ORIGINATOR State Traffic Engineer	2-3-70
CHAPTER 2	Signs
SECTION 3	Warning Signs
SUBJECT 70	Low Flying Plane Signs

A. General and Background

Federal Aviation Regulations require aircraft, except when necessary for takeoff and landing, to maintain a minimum altitude of 1000' in congested areas, and 500' in other-than congested areas. Exceptions are also granted for certain restricted category aircraft, such as crop-dusting airplanes. These exceptions may cause airplanes to fly at a low altitude over the roadway, causing potential hazard or concern for motorists.

In the past, various signs have been installed to alert motorists to these low-flying aircraft. This policy will clarify when these signs *may* be installed, and establish a statewide standard sign for these locations.

B. Policy

Low flying plane warning signs *may* be installed at locations where planes regularly fly at altitudes below 500' over or in the immediate vicinity of the roadway. Examples of these locations include airports with runways adjacent to the highway and fields with regular crop-dusting activities. FAA and Bureau of Aeronautics comments *may* also be taken into consideration.

Standard sign plate W11-57 has been developed for use at these locations. This sign *should* be installed per Condition B: Deceleration to the listed advisory speed (0 mph) in Table 2C.4 of the [Wisconsin MUTCD](#). No sign is necessary at the crossing itself.

C. Implementation

There is no formal phase-in period for installation of this signing. Existing signs will be allowed to remain in place until the end of their useful life. Useful life ends when the sign message no longer meets legibility or condition standards. Existing signs *may* be replaced prior to the end of their useful life when opportunities arise such as knockdown or damage, when other work is occurring nearby, or when projects make replacement practical.



Traffic Guidelines Manual

ORIGINATOR State Traffic Engineer	2-4-41
CHAPTER 2	Signing
SECTION 4	Guide Signs – Conventional
SUBJECT 41	Advance Supplemental Guide Signs

A. Purpose

The Department places signs to various traffic generating facilities on the state highway system. In the past, several of these facilities have been signed with advance guide signs (...½ Mile or Road To...½ Mile) located ¼ to 1 mile in advance of the required turn, and directional guide signs (Name of Facility with arrow) located 0-1000' from the turn. This practice has been inconsistent across the state. This policy will clarify when to install advance guide signs, and where both advance and directional guide signs *should* be located. This policy will not define which facilities *may* be signed for. Refer to [TGM 2-15-3](#) for further information.

B. Definitions

Freeways are defined as divided arterial highway facilities that have full controlled access, by means of grade separation at interchanges only.

Expressways are defined as divided arterial highway facilities that have partial control of access and generally with grade separations at major intersections.

Conventional Highways are defined as either divided or undivided roadway facilities that have no control of access with grade separations at intersections. These highways can be two lane or multilane facilities.

Traffic Generators are defined as any facility, activity, or special point of interest which attracts large numbers of people, the majority of whom are unfamiliar with the local area and/or access route.

C. Policy

Facilities Adjacent to Any Highway

These facilities have a driveway directly off of a State or US Highway. These facilities *may* be located on conventional highways or expressways. Facilities adjacent to a highway that qualify for traffic signage are typically publicly owned and operated locations serving the motoring public. Examples of these facilities include Waysides and Historical Markers.

Advance guide signs for qualifying facilities *should* be installed approximately one-half mile in advance of the driveway. Other distances *may* be substituted where site conditions prevent using the distance of ½ mile.

Directional guide signs **shall** be installed at the entrance to the facility.

Facilities Remote from the State Trunk Highway System

These facilities do not have driveways on a State or US Highway; therefore, the motorist would be required to turn off of the highway onto a county or local road to access the facility. Many types of facilities *may* qualify for this type of signing.

Advance guide signs (Road To...1/2 Mile) *should not* be installed for these facilities.

Directional guide signs for qualifying facilities *should* be installed approximately 500' in advance of the appropriate intersecting roadway. This distance *may* be adjusted based on field conditions, but *should not* be less than 200' in rural areas or 100' in urban areas. A word message (Next Right, Second Left, etc) *may* be used in place of an arrow where necessary.

D. Implementation

There is no formal phase-in period for installation of this signing. Existing signs will be allowed to remain in place until the end of their useful life. Useful life ends when the sign message no longer meets legibility or condition standards. Existing signs *may* be replaced prior to the end of their useful life when opportunities arise such as knockdown or damage, when other work is occurring nearby, or when projects make replacement practical.



Traffic Guidelines Manual

ORIGINATOR State Traffic Engineer	2-6-60
CHAPTER 2	Signing
SECTION 6	Guide Signs – Freeways
SUBJECT 60	Cellular 911 Signs

A. Purpose

The intent of this guideline is to restrict the usage of signs that inform the public about contacting 911 for road emergencies to locations that are most helpful to motorists.

Signs with the message “WISCONSIN ROAD EMERGENCY – CELLULAR 911” (D12-4) have been installed on state highways in the past. These signs were installed in a partnership between Bureau of Traffic Operations and Bureau of Transportation Safety to educate motorists that they can dial 911 on their cell phones for road emergencies. Since these signs were installed, the usage of 911 has been adopted pretty much nationwide and motorists are now well aware that 911 is to be used for road emergencies. The official state highway map also encourages motorists to use 911 for road emergencies. Therefore, these signs are no longer considered necessary.

B. Policy

Cellular 911 signs (D12-4 signs) are declared non-essential on state highways. As a result, the following actions are expected:

1. No new Cellular 911 signs **shall** be erected on state highways.
2. Cellular 911 signs that have been installed on state highways will be allowed to remain in place until the end of their useful life, when they are to be removed and not replaced. Useful life ends when the sign message no longer meets legibility or condition standards. Cellular 911 signs *may* be removed prior to the end of the signs useful life when opportunities arise such as knockdown or damage, when other work is occurring nearby, or projects make removal practical.



Traffic Guidelines Manual

ORIGINATOR State Traffic Engineer	3-2-1
CHAPTER 3	Markings
SECTION 2	Applications
SUBJECT 1	Long Line Markings (Center/Edge/Lane/ Broken Lane/ Dotted Line/ Channelizing/Bike Lane)

General

The purpose of this policy is to provide specific guidance for the uniform application of long line markings on State Highways under DOT jurisdiction. The 2009 MUTCD, [Section 3B](#) contains further guidance on longline markings.

Centerline Markings

Centerline markings **shall** be a 4" wide yellow line. Dashed lines **shall** be 12.5' long with a 37.5' gap.

Centerlines markings **shall** be marked on:

- All highways under DOT jurisdiction
- Through all intersections with local roads on two-lane state highways.
- On undivided multilane highway with a double yellow line

Centerline markings **shall not** be marked through:

- Intersections where the state highway is more than two lanes
- Intersections where Interstate, US, or State Highways intersect
- Signalized intersections
- All way stop
- Intersections with opposing left turn lanes.
- Stop lines or marked crosswalks.

Further information on centerline markings are located in [Section 3B.01](#) of the 2009 MUTCD.

Edge line Markings

The 2009 MUTCD, [Section 3B.06](#), describes edge line markings in more detail. Edge line markings **shall** be a 4" white line on the edge of the roadway except the left most edge line on a divided highway **shall** be yellow.

Edge line markings **shall**:

- Continue through all driveways (commercial or private) except major commercial driveways (big box stores, etc.)
- Be used on freeways and expressways
- Be used on rural arterial roads with a traveling width of at least 20 feet and an ADT > 6,000 vehicles per day
- Urban areas with a travel lane of 16 ft. or greater.

Edge line markings **shall not** continue through:

- Intersections with more than two lane
- Intersections where Interstate, US, or State Highways intersect
- Intersections with opposing left turn lanes
- Signalized intersections
- Stop controlled intersections
- Commercial driveways meeting intersection design standards with full width paved turn lanes.

Edge lines *should* be used in urban areas or semi urban areas that do not have curb and gutter as required in MUTCD 2009 [Section 3B.07](#).

Edge Lines Adjacent To Urban Curb & Gutter Sections

POSTED SPEED	IS THERE CONTINUOUS LIGHTING?	
	YES	NO
≤ 30 mph	No	Optional
35 mph or 40 mph	Optional	Recommended
≥ 45 mph	Recommended	Required

Lane Line Markings

Lane lines **shall** be marked to delineate traffic traveling in the same direction. Lane lines **shall** be a 4” wide white line that is 12.5 foot long with a 37.5 foot gap between lines. Lane lines **shall** be marked on all state highways under DOT jurisdiction. Lane lines **shall** be marked through minor intersections and major T-intersections on the state highways, see [SDD 15C8 sheets b and c](#).

Dotted Lane Lines

According to the MUTCD, [Section 3B.04](#), a dotted line (3’ line, 9’ gap) *maybe* used as a substitute lane line. This line **shall** be 4” wide and **shall** be used to separate a through lane that continues beyond an intersection or interchange from an adjacent lane under the following conditions:

- A deceleration or acceleration lane
- A through lane that becomes a mandatory turn or exit lane ([SDD 15C8-sheet e](#), [SDD 15C28](#))
- Auxiliary lane
- Tapered Exit Ramps ([SDD 15C31 sheets a, b, and d](#))
- Parallel Exit (Deceleration) Ramps ([SDD 15C 31 sheet c](#))

Dotted Extension Lines

Dotted extensions **shall** be added to provide guidance past exits or *may* be added through intersections on curves where the edge of the traveled lane is unclear. A dotted extension line *may* be continued through an uncontrolled movement of a state highway intersection with another highway. If these lines are used through an intersection they **shall** be 2' lines with a 6' gap and the same width as the line that is being extended see in [SDD 15C8-17 sheet e](#).

Channelizing Lines

Channelizing lines **shall** be white and 8" in width. Channelizing lines **shall** be used in the following locations:

- In advance of an exit ramps or intersections to distinguish a lane. (3 foot line with a 9 foot gap) [SDD 15C8-17 sheet e](#)
- In advance of freeway route splits with dedicated lanes.
- To separate a through lane that continues beyond an intersection from an adjacent auxiliary lane between two intersections [SDD 15C8-17b](#)
- Exit gore markings **shall** extend fifty feet past the unpaved neutral area and 300 feet to begin the gore line, as shown on [SDD 15C 8-13g](#) and [SDD 15C31 sheet b](#).
- Entrance gore marking **shall** follow [SDD 15C31-1a](#)

Channelizing markings **shall not** be marked through:

- Signalized intersections.
- Intersections at a 4 way stop.
- Stop lines or marked crosswalks.

Bike Lane

If bike lanes are marked it **shall** be at least 5 ft. wide. Refer to [SDD 15C29](#) in the FDM. The words "BIKE LANE" or the bike symbol *maybe* used to delineate the bike lane. Signing *may* also be used to supplement the marking. The [DT2500 form](#) shall be completed to permit locals to install/maintain bike lanes and the [DT2137](#) form shall be completed to permit the locals to install/maintain Shared Lane Markings.

The usage of green pavement marking for bike lanes or bike boxes **shall not** be allowed on state maintained roadways.



Traffic Guidelines Manual

ORIGINATOR State Traffic Engineer		3-2-2
CHAPTER 3	Markings	
SECTION 2	Applications	
SUBJECT 2	No-Passing Zone Standards	

A. General

No-passing zones are marked and signed on state maintained highways to indicate where a driver cannot safely complete a passing maneuver under normal light and weather conditions. In addition to the zones required by inadequate sight distance, certain other conditions warrant short zones or no-passing zone extensions which are marked by no-passing barrier lines. Although sufficient sight distance *may* be present at these locations, the passing operation is not appropriate under state law or for safety reasons as documented in an engineering study.

Unmarked zones (where passing is allowed) allow the driver to make a decision based on rules of the road and circumstances, such as oncoming traffic, reduced visibility due to fog, low light, rain or smoke, turning traffic, or vehicles entering from side roads or driveways. **No-passing zones *should not* be marked to eliminate all possible conflicts.**

[Wisconsin Statute 346.10](#) allows passing another vehicle in a rural (non-business regional, non-residential regional) intersection, unless the intersection is designated by signals, stop signs, yield signs, or warning signs. Routinely marking zones through minor intersections and/or driveways would significantly reduce legal passing areas available to the driver, increasing non-compliance and unsafe passing in less favorable locations where adequate sight distance may not be available.

B. No-Passing Zone Criteria

No-passing zones **shall** be marked at all locations on the State Highway system that have insufficient sight distance for a vehicle to safely complete a passing maneuver under normal light and weather conditions. **The establishment of these zones shall be based exclusively on the sight distance required for the posted speed and the highway characteristics.**

The following criteria **shall** be used to mark no-passing zones:

SIGHT DISTANCE

Each Region has either a No-Passing Zone Sight Distance Map or spreadsheet listing the sight distance criteria on The State Trunk Highways. Either is available from your Regional Traffic Section. Typical sight distances are shown in the following table, but other criteria such as ADT or geometrics *may* change or alter those requirements.

Posted Speed Limit (MPH)	No-Passing Zone Sight Distance		Minimum Distance Between Zones	
	(mile)	(feet)	(mile)	(feet)
<30	0.10	528	0.10	528
35-40	0.13	686	0.10	528
40-50	0.16	845	0.13	686
55	0.21*	1,110*	0.15	792

* When authorized by the designated Regional Signing/Marking Engineer, the 55 MPH No-Passing Zone, sight distance **may be increased from 0.21 to 0.26 miles** on certain higher volume highway segments, due to higher frequency of crashes and/or a demonstrated history of excessive speeding above the posted limit.

* When authorized by the designated Regional Signing/Marking Engineer, the 55 MPH No-Passing Zone sight distance **may be decreased from 0.21 to 0.16 miles** on certain lower volume highway segments with poor alignment that significantly reduces safe passing opportunities. Factors to be considered include:

- Current high percent of solid yellow with concern for driver compliance
- Adequate lane and shoulder widths
- Infrequent intersections and access conflicts
- Lower ADT with minimal congestion and traffic peaks
- Lower prevailing speeds
- Greater speed differentials due to large agricultural machinery, heavy trucking, significant tourism traffic and sightseers, etc.
- Below average crash history

The specific characteristics and factors leading to the increase or decrease of the No-Passing Zone sight distance from the DOT 55 MPH standard of 0.21 mile, *should* be documented in the Region.

For 55 mph posted speed roadways, during the project design process, the designer **shall** contact the Region Signing/Marking Engineer to determine the correct No Passing Zone Sight Distance to be used. STSP 648-005 **shall** be inserted into the Special Provisions with the correct No Passing Zone Sight Distance for 55 mph posted speed roadways.

C. Required Equipment

1. Use two vehicles that provide a target on the lead vehicle 42 inches above the roadway. The observer's eye in the trailing vehicle shall be 42 inches above the roadway. Whatever type of target is used, it **shall** have a sharp cutoff when it disappears and appears.

2. A Distance Measuring Instrument (DMI) **shall** be used and **shall** have an accuracy of at least 10 feet per mile. The DMI **shall** decrease the measured distance when the vehicle backs up.
3. Two-Way communication equipment is required for the two vehicles.
4. At a minimum, a full-width flashing yellow light bar with 360 degree visibility **shall** be used. Additional signs and flashing lights on the vehicles are recommended.

D. Procedure for Locating and Marking No Passing Zones

1. LOCATING NO PASSING ZONES

- Prior to beginning work on locating no passing zones, the project engineer or Region Signing/Marking Engineer **shall** be contacted to determine if there are any special no-passing zones to mark under the contract.
- The No Passing Zone sight distance shown in the table in part B **shall** be followed.
- The termini of no-passing zones **shall** be established to an accuracy of +/- 50 feet (0.01 mile).
- When the distance between two successive no-passing zones is less than the minimum distance shown in the table in part B, the two zones **shall** be connected.
- For roadways with speed limit changes, the proper no-passing zone sight distance in the table in part B **shall** be maintained. For locations where the posted speed limit is increasing, when the lead vehicle reaches the increased speed sign, the trail vehicle would back up until the appropriate no-passing zone sight distance is achieved. For locations where the posted speed limit is decreasing, once the trail vehicle reaches the first decreased speed regulatory sign, the lead vehicle would back up until the appropriate no-passing zone sight distance is achieved.
- On horizontal curves, no part of the line of sight **shall** extend outside the shoulder of the road. No Passing Zones **shall** be located and marked on the inside radius of horizontal curves.

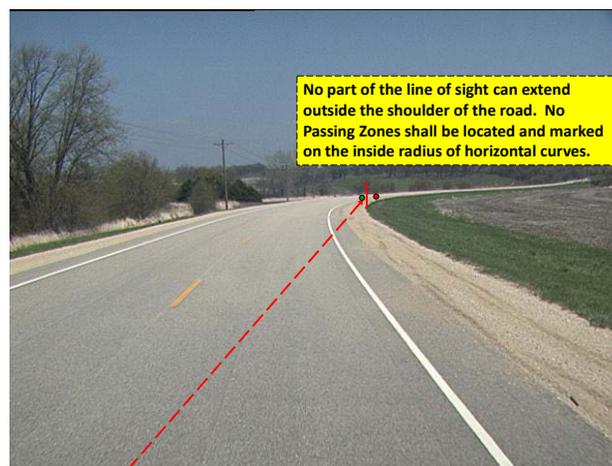


FIGURE 1 Horizontal Curve

- On vertical curves, whenever the target light disappears from sight, the crew **shall** check for blind spots. For a crest vertical curve, if the target light on the lead vehicle goes out of sight, the trail vehicle parks at the base of the hill. The lead vehicle **shall** back up to reveal a full silhouette of the rear of the car (from the bottom of the bumper up). Once the trail vehicle sees the full silhouette of the lead vehicle, the trail vehicle **shall** back up to establish the sight distance between the 2 vehicles before marking the roadway (see Figure 2).

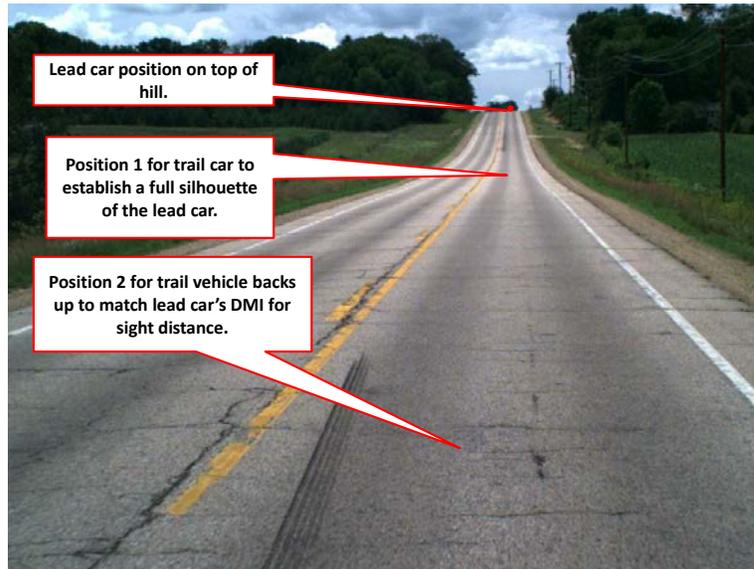


FIGURE 2 Crest Vertical Curve

- For sag vertical curves, if the target on the lead vehicle goes out, the lead vehicle **shall** stop at the base of the hill or in the sag. The trail vehicle **shall** pull forward until they see a full silhouette of the lead vehicle. Once the trail vehicle sees the full silhouette of the lead vehicle, the lead vehicle **shall** pull forward to establish the sight distance between the 2 vehicles before marking the roadway (see Figure 3).



FIGURE 3 Sag Vertical Curve

- If the no passing zone is less than 500 feet in length, the zone **shall** be extended to 500 feet by lengthening the zone at its beginning in each traffic direction.
- The correctness of no-passing zones leading into and out of the project limits **shall** be checked. Ensure that the minimum distance between zones and the sight distance are checked.

2. MARKING MATERIAL

- * The beginning and end of all no-passing zones **shall** be marked on the roadway by the marking of T's and dots with white spray paint (for asphalt) and black spray paint (for concrete).
- * T's **shall** be 12" X 12" and 2" stroke. Dots **shall** be 3" - 4" in diameter.
- * The paint material used to mark the road **shall** be durable enough to be readily visible for one year after application.

3. RECORDING OF NO PASSING ZONES

The WisDOT Standard No Passing Zone Log (form [DT2124](#)) **shall** be used to record the No Passing Zones (see Figure 4). Include the following data on the No Passing Zone Log Sheets:

- * Date of survey on each sheet.
- * County and Route on each sheet.
- * The cardinal direction of travel (for east west roads, record in the easterly direction, for north south roads, record in the northerly direction).
- * All starts and ends are logged in miles to the nearest 1/100th of a mile.
- * The beginning and ending of each no-passing zone line in both directions.
- * The sight distance and speed criteria for each zone.
- * The location of landmarks (intersecting U.S., State and County trunk highways, bypass lanes, truck climbing lanes, passing lanes, county boundary lines, railroad crossings, starts and ends of bridges and regional boundaries).

D. No-Passing Barrier Line Criteria

1. No-passing barrier lines, 500 feet in length, **shall** be marked on an undivided STH approach in the following intersection situations:
 - * The STH traffic is controlled by a stop sign.
 - * The intersection with the STH is controlled by a signal.
 - * The intersection with the STH is controlled by a roundabout.
 - * At a T-intersection with a standard bypass lane that allows vehicles proceeding straight to pass to the right of a left turning vehicle without leaving the paved portion of the highway as per [SDD 15C8-b](#), a 500-foot barrier line **shall** be installed prior to the start of the bypass taper.
2. A no-passing barrier line **shall** be marked in the following non-intersection situations:
 - * In advance of a divided highway. The marking configuration **shall** extend a barrier line 500 feet in advance of the island or median nose so passing is prohibited entering into the divided highway. This is illustrated on the Standard Detail Drawing

titled "Signing and Marking For Two Lane to Four Lane Divided Transitions", located in the Facilities Development Manual. ([SDD 15C21](#))

- * In advance of a painted median island. The marking configuration **shall** extend a barrier line 500 feet in advance of the separation of the double yellow center line. This is illustrated on the Standard Detail Drawing titled "Median Island Marking", located in the Facilities Development Manual. ([SDD 15C18](#))
- * Bridges having a width less than 24 feet. The marking **shall** include a 500 foot barrier in advance of the actual structure as shown on the Standard Detail Drawing titled "Traffic Control Devices for Two-Lane Bridges", located in the Facilities Development Manual. ([SDD 15C6](#))
- * Railroad grade crossings. The barrier line **shall** be placed 500 feet prior to each approach (unless markings are not required, as provided in the WMUTCD). The configuration of the marking is shown on the Standard Detail Drawing titled "Pavement Marking Details for Railroad-Highway Grade Crossings" and located in the Facilities Development Manual. ([SDD 15C9](#))
- * Passing Lanes. The pavement marking configuration **shall** extend a barrier line 500 feet in advance of the beginning of the taper. This is illustrated on the [SDD 15C8-c](#) and [SDD 15C8-d](#), "Pavement Marking (Climbing Lane & Passing Lane)", located in the Facilities Development Manual. A bypass lane for an intersection is **not** considered a passing lane under this guideline.
- * Truck Climbing Lanes. The pavement marking configuration **shall** extend a barrier line 500 feet in advance of the beginning of the taper. This is illustrated on the [SDD 15C8-c](#) and [SDD 15C8-d](#), "Pavement Marking (Climbing Lane & Passing Lane)", located in the Facilities Development Manual.
- * Undivided 4 lane roadways. Any stretch of roadway with this configuration **shall** have the opposing lanes designated by a barrier line for its entire length and **shall** have barrier lines of 500 feet in length on the approaches to this section.

E. Special No Passing Barrier Lines

No-passing barrier lines **shall** be marked with the approval of the designated Regional Signing/Marking Engineer in the following situations. When marked, they *should* be documented in the Region.

- * At any intersection when justified by an engineering study. Appropriate reasons include a crash history related to passing maneuvers or demonstrated operational problems. The 500-foot barrier line would end at the near edge line of intersecting road and *may* be placed in only one direction based on operational need. This is illustrated on the [SDD 15C8-13b](#), "Pavement Marking (Intersections)", located in the Facilities Development Manual.

- * In low speed urban areas, double yellow barrier lines *may* be placed when justified by an engineering study. Criteria for the engineering study include curb and gutter, reduced speed, parking allowed, poor stopping sight distance, closely spaced driveways or intersections, and high pedestrian volumes. The double yellow lines *should* be installed from the start of the curb and gutter to the end of curb and gutter through the urban area. When urban double yellow lines are used, 500-foot barrier lines **shall** be placed on the approaches to this special layout, unless a longer no-passing zone takes precedence.

- * At a T-intersection with roadway pavement that allows vehicles proceeding ahead to legally pass to the right of a left turning vehicle without leaving the paved portion of the roadway, a 500-foot barrier line prior to the start of the bypass taper will be optional based on engineering judgment.

F. Marking No-Passing Barrier Lines

Barrier lines, as designated above, **shall** have a minimum length of 500 feet.

On State Trunk Highway approaches with stop or signal control, the barrier line would end at the stop line, theoretical stopping point or marked crosswalk. Each approach on the State Trunk Highway *should* be considered separately.

Barrier lines **shall** be connected into adjacent no-passing zones when there is less than minimum distance between zones, as described in the NO-PASSING ZONE CRITERIA section of this policy.

Where allowable barrier lines are justified, the traffic engineer **shall** give the crew locating no-passing zones specific directions as to where barrier lines are to be placed.

G. Signing

A No-Passing Zone pennant sign (W14-3) **shall** be installed as required in TGM [2-3-38](#), supplementing zones established under this guideline. This sign **shall** be placed no more than 50 feet from the start of the no-passing barrier line unless it's impossible due to location on a bridge deck or other exception.

Sign quantities for moving the existing W14-3 sign **shall** be paid for separately and listed in the Permanent Signing Miscellaneous Quantities Sheet in the plan. If moved, the sign location **shall** be based on placement of the beginning of the revised no passing zone.



Traffic Guidelines Manual

ORIGINATOR State Traffic Engineer		3-2-3
CHAPTER 3	Markings	
SECTION 2	Applications	
SUBJECT 3	Special Markings (Arrows, Words, Symbols, Chevron Markings, Stop lines, Crosswalk, Aerial/Vascar Enforcement Bars)	

General

Special pavement markings consist of arrows, symbols, words, stop lines, crosswalks, diagonals, and aerial/vascar enforcement markings. These markings *may* be used to supplement signing. When used, they **shall** conform to the requirements in [Section 3B](#) of the 2009 MUTCD, and the following guidelines.

Policy

All special markings **shall** be white and reflective.

Arrows

Arrows are not required, but may be used to supplement signing. There are 3 main types of arrows that WisDOT uses:

1. *Lane Control Arrows*

- To supplement signing for complicated lane assignment

2. *Wrong Way Arrows (Type 4)*

- On any freeway off-ramp with high crash rates or unusual or poor geometrics.
- Intersections or ramps with demonstrated problems of wrong way driving.

3. *Lane Drop Arrows (Type 5)*

- On any lane drop with high crash rates.

Use [SDD 15C7 sheet c and d](#) for the size and shapes of these markings.

Words

Words currently allowed by WisDOT can be found in [SDD 15C7.12b](#) and [SDD 15C29 sheet e and f](#) for the size and shape of these words. All words should be used at a site with a documented safety problem and discussed with the regional traffic engineer.

- The word, “ONLY”, *may* only be used with singular Type 1 or Type 2 lane use arrows. The word, “ONLY”, **shall not** be used in a two-way left turn lane.
- The word, “SCHOOL”, either single or dual lane marking, **shall** only be used when one of the following criteria applies:
 - In advance of a marked crosswalk, which is typically monitored by a school crossing guard.
 - At a mid-block or uncontrolled intersection. The requestor **shall** be responsible for maintenance of the “SCHOOL” marking in combination with the crosswalk marking. This **shall** be documented on the application/permit form, DT2136 and the crosswalks policy under the “Type of Crosswalk Marking, Other”. The required detail **shall** comply with [SDD 15C7](#).
- “BIKE LANE” **shall** only be used with a signed bike lane.
- “YIELD” shall only be used at roundabouts.
- The word, “OK”, **shall not** be used on any state maintained highways.

Symbols

Symbols **shall** conform to the [SDD15C7 sheet a](#) and **shall** only be used when the following criteria applies:

- At a site with a documented safety problem.
- Supplement to regulatory signage.
- At the discretion of the regional traffic engineer.

Chevron/Diagonal Markings

Chevron/Diagonal markings provide added emphasis to the neutral area of the gore. Chevron markings *may* be applied at gores. Refer to the FDM [SDD 15C8-13g, h, and i](#).

Stop Lines

Stop lines indicate where vehicles are required to stop at intersections. Stop lines are not required at all intersections, but *may* be desired if:

- An approach to a signalized intersection where detection is installed and stopping at a certain point *may* enhance the operation.
- Intersection approaches with unusual geometrics such as large skew angles or non-symmetric approaches.
- Complex multilane approaches.
- An approach to an intersection with the STOP sign installed well in advance of the desired stopping point because of curb radii.
- In advance of a marked or unmarked crosswalk with significant pedestrian volumes.

For placement of stop lines refer to [SDD 15C33](#). If the stop lines are required by the department, the Department will maintain the markings. All other stop lines and crosswalks *may* be marked by contract at the request of the municipality with the understanding that the local agency assumes responsibility for the maintenance.

Crosswalks

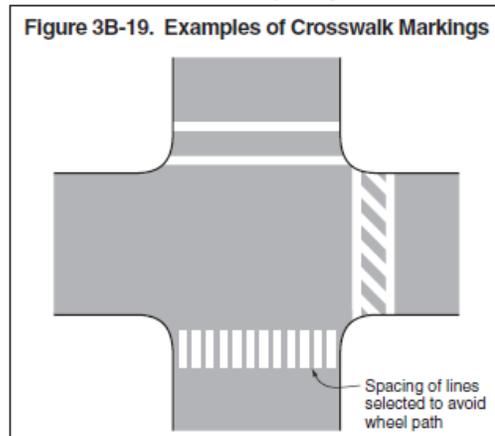
Crosswalks mark the path at which pedestrians should cross the roadway by delineating paths on approaches to and within signalized intersections, and on approaches to other intersections where traffic stops. As a secondary purpose, crosswalk markings *may* also serve to alert drivers of a pedestrian crossing point without signal or stop control. At non-intersection locations, crosswalk markings legally establish the crosswalk.

The Department policy for installation of crosswalks is as follows:

- Crosswalk markings *should* be installed at signalized intersections where pedestrian signal indications are present and at locations where there is a signed school crossing.
- Crosswalk markings *should not* be installed at non-intersection, mid-block locations or urban locations where posted speed limits are 45 MPH or more, unless traffic controls (all-way stop, signal, roundabout) or crossing enhancements (curb bump outs, median divider island, etc.) are present.
- Non intersection crosswalk markings **shall not** be permitted at rural locations with a posted speed limit of 45 MPH or more. Exceptions may include trail crossings where advance warning signs are present.

There are 2 types of crosswalks that WisDOT allows as shown in Figure 3B-19 of the 2009 MUTCD

- 2 - 6" Transverse Lines (all intersections and roundabouts)
- 24" Ladder Pattern (Only for midblock crossings)



Crosswalk markings *should* be placed as nearly perpendicular as possible to the direction of travel on the roadway. The following form needs to be completed to permit a municipality to install and maintain a crosswalk [DT2136](#). A signed copy of the permit **shall** be sent to the local unit of government and a copy shall be filed in the Region office.

Special Marking Treatments for Crosswalks

FHWA has published an official MUTCD Ruling, dated August 15, 2013 that allows subdued-colored aesthetic pavement treatments between legally marked transverse crosswalk lines. However, the following criteria **shall** apply:

- The colored pavement treatment **shall not** be made of retroreflective material.
- Transverse crosswalk lines **shall** delineate the edges of the crosswalk and **shall** be 2-6" white transverse lines.
- Examples of acceptable aesthetic pavement treatments include brick lattice patterns, paving bricks, paving stones, cobbles or other types of paving. All treatments cannot impede wheelchair pedestrians.
- Examples of acceptable colors for aesthetic pavement treatments are red, rust, brown, burgundy, clay, tan or similar earth tone equivalents.

Aerial Enforcement and Vascar Enforcement Bars

Aerial and Vascar Enforcement Bars are transverse markings placed on the roadway to assist law enforcement agencies in the enforcement of speed regulations. These markings are a series of two to five bars with a center-to-center spacing of 660 ft. and **shall** conform to the [SDD15C14](#).

- Aerial –These lines are utilized by airplane to determine vehicle speeds from the air.
- VASCAR (Visual Average Speed Computer and Recorder) – These lines are utilized at ground locations for speed monitoring and verification of distance traveled.

Wisconsin State Patrol is the authority on these markings in cooperation with the Division of Transportation System Development to determine the quantity and locations of these markings for the use on state trunk system. Wisconsin State Patrol will notify the Regional traffic office for new locations that are needed or those that need to be remarked. Actual marking of the lines will be done by the Special Marking Contractor as the work schedule permits. A representative of State Patrol **shall** mark the locations of the lines with a small paint stripe prior to placing markings. A car can be provided by State Patrol for Traffic Control during the marking process, if the project engineer deems it necessary.



Traffic Guidelines Manual

ORIGINATOR State Traffic Engineer	3-2-4
CHAPTER 3	Markings
SECTION 2	Applications
SUBJECT 4	Island Marking

A. Purpose

This policy explains the concept of how islands **shall** be marked consistent with MUTCD 2009, [Section 3B.23](#)

B. Policy

Channelizing lines **shall** be placed upstream and adjacent to islands. The color of the pavement marking adjacent to the island **shall** be indicative of the function of the island.

- If an island separates traffic flowing in the same direction, such as a right or left turn island, the pavement markings along the island **shall** be white.
- If an island separates opposing traffic, such as a median island, the pavement markings **shall** be yellow.

Channelizing lines *may* be extended to address a demonstrated problem.

Refer to [SDD 15C8 \(c\)](#) for details on how to mark a Turn Lane Island, Median, and Corrugated Median



Traffic Guidelines Manual

ORIGINATOR State Traffic Engineer	3-2-11
CHAPTER 3	Markings
SECTION 2	Applications
SUBJECT 11	Raised Pavement Markers

Purpose

Raised pavement markers are used to either supplement or substitute longitudinal pavement markings. These retroreflective units are either placed on top of or embedded into the pavement. Section [3B.11 – 3B.14](#) of the MUTCD covers the installation of raised pavement markers, and Section [6F.79](#) covers temporary raised pavement markers. This policy will clarify application of raised pavement markers on WisDOT maintained roadways.

Policy

The color of the raised pavement markers **shall** match the color of the line that they supplement or substitute.

Plowable raised pavement markers **shall not** be used on state-maintained roadways. Existing plowable raised pavement markers **shall not** be covered over during a resurface project and **shall** be removed, prior to resurfacing the roadway.

Temporary Raised Pavement Markers, Type I

Temporary Raised Pavement Markers Type I *may* be used in construction zones to supplement pavement marking through shifting tapers. If used in shifting tapers within construction zones, temporary raised pavement markers **shall** remain in place until the traffic staging changes. They **shall** be placed every 50 feet.

Temporary Raised Pavement Markers, Type II

Temporary Raised Pavement Markers Type II **shall** be used to substitute pavement markings which are completely covered.

On undivided roadways, W8-12 “NO CENTER LINE” signs **shall** be used to supplement Temporary Raised Pavement Markers Type II until temporary or permanent markings are installed. These signs **shall** be placed at the beginning of the project, at two-mile intervals

throughout the project, and at locations where traffic enters the project area from intersections with state trunk and county trunk highways.

On projects for roadways with less than 3500 AADT, temporary raised pavement markers are acceptable until a permanent marking can be placed.

On projects for roadways with 3500 ADT or greater, temporary raised pavement markers are acceptable for a maximum of 3 days after the markings are covered. Until the permanent markings are installed, temporary pavement markings are required for centerlines, lane lines and edge lines. Permanent markings **shall** be installed within 14 days of the marking being covered.

Same-day pavement marking *may* be used in lieu of using Temporary Raised Pavement Markers, Type II.

The standard application of Temporary Raised Pavement Markers, Type II **shall** be installed as shown on Standard Detail Drawing [15C34-1](#).

Same Day Pavement Marking

If same-day pavement marking is being installed, a reduced amount of temporary raised pavement markers may be used to locate the centerline and channelizing lines. At a minimum, the following spacing requirements **shall** be used for Temporary Raised Pavement Markers, Type II for same-day pavement marking operations:

- Centerline, Lane Line, and Edge Line Marking: Place temporary pavement markers at 100' spacing.
- Place temporary pavement markers at beginning and ends of barrier lines.
- Beginning and ends of 8" channel line: Place two temporary pavement markers side by side.
- Dotted 8" Line: Place 1 temporary raised pavement marker at beginning of every other segment of dotted line.



Traffic Guidelines Manual

ORIGINATOR State Traffic Engineer	3-2-15
CHAPTER 3	Pavement Marking
SECTION 2	Applications
SUBJECT 15	Dynamic Envelope Markings

A. Purpose

The 2009 MUTCD, [Section 8B.29](#) defines dynamic envelope pavement markings as a 4-inch solid white line, placed parallel to and 6 feet away from the nearest rail of an at-grade crossing. The [2011 Wisconsin Supplement](#) further defines a supplemental marking consisting of 12-inch solid white lines, placed at a 45-degree angle and 5 foot spacing between the 4-inch solid lines. This policy will clarify dynamic envelope pavement marking installation on state maintained roadways.

B. Policy and Guidelines

Between the 4-inch parallel lines, dynamic envelope markings fully cover 20 percent of the driving surface. This broad coverage area presents a potential safety hazard to bicycles and motorcyclists, as pavement marking material offers significantly less surface friction than unmarked pavement. In addition, this large amount of marking creates a maintenance issue for the department. For these reasons, dynamic envelope markings **shall not** be utilized on state maintained roadways.

Certain grade-crossing locations on state maintained roadways *may* present operational issues. In lieu of dynamic envelope markings, the following signing countermeasures *may* be implemented:

1. The R8-8 “DO NOT STOP ON TRACKS” sign *may* be used at grade crossings where drivers tend to stop on the tracks.
2. The R10-6 “STOP HERE ON RED” sign *may* be used at grade crossings with signals downstream of the crossing.
3. The W10-11-A “XX FEET BETWEEN TRACKS & HIGHWAY” sign *may* be mounted in advance of a grade crossing where limited storage space exists between the tracks and a downstream intersection.
4. The W10-11-B “XX FEET BETWEEN HIGHWAY & TRACKS BEHIND YOU” sign *may* be used downstream of a grade crossing where limited storage space exists

between the tracks and a downstream controlled intersection. If used, this sign *should* be mounted either below the STOP or YIELD sign, or just prior to the signalized intersection.



Traffic Guidelines Manual

ORIGINATOR State Traffic Engineer	3-10-1
CHAPTER 3	Markings
SECTION 10	Program
SUBJECT 1	Pavement Marking Material Selection Policy

A. Purpose

Uniformity in the application of pavement markings materials on state highways is very important because it will provide for consistency of motorist expectations, which can enhance traffic safety. Consistency of application will result in the most efficient usage of dollars (both for projects and maintenance) for pavement markings. In turn, this will lead to a sustainable pavement marking program that will provide effective pavement markings to address the needs of motorists at the most economical cost.

This policy provides direction on what types of pavement marking materials are used on the different types of roadways.

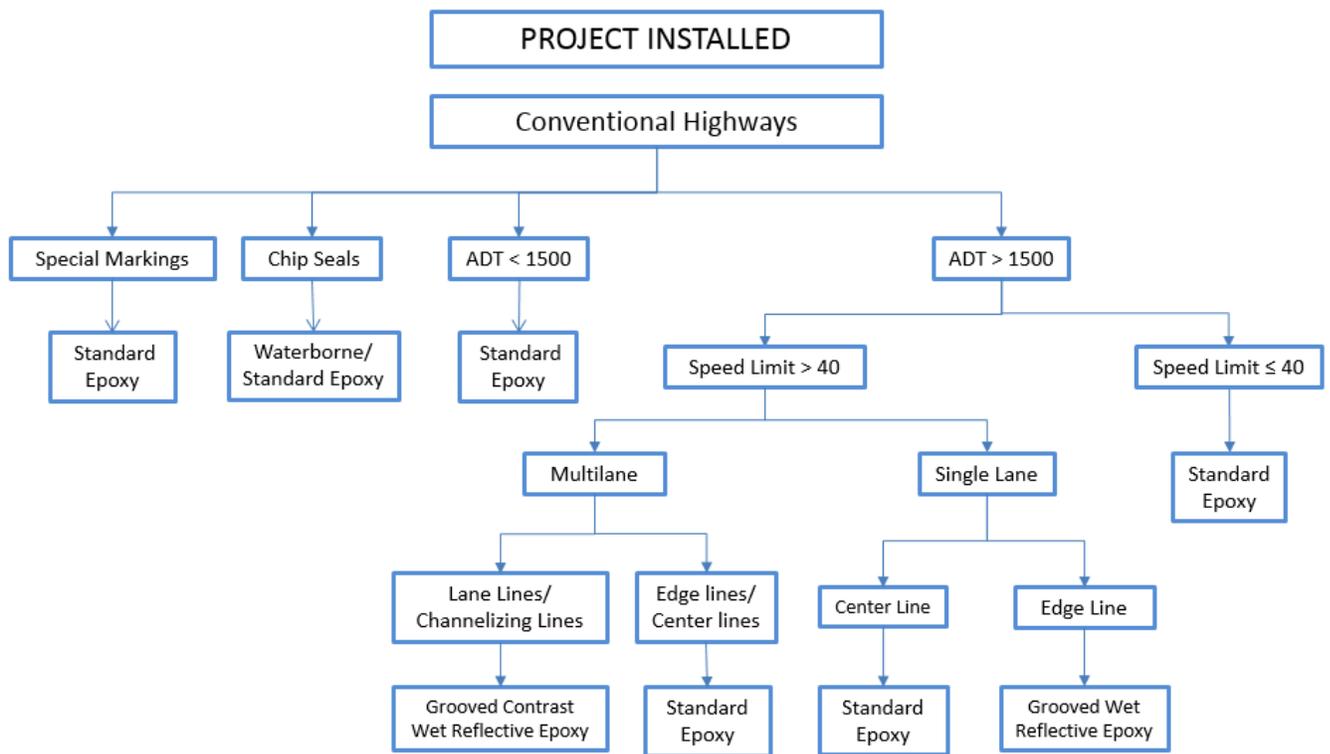
It is recognized that there may be times where unique situations could necessitate a deviation from this policy. Unique locations or non-standard markings **shall** be discussed with the Regional Traffic Signing and Marking Engineer prior to including such markings in contract plans.

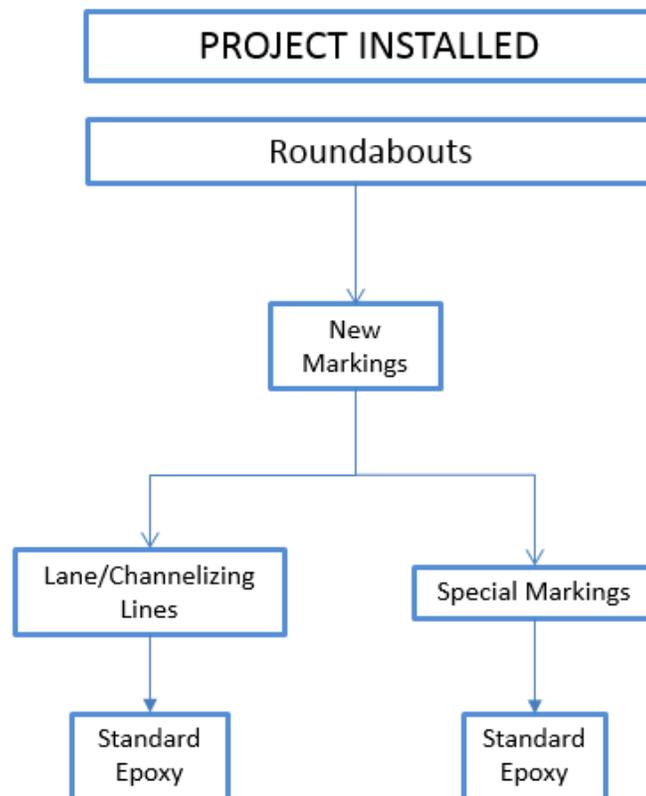
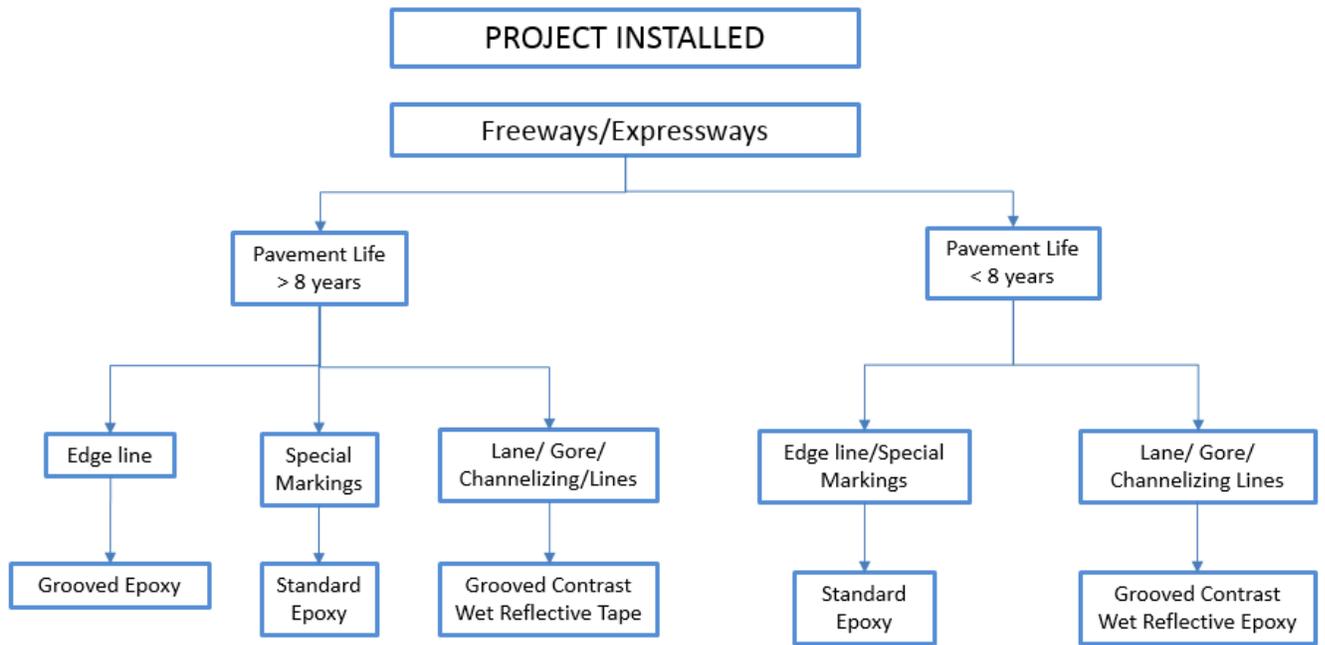
Any pavement marking material usage requests that are not on the Department's Approved Products List **shall** be reviewed and approved by the Bureau of Traffic Operations prior to usage. Any shortages of pavement marking materials or vendors requesting usage of new products **shall** be referred to the Bureau of Traffic Operations.

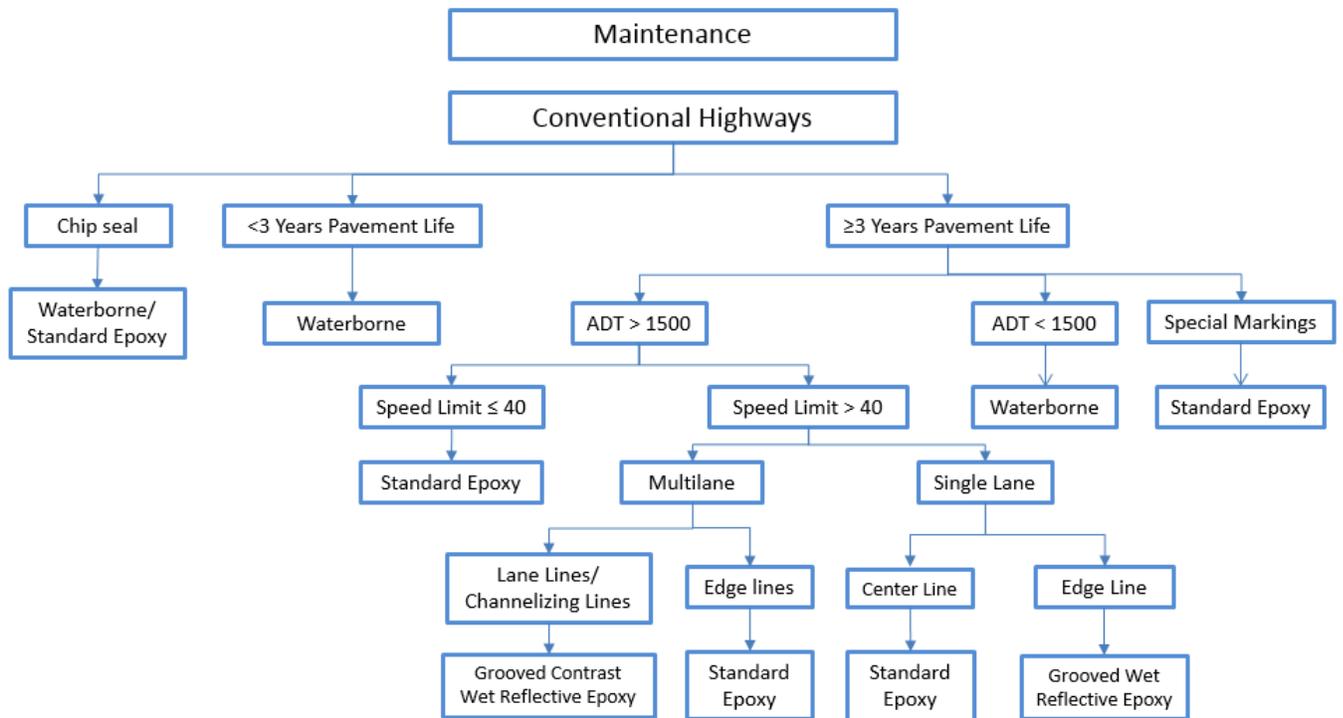
B. Policy

The type of pavement marking material used on state highways is provided below in the flow charts. The flow charts are for project installed pavement markings and maintenance installed pavement markings. These charts **shall** be utilized when making the decision to select the proper pavement marking material for the roadway.

- When utilizing the flow charts, the following criteria shall be kept in mind: If a contrast epoxy product already exists, retrace only the white portion of the epoxy unless the black aggregate is visually missing.
- Grooved Wet Reflective Epoxy **shall** only be remarked in kind, if an existing groove has maintained adequate depth.
- If preformed thermoplastic is present, remove preformed thermoplastic markings and replace with a product listed on the associated flow chart. Retracing preformed thermoplastic is **NOT** permitted.
- If tape is present and still bonding, retrace marking with a product listed on the flow chart product. However, if the tape product is failing, remove tape and replace with epoxy.

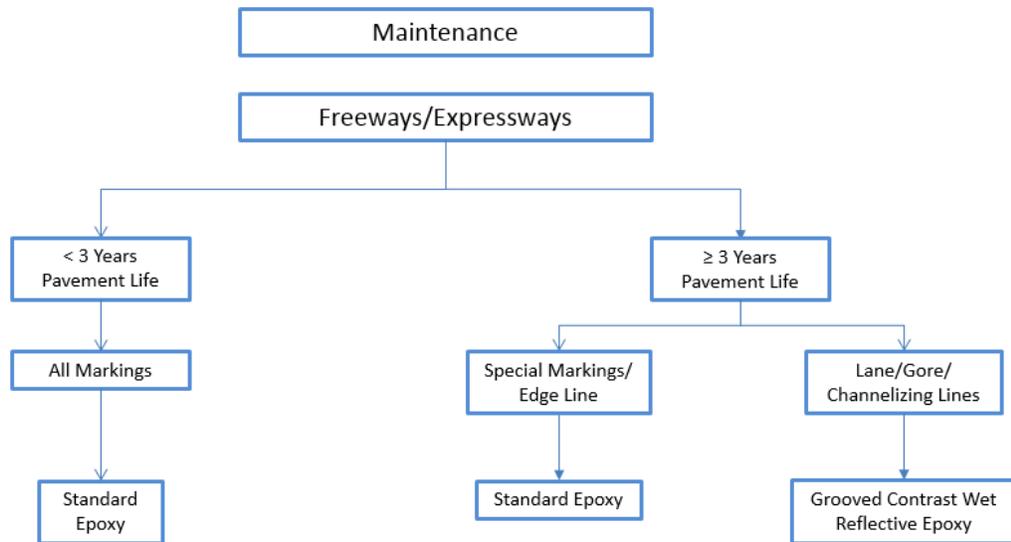






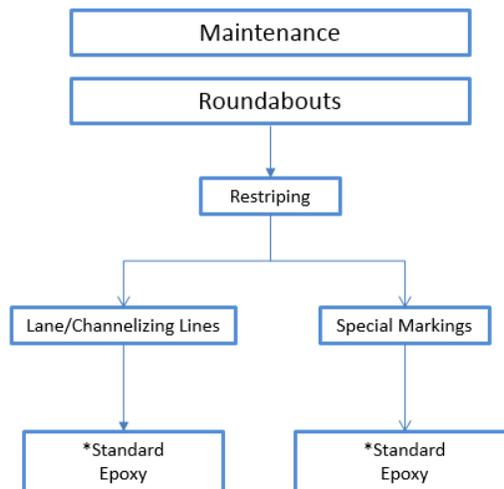
NOTE:

- In areas where there is no groove, marking would be standard epoxy or waterborne.
- Where contrast epoxy already exists, retrace only the epoxy, not the contrast marking unless visually missing.
- Grooved Epoxy: Remarkings within the existing groove, unless material is failing, then consider re-grooving.
- If thermoplastic is present, remove thermoplastic markings and replace with the correct product listed above. Retracing thermoplastic is NOT permitted.
- If tape is present and still bonding, retrace marking with the correct product listed above. If tape product is failing, remove tape and replace with epoxy.



NOTE:

- In areas where there is no groove, marking would be surface applied and not wet reflective.
- Where contrast epoxy already exists, retrace only the epoxy, not the contrast marking unless visually missing.
- Grooved Epoxy: Remarkings within the existing groove, unless material is failing, then consider re-grooving.
- If thermoplastic is present, remove thermoplastic markings and replace with the correct product listed above. Retracing thermoplastic is NOT permitted.
- If tape is present and still bonding, retrace marking with the correct product listed above. If tape product is failing, remove tape and replace with epoxy.



NOTE:

- Where contrast epoxy already exists, retrace only the epoxy, not the contrast marking unless visually missing.
- Grooved Epoxy: Remarkings within the existing groove, unless material is failing, then consider re-grooving.
- If thermoplastic is present, remove thermoplastic markings and replace with the correct product listed above. Retracing thermoplastic is NOT permitted.
- If tape is present and still bonding, retrace marking with the correct product listed above. If tape product is failing, remove tape and replace with epoxy.



Traffic Guidelines Manual

ORIGINATOR State Traffic Engineer	3-15-5
CHAPTER 3	Markings
SECTION 15	Applications
SUBJECT 5	Temporary Pavement Markings

General

Temporary Pavement Markings help delineate the roadway during a construction project.

Policy

Temporary Pavement Markings **shall** resemble the width and color of the permanent pavement markings. Temporary Pavement Markings can be one of the markings listed below:

1. Paint
 - a. Preferred product over the summer months.
2. Epoxy
 - a. Preferred product if the project will extend over the winter.
3. Removable Tape
 - a. **May** be used when it is applied to the permanent pavement, but not where the permanent marking will be placed.
 - b. **Shall not** be used over the winter.
4. Mask-out Tape
 - a. This is used to cover existing marking for the duration of the project, only if the marking will be there after the project.
 - b. This product *should* only be used for short term work, as long-term usage this *may* leave a residue on the underlying markings.
 - c. **Shall not** be used over the winter
5. Temporary Raised Pavement Markers- See TGM 3-2-11 for further guidance. SDD [15C34-1](#).provides guidance on the placement of Temporary Raised Pavement Markers, Type II.

Transition Areas, Lane Shifts, and Crossovers *may* use the following marking for emphasis:

- Contrast lane lines (removable tape)
- Type I temporary raised pavement markers
- Solid lines (any product)



Traffic Guidelines Manual

ORIGINATOR State Traffic Engineer		6-3-7
CHAPTER 6	Work Zone Traffic Control	
SECTION 3	Elements	
SUBJECT 7	Freeway Service Team Sponsorship	

General

The department initiated the Freeway Service Team (FST) Sponsorship Program as an innovative source of revenue. The Sponsorship Program is intended to improve the transportation system and benefit the traveling public by increasing their awareness of available services. Additional revenues further enable WisDOT to provide necessary services and enhance the safety and efficiency of the State's highway system.

FST sponsorships offer recognition to a business or other entity for supporting FSTs that improve work zone safety. Sponsorship agreements *may* include sponsor recognition placed on FST vehicles under contract with the department and or signs as outlined in MUTCD 2H.08.

Goals and objectives

The goals and objectives of FST Sponsorship are to:

- Create a public/private partnership to provide FST services
- Increase public awareness of program
- Provide sponsors an opportunities to promote traffic safety

Responsibilities

Bureau of Traffic Operations (BTO)

- Management of the FST program via FST Program Manager
- Procure FST services
- Procure FST sponsorship(s)

Regional Traffic Engineers

Notify BTO of preconstruction meetings and project start dates *Other Stakeholders*

- Regional Communications Manager

- Law enforcement
- Counties and local officials
- Towing contractors

Eligible Sponsors

Eligibility for participation in the sponsorship program is limited to individuals, businesses and organizations that abide by state and federal laws that prohibit discrimination based on race, religion, color, age, sex, national origin, or sexual orientation, that do not promote illegal products or activities, and that do not harm the public image of the state or department.

Sponsorship Recognition

Vehicle marking, registered trademarks and lettering

- A. The Sponsorship Contractor *may* apply markings and trademarks onto the FST trucks operated by Operator Contractors. The sponsor **shall** submit a design to WisDOT for approval.
- B. No other markings *may* be placed on or in the FST vehicles, unless otherwise approved by WisDOT.
- C. Any painting, placing, maintaining, repairing, adding or removing Vehicle Markings, Logos and Lettering must be conducted in such a manner as to not reduce the FST Operator Contractor's contractually required level of performance and availability.
- D. Operator Contractors are required to have backup trucks to be used in the event the primary truck is damaged. When the backup truck is in use the Sponsorship Contractor *may* provide magnetic markings to indicate that the truck is part of the FST. The sponsor **shall** submit a design to WisDOT for approval.
- E. WisDOT will determine when FST Operator Contractor contracts will end.
- F. The sponsor is responsible for removal of all markings, logos and lettering from operator vehicles within two weeks of notification by WisDOT.
- G. The Sponsorship Contractor is responsible for any damage to Operator Contractor vehicles as a result of graphics placement or removal.

Roadside Signage

The Sponsorship Contractor *may* indicate its sponsorship of the FST program through roadside signage placed at certain designated locations within or approaching work zones where FST Operator Contractor vehicles are operating.

- A. All Sponsorship Contractor signage **shall** be approved by WisDOT inclusive of design and placement. WisDOT reserves the right to require in certain circumstances signs to be removed, or placed in other locations at WisDOT's sole discretion.

- B. All signs **shall** comply at all times with Federal Highway Administration (FHWA) guidelines, and all applicable Federal and Wisconsin rules, regulations and laws in effect at the present and in the future.
- C. Acknowledgement signs **shall** be designed and installed as follows:
- i. No more than two signs per direction along a single work zone, in locations approved by WisDOT.
 - ii. Signs (in one direction) *may* be spaced no closer than 3 miles apart except where approved by WisDOT.
 - iii. Sign logo, layout, size and design **shall** be in accordance with the requirements of the MUTCD.
 - iv. Signs shall be considered temporary and will be mounted on wooden posts. Sign size will be approved by WisDOT.
- D. WisDOT will approve all sign locations. The standard sign location will be 800' in advance of the "Road Work Ahead" sign.
- E. The minimum spacing between sponsorship acknowledgement signs and other signs should be:
- i. 150' on roadways with posted speed limits of 25 MPH or less.
 - ii. 200' on roadways with posted speed limits of 30 MPH to 45 MPH
 - iii. 500' on roadways with posted speed limits greater than 45 MPH
- F. WisDOT will determine when FST Operator Contractor contracts will end.
- G. Placing, replacing, maintaining, repairing, removing, covering or relocating signs must be done in accordance with WisDOT specifications. For questions contact the State Signing and Marking Engineer.

Operator Uniforms

The Sponsorship Contractor *may* choose to provide uniforms to FST Contractor Operator drivers. Uniforms must comply with the following:

- A. ANSI Class III compliant safety vests and pants. Vests **shall** have the Sponsors logo worn above the left chest pocket. Contractor **shall** provide enough sets of vests and pants such that each vehicle operator has clean sets of pants and vests.
- B. Sponsor colored baseball type hat. The hat **shall** be made entirely of fabric (no mesh style hats) and will have the Sponsor's logo on the front of the hat above the brim. Contractor **shall** provide enough hats such that the Operator Contractor *may* provide clean, legible hats as needed. FST Operator Contractor operators are not required to wear hats.
- C. Sponsorship Contractor supplied sponsor logo patches/embroideries/prints for the uniforms, **shall** be approved by WisDOT prior to ordering.



Traffic Guidelines Manual

ORIGINATOR State Traffic Engineer	13-26-1
CHAPTER 13	Traffic Regulations
SECTION 26	Intersection Control
SUBJECT 1	Passing on Right at Intersection

A. BACKGROUND

Passing on the right at intersections can present enforcement problems if the marking and signing are not clear as to whether a motorist can pass on the right where there is a standing left turner at an intersection. The intersection *may* have a paved shoulder, a paved right turn lane or a gravel shoulder.

The State Statutes “Rules of Road” indicate the following:

ss 346.08 When overtaking and passing on the right permitted. The operator of a vehicle *may* overtake and pass another vehicle upon the right only under conditions permitting such the movement in safety and only if the operator can do so while remaining on either the roadway or a paved shoulder, and then only under the following conditions:

- 1) When the vehicle overtaken is making or about to make a left turn or U-turn; or
- 2) Upon a street or highway with unobstructed pavement of sufficient width to enable 2 or more lines of vehicles lawfully to proceed, at the same time, in the direction in which the passing vehicle is proceeding; or
- 3) Upon a one-way street or divided highway with unobstructed pavement of sufficient width to enable 2 or more lines of vehicles lawfully to proceed in the same direction at the same time.

This language can be misunderstood. Therefore, it is important to provide the proper signing and pavement marking for intersection lane control. Refer to [TGM 2-2-20](#) for additional lane control signage.

CASE LAW

CASE LAW, 2001 Court of Appeals decision overruled the DOT General Counsel’s interpretation of 346.08, per Memorandum from WisDOT Office of General Counsel, dated July 21, 1999. The 2001 decision stated that usage of any shoulder, whether paved or unpaved was not permitted to pass another vehicle on the right. The ruling remains in effect and is printed in the footnote of publication Motor Vehicle Laws, 346.08 (Kaufman v. Postle).

The issue was the use of the term “roadway” in 346.08. The roadway is defined as the traveled portion of the road, designed for vehicular travel and specifically excludes the shoulders. Therefore, driving off the pavement of the ROADWAY, or driving off the main-traveled portion of the ROADWAY is not permitted to pass another vehicle.

A driver can only pass on the right if there is a paved auxiliary lane that is not marked or signed prohibiting it. A driver cannot cross an edgeline (fog line) to bypass a standing left turner.

B. POLICY

1. Provide pavement marking in accordance with Figure 1 if the intersection is to operate with a bypass option lane where the right lane functions as a right turn lane or bypass lane. If the intersection is to operate with a bypass option lane where the right lane functions as a bypass lane, provide pavement marking in accordance with Standard Detail Drawing 15C8-10b (Intersections).
2. Provide signing and pavement marking in accordance with Figure 2 if the intersection is to operate with an exclusive right turn lane.
3. Provide signing as optional in accordance with Figure 3 or Figure 4 if you desire to restrict drivers from making the maneuver to bypass a standing left turner. Typically this sign is used only if you have a history of crash issues. The sign is intended for use at intersections.

Note: Figure 1 is used except in unusual cases, Figure 2 is used for higher crash locations. Evaluate the number of right turns versus left turns to determine the proper marking and signing for right turn only lane versus allowing the right hand lane as a bypass lane.

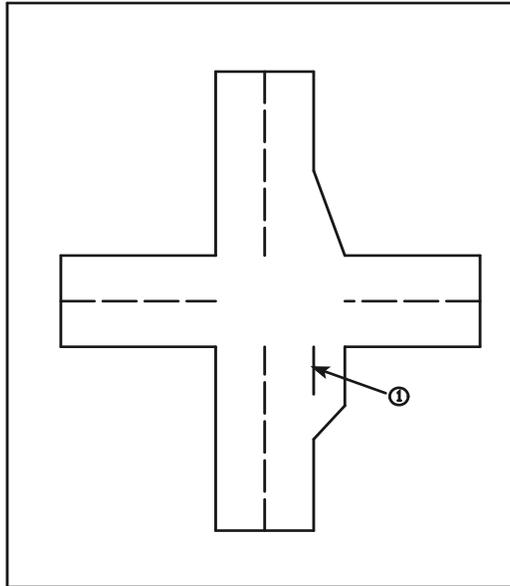


FIG. 1 PAVED BYPASS/RIGHT TURN LANE

① 8" CHANNELIZING PAYEMENT MARKING

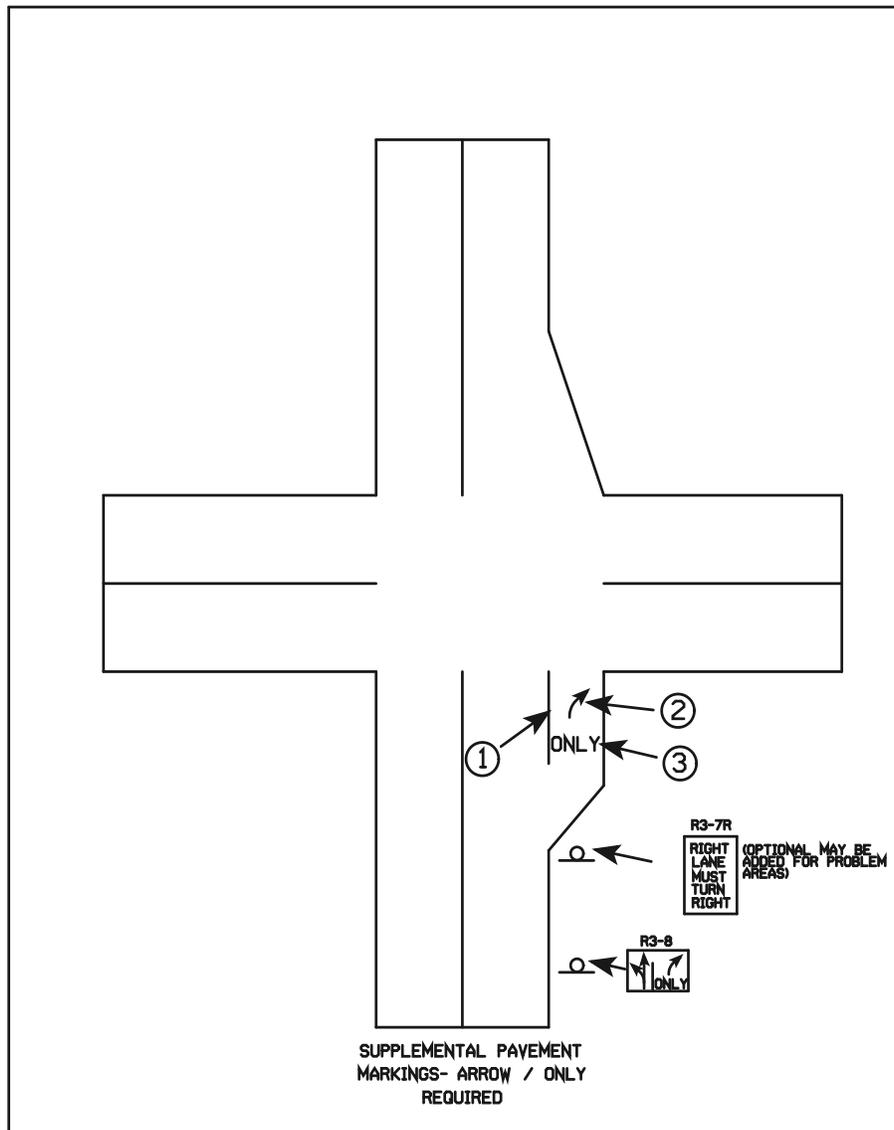


FIG. 2 EXCLUSIVE PAVED RIGHT TURN LANE

- ① 8" CHANNELIZING PAVEMENT MARKING
- ② TYPE 2 ARROW PAVEMENT MARKING
- ③ WORD PAVEMENT MARKING

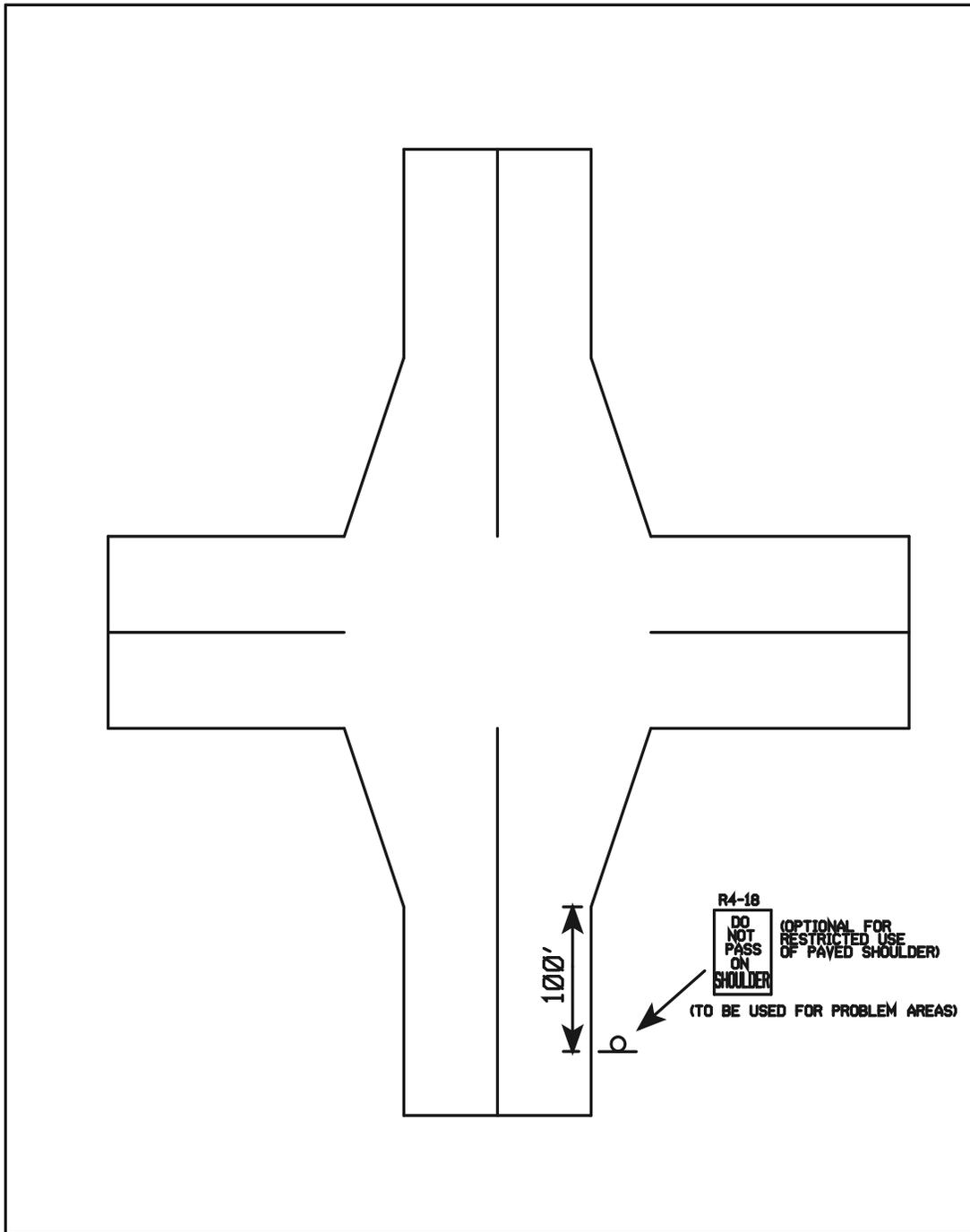


FIG. 3 PAVED RIGHT TURN LANE

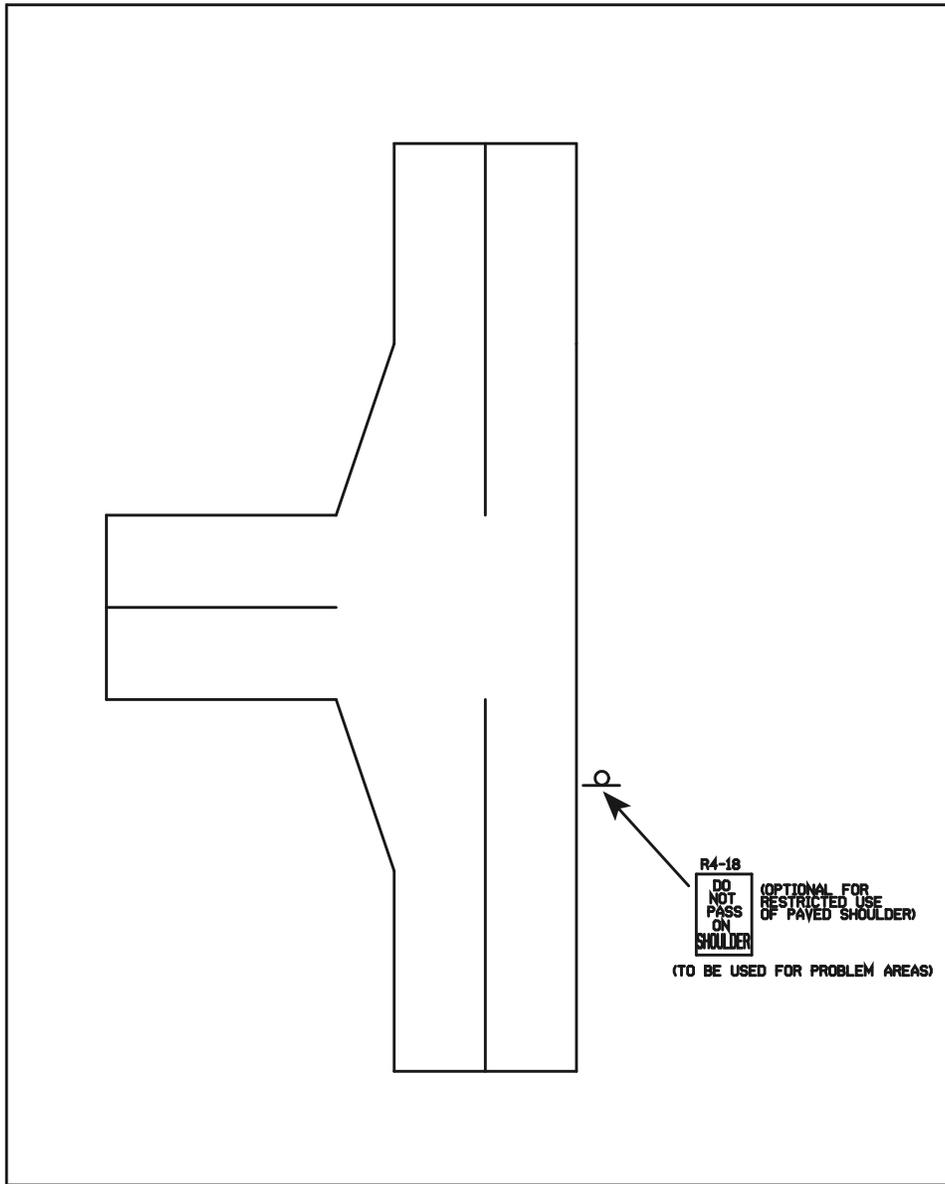


FIG. 4 T-INTERSECTION



Traffic Guidelines Manual

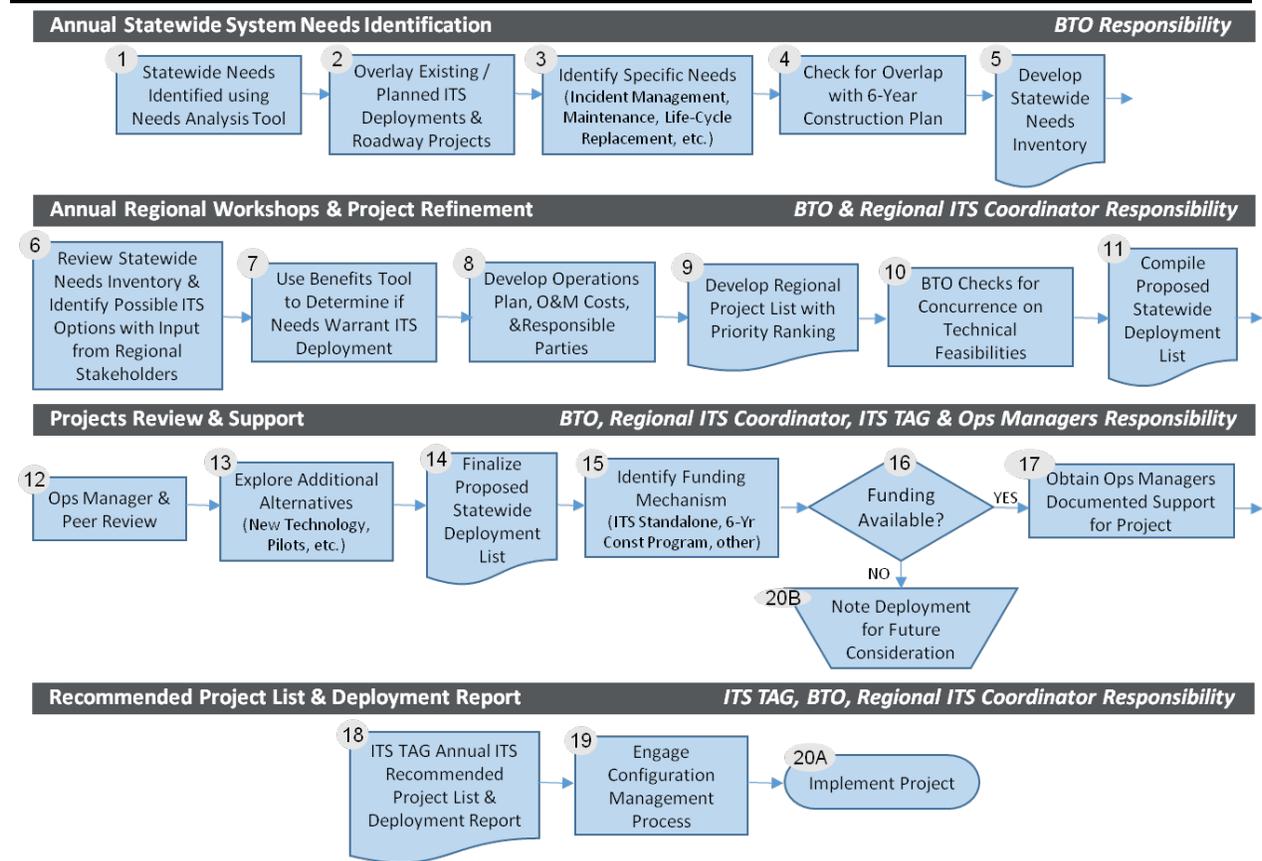
ORIGINATOR Director, Bureau of Traffic Operations		17-6-1
CHAPTER 17	System Operations & Intelligent Transportation Systems	
SECTION 6	Planning	
SUBJECT 1	TSM&O-Traffic Infrastructure Process (TIP)	

Introduction

The TSMO-TIP process is an annual process to select relevant transportation systems management and operations (TSM&O) deployments for implementation in the next assessment year (AY). The process involves the collaboration and support of many different stakeholders within the Wisconsin Department of Transportation (WisDOT). These stakeholders include the Bureau of Traffic Operations (BTO), regional intelligent transportation system (ITS) coordinators, the operations managers, and the ITS Technical Advisory Group (ITS TAG).

To make the process more streamlined and well-defined, the process has been broken down into a series of 21 steps beginning with a statewide needs analysis and ending with either project implementation or marking a project for future consideration. To make sense of the process, a flowchart is available showing the flow of steps and responsibilities throughout the process.

Each step in the process chart is outlined below and detailed process steps are explained in the remaining document.



Process Task A

Goal: Develop Final Draft of Statewide Needs Inventory

Responsibility: BTO Traffic Systems Unit with stakeholder support

Task A was created to jumpstart the planning process for identifying areas for TSM&O deployments. Although other stakeholders are welcome to submit ideas during this task, the task itself is primarily the responsibility of the BTO Traffic Systems Unit. This group will begin the TSMO-TIP process by creating a draft of the Statewide Needs Inventory which will then be brought to the regions for review. During the first year or two of implementation or as needed, BTO will be a guiding hand through all tasks in this process.

Step 1: Statewide Needs Identified using Needs Analysis Tool

Timeframe: January to February

Result: Draft of the Statewide Needs Inventory with list by region of statewide area needs to be analyzed further

The Needs Analysis Tool is an online mapping tool displaying information about the current safety, mobility, service, and freight performance for most arterials in the state. The majority of this information is processed from MetaManager data, with the support of algorithms to include weather and special event data. The Needs Analysis Tool is

available on the TSMO-TIP website (<http://www.topslab.wisc.edu/tsmo/tip/>) and was developed by the Wisconsin Traffic Operations and Safety (TOPS) Lab.

The tool includes many functions which support the identification of regional needs across the state. Although this tool identifies areas of need, it does not identify which TSM&O solution *should* be implemented to allay the need, assuming any TSM&O deployment will be able to help.

In this step, the BTO Traffic Systems Unit *should* run regional reports for each region using each preset. There are five regions and six presets, so this will result in thirty reports. At present, this task must be done manually, but future updates to the tool will streamline this process. Once all reports are generated, the top five areas identified in each of the reports *should* be marked for further investigation in step two.

Two short video tutorials are provided on the website. The first gives an overview of all capabilities of the needs tool. The second shows an example of generating the reports required for this step. The Needs Analysis Tool also includes internal documentation as well as a document describing all of the tool's data inputs.

Step 2: Overlay Existing / Planned ITS Deployments and Roadway Projects

Timeframe: January to February

Result: Map of each area needs location including existing / planned deployments

This step involves going back into the Needs Analysis Tool and looking precisely at each area of need on the map. To complete this step, existing and planned deployments *should* be overlaid on the area of interest. A copy of each map *should* be attached to the regional list of identified needs areas. An example is shown in a video tutorial on the website.

Step 3: Identify Specific Needs (Incident Management, Maintenance, Life-Cycle Replacement, etc.)

Timeframe: February to March

Result: Revised draft of the Statewide Needs Inventory including a list of specific needs for each need area

Working with BTO stakeholders, specific needs will be identified for the previously determined needs areas. These needs include incident management, maintenance, and life-cycle replacement, among other possibilities. Engineering judgement must be used to identify the specific need for each area.

This step may involve looking at the Needs Analysis Tool for support, although the only outcome of this step will be the appending to the list of specific needs for each needs area.

Step 4: Check for Overlap with 6-Year Construction Plan

Timeframe: February to March

Result: Revised draft of the Statewide Needs Inventory including list of projects overlapping with the 6-year construction plan

Consult with project designers for highway improvement projects in the six-year plan to investigate the possibility of including the installation of operations technologies in tandem with the highway improvement project, providing a cost-effective approach to deployment.

Mark all potential overlaps on the Statewide Needs Inventory document including needs that are fully addressed by construction projects, needs that could be integrated with construction projects, and needs that would need their own financial support to be implemented.

Step 5: Develop Statewide Needs Inventory

Timeframe: April

Result: Final Draft of the Statewide Needs Inventory

This is the final step completed by BTO before bringing the plan forth to the regions for further consideration and development. In this step, the BTO Traffic Systems Unit will pull together all of the resources in the previous steps and present a clean final draft of the Statewide Needs Inventory, presented by region.

Each regional needs area will include

- a sheet of pertinent data by segment, given by the needs tool,
- a map of the area with current and planned deployments shown,
- a specific need to focus the selection of TSM&O deployment(s),
- and a statement of overlap with the 6-year construction plan.

Process Task B

Goal: Develop Regional Project List with Priority Ranking

Responsibility: BTO and Regional ITS Coordinators

During this process, BTO will work directly with each of the five Regional ITS Coordinators to process the Statewide Needs Inventory into a Regional Project List with Priority Ranking. These project lists will be compiled in Task C.

For the first year or two of implementation or as needed, the BTO and each region will have a meeting walking through all steps of this process and specifically focusing on the steps in Task B. The goal of this meeting will be to allow the Regional ITS Coordinators to become comfortable with the Needs Analysis Tool and the overall process to ensure smooth implementation.

Step 6: Review Statewide Needs Inventory and Identify Possible ITS Options with Input from Regional Stakeholders

Timeframe: April-May

Result: Revision of each of the regional sections of the Statewide Needs Inventory to include possible TSM&O / ITS options for deployment

In a meeting between BTO staff involved in the development of the Statewide Needs Inventory and the Regional ITS Coordinator for the given region, the regional Statewide Needs Inventory will be analyzed and potential TSM&O / ITS deployments will be identified. Regions will be involved due to their involvement with the region including their interest in the region and expertise in regional highway issues. With the support of the TOPS Lab and others as needed for engineering judgement, potential TSM&O / ITS deployments will be determined for each area of need in the region.

As part of this step, all regional staff and stakeholders will be encouraged to provide input into better understanding the areas of identified need and ideas for types of deployments.

Step 7: Use Benefits Tool to Determine if Needs Warrant ITS Deployment

Timeframe: April-May

Result: Revision of each of the regional sections of the Statewide Needs Inventory to include warrant information for each possible TSM&O / ITS deployment option

Each Regional ITS Coordinator will be trained and use the Benefits Tool. The Benefits Tool was developed by Kimley-Horn, and is also available on the TSMO-TIP website.

The tool will be used to run a benefits-cost analysis on each of the potential TSM&O / ITS deployments for each needs area. Most of the inputs will come from regional knowledge of the area or the Needs Analysis Tool. There are some inputs into the Benefits Tool that will require engineering judgement and estimation.

Each of the deployments with a positive value for benefit-cost analysis (as determined by the tool) will be listed along with the needs area in a revised Statewide Needs Inventory for each region.

A tutorial of the Benefits Tool is provided for use of the tool on the TSMO-TIP website.

Step 8: Develop Operations Plan, O & M Costs, and Responsible Parties

Timeframe: April-May

Result: Draft of Regional Project List for each region

This step involves creation of an operations plan to document the operating procedure for each deployment, creation of a list of all operating and maintenance costs involved

in deployment of the TSM&O solution, and a list of responsible parties for operation and maintenance of the TSM&O solution.

Step 9: Develop Regional Project List with Priority Ranking

Timeframe: May

Result: Regional Project List with Priority Ranking

This is the final step completed by each region with BTO support before merging the regional plans into a statewide list. In this step, each region will pull together all of the resources in the previous steps of this task and present a clean list of projects with priority rankings for their region.

Each project will include:

- all information on the project area as produced in the Statewide Needs Inventory for the region,
- a list of TSM&O solutions to be deployed,
- a benefits-cost analysis summary (from the Benefits tool) for each TSM&O solution,
- and an operations plan with O&M costs and responsible parties listed for each TSM&O solution.

Projects will then be ranked with a priority based on benefits-costs results as well as regional and BTO judgement.

Process Task C

Goal: Compile a Statewide Deployment List

Responsibility: BTO and Regional ITS Coordinators

This is a relatively quick task that involves BTO oversight of the Regional Project Lists. This task culminates with the merger of these lists into a Proposed Statewide Deployment List which will be passed on to the Operations Managers.

Step 10: BTO Operations Unit Checks for Concurrence on Technical Feasibilities

Timeframe: June

Result: Revised Regional Project Lists with projects marked for concurrence with technical feasibilities

In this step, the BTO Operations Unit will go through each of the five Regional Project Lists and verify that all proposed TSM&O deployments are feasible for deployment during the next AY.

Although the main process involved is verifying if deployments can be made given current technical expertise and availability at BTO, this step also offers BTO a chance to review materials before creating a final list to pass on to the Operations Managers.

BTO *should* work with the Regional ITS Coordinators at this point with any projects and/or deployments in question to resolve any issues.

Step 11: Compile Proposed Statewide Deployment List

Timeframe: June

Result: Proposed Statewide Deployment List

This is the final step completed by the BTO Operations Unit with support from the Regional ITS Coordinators. In this step, BTO will pull together the resources from Step 10 and the previous tasks to compile a proposed Statewide Deployment List.

Each deployment in the list will include

- all information on the project area as produced in the Statewide Needs Inventory for the region,
- all information on the specific projects and TSM&O deployments as produced in the Regional Project List including priority rankings,
- and a verification of deployment feasibility.

Process Task D

Goal: Finalize Statewide Deployment List

Responsibility: BTO and Operations Managers

This task allows for a review period to consider all deployments and offer any suggestions of criticisms. At this stage, new technologies will also be considered. This task culminates with the finalization of the Statewide Deployment List which will be passed on to the ITS TAG.

Step 13: Operations Manager and Peer Review

Timeframe: July

Result: Reviewed Statewide Deployment List

In this step, Operations Managers will review all suggested deployments and offer input, concerns, and criticism. Peers including other regions, MPOs, TOPS Lab, and other relevant bodies will also be asked to provide feedback at this stage.

All feedback at this stage *should* be documented and BTO *should* record all feedback and attach it to each proposed deployment's package on the Proposed Statewide Deployment List.

Step 14: Explore Additional Alternatives (New Technology, Pilot Possibilities, etc.) Timeframe: July

Result: Reviewed Statewide Deployment List with suggested alternatives

Using the TOPS Lab's annual evaluation of emerging and current TSM&O technologies, BTO will decide if new technologies *should* be deployed in place of or in addition to the suggested TSM&O deployments for each project.

If any significant changes are made at this point, Regional ITS Coordinators *should* be brought back into the discussion as necessary to provide feedback.

Any changes that are made to the Proposed Statewide Deployment List *should* be recorded and all relevant documentation (including benefits-cost analyses and changes to the operations plan, O&M costs, and responsible parties) *should* be attached to each proposed deployment's package on the Proposed Statewide Deployment List.

Step 15: Finalize Proposed Statewide Deployment List

Timeframe: July

Result: Finalized Statewide Deployment List

This is the final step completed by the BTO before the deployment plan is sent out for funding and support. In this step, BTO will pull together the resources from Steps 13 and 14 as well as the previous tasks to compile a finalized Statewide Deployment List.

Each deployment in the list will include

- all information on the project area as produced in the Statewide Needs Inventory for the region,
- all information on the specific projects and TSM&O deployments as produced in the Regional Project List including priority rankings,
- verification of deployment feasibility,
- and notes from all reviews.

Process Task E

Goal: Identify Funding Sources and Obtain Support Documentation for Statewide Deployments List

Responsibility: ITS TAG, BTO, and Regional ITS Coordinators with Operations Managers oversight

This task involves the selection of a funding mechanism for each project and allows for one final review before passing the list on to ITS TAG for their approval.

Steps 16/17: Identify Funding Mechanism – ITS Standalone, 6-Year Construction Program, Other Funding – Is Funding Available?

Timeframe: August

Result: Append funding mechanism to Final Statewide Deployment List

During this step, each of the projects listed in the Statewide Deployment List will be reviewed and funding mechanisms will be selected. Each deployment will fall be marked with one of the following:

- Funding from 6-Year Construction Program – specific program and timeline will be identified and listed with the deployment
- Funding from ITS Standalone
- Funding from other source – specific source must be identified with timeline
- Not Funded – Reason for lack of funding must be documented and deployment will be marked for future consideration

Step 18: Obtain Operations Managers Documented Support for Project

Timeframe: August

Result: Append Operations Managers Support to the Final Statewide Deployment List

During this step, the Operations Managers will review each project paying particular attention to verified funding sources. Any questions or concerns *should* be directed to all stakeholders.

Operations Managers *should* approve (or deny) all projects and these approvals **shall** be documented and included with Final Statewide Deployment List.

To summarize, this step will include attaching funding mechanisms and approvals to the Final Statewide Deployment List.

Process Task F

Goal: ITS TAG Final Review and Approval of Statewide Deployment List

Responsibility: ITS TAG

This task is the final chance for ITS TAG to review all deployments and place the deployments into the official list for the next AY (or future).

Step 19: ITS TAG Annual ITS Recommended Project List and Deployment (Decision Making / Justification Summary) Report

Timeframe: September

Result: ITS Recommended Project List and Deployment Report

In this step, ITS TAG will review the Statewide Deployment List and use this list to develop their ITS Recommended Project List and Deployment Report. This report will include a list of all deployments for the next AY (as well as any projects marked for future AYs). Each deployment *should* include a short decision making and justification summary.

Process Task G

Goal: Implement Projects

Responsibility: BTO and Regional ITS Coordinators

In this task, BTO will work with Regional ITS Coordinators to successfully implement the projects listed in ITS TAG's ITS Recommended Project List and Deployment Report.

Step 20: Engage Configuration Management Process

Timeframe: October/November

Result: Final Configuration Plan

In this step, the configuration management process *should* be used to determine exactly how the project will be deployed in the field. A configuration management process is one that manages changes to a system, to ensure that a system is operated as it is intended throughout its design life cycle. Configuration management includes documenting upgrades and modifications that are performed and other attributes related to this work, including the date and reasoning why the work was completed.

Step 21A: Implement Project

Timeframe: Next AY during Construction Season

Result: TSM&O solution successfully deployed

The project is implemented by whatever means determined in the previous steps and responsibility is passed on to the identified responsible parties for operations and maintenance.

Step 21B: Mark Deployment for Future Consideration

Timeframe: Any Time During Current AY

Result: List of Deployments for Future Consideration

Any deployment that was taken off the ITS Recommended Project List and Deployment Report at any point during this entire process *should* be moved into the next AY process cycle for consideration. To make this list easier to use, all deployments in this list *should* include all documentation that was created during this process.