

**Chapter 3B. Pavement and Curb Markings**

**3B.1 Yellow Centerline Pavement Markings and Warrants**

**STANDARD:**  
Centerline pavement markings, when used, shall be the pavement markings used to delineate the separation of traffic lanes that have opposite directions of travel on a roadway and shall be yellow.

**OPTION:**  
Centerline pavement markings may be placed at a location that is not the geometric center of the roadway.  
On roadways without continuous centerline pavement markings, short sections may be marked with centerline pavement markings to control the position of traffic at specific locations, such as around curves, over hills, on approaches to ~~highway-railroad~~ grade crossings, at ~~highway-railroad~~ grade crossings, and at bridges.

**STANDARD:**  
The centerline markings on two-lane, two-way roadways shall be one of the following as shown in Figure 3B-1:  
A. Two-direction passing zone markings consisting of a normal broken yellow line where crossing the centerline markings for passing with care is permitted for traffic traveling in either direction;  
B. One-direction no-passing zone markings consisting of a normal broken yellow line and a normal solid yellow line where crossing the centerline markings for passing with care is permitted for the traffic traveling adjacent to the broken line, but is prohibited for traffic traveling adjacent to the solid line; and  
C. Two-direction no-passing zone markings consisting of two normal solid yellow lines where crossing the centerline markings for passing is prohibited for traffic traveling in either direction. The centerline markings on undivided two-way roadways with four or more lanes for moving motor vehicle traffic always available shall be the two-direction no passing zone markings consisting of two normal solid yellow lines as shown in Figure 3B-2.

**Compliance Date: January 3, 2003**

**CHAPTER 3B. PAVEMENT AND CURB MARKINGS**

**Section 3B.01 Yellow Center Line Pavement Markings and Warrants**

**Standard:**  
01 Center line pavement markings, when used, shall be the pavement markings used to delineate the separation of traffic lanes that have opposite directions of travel on a roadway and shall be yellow.

**Option:**  
02 Center line pavement markings may be placed at a location that is not the geometric center of the roadway.

03 On roadways without continuous center line pavement markings, short sections may be marked with center line pavement markings to control the position of traffic at specific locations, such as around curves, over hills, on approaches to grade crossings, at grade crossings, and at bridges.

**Standard:**  
04 The center line markings on two-lane, two-way roadways shall be one of the following as shown in **Figure 3B-1**:  
A. Two-direction passing zone markings consisting of a normal broken yellow line where crossing the center line markings for passing with care is permitted for traffic traveling in either direction;  
B. One-direction no-passing zone markings consisting of a **double yellow line**, one of which is a normal broken yellow line and the other is a normal solid yellow line, where crossing the center line markings for passing with care is permitted for the traffic traveling adjacent to the broken line, but is prohibited for traffic traveling adjacent to the solid line; or  
C. Two-direction no-passing zone markings consisting of two normal solid yellow lines where crossing the center line markings for passing is prohibited for traffic traveling in either direction.

05 A single solid yellow line shall not be used as a center line marking on a two-way roadway.

06 The center line markings on undivided two-way roadways with four or more lanes for moving motor vehicle traffic always available shall be the two-

**CHAPTER 3B. PAVEMENT AND CURB MARKINGS**

**Section 3B.01 Yellow Center Line Pavement Markings and Warrants**

**Standard:**  
01 Center line pavement markings, when used, shall be the pavement markings used to delineate the separation of traffic lanes that have opposite directions of travel on a roadway and shall be yellow.

**Option:**  
02 Center line pavement markings may be placed at a location that is not the geometric center of the roadway.

03 On roadways without continuous center line pavement markings, short sections may be marked with center line pavement markings to control the position of traffic at specific locations, such as around curves, over hills, on approaches to grade crossings, at grade crossings, and at bridges.

**Standard:**  
04 The center line markings on two-lane, two-way roadways shall be one of the following as shown in **Figure 3B-1**:  
A. Two-direction passing zone markings consisting of a normal broken yellow line where crossing the center line markings for passing with care is permitted for traffic traveling in either direction;  
B. One-direction no-passing zone markings consisting of a **double yellow line**, one of which is a normal broken yellow line and the other is a normal solid yellow line, where crossing the center line markings for passing with care is permitted for the traffic traveling adjacent to the broken line, but is prohibited for traffic traveling adjacent to the solid line; or  
C. Two-direction no-passing zone markings consisting of two normal solid yellow lines where crossing the center line markings for passing is prohibited for traffic traveling in either direction.

05 A single solid yellow line shall not be used as a center line marking on a two-way roadway.

Are existing ones grandfathered in? What about bike paths? Yes, they are, according to Joe G.

**GUIDANCE:**

On two-way roadways with three through lanes for moving motor vehicle traffic, two lanes should be designated for traffic in one direction by using one- or two direction no-passing zone markings as shown in Figure 3B-3.

**STANDARD:**

Centerline markings shall be placed on all paved urban arterials and collectors that have a traveled width of ~~6.1 m (20 ft)~~ or more and an ADT of 6,000 vehicles per day or greater. Centerline markings shall also be placed on all paved two-way streets or highways that have three or more lanes for moving motor vehicle traffic.

**GUIDANCE:**

Centerline markings should be placed on paved urban arterials and collectors that have a traveled width of ~~6.1 m (20 ft)~~ or more and an ADT of 4,000 vehicles per day or greater. Centerline markings should also be placed on all rural arterials and collectors that have a traveled width of ~~6.5 m (18 ft)~~ or more and an ADT of 3,000 vehicles per day or greater.

direction no-passing zone markings consisting of a solid double yellow line as shown in Figure 3B-2.

**Guidance:**

07 On two-way roadways with three through lanes for moving motor vehicle traffic, two lanes should be designated for traffic in one direction by using one- or two-direction no-passing zone markings as shown in Figure 3B-3.

**Support:**

08 Sections 11-301(c) and 11-311(c) of the “Uniform Vehicle Code (UVC)” contain information regarding left turns across center line no-passing zone markings and paved medians, respectively. The UVC can be obtained from the National Committee on Uniform Traffic Laws and Ordinances at the address shown on Page i.

**Standard:**

09 Center line markings shall be placed on all paved urban arterials and collectors that have a traveled way of 20 feet or more in width and an ADT of 6,000 vehicles per day or greater. Center line markings shall also be placed on all paved two-way streets or highways that have three or more lanes for moving motor vehicle traffic.

**Guidance:**

10 Center line markings should be placed on paved urban arterials and collectors that have a traveled way of 20 feet or more in width and an ADT of 4,000 vehicles per day or greater. Center line markings should also be placed on all rural arterials and collectors that have a traveled way of 18 feet or more in width and an ADT of 3,000 vehicles per day or greater. Center line markings should also be placed on other traveled ways where an engineering study indicates such a need.

06 The center line markings on undivided two-way roadways with four or more lanes for moving motor vehicle traffic always available shall be the two-direction no-passing zone markings consisting of a solid double yellow line as shown in ~~Figure 3B-2~~.

**Guidance:**

07 On two-way roadways with three through lanes for moving motor vehicle traffic, two lanes should be designated for traffic in one direction by using one- or two-direction no-passing zone markings as shown in ~~Figure 3B-3~~.

**Support:**

8 ~~Sections 11-301(c) and 11-311(c) of the “Uniform Vehicle Code (UVC)” contain information regarding left turns across center line no-passing zone markings and paved medians, respectively. The UVC can be obtained from the National Committee on Uniform Traffic Laws and Ordinances at the address shown on Page i.~~

**Standard:**

09 Center line markings shall be placed on all paved urban arterials and collectors that have a traveled way of 20 feet or more in width and an ADT of 6,000 vehicles per day or greater. Center line markings shall also be placed on all paved two-way streets or highways that have three or more lanes for moving motor vehicle traffic.

**Guidance:**

10 Center line markings should be placed on paved urban arterials and collectors that have a traveled way of 20 feet or more in width and an ADT of 4,000 vehicles per day or greater. Center line markings should also be placed on all rural arterials and collectors that have a traveled way of 18 feet or more in width and an ADT of 3,000 vehicles per day or greater. Center line markings should also be placed on

[Ask Ken Schroeffer. Joe Gustafson says the NCUTLO no longer exists. Sue confirmed at 11/10/10 MCUTCD Meeting.](#)

[Leave out the reference to the National Committee.](#)

Centerline markings should also be placed on other traveled ways where an engineering study indicates such a need.  
 Engineering judgment should be used in determining whether to place centerline markings on traveled ways that are less than ~~4.9 m (16 ft)~~ wide because of the potential for traffic encroaching on the pavement edges, traffic being affected by parked vehicles, and traffic encroaching into the opposing traffic lane.

**OPTION:**  
 Centerline markings may be placed on other paved two way traveled ways that are ~~4.9 m (16 ft)~~ or more in width.  
 If a traffic count is not available, the ADTs described in this Section may be estimates that are based on engineering judgment.

11 Engineering judgment should be used in determining whether to place center line markings on traveled ways that are less than 16 feet wide because of the potential for traffic encroaching on the pavement edges, traffic being affected by parked vehicles, and traffic encroaching into the opposing traffic lane.

**Option:**  
 12 Center line markings may be placed on other paved two-way traveled ways that are 16 feet or more in width.

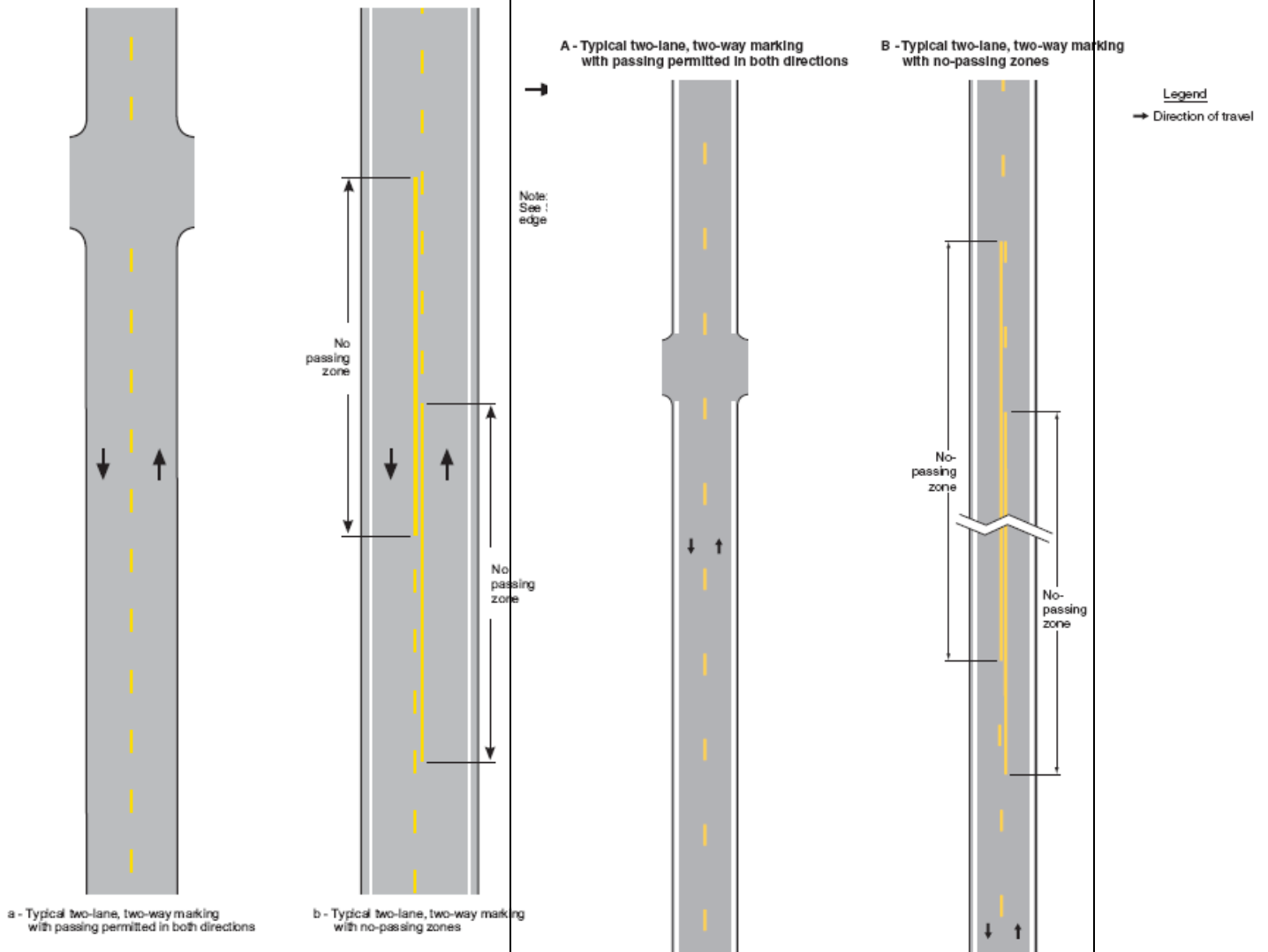
13 If a traffic count is not available, the ADTs described in this Section may be estimates that are based on engineering judgment.

other traveled ways where an engineering study indicates such a need.

11 Engineering judgment should be used in determining whether to place center line markings on traveled ways that are less than 16 feet wide because of the potential for traffic encroaching on the pavement edges, traffic being affected by parked vehicles, and traffic encroaching into the opposing traffic lane.

**Option:**  
 12 Center line markings may be placed on other paved two-way traveled ways that are 16 feet or more in width.

13 If a traffic count is not available, the ADTs described in this Section may be estimates that are based on engineering judgment.



Add a note: See Section 3B.7 for edge line warrants.

[Figure modified not deleted](#)

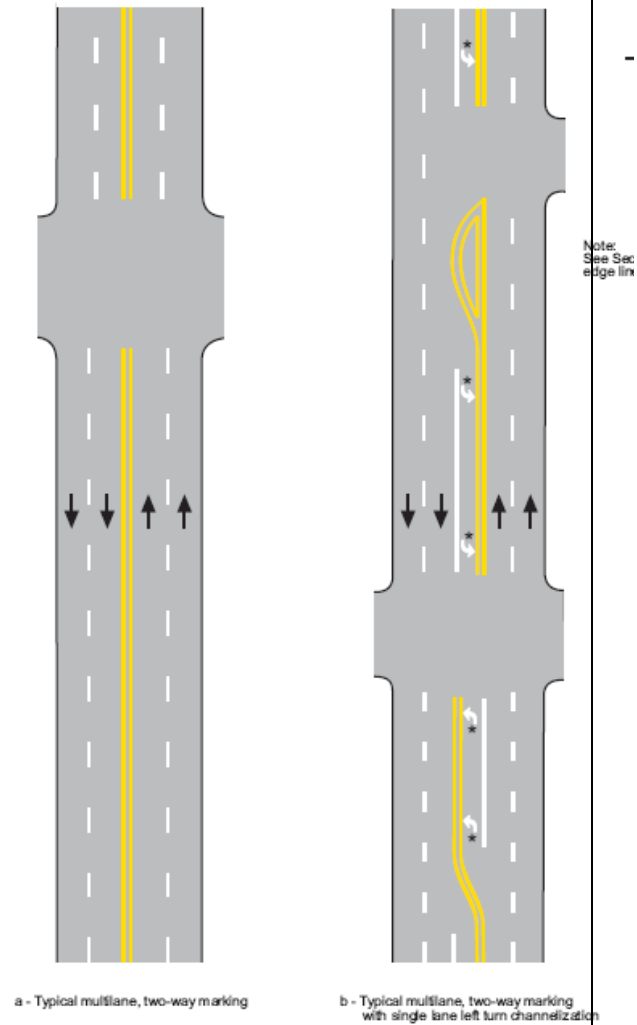


Figure 3B-2 Examples of Four-or-More Lane, Two-Way Marking

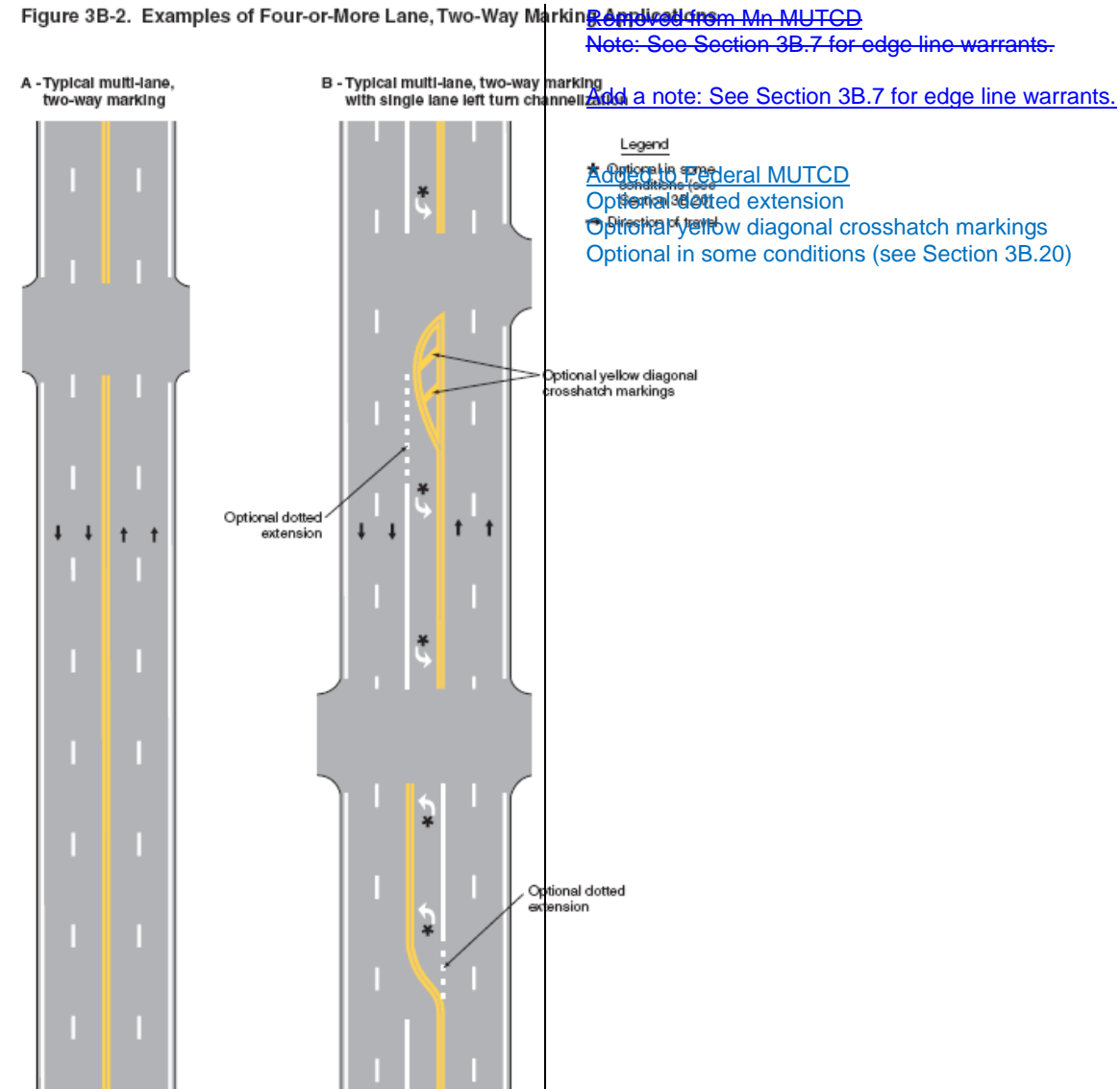


Figure 3B-2. Examples of Four-or-More Lane, Two-Way Marking

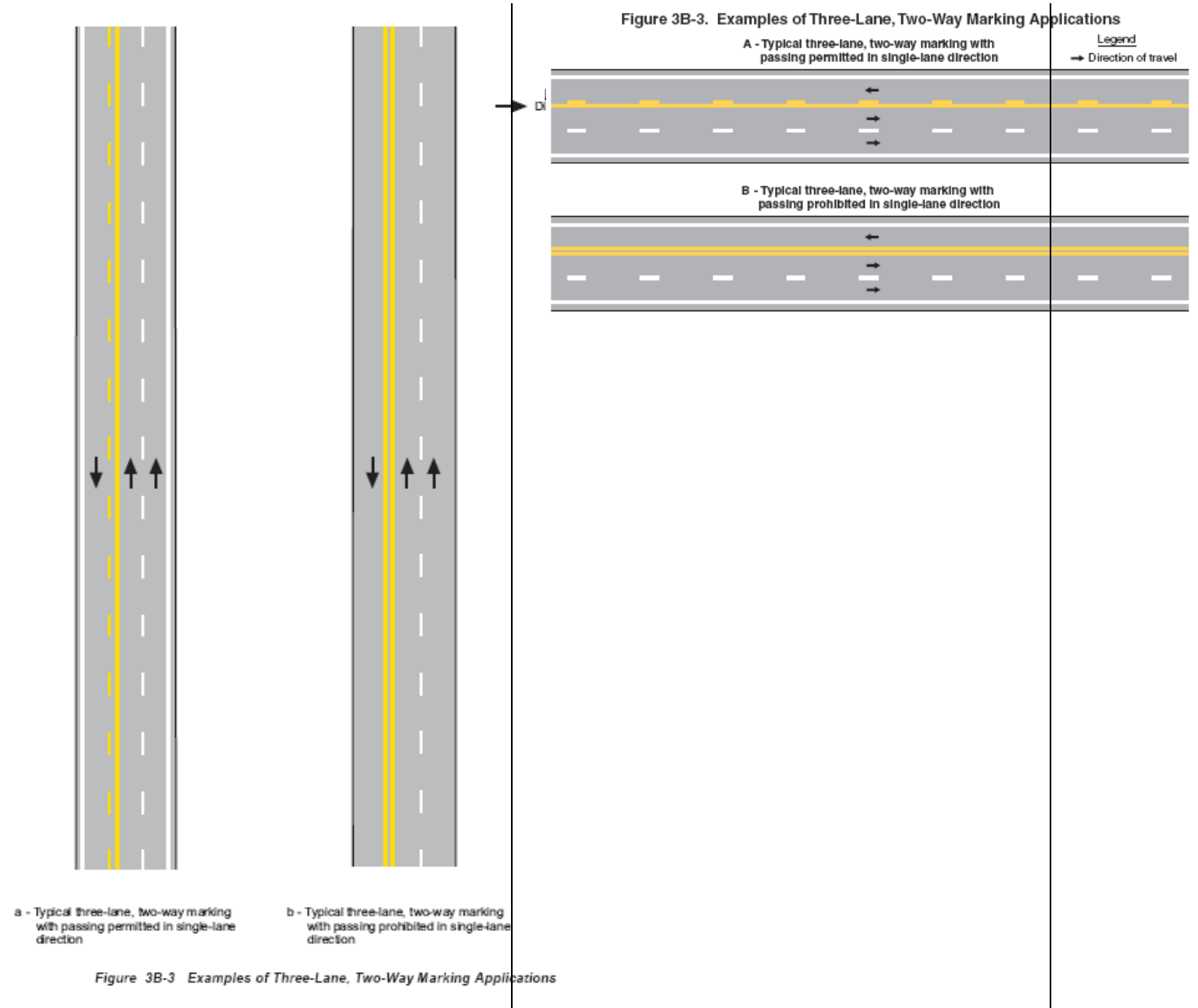
Removed from Mn MUTCD

Added to Federal MUTCD

Note: See Section 3B.7 for edge line warrants.

Add a note: See Section 3B.7 for edge line warrants.

We might want to add a reference to the diagonal crosshatch patterns and widths. They can be found later in Chapter 3.



**3B.2 No-Passing Zone Pavement Markings and Warrants**

**STANDARD:**

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

When centerline markings are used, no-passing zone markings shall be used on two-way roadways at lane reduction transitions (see Section 3B.9) and on approaches to obstructions that must be passed on the right (see Section 3B.10).

**Standard:**

On two-way, two- or three-lane roadways where centerline 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.

**Standard:**

On roadways with centerline markings, no-passing zone markings shall be used at horizontal or vertical curves where the passing sight distance is less than the minimum at the 85th-percentile speed or the posted or statutory speed limit as shown in Table 3B-1. The passing sight distance on a vertical curve is the distance at which an object 1.07 m (3.5 ft) above the pavement surface can be seen from a point 1.07 m (3.5 ft) above the pavement (see Figure 3B-5). Similarly, the passing sight distance on a horizontal curve is the distance measured along the centerline (or right-hand lane line of a three-lane roadway) between two points 1.07 m (3.5 ft) above the pavement on a line tangent to the embankment or other obstruction that cuts off the view on the inside of the curve (see Figure 3B-5).

**Support:**

The beginning of a no-passing zone at point "a" in Figure 3B-5 is that point where the sight distance first becomes less than that specified in Table 3B-1. The end of the no-passing zone at point "b" in Figure 3B-5

**Section 3B.02 No-Passing Zone Pavement Markings and Warrants**

**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 When center line markings are used, no-passing zone markings shall be used on two-way roadways at lane-reduction transitions (see Section 3B.09) and on approaches to obstructions that must be passed on the right (see Section 3B.10).

03 On two-way, two- 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.

04 On roadways with center line markings, no-passing zone markings shall be used at horizontal or vertical curves where the passing sight distance is less than the minimum shown in Table 3B-1 for the 85th-percentile speed or the posted or statutory speed limit. The passing sight distance on a vertical curve is the distance at which an object 3.5 feet above the pavement surface can be seen from a point 3.5 feet above the pavement (see Figure 3B-4). Similarly, the passing sight distance on a horizontal curve is the distance measured along the center line (or right-hand lane line of a three-lane roadway) between two points 3.5 feet above the pavement on a line tangent to the embankment or other obstruction that cuts off the view on the inside of the curve (see Figure 3B-4).

**Support:**

05 The upstream end of a no-passing zone at point "a" in Figure 3B-4 is that point where the sight distance first becomes less than that specified in Table 3B-1. The downstream end of the no-passing zone at point "b" in Figure 3B-4 is that point at which the sight

**Section 3B.02 No-Passing Zone Pavement Markings and Warrants**

**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 When center line markings are used, no-passing zone markings shall be used on two-way roadways at lane-reduction transitions (see Section 3B.09) and on approaches to obstructions that must be passed on the right (see Section 3B.10).

03 On two-way, two- 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.

04 On roadways with center line markings, no-passing zone markings shall be used at horizontal or vertical curves where the passing sight distance is less than the minimum shown in Table 3B-1 for the 85th-percentile speed or the posted or statutory speed limit. The passing sight distance on a vertical curve is the distance at which an object 3.5 feet above the pavement surface can be seen from a point 3.5 feet above the pavement (see Figure 3B-4). Similarly, the passing sight distance on a horizontal curve is the distance measured along the center line (or right-hand lane line of a three-lane roadway) between two points 3.5 feet above the pavement on a line tangent to the embankment or other obstruction that cuts off the view on the inside of the curve (see Figure 3B-4).

**Support:**

05 The upstream end of a no-passing zone at point "a" in Figure 3B-4 is that point where the sight distance first becomes less than that specified in Table 3B-1. The downstream end

is that point at which the sight distance again becomes greater than the minimum specified.

distance again becomes greater than the minimum specified.

of the no-passing zone at point “b” in Figure 3B-4 is that point at which the sight distance again becomes greater than the minimum specified.

**Guidance:**  
Where the distance between successive no-passing zones is less than ~~450 m (500 ft)~~, no-passing markings should connect the zones.

**Guidance:**  
07 Where the distance between successive no-passing zones is less than 400 feet, no-passing markings should connect the zones.

**Guidance:**  
07 Where the distance between successive no-passing zones is less than 400 feet, no-passing markings should connect the zones.

**Standard:**  
Where centerline markings are used, no-passing zone markings shall be used on approaches to ~~highway-rail~~ grade crossings in conformance with Section ~~8B.20~~.

**Standard:**  
08 Where center line markings are used, no-passing zone markings shall be used on approaches to grade crossings in compliance with Section ~~8B.27~~.

**Standard:**  
08 Where center line markings are used, no-passing zone markings shall be used on approaches to grade crossings in compliance with Section ~~8B.27~~.

**Option:**  
In addition to pavement markings, no-passing zone signs (see Sections 2B.29, ~~2B.30~~, and 2C.~~35~~) may be used to emphasize the existence and extent of a no-passing zone.

**Option:**  
09 In addition to pavement markings, no-passing zone signs (see Sections ~~2B.28~~, 2B.29, and 2C.~~44~~) may be used to emphasize the existence and extent of a no-passing zone.

**Option:**  
09 In addition to pavement markings, no-passing zone signs (see Sections 2B.~~28~~, 2B.29, and 2C.~~45~~) may be used to emphasize the existence and extent of a no-passing zone.

**Support:**  
Section 11-307 of the "Uniform Vehicle Code (UVC) Revised" contains further information regarding no-passing zones. The "UVC" can be obtained from the National Committee on Uniform Traffic Laws and Ordinances at the address shown on Page i.

**Support:**  
10 Section 11-307 of the "Uniform Vehicle Code (UVC)" contains further information regarding **required road user behavior** in no-passing zones. The UVC can be obtained from the National Committee on Uniform Traffic Laws and Ordinances at the address shown on Page i.

**Support:**  
10 Section 11-307 of the "Uniform Vehicle Code (UVC)" contains further information regarding **required road user behavior** in no-passing zones. ~~The UVC can be obtained from the National Committee on Uniform Traffic Laws and Ordinances at the address shown on Page i.~~

**Standard:**  
On three-lane roadways where the direction of travel in the center lane transitions from one direction to the other, a no-passing buffer zone shall be provided in the center lane as shown in Figure 3B-4. A lane transition shall be provided at each end of the buffer zone. The buffer zone shall be a median island that is at least 15 m (50 ft) in length.

**Standard:**  
11 On three-lane roadways where the direction of travel in the center lane transitions from one direction to the other, a no-passing buffer zone shall be provided in the center lane as shown in Figure 3B-~~4~~. A lane-reduction transition (see Section ~~3B.04~~) shall be provided at each end of the buffer zone.  
12 The buffer zone shall be a flush median island formed by two sets of double yellow center line markings that is at least 50 feet in length.

**Standard:**  
11 On three-lane roadways where the direction of travel in the center lane transitions from one direction to the other, a no-passing buffer zone shall be provided in the center lane as shown in Figure 3B-5. A lane-reduction transition (**see Section 3B.09**) shall be provided at each end of the buffer zone.  
12 The buffer zone shall be a flush median island formed by two sets of double yellow center line markings that is at least 50 feet in length.

Verify if this is true prior to MUTCD publishing. AASHTO has apparently updated its guidance to be in line with MUTCD.

Accepted. This is less restrictive than the current MUTCD. We will eventually have to check and see if it is compatible with the TEM, and NCHRP 605.

References Uniform Vehicle Code

Determine if this line should be deleted.

**Guidance:**  
 For three-lane roadways having a posted or statutory speed limit of ~~70 km/h (45 mph)~~ or greater, the lane transition taper length should be computed by the formula  $L = 0.62 WS$  for speeds in km/h (L = WS for speeds in mph).  
 For roadways where the posted or statutory speed limit is less than ~~70 km/h (45 mph)~~, the formula  $L = WS^2/155$  for speeds in km/h (L = WS<sup>2</sup>/60 for speeds in mph) should be used to compute taper length.

Under both formulas, L equals the taper length in meters (feet), W equals the width of the center lane or offset distance in meters (feet), and S equals the 85th-percentile speed or the posted or statutory speed limit, whichever is higher. Moved to Support.

**Standard:**  
 The minimum lane transition taper length shall be ~~30 m (100 ft)~~ in urban areas and ~~60 m (200 ft)~~ in rural areas. Moved to Guidance.

85th Percentile or Posted or Statutory speed mph		Minimum Passing Sight Distance	
km/h	mph	meters	feet
40	25	140	450
50	30	160	500
60	35	180	550
60	40	180	600
70	45	210	700
80	50	245	800
90	55	280	900
100	60	320	1000
110	65	355	1100
120	70	395	1200

Table 3B-1 Minimum Passing Sight Distances

**Option:**  
 13 Yellow diagonal crosshatch markings (see [Section 3B.24](#)) may be placed in the flush median area between the two sets of no-passing zone markings as shown in [Figure 3B-5](#).

**Guidance:**  
 14 For three-lane roadways having a posted or statutory speed limit of 45 mph or greater, the lane transition taper length should be computed by the formula L = WS. For roadways where the posted or statutory speed limit is less than 45 mph, the formula L = WS<sup>2</sup>/60 should be used to compute the taper length.

**Support:**  
 15 Under both formulas, L equals the taper length in feet, W equals the width of the center lane or offset distance in feet, and S equals the 85th-percentile speed or the posted or statutory speed limit, whichever is higher.

**Guidance:**  
 16 The minimum lane transition taper length should be 100 feet in urban areas and 200 feet in rural areas.

85th-Percentile or Posted or Statutory Speed Limit	Minimum Passing Sight Distance
25 mph	450 feet
30 mph	500 feet
35 mph	550 feet
40 mph	600 feet
45 mph	700 feet
50 mph	800 feet
55 mph	900 feet
60 mph	1,000 feet
65 mph	1,100 feet
70 mph	1,200 feet

**Guidance Option:**  
 13 Yellow diagonal crosshatch markings (see [Section 3B.24](#)) ~~should~~ may be placed in the flush median area between the two sets of no-passing zone markings as shown in [Figure 3B-5](#).

**Guidance:**  
 14 For three-lane roadways having a posted or statutory speed limit of 45 mph or greater, the lane transition taper length should be computed by the formula L = WS. For roadways where the posted or statutory speed limit is less than 45 mph, the formula L = WS<sup>2</sup>/60 should be used to compute the taper length.

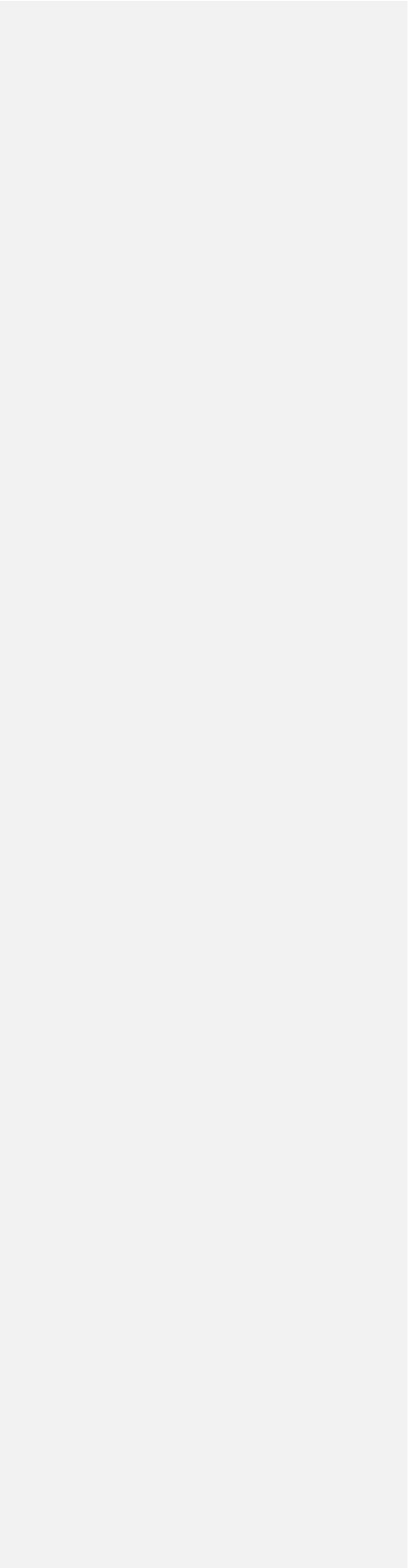
**Support:**  
 15 Under both formulas, L equals the taper length in feet, W equals the width of the center lane or offset distance in feet, and S equals the 85th-percentile speed or the posted or statutory speed limit, whichever is higher.

**Guidance:**  
 16 The minimum lane transition taper length should be 100 feet in urban areas and 200 feet in rural areas.

85th-Percentile or Posted or Statutory Speed Limit	Minimum Passing Sight Distance
25 mph	450 feet
30 mph	500 feet
35 mph	550 feet
40 mph	600 feet
45 mph	700 feet
50 mph	800 feet
55 mph	900 feet
60 mph	1,000 feet
65 mph	1,100 feet
70 mph	1,200 feet

The Task Force felt this should be more strict due to the potential for head-on conflicts. As it's a painted island in a three-lane section, some drivers may perceive the area in between the double yellows to be a lane.

OK



**3B.3 Other Yellow Longitudinal Pavement Markings**

**Standard:**

If reversible lanes are used, the lane line pavement markings on each side of reversible lanes shall consist of a normal double broken yellow line to delineate the edge of a lane in which the direction of travel is reversed from time to time, such that each of these markings serve as the centerline markings of the roadway during some period (see Figure 3B-6).

Signs (see Section 2B.25), lane-use control signals (see Chapter 4J), or both shall be used to supplement reversible lane pavement markings.

If a two-way left-turn lane that is never operated as a reversible lane is used, the lane line pavement markings on each side of the two-way left-turn lane shall consist of a normal broken yellow line and a normal solid yellow line to delineate the edges of a lane that can be used by traffic in either direction as part of a left-turn maneuver. These markings shall be placed with the broken line toward the two-way left-turn lane and the solid line toward the adjacent traffic lane as shown in Figure 3B-7.

**OPTION:**

~~Pavement marking arrows may be used in conjunction with the two-way left-turn lane markings as shown in Figure 3B-7. Reworded and moved to Guidance.~~

~~Compliance Date: December 22, 2008~~

**Guidance:**

Signs should be used in conjunction with the two-way left turn markings (see Section 2B.24).

**Standard:**

If a continuous median island formed by pavement markings separating travel in opposite directions is used, two sets of double solid yellow lines shall be used to form the island as shown in Figures 3B-2 and 3B-4. Other markings in the median island area shall also be yellow, except crosswalk markings which shall be white (see Section 3B.17).

**Section 3B.03 Other Yellow Longitudinal Pavement Markings**

**Standard:**

01 If reversible lanes are used, the lane line pavement markings on each side of reversible lanes shall consist of a normal broken double yellow line to delineate the edge of a lane in which the direction of travel is reversed from time to time, such that each of these markings serve as the center line markings of the roadway during some period (see Figure 3B-6).

02 Signs (see Section 2B.26), lane-use control signals (see Chapter 4M), or both shall be used to supplement reversible lane pavement markings.

03 If a two-way left-turn lane that is never operated as a reversible lane is used, the lane line pavement markings on each side of the two-way left-turn lane shall consist of a normal broken yellow line and a normal solid yellow line to delineate the edges of a lane that can be used by traffic in either direction as part of a left-turn maneuver. These markings shall be placed with the broken line toward the two-way left-turn lane and the solid line toward the adjacent traffic lane as shown in Figure 3B-7.

**Guidance:**

04 White two-way left-turn lane-use arrows (see Figure 3B-7), should be used in conjunction with the longitudinal two-way left-turn markings at the locations described in Section 3B.20.

05 Signs should be used in conjunction with the two-way left turn markings (see Section 2B.24).

**Standard:**

06 If a continuous flush median island formed by pavement markings separating travel in opposite directions is used, two sets of solid double yellow lines shall be used to form the island as shown in Figures 3B-2 and 3B-5. Other markings in the median island area shall also be yellow, except crosswalk markings which shall be white (see Section 3B.17).

**Section 3B.03 Other Yellow Longitudinal Pavement Markings**

**Standard:**

01 If reversible lanes are used, the lane line pavement markings on each side of reversible lanes shall consist of a normal broken double yellow line to delineate the edge of a lane in which the direction of travel is reversed from time to time, such that each of these markings serve as the center line markings of the roadway during some period (see Figure 3B-6).

02 Signs (see Section 2B.26), lane-use control signals (see Chapter 4M), or both shall be used to supplement reversible lane pavement markings.

03 If a two-way left-turn lane that is never operated as a reversible lane is used, the lane line pavement markings on each side of the two-way left-turn lane shall consist of a normal broken yellow line and a normal solid yellow line to delineate the edges of a lane that can be used by traffic in either direction as part of a left-turn maneuver. These markings shall be placed with the broken line toward the two-way left-turn lane and the solid line toward the adjacent traffic lane as shown in Figure 3B-7.

**Guidance:**

04 **White two-way left-turn lane-use arrows (see Figure 3B-7), should be used in conjunction with the longitudinal two-way left-turn markings at the locations described in Section 3B.20.**

05 Signs should be used in conjunction with the two-way left turn markings (see Section 2B.24).

**Standard:**

06 If a continuous flush median island formed by pavement markings separating travel in opposite directions is used, two sets of solid double yellow lines shall be used to form the island as shown in Figures 3B-2 and 3B-5. Other markings in the median island area shall also be yellow, except crosswalk markings which shall be white (see Section 3B.18).

Ok

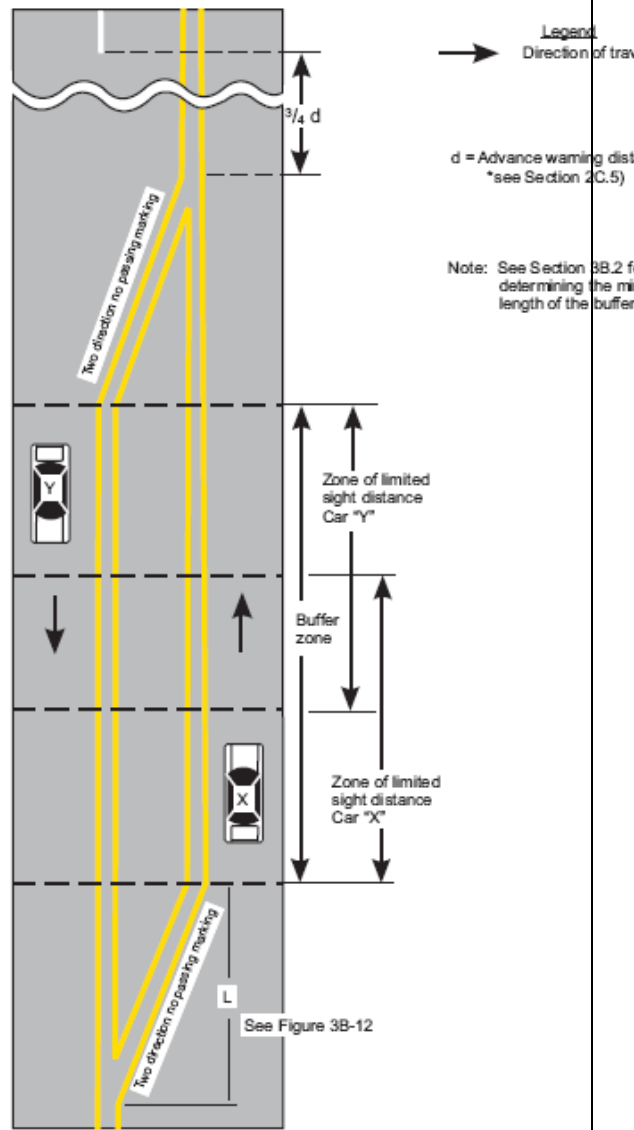
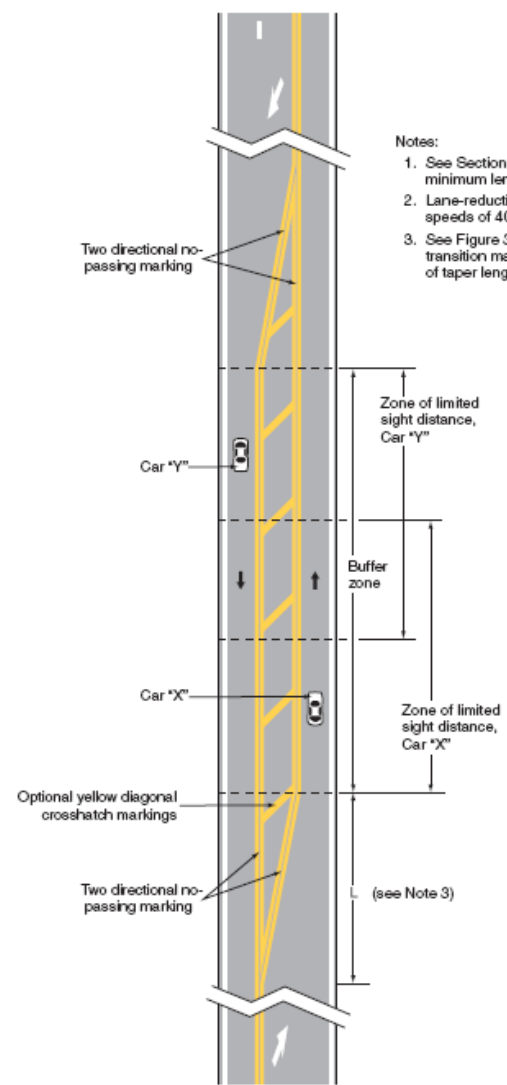


Figure 3B-4 Example of Three-Lane, Two-Way Marking for Changing Direction of the Center Line

Figure 3B-5. Example of Application of Three-Lane, Two-Way Marking Changing Direction of the Center Lane



Changes  
Figure 3B-4 is now figure 3B-5  
Figure and section references have changed

Added to the Federal MUTCD  
Optional yellow diagonal crosshatch markings  
Directional Arrows  
Lane reduction arrows are optional for speeds of 40 mph or less

Notes:

1. See Section 3B.02 for determining the minimum length of the buffer zone
2. Lane-reduction arrows are optional for speeds of 40 mph or less
3. See Figure 3B-14 for lane-reduction transition markings and direction of taper length L

Ok  
Ok

Does this mean that lane-reduction arrows are required for speeds > 40 MPH? Mitch will check.

In Figure - Change Optional yellow diagonal crosshatch markings to Recommended yellow diagonal crosshatch markings

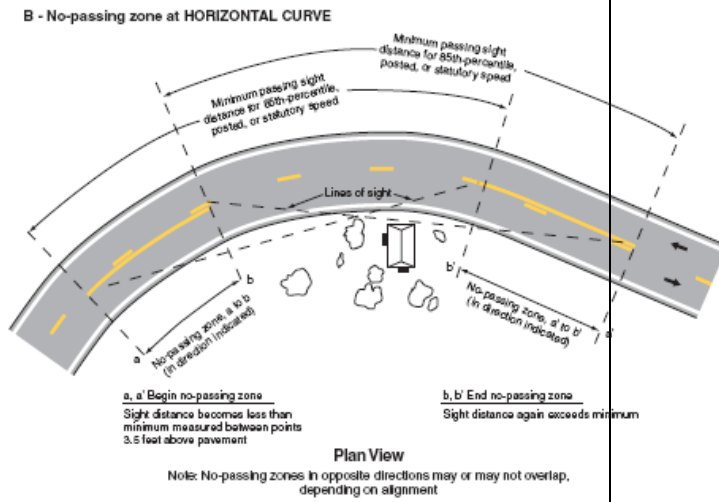
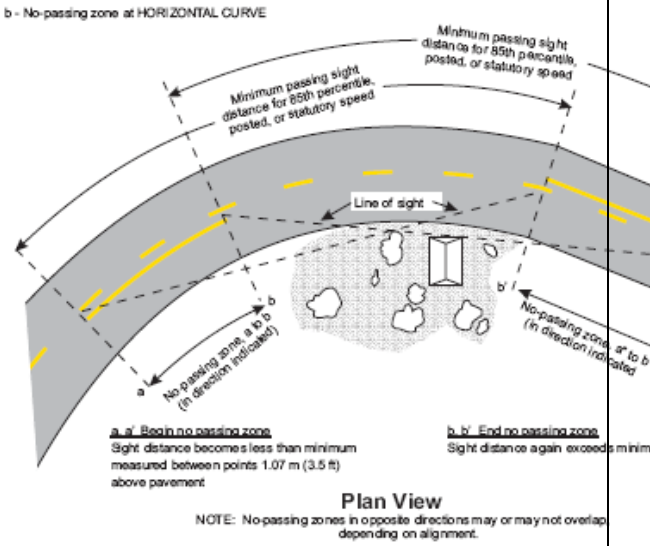
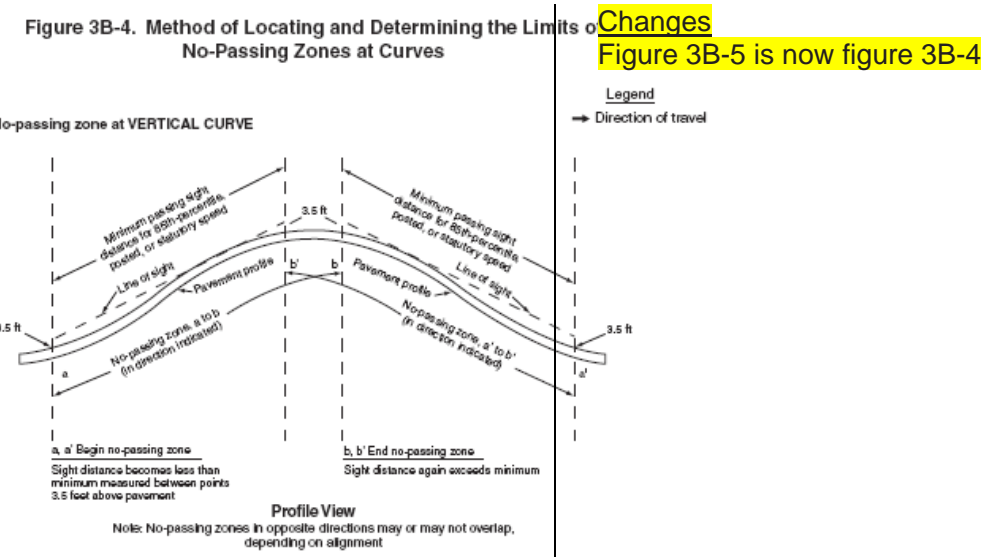
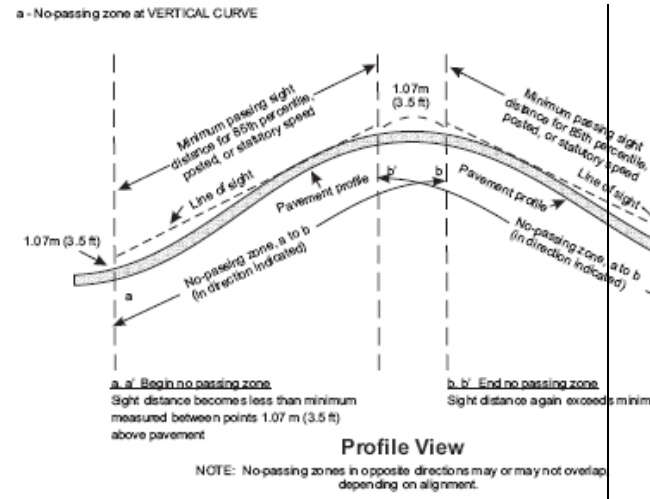


Figure 3B-5 Method of Locating and Determining the Limits of No-Passing Zones at Curves

Figure 3B-4. Method of Locating and Determining the Limits of **Changes** No-Passing Zones at Curves **Figure 3B-5 is now figure 3B-4**

OK

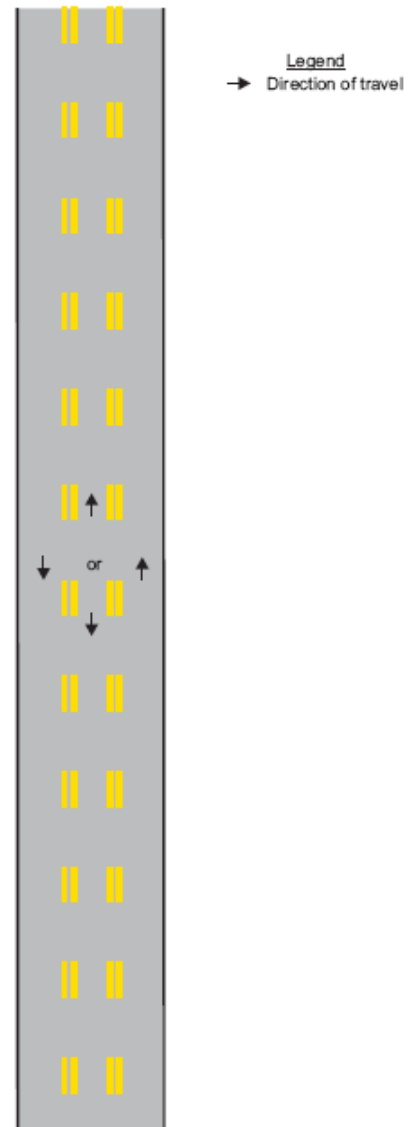
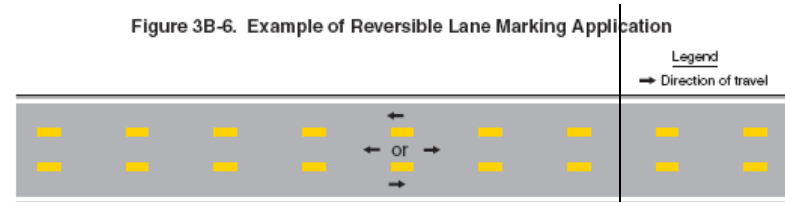


Figure 3B-6 Example of Reversible Lane Marking Application



**3B.4 White Lane Line Pavement Markings and Warrants**

**Standard:**  
When used, lane line pavement markings delineating the separation of traffic lanes that have the same direction of travel shall be white. Lane line markings shall be used on all freeways and Interstate highway.

**Guidance:**  
Lane line markings should be used on all roadways with two or more adjacent traffic lanes that have the same direction of travel. Lane line markings should also be used at congested locations where the roadway will accommodate more traffic lanes with lane line markings than without the markings.

**Support:**  
Examples of lane line markings are shown in Figures 3B-2, 3B-3, 3B-7 through 3B-13, ~~3B-21, 3B-24, and 3B-26.~~

**Standard:**  
Where crossing the lane line markings with care is permitted, the lane line markings shall consist of a normal broken white line.

**Section 3B.04 White Lane Line Pavement Markings and Warrants**

**Standard:**  
01 When used, lane line pavement markings delineating the separation of traffic lanes that have the same direction of travel shall be white.  
02 Lane line markings shall be used on all freeways and Interstate highways.

**Guidance:**  
03 Lane line markings should be used on all roadways that are intended to operate with two or more adjacent traffic lanes in the same direction of travel, **except as otherwise required for reversible lanes.** Lane line markings should also be used at congested locations where the roadway will accommodate more traffic lanes with lane line markings than without the markings.

**Support:**  
04 Examples of lane line markings are shown in **Figures 3B-2, 3B-3, and 3B-7 through 3B-13.**

**Standard:**  
05 **Except as provided in Paragraph 6, where crossing the lane line markings with care is permitted, the lane line markings shall consist of a normal broken white line.**

06 **A dotted white line marking shall be used as the lane line to separate a through lane that continues beyond the interchange or intersection from an adjacent lane for any of the following conditions:**  
A. A deceleration or acceleration lane,  
B. A through lane that becomes a mandatory exit or turn lane,  
C. An auxiliary lane 2 miles or less in length between an entrance ramp and an exit ramp, or  
D. An auxiliary lane 1 mile or less in length between two adjacent intersections.

07 **For exit ramps with a parallel deceleration lane, a normal width dotted white lane line shall be installed from the upstream end of the full-width deceleration lane to the theoretical gore or to the upstream end of a solid white lane line, if used, that extends upstream from the theoretical gore as shown in **Drawings A and C of Figure 3B-7.****

**Section 3B.04 White Lane Line Pavement Markings and Warrants**

**Standard:**  
01 When used, lane line pavement markings delineating the separation of traffic lanes that have the same direction of travel shall be white.  
02 Lane line markings shall be used on all freeways and Interstate highways.

**Guidance:**  
03 Lane line markings should be used on all roadways that are intended to operate with two or more adjacent traffic lanes in the same direction of travel, **except as otherwise required for reversible lanes.** Lane line markings should also be used at congested locations where the roadway will accommodate more traffic lanes with lane line markings than without the markings.

**Support:**  
04 Examples of lane line markings are shown in Figures 3B-2, 3B-3, and 3B-7 through 3B-13.

**Standard:**  
05 **Except as provided in Paragraph 6, where crossing the lane line markings with care is permitted, the lane line markings shall consist of a normal broken white line.**

06 **A dotted white line marking shall be used as the lane line to separate a through lane that continues beyond the interchange or intersection from an adjacent lane for any of the following conditions:**  
A. A deceleration or acceleration lane,  
B. A through lane that becomes a mandatory exit or turn lane,  
C. An auxiliary lane 2 miles or less in length between an entrance ramp and an exit ramp, or  
D. An auxiliary lane 1 mile or less in length between two adjacent intersections.

07 **For exit ramps with a parallel deceleration lane, a normal-wide width dotted white lane line shall be installed from the upstream end of the**

[Worded awkwardly, reword?](#)

[Mitch will send a request for interpretation to Will Stein to see if 1 mile could be the language. This issue should be coordinated with Chapter 2 regarding the placement of signing.](#)

[Use Wide Width – TEM 7-4.03.07](#)

**Option:**  
 Solid white lane line markings may be used to separate through traffic lanes from auxiliary lanes, such as uphill truck lanes, left- or right-turn lanes, and preferential lanes. They may also be used to separate traffic lanes approaching an intersection. Wide solid lane line markings may be used for greater emphasis.

**Option:**  
 08 For exit ramps with a parallel deceleration lane, a normal width dotted white line extension may be installed in the taper area upstream from the full-width deceleration lane as shown in Drawings A and C of Figure 3B-8.

09 For an exit ramp with a tapered deceleration lane, a normal width dotted white line extension may be installed from the theoretical gore through the taper area such that it meets the edge line at the upstream end of the taper as shown in Drawing B of Figure 3B-8.

**Standard:**  
 10 For entrance ramps with a parallel acceleration lane, a normal width dotted white line shall be installed from the theoretical gore or from the downstream end of a solid white lane line, if used, that extends downstream from the theoretical gore, to a point at least one-half the distance from the theoretical gore to the downstream end of the acceleration taper, as shown in Drawing A of Figure 3B-9.

**Option:**  
 11 For entrance ramps with a parallel acceleration lane, a normal width dotted white line extension may be installed from the downstream end of the dotted white lane line to the downstream end of the acceleration taper, as shown in Drawing A of Figure 3B-9.

12 For entrance ramps with a tapered acceleration lane, a normal width dotted white line extension may be installed from the downstream end of the channelizing line adjacent to the through lane to the downstream end of the acceleration taper, as shown in Drawings B and C of Figure 3B-9.

**Standard:**  
 13 A wide dotted white lane line shall be used:

full-width deceleration lane to the theoretical gore or to the upstream end of a solid white lane line, if used, that extends upstream from the theoretical gore as shown in Drawings A and C of Figure 3B-8.

**Option:**  
 08 For exit ramps with a parallel deceleration lane, a normal width dotted white line extension may be installed in the taper area upstream from the full-width deceleration lane as shown in Drawings A and C of Figure 3B-8.

09 For an exit ramp with a tapered deceleration lane, a normal width dotted white line extension may be installed from the theoretical gore through the taper area such that it meets the edge line at the upstream end of the taper as shown in Drawing B of Figure 3B-8.

**Standard:**  
 10 For entrance ramps with a parallel acceleration lane, a normal width dotted white line shall be installed from the theoretical gore or from the downstream end of a solid white lane line, if used, that extends downstream from the theoretical gore, to a point at least one-half the distance from the theoretical gore to the downstream end of the acceleration taper, as shown in Drawing A of Figure 3B-9.

**Option:**  
 11 For entrance ramps with a parallel acceleration lane, a normal width dotted white line extension may be installed from the downstream end of the dotted white lane line to the downstream end of the acceleration taper, as shown in Drawing A of Figure 3B-9.

12 For entrance ramps with a tapered acceleration lane, a normal width dotted white line extension may be installed from the downstream end of the channelizing line adjacent to the through lane to the downstream end of the acceleration taper, as shown in Drawings B and C of Figure 3B-9.

**Standard:**  
 13 A wide dotted white lane line shall be used:

[Use our current practice and figures except that its a wide dotted instead of normal broken. Mitch and Jim will create justification.](#)

[End of Pavement Marking Task Force April 8, 2011 meeting](#)

- A. As a lane drop marking in advance of lane drops at exit ramps to distinguish a lane drop from a normal exit ramp (see Drawings A, B, and C of Figure 3B-10),
- B. In advance of freeway route splits with dedicated lanes (see Drawing D of Figure 3B-10),
- C. To separate a through lane that continues beyond an interchange from an adjacent auxiliary lane between an entrance ramp and an exit ramp (see Drawing E of Figure 3B-10),
- D. As a lane drop marking in advance of lane drops at intersections to distinguish a lane drop from an intersection through lane (see Drawing A of Figure 3B-11), and
- E. To separate a through lane that continues beyond an intersection from an adjacent auxiliary lane between two intersections (see Drawing B of Figure 3B-11).

**Guidance:**

14 lane drop markings used in advance of lane drops at freeway and expressway exit ramps should begin at least 1/2 mile in advance of the theoretical gore.

15 On the approach to a multi-lane exit ramp having an optional exit lane that also carries through traffic, lane line markings should be used as illustrated in Drawing B of Figure 3B-10. In this case, if the right-most exit lane is an added lane such as a parallel deceleration lane, the lane drop marking should begin at the upstream end of the full-width deceleration lane, as shown in Drawing C of Figure 3B-8.

16 lane drop markings used in advance of lane drops at intersections should begin a distance in advance of the intersection that is determined by engineering judgment as suitable to enable drivers who do not desire to make the mandatory turn to move out of the lane being dropped prior to reaching the queue of vehicles that are waiting to make the turn. The lane drop marking should begin no closer to the intersection than the most upstream regulatory or warning sign associated with the lane drop.

- A. As a lane drop marking in advance of lane drops at exit ramps to distinguish a lane drop from a normal exit ramp (see Drawings A, B, and C of Figure 3B-10),
- B. In advance of freeway route splits with dedicated lanes (see Drawing D of Figure 3B-10),
- C. To separate a through lane that continues beyond an interchange from an adjacent auxiliary lane between an entrance ramp and an exit ramp (see Drawing E of Figure 3B-10),
- D. As a lane drop marking in advance of lane drops at intersections to distinguish a lane drop from an intersection through lane (see Drawing A of Figure 3B-11), and
- E. To separate a through lane that continues beyond an intersection from an adjacent auxiliary lane between two intersections (see Drawing B of Figure 3B-11).

**Guidance:**

14 Lane drop markings used in advance of lane drops at freeway and expressway exit ramps should begin at least 1/2 mile in advance of the theoretical gore.

15 On the approach to a multi-lane exit ramp having an optional exit lane that also carries through traffic, lane line markings should be used as illustrated in Drawing B of Figure 3B-10. In this case, if the right-most exit lane is an added lane such as a parallel deceleration lane, the lane drop marking should begin at the upstream end of the full-width deceleration lane, as shown in Drawing C of Figure 3B-8.

16 Lane drop markings used in advance of lane drops at intersections should begin a distance in advance of the intersection that is determined by engineering judgment as suitable to enable drivers who do not desire to make the mandatory turn to move out of the lane being dropped prior to reaching the queue of vehicles that are waiting to make the turn. The lane drop marking should begin no closer to the intersection than the most upstream regulatory or warning sign associated with the lane drop.

Include sections 8,9,10, and 11 in 13. Delete current sections? Include all under Standard or create an Option section after the Standard? OK

**Standard**

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

17 The dotted white lane lines that are used for lane drop markings and that are used as a lane line separating through lanes from auxiliary lanes should consist of line segments that are 3 feet in length separated by 9-foot gaps.

**Support:**

18 [Section 3B.20](#) contains information regarding other markings that are associated with lane drops, such as lane-use arrow markings and ONLY word markings.

19 [Section 3B.09](#) contains information about the lane line markings that are to be used for transition areas where the number of through lanes is reduced.

**Standard:**

20 Where crossing the lane line markings is discouraged, the lane line markings shall consist of a normal or wide solid white line.

**Option:**

21 Where it is intended to discourage lane changing on the approach to an exit ramp, a wide solid white lane line may extend upstream from the theoretical gore or, for multi-lane exits, as shown in [Drawing B of Figure 3B-10](#), for a distance that is determined by engineering judgment.

22 Where lane changes might cause conflicts, a wide or normal solid white lane line may extend upstream from an intersection.

23 In the case of a lane drop at an exit ramp or intersection, such a solid white line may replace a portion, but not all of the length of the wide dotted white lane line.

**Support:**

24 [Section 3B.09](#) contains information about the lane line markings that are to be used for transition areas where the number of through lanes is reduced.

**Guidance:**

25 On approaches to intersections, a solid white lane line marking should be used to separate a through lane from an added mandatory turn lane.

17 **The dotted white lane lines that are used for lane drop markings and that are used as a lane line separating through lanes from auxiliary lanes should consist of line segments that are 3 feet in length separated by 9~~12~~-foot gaps.**

**Support:**

18 **Section 3B.20 contains information regarding other markings that are associated with lane drops, such as lane-use arrow markings and ONLY word markings.**

19 **Section 3B.09 contains information about the lane line markings that are to be used for transition areas where the number of through lanes is reduced.**

**Standard:**

20 Where crossing the lane line markings is discouraged, the lane line markings shall consist of a normal or wide solid white line.

**Option:**

21 Where it is intended to discourage lane changing on the approach to an exit ramp, a wide solid white lane line may extend upstream from the theoretical gore or, for multi-lane exits, as shown in Drawing B of Figure 3B-10, for a distance that is determined by engineering judgment.

22 Where lane changes might cause conflicts, a wide or normal solid white lane line may extend upstream from an intersection.

23 In the case of a lane drop at an exit ramp or intersection, such a solid white line may replace a portion, but not all of the length of the wide dotted white lane line.

**Support:**

24 Section 3B.09 contains information about the lane line markings that are to be used for transition areas where the number of through lanes is reduced.

**Guidance:**

25 On approaches to intersections, a solid white lane line marking should be used to separate a through lane from an added mandatory turn lane.

Ok

Ok

Ok – add guidance such that if you have a wide-dotted line before turn lane, then the turn lane line should be wide as well – here or in paragraph 25

Ok

Ok

**Standard:**  
Where crossing the lane line markings is prohibited, the lane line markings shall consist of ~~two normal~~-solid white lines.

- Option:**
- 26 On approaches to intersections, solid white lane line markings may be used to separate adjacent through lanes or adjacent mandatory turn lanes from each other.
  - 27 Where the median width allows the left-turn lanes to be separated from the through lanes to give drivers on opposing approaches a less obstructed view of opposing through traffic, white pavement markings may be used to form channelizing islands as shown in [Figure 3B-17](#).
  - 28 Solid white lane line markings may be used to separate through traffic lanes from auxiliary lanes, such as an added uphill truck lane or a preferential lane (see [Section 3D.02](#)).
  - 29 Wide solid lane line markings may be used for greater emphasis.

**Standard:**  
30 Where crossing the lane line markings is prohibited, the lane line markings shall consist of a solid double white line [\(see Figure 3B-12\)](#).

- Option:**
- 26 On approaches to intersections, solid white lane line markings may be used to separate adjacent through lanes or adjacent mandatory turn lanes from each other.
  - 27 Where the median width allows the left-turn lanes to be separated from the through lanes to give drivers on opposing approaches a less obstructed view of opposing through traffic, white pavement markings may be used to form channelizing islands as shown in **Figure 2B-17**.
  - 28 Solid white lane line markings may be used to separate through traffic lanes from auxiliary lanes, such as an added uphill truck lane or a preferential lane (see Section 3D.02).
  - 29 Wide solid lane line markings may be used for greater emphasis.

**Standard:**  
30 Where crossing the lane line markings is prohibited, the lane line markings shall consist of a solid double white line (see Figure 3B-12).

Ok

Check Figure reference OK

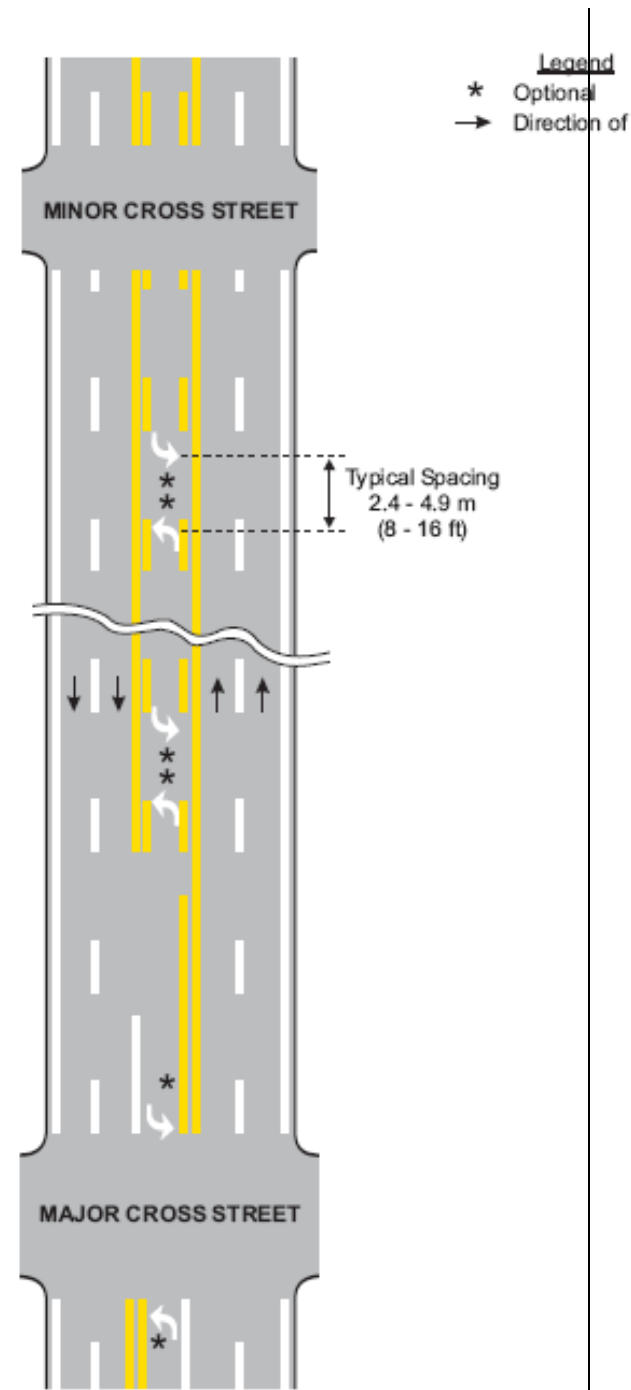
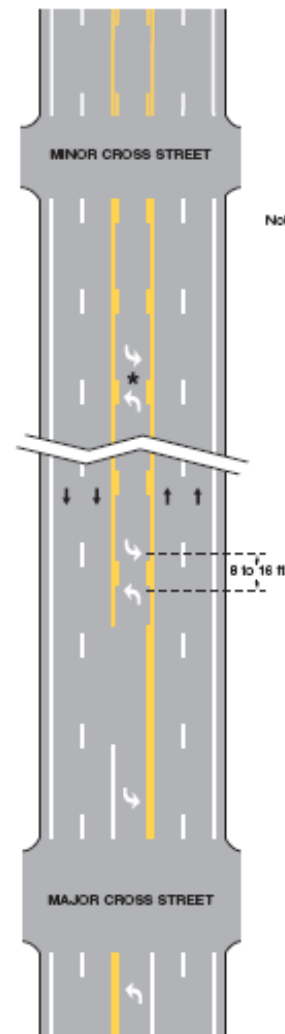


Figure 3B-7 Example of Two-Way Left-Turn Lane Marking Applications

Figure 3B-7. Example of Two-Way Left-Turn Lane Marking Applications



Added to Federal MUTCD

See Section 3B.20 for use of additional arrows beyond the beginning of the two-way left-turn lane

→ Direction of travel

Note: Single-direction left-turn arrows shall not be used in lanes bordered on both sides by two-way left-turn lane markings.

\* See Section 3B.20 for use of additional arrows beyond the beginning of the two-way left-turn lane

Note: Single-direction left-turn arrows shall not be used in lanes bordered on both sides by two-way left-turn lane markings.

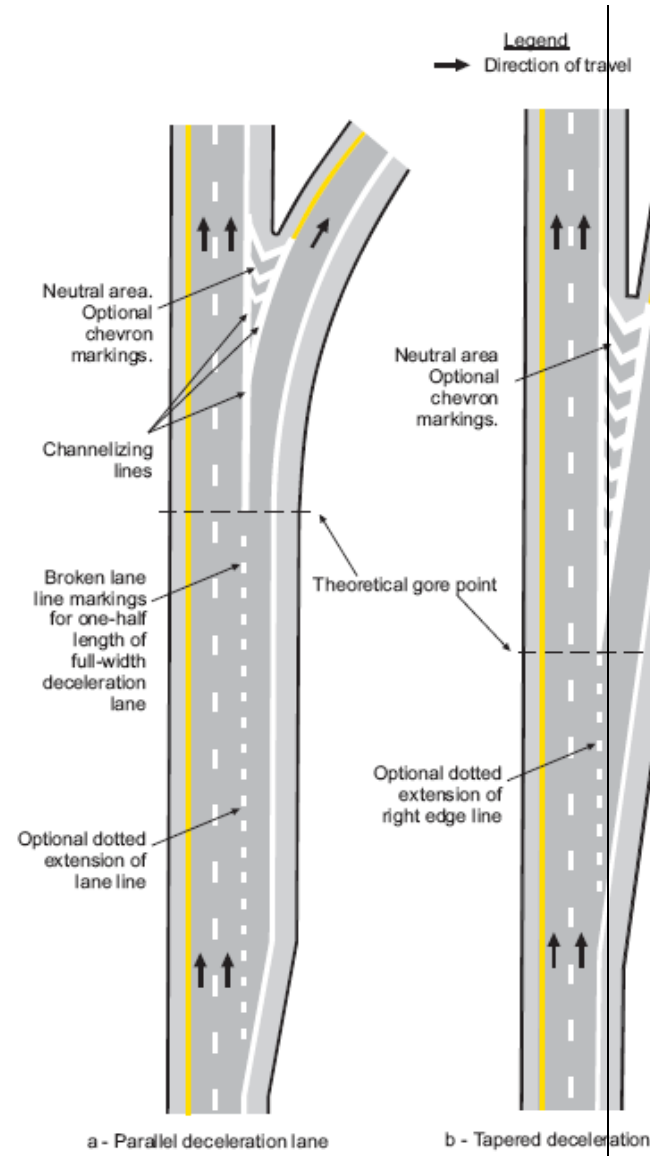


Figure 3B-8 Examples of Channelizing Line Applications for Exit Ramp Markings (Sheet 1 of 2)

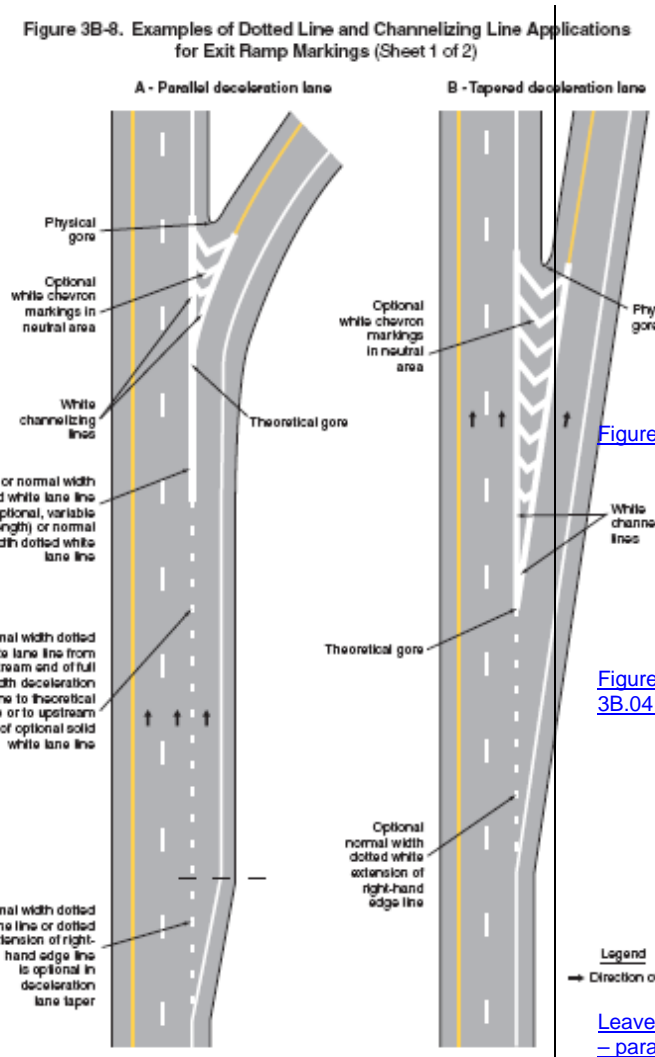


Figure A - Gore should be wide, not normal

Figure A – dotted line should be wide (See text in Section 3B.04 – paragraph 07)

Leave the bottom of Figure A as normal – See Section 3B.04 – paragraph 08)

“Normal width dotted lane line or dotted...” Option for curve sections

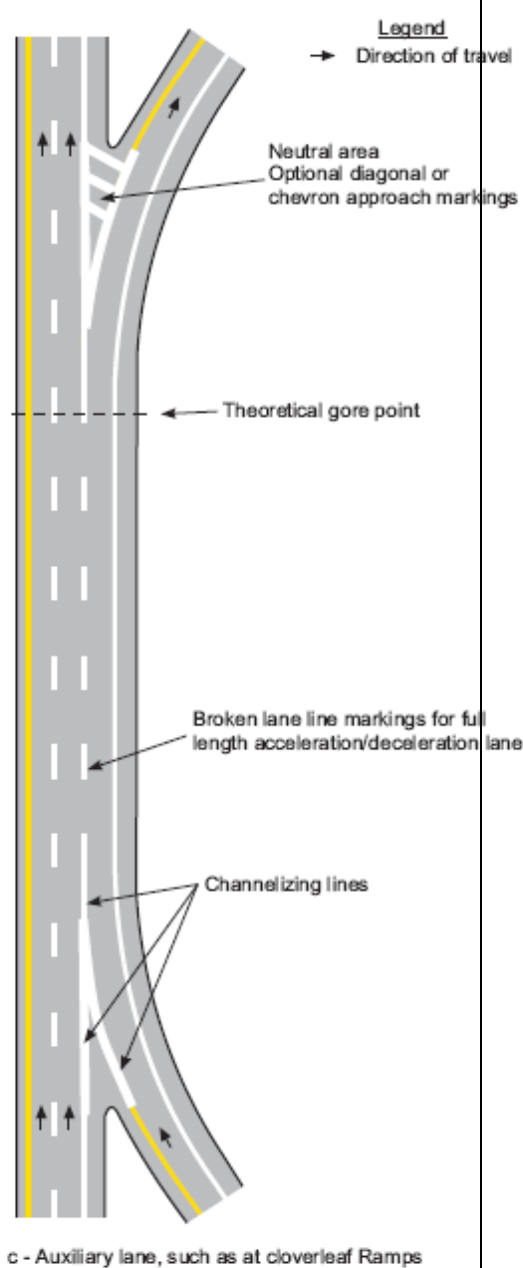


Figure 3B-8 Examples of Channelizing Line Applications for Exit Ramp Markings (Sheet 2 of 2)

Figure 3B-8. Examples of Dotted Line and Channelizing Line Applications for Exit Ramp Markings (Sheet 2 of 2)

C – Parallel deceleration lane at a multi-lane exit ramp having an optional exit lane that also carries the through route

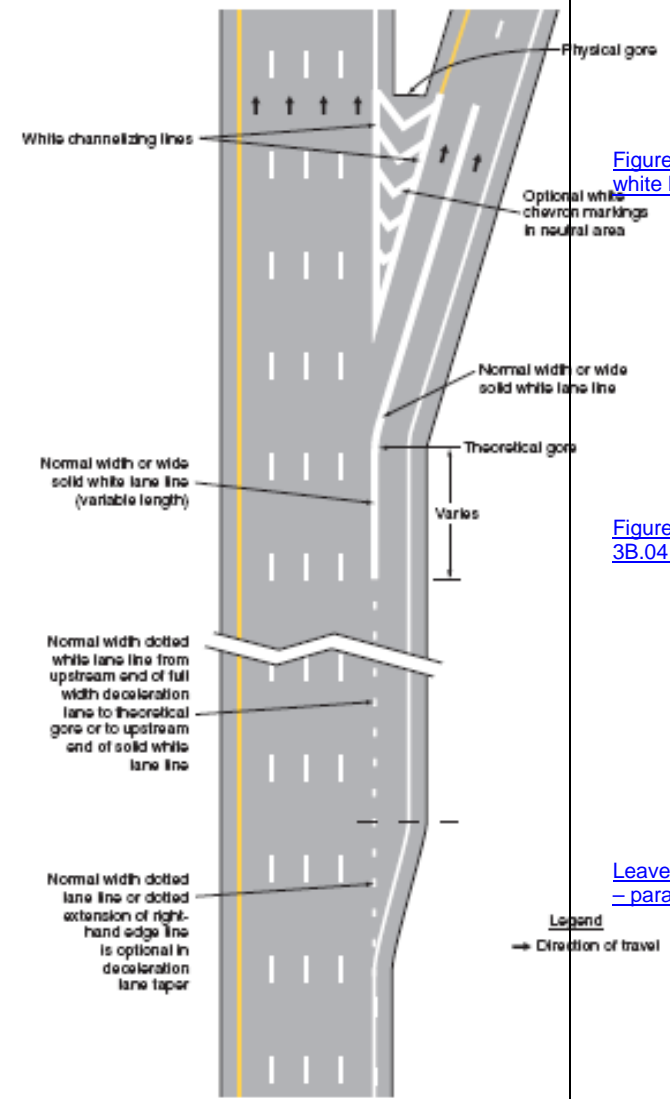


Figure C - Gore should be wide, not normal. So should Solid white lane line.

Figure A – dotted line should be wide (See text in Section 3B.04 – paragraph 07)

Leave the bottom of Figure A as normal – See Section 3B.04 – paragraph 08)

From the list of known errors in the MUTCD (as of 4/8/2011)

Figure 3B-8 (Sheet 2 of 2)  
The label for the “Theoretical gore” and the leader line and arrowhead pointing at the location where the solid lane line begins to curve should be deleted, and a short dimension line should be placed at the top of the “Varies” dimension.

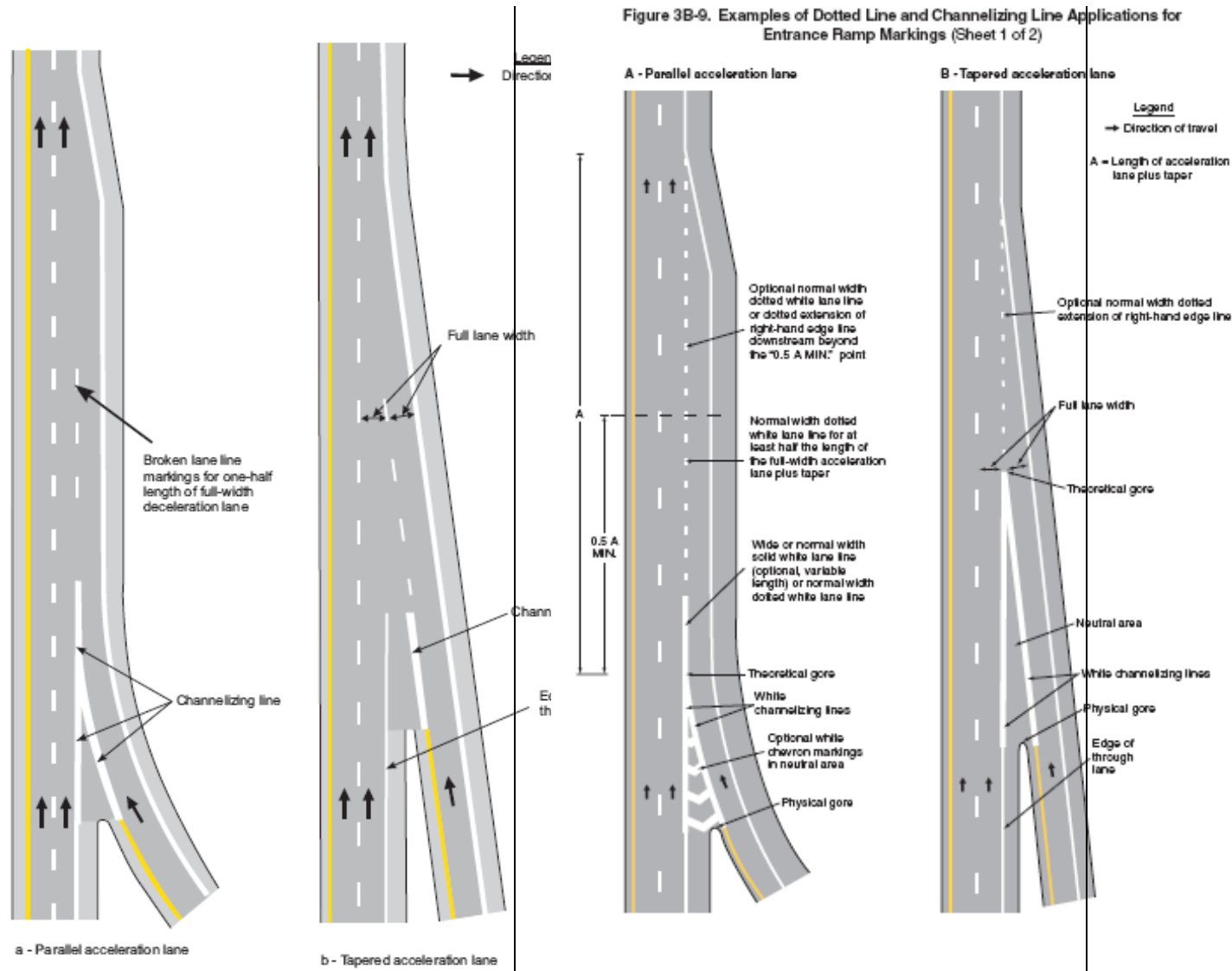
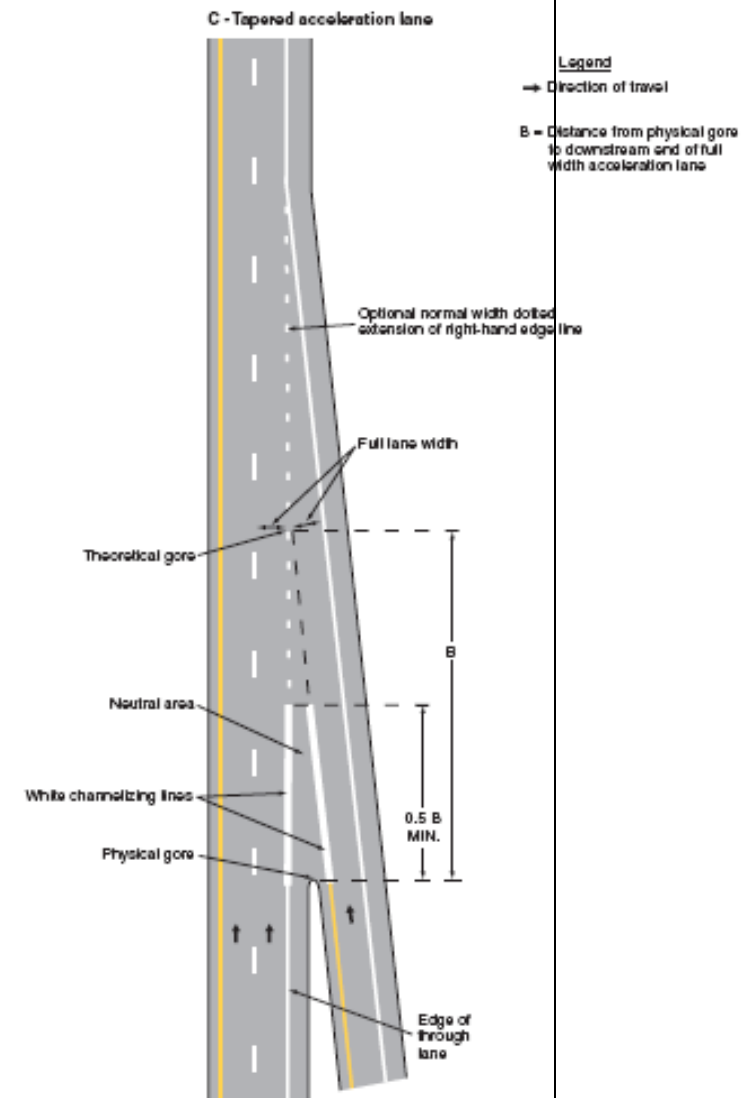


Figure 3B-9 Examples of Channelizing Lane Applications for Entrance Ramp Markings

Remove Figure 3B-9 B  
The decision was made to keep the old Figure 3B-9B and remove Figures 3B-9B and C

Figure 3B-9. Examples of Dotted Line and Channelizing Line Applications for Entrance Ramp Markings (Sheet 2 of 2)



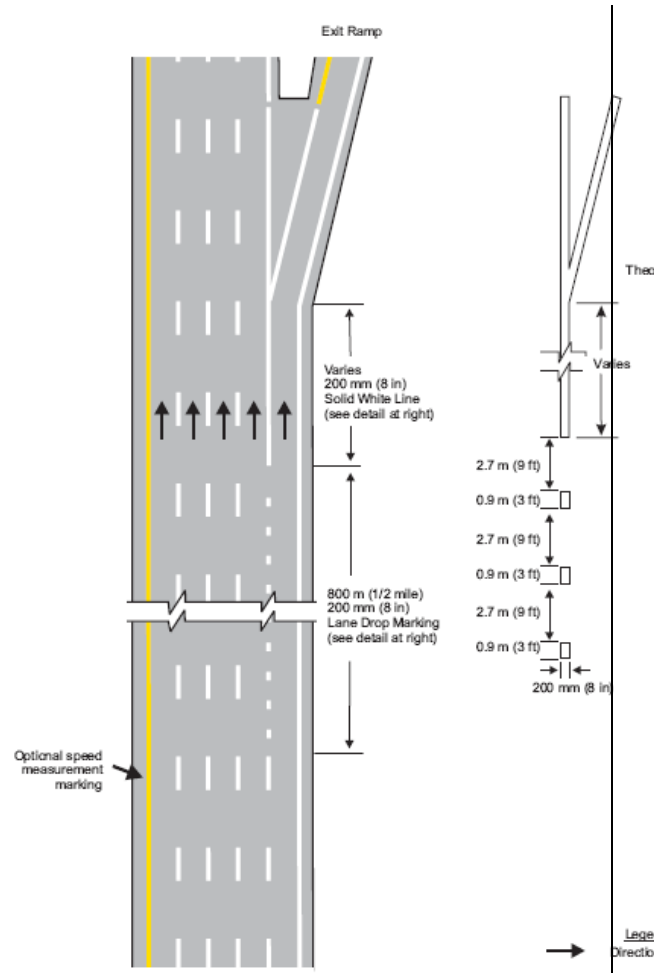
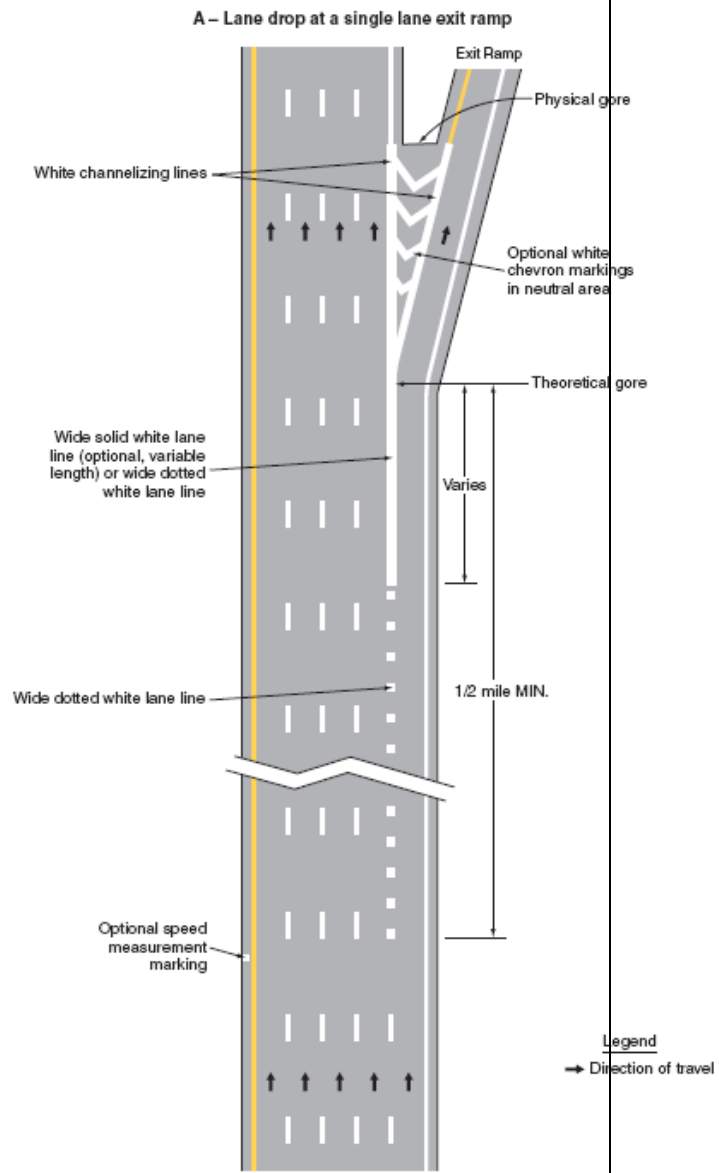
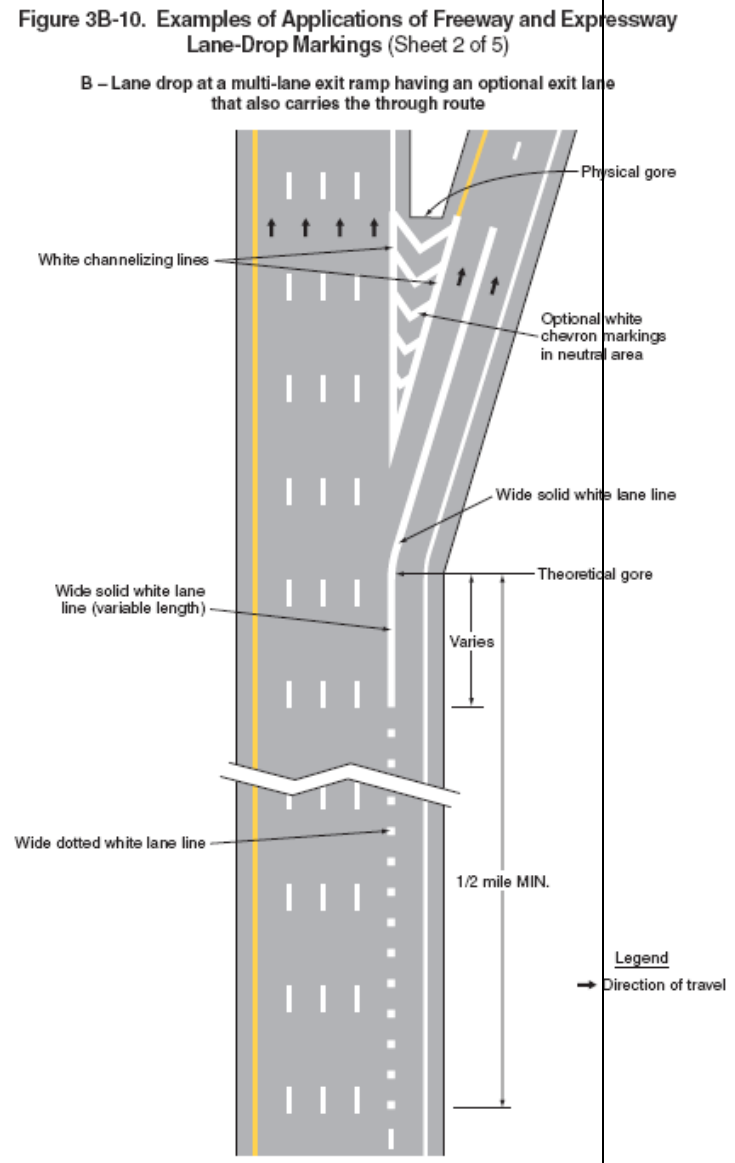


Figure 3B-10 Example of Lane Drop Markings at Exit Ramps

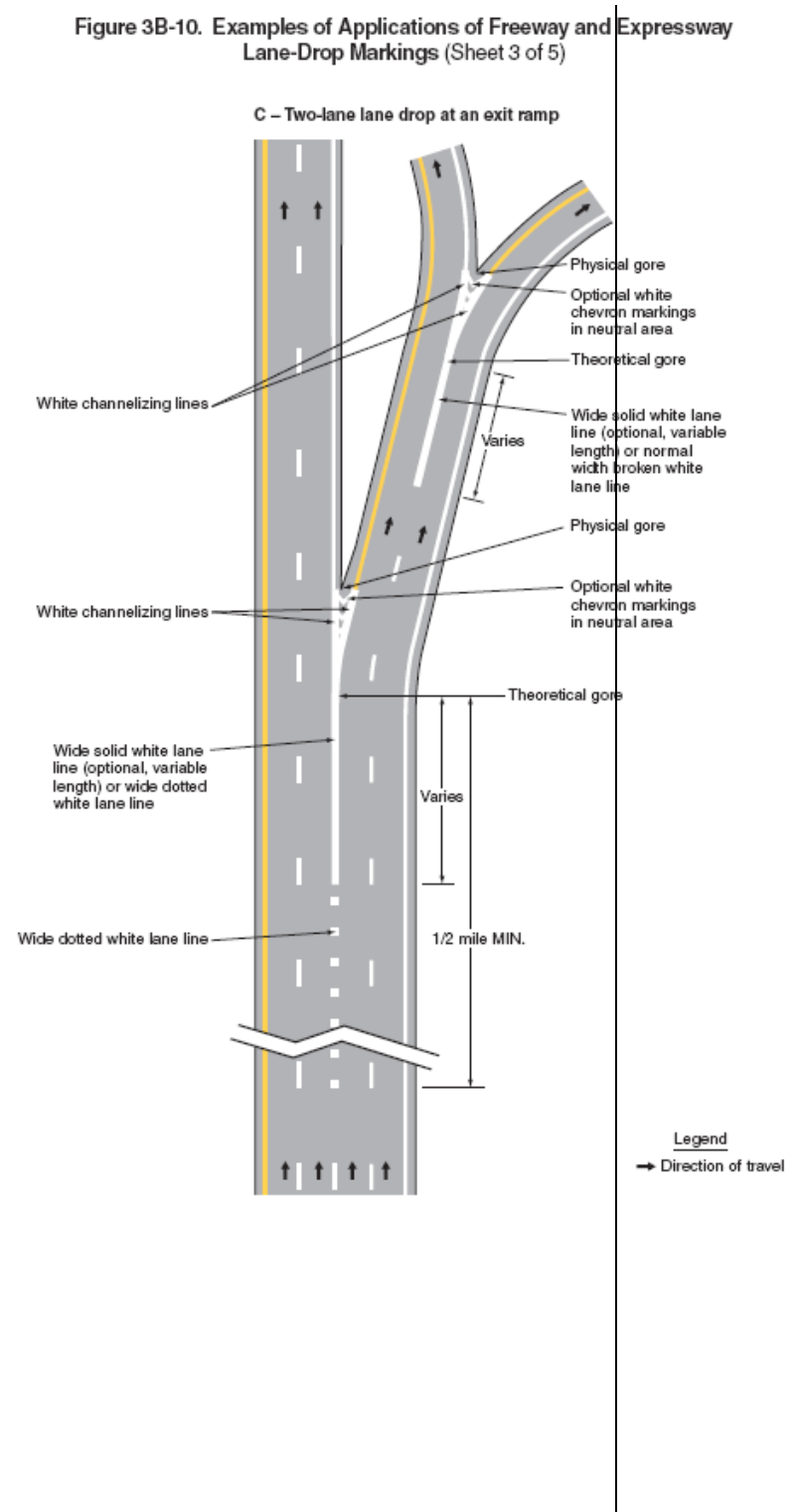
Figure 3B-10. Examples of Applications of Freeway and Expressway Lane-Drop Markings (Sheet 1 of 5)



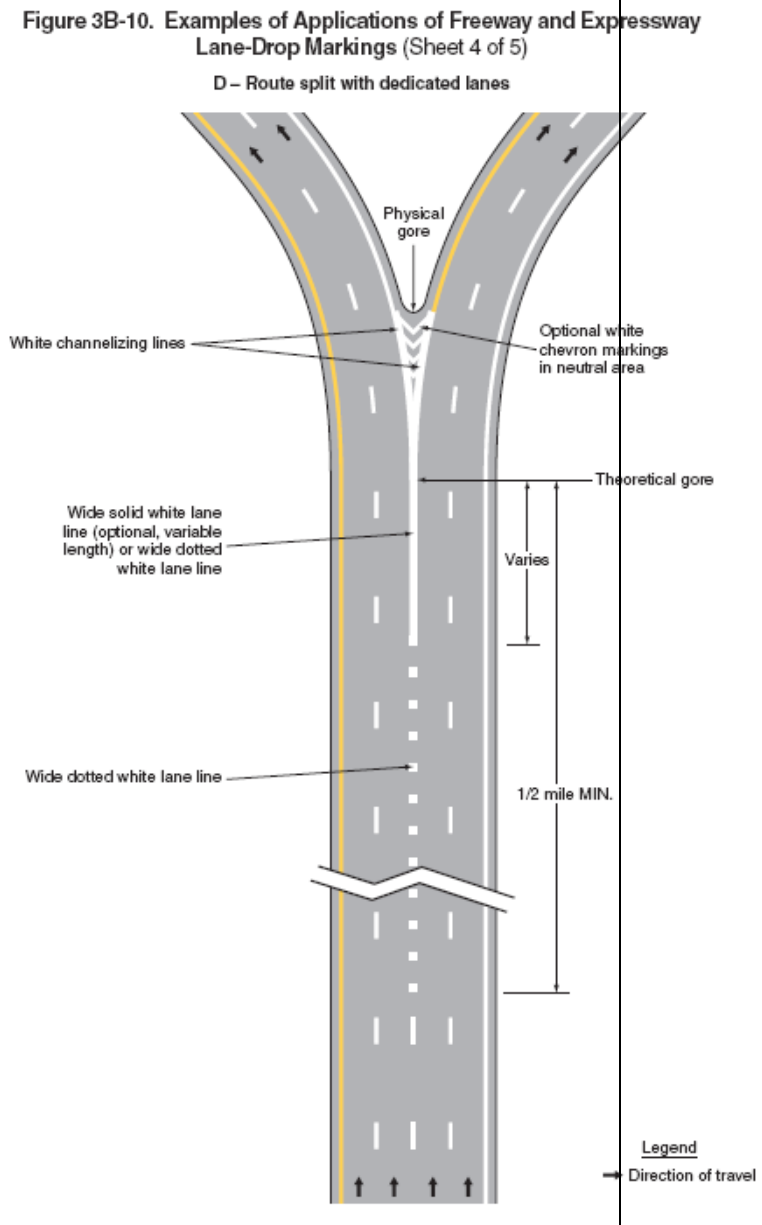


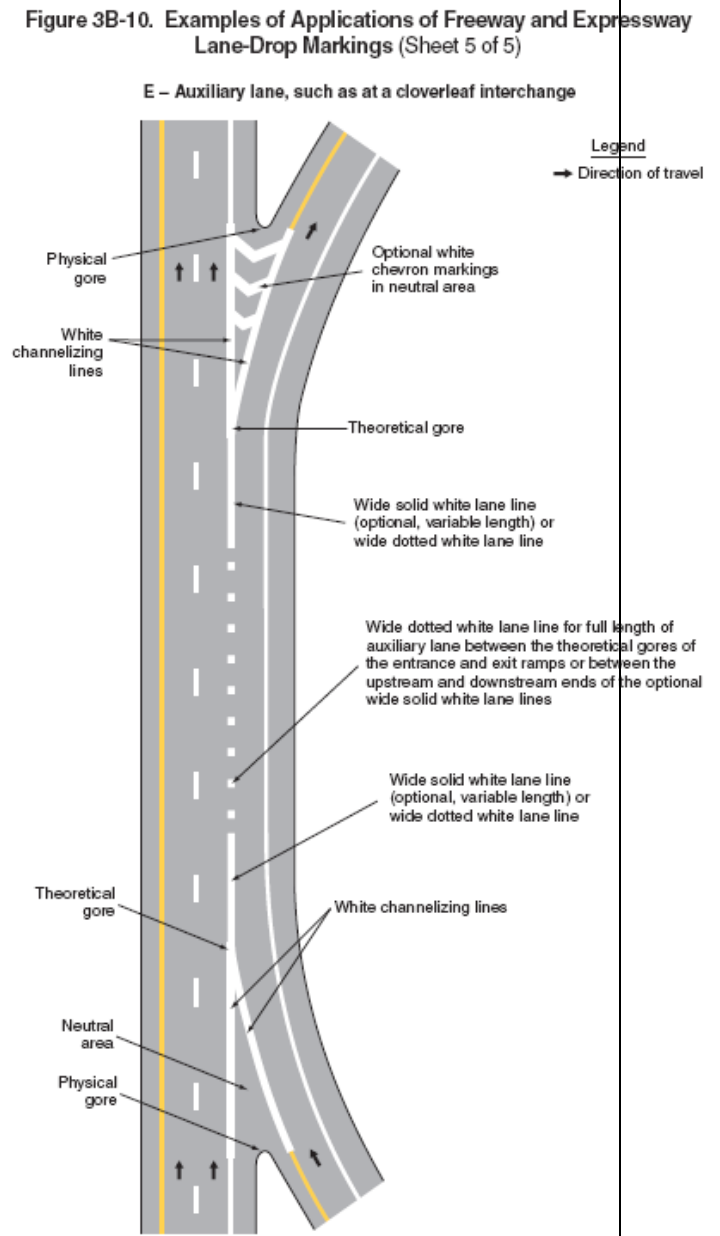
[From the list of known errors in the MUTCD \(as of 4/8/2011\)](#)

**Figure 3B-10 (Sheet 2 of 5)**  
[The label for the “Theoretical gore” and the leader line and arrowhead pointing at the location where the solid lane line begins to curve should be deleted, and a dimension line should be placed at the top of the “Varies” and the “1/2 mile MIN.” dimensions.](#)



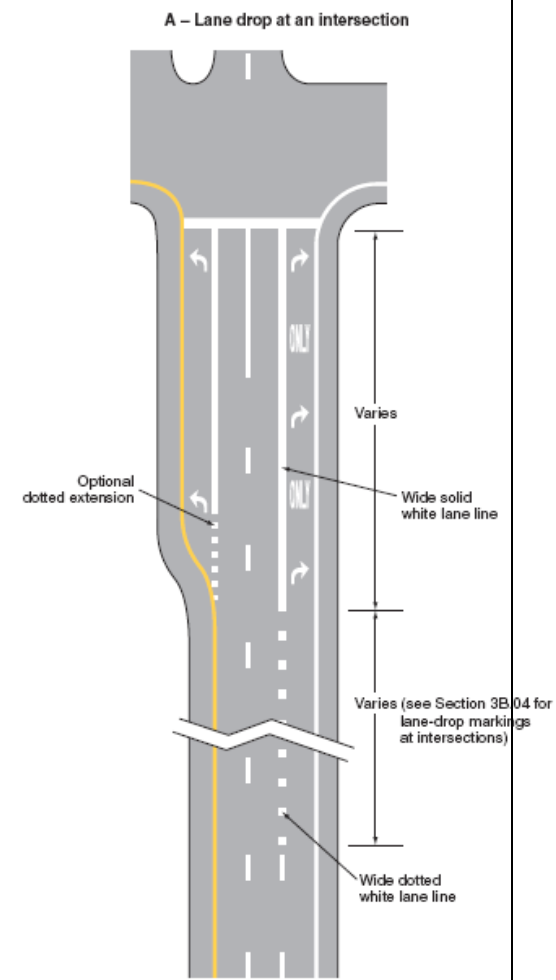
[Why 1/2 mile? Why not 2 miles?](#)





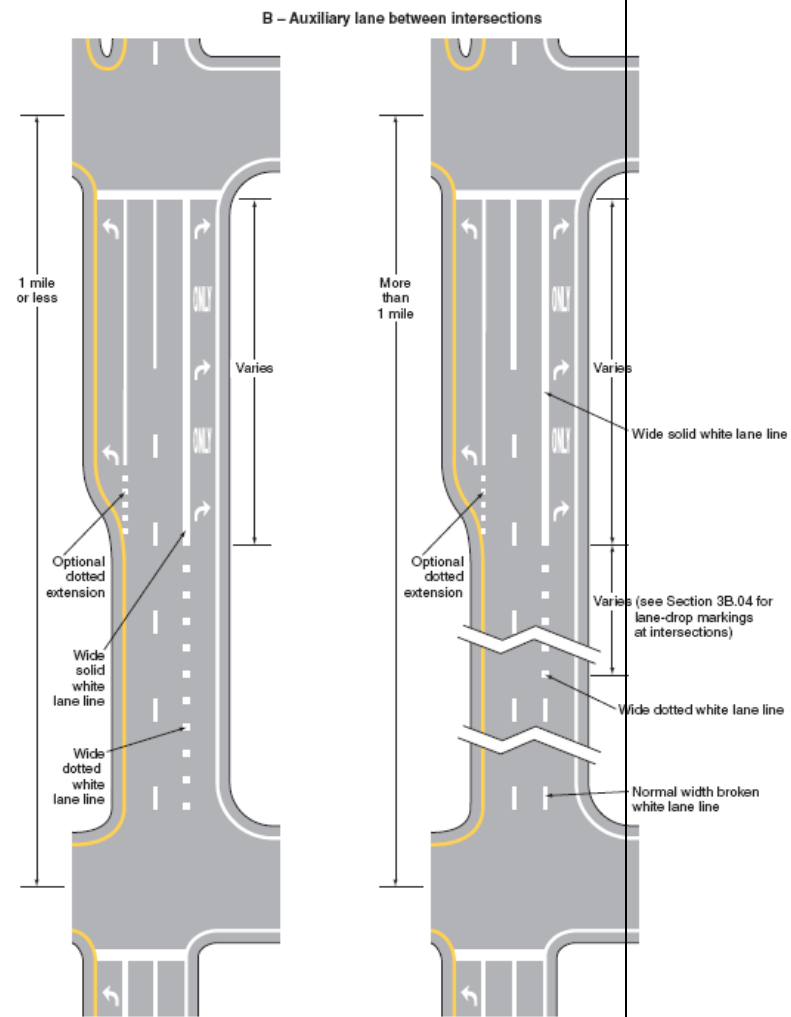
Auxiliary lane up to 2 miles?

Figure 3B-11. Examples of Applications of Conventional Road Lane-Drop Markings  
(Sheet 1 of 2)



Joe G thought there was a Right Lane Must Turn Right sign required with this. Should we somehow include a reference to that in the Figure?

Figure 3B-11. Examples of Applications of Conventional Road Lane-Drop Markings  
(Sheet 2 of 2)



1 mile stipulation for right turn lane?

End 6/2010 Review

**3B.5 Other White Longitudinal Pavement Markings**

**Standard:**  
A channelizing line shall be a wide or double solid white line.

**Option:**  
Channelizing lines may be used to form channelizing islands where traffic traveling in the same direction is permitted on both sides of the island.

**Standard:**  
Other pavement markings in the channelizing island area shall be white.

**Support:**  
Examples of channelizing line applications are shown in Figures 3B-8, 3B-9, and 3B-13. Channelizing lines at exit ramps as shown in Figure 3B-8 define the neutral area, direct exiting traffic at the proper angle for smooth divergence from the main lanes into the ramp, and reduce the probability of colliding with objects adjacent to the roadway. Channelizing lines at entrance ramps as shown in Figure 3B-9 promote reasonably safe and efficient merging with the through traffic.

**Standard:**  
For exit ramps, channelizing lines shall be placed along ~~the~~ sides of the neutral area adjacent to the through traffic lane and the ramp lane. With a parallel deceleration lane, a lane line shall be extended from the beginning of the channelizing line upstream for a distance of one-half the length of the full-width deceleration lane as shown in Figure 3B-8.

**Option:**  
For entrance ramps with a tapered acceleration lane, lane line markings may be placed to extend the channelizing line, but not beyond a point where the tapered lane meets the near side of the through traffic lane as shown in Figure 3B-9.

**Section 3B.05 Other White Longitudinal Pavement Markings**

**Standard:**  
01 A channelizing line shall be a wide or double solid white line.

**Option:**  
02 Channelizing lines may be used to form channelizing islands where traffic traveling in the same direction is permitted on both sides of the island.

**Standard:**  
03 Other pavement markings in the channelizing island area shall be white.

**Support:**  
04 Examples of channelizing line applications are shown in Figures 3B-8, 3B-9, and 3B-10, and in Drawing C of Figure 3B-15.

05 Channelizing lines at exit ramps as shown in Figures 3B-8 and 3B-10 define the neutral area, direct exiting traffic at the proper angle for smooth divergence from the main lanes into the ramp, and reduce the probability of colliding with objects adjacent to the roadway.

06 Channelizing lines at entrance ramps as shown in Figures 3B-9 and 3B-10 promote orderly and efficient merging with the through traffic.

**Standard:**  
07 For all exit ramps and for entrance ramps with parallel acceleration lanes, channelizing lines shall be placed on both sides of the neutral area (see Figures 3B-8 and 3B-10 and Drawing A of Figure 3B-9).

08 For entrance ramps with tapered acceleration lanes, channelizing lines shall be placed along both sides of the neutral area to a point at least one-half of the distance to the theoretical gore (see Drawing C of Figure 3B-9).

**Option:**  
09 For entrance ramps with tapered acceleration lanes, the channelizing lines may extend to the theoretical gore as shown in Drawing B of Figure 3B-9.

**Section 3B.05 Other White Longitudinal Pavement Markings**

**Standard:**  
01 A channelizing line shall be a wide or double solid white line.

**Option:**  
02 Channelizing lines may be used to form channelizing islands where traffic traveling in the same direction is permitted on both sides of the island.

**Standard:**  
03 Other pavement markings in the channelizing island area shall be white.

**Support:**  
04 Examples of channelizing line applications are shown in Figures 3B-8, 3B-9, and 3B-10, and in Drawing C of Figure 3B-15.

05 Channelizing lines at exit ramps as shown in Figures 3B-8 and 3B-10 define the neutral area, direct exiting traffic at the proper angle for smooth divergence from the main lanes into the ramp, and reduce the probability of colliding with objects adjacent to the roadway.

06 Channelizing lines at entrance ramps as shown in Figures 3B-9 and 3B-10 promote orderly and efficient merging with the through traffic.

**Standard:**  
07 For all exit ramps and for entrance ramps with parallel acceleration lanes, channelizing lines shall be placed on both sides of the neutral area (see Figures 3B-8 and 3B-10 and Drawing A of Figure 3B-9).

08 For entrance ramps with tapered acceleration lanes, channelizing lines shall be placed along both sides of the neutral area to a point at least one-half of the distance to the theoretical gore (see Drawing C of Figure 3B-9).

**Option:**  
09 For entrance ramps with tapered acceleration lanes, the channelizing lines may extend to the theoretical gore as shown in Drawing B of Figure 3B-9.

Clean up this language after determining what is the appropriate entrance ramp pavement markings and the identified figure reference number.

Formatted: Highlight

**Guidance:**

For entrance ramps, a channelizing line should be placed along the side of the neutral area adjacent to the ramp lane. Moved to Standard Line 07

For entrance ramps with a parallel acceleration lane, a lane line should be extended from the end of the channelizing line for a distance of one-half the length of the full-width acceleration lane as shown in Figure 3B-9.

**Option:**

White chevron markings may be placed in the neutral area for special emphasis as shown in Figure 3B-8.

Lane drop markings as shown in Figure 3B-10 may be used in advance of lane drops at exit ramps to distinguish a lane drop from a normal exit ramp or from an auxiliary lane. The lane drop marking may consist of a wide, white dotted line with line segments 0.9 m (3 ft) in length separated by 2.7 m (9 ft) gaps.

**Guidance:**

If used, lane drop markings should begin 800 m (0.5 mi) in advance of the theoretical gore point.

**Option:**

Where lane changes might cause conflicts, a wide solid white channelizing line may extend upstream from the theoretical gore point.

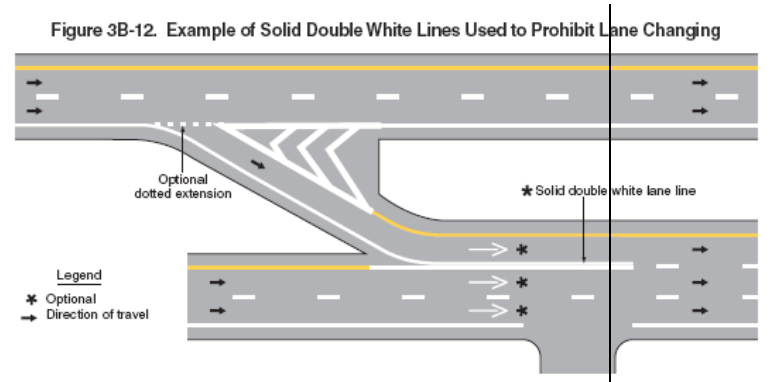
10 White chevron crosshatch markings (see Section 3B.24) may be placed in the neutral area of exit ramp and entrance ramp gores for special emphasis as shown in Figures 3B-8 and 3B-10 and Drawing A of Figure 3B-9.

The channelizing lines and the optional chevron crosshatch markings at exit ramp and entrance ramp gores may be supplemented with white retroreflective or internally illuminated raised pavement markers (see Sections 3B.11 and 3B.13) for enhanced nighttime visibility.

10

White chevron crosshatch markings (see Section 3B.24) may be placed in the neutral area of exit ramp and entrance ramp gores for special emphasis as shown in Figures 3B-8 and 3B-10 and Drawing A of Figure 3B-9.

The channelizing lines and the optional chevron crosshatch markings at exit ramp and entrance ramp gores may be supplemented with white retroreflective or internally illuminated raised pavement markers (see Sections 3B.11 and 3B.13) for enhanced nighttime visibility.



Fix the entrance markings, should use single white?

**3B.6 Edge Line Pavement Markings**

**STANDARD:**

If used, edge line pavement markings shall delineate the right or left edges of a roadway. Except for dotted edge line extensions (see Section 3B.8), edge line markings shall not be continued through intersections or major driveways. If used on the roadways of divided highways or one-way streets, or on any ramp in the direction of travel (see Section 3B.6), left edge line pavement markings shall consist of a normal solid yellow line to delineate the left edge of a roadway or to indicate driving or passing restrictions left of these markings. If used, the right edge line pavement markings shall consist of a normal solid white line to delineate the right edge of the roadway.

**GUIDANCE:**

Edge line markings should not be broken for driveways.

**SUPPORT:**

Edge line markings have unique value as visual references to guide road users during adverse weather and visibility conditions.

**OPTION:**

Wide solid edge line markings may be used for greater emphasis.

**Section 3B.06 Edge Line Pavement Markings**

**Standard:**

01 If used, edge line pavement markings shall delineate the right or left edges of a roadway.

02 Except for dotted edge line extensions (see Section 3B.08), edge line markings shall not be continued through intersections or major driveways.

03 If used on the roadways of divided highways or one-way streets, or on any ramp in the direction of travel, left edge line pavement markings shall consist of a normal solid yellow line to delineate the left-hand edge of a roadway or to indicate driving or passing restrictions left of these markings.

04 If used, right edge line pavement markings shall consist of a normal solid white line to delineate the right-hand edge of the roadway.

**Guidance:**

05 Edge line markings should not be broken for minor driveways.

**Support:**

06 Edge line markings have unique value as visual references to guide road users during adverse weather and visibility conditions.

**Option:**

07 Wide solid edge line markings may be used for greater emphasis.

**Section 3B.06 Edge Line Pavement Markings**

**Standard:**

01 If used, edge line pavement markings shall delineate the right or left edges of a roadway.

02 Except for dotted edge line extensions (see Section 3B.08), edge line markings shall not be continued through intersections or major driveways.

03 If used on the roadways of divided highways or one-way streets, or on any ramp in the direction of travel, left edge line pavement markings shall consist of a normal solid yellow line to delineate the left-hand edge of a roadway or to indicate driving or passing restrictions left of these markings.

04 If used, right edge line pavement markings shall consist of a normal solid white line to delineate the right-hand edge of the roadway.

**Guidance:**

05 Edge line markings should not be broken for minor driveways.

**Support:**

06 Edge line markings have unique value as visual references to guide road users during adverse weather and visibility conditions.

**Option:**

07 Wide solid edge line markings may be used for greater emphasis.

Paragraph 1 doesn't say left-hand, so we removed it in paragraphs 3 and 4.

3B.7 Warrants for Use of Edge Lines

Compliance Date: January 3, 2003

STANDARD:

Edge line markings shall be placed on paved streets or highways with the following characteristics:

- A. Freeways;
- B. Expressways; and
- C. Rural arterials with a traveled way of ~~6.1 m (20 ft)~~ or more in width and an ADT of 6,000 vehicles per day or greater.

Edge line markings should be placed on paved streets or highways with the following characteristics:

- A. Rural arterials and collectors with a traveled way of ~~6.1 m (20 ft)~~ or more in width and an ADT of 3,000 vehicles per day or greater.
- B. At other paved streets and highways where an engineering study indicates a need for edge line markings. Moved to Guidance

GUIDANCE:

Edge line markings should not be placed where an engineering study or engineering judgment indicates that providing them is likely to decrease safety.

OPTION:

Edge line markings may be placed on streets and highways with or without centerline markings.

Edge line markings may be excluded, based on engineering judgment, for reasons such as if the traveled way edges are delineated by curbs, parking, bicycle lanes, or other markings.

Edge line markings may be used where edge delineation is desirable to minimize unnecessary driving on paved shoulders or on refuge areas that have lesser structural pavement strength than the adjacent roadway.

~~Compliance Date: January 3, 2003~~

Section 3B.07 Warrants for Use of Edge Lines

Standard:

01 Edge line markings shall be placed on paved streets or highways with the following characteristics:

- A. Freeways,
- B. Expressways, and
- C. Rural arterials with a traveled way of 20 feet or more in width and an ADT of 6,000 vehicles per day or greater.

Guidance:

02 Edge line markings should be placed on paved streets or highways with the following characteristics:

- A. Rural arterials and collectors with a traveled way of 20 feet or more in width and an ADT of 3,000 vehicles per day or greater.
- B. ~~At On~~ other paved streets and highways where an engineering study indicates a need for edge line markings.

03 Edge line markings should not be placed where an engineering study or engineering judgment indicates that providing them is likely to decrease safety.

Option:

04 Edge line markings may be placed on streets and highways with or without center line markings.

05 Edge line markings may be excluded, based on engineering judgment, for reasons such as if the traveled way edges are delineated by curbs, parking, or other markings.

06 ~~If a bicycle lane is marked on the outside portion of the traveled way, the edge line that would mark the outside edge of the bicycle lane may be omitted.~~

07 Edge line markings may be used where edge delineation is desirable to minimize unnecessary driving on paved shoulders or on refuge areas that have lesser structural pavement strength than the adjacent roadway.

Section 3B.07 Warrants for Use of Edge Lines

Standard:

01 Edge line markings shall be placed on paved streets or highways with the following characteristics:

- A. Freeways,
- B. Expressways, and
- C. Rural arterials with a traveled way of 20 feet or more in width and an ADT of 6,000 vehicles per day or greater.

Guidance:

02 Edge line markings should be placed on paved streets or highways with the following characteristics:

- A. Rural arterials and collectors with a traveled way of 20 feet or more in width and an ADT of 3,000 vehicles per day or greater.
- B. ~~At On~~ other paved streets and highways where an engineering study indicates a need for edge line markings.

03 Edge line markings should not be placed where an engineering study or engineering judgment indicates that providing them is likely to decrease safety.

Option:

04 Edge line markings may be placed on streets and highways with or without center line markings.

05 Edge line markings may be excluded, based on engineering judgment, for reasons such as if the traveled way edges are delineated by curbs, parking, or other markings.

06 ~~If a bicycle lane is marked on the outside portion of the traveled way, the edge line that would mark the outside edge of the bicycle lane may be omitted.~~

07 Edge line markings may be used where edge delineation is desirable to minimize unnecessary driving on paved shoulders or on refuge areas that have lesser structural pavement strength than the adjacent roadway.

Ok

[From the list of known errors in the MUTCD \(as of 4/8/2011\) Section 3B.07 In Item B of Paragraph 2, the word "At" should be changed to "On."](#)

**3B.8 Extensions Through Intersections or Interchanges**

**STANDARD:**  
Pavement markings extended into or continued through an intersection or interchange area shall be the same color and at least the same width as the line markings they extend (see Figure 3B-11).

**OPTION:**  
A normal line may be used to extend a wide line through an intersection.

Where highway design or reduced visibility conditions make it desirable to provide control or to guide vehicles through an intersection or interchange, such as at offset, skewed, complex, or multi-legged intersections, on curved roadways, or where multiple turn lanes are used, dotted line markings may be used to extend longitudinal line markings through an intersection or interchange area. Moved to Guidance

Dotted edge line extensions may be placed through intersections or major driveways.

**GUIDANCE:**  
Where greater restriction is required, solid lane lines or channelizing lines should be extended into or continued through intersections or major driveways.

However, edge lines should not be extended into or continued through intersections or major driveways as solid lines. Moved to Standard

A single line of equal width to one of the lines of the double line should be used to extend a double line through an intersection.

To the extent possible, pavement marking extensions through intersections should be designed in a manner that minimizes potential confusion for drivers in adjacent or opposing lanes.

**Section 3B.08 Extensions Through Intersections or Interchanges**

**Standard:**  
01 Except as provided in Paragraph 2, pavement markings extended into or continued through an intersection or interchange area shall be the same color and at least the same width as the line markings they extend (see Figure 3B-13).

**Option:**  
02 A normal line may be used to extend a wide line through an intersection.

**Guidance:**  
03 Where highway design or reduced visibility conditions make it desirable to provide control or to guide vehicles through an intersection or interchange, such as at offset, skewed, complex, or multi-legged intersections, on curved roadways, where multiple turn lanes are used, or where offset left turn lanes might cause driver confusion, dotted line extension markings consisting of 2-foot line segments and 2- to 6-foot gaps should be used to extend longitudinal line markings through an intersection or interchange area.

**Option:**  
04 Dotted edge line extensions may be placed through intersections or major driveways.

**Guidance:**  
05 Where greater restriction is required, solid lane lines or channelizing lines should be extended into or continued through intersections or major driveways.

**Standard:**  
06 Solid lines shall not be used to extend edge lines into or through intersections or major driveways.

**Guidance:**  
07 Where a double line is extended through an intersection, a single line of equal width to one of the lines of the double line should be used.

08 To the extent possible, pavement marking extensions through intersections should be designed in a manner that minimizes potential confusion for drivers in adjacent or opposing lanes.

**Section 3B.08 Extensions Through Intersections or Interchanges**

**Standard:**  
01 Except as provided in Paragraph 2, pavement markings extended into or continued through an intersection or interchange area shall be the same color and at least the same width as the line markings they extend (see Figure 3B-13).

**Option:**  
02 A normal line may be used to extend a wide line through an intersection.

**Guidance:**  
03 Where highway design or reduced visibility conditions make it desirable to provide control or to guide vehicles through an intersection or interchange, such as at offset, skewed, complex, or multi-legged intersections, on curved roadways, where multiple turn lanes are used, or where offset left turn lanes might cause driver confusion, dotted line extension markings consisting of 2-foot line segments and 2- to 6-foot gaps should be used to extend longitudinal line markings through an intersection or interchange area.

**Option:**  
04 Dotted edge line extensions may be placed through intersections or major driveways.

**Guidance:**  
05 Where greater restriction is required, solid lane lines or channelizing lines should be extended into or continued through intersections or major driveways.

**Standard:**  
06 Solid lines shall not be used to extend edge lines into or through intersections or major driveways.

**Guidance:**  
07 Where a double line is extended through an intersection, a single line of equal width to one of the lines of the double line should be used.

08 To the extent possible, pavement marking extensions through intersections should be designed in a manner that minimizes potential confusion for drivers in adjacent or opposing lanes.

Ok

This might apply at future MnPass lanes.

3B.9 Lane Reduction Transition Markings

**Standard:** Where pavement markings are used, lane reduction transition markings shall be used to guide traffic through transition areas where the number of through lanes is reduced, as shown in Figure 3B-12. On two-way roadways, no-passing zone markings shall be used to prohibit passing in the direction of the convergence, and shall continue through the transition area.

**Guidance:** For roadways having a posted or statutory speed limit of 70 km/h (45 mph) or greater, the transition taper length for a lane reduction should be computed by the formula  $L = 0.62 WS$  for speeds in km/h ( $L = WS$  for speeds in mph). For roadways where the posted or statutory speed limit is less than 70 km/h (45 mph), the formula  $L = WS^2/155$  for speeds in km/h ( $L = WS^2/60$  for speeds in mph) should be used to compute taper length.

Under both formulas, L equals the taper length in meters (feet), W equals the width of the offset distance in meters (feet), and S equals the 85th-percentile speed or the posted or statutory speed limit, whichever is higher. Moved to Support

Where observed speeds exceed posted or statutory speed limits, longer tapers should be used.

Section 3B.09 Lane-Reduction Transition Markings

**Support:** 01 Lane-reduction transition markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. Lane-reduction transition markings are not used for lane drops.

**Standard:** 02 Except as provided in Paragraph 3, where pavement markings are used, lane-reduction transition markings shall be used to guide traffic through transition areas where the number of through lanes is reduced, as shown in Figure 3B-14. On two-way roadways, no-passing zone markings shall be used to prohibit passing in the direction of the convergence, and shall continue through the transition area.

**Option:** 03 On low-speed urban roadways where curbs clearly define the roadway edge in the lane-reduction transition, or where a through lane becomes a parking lane, the edge line and/or delineators shown in Figure 3B-14 may be omitted as determined by engineering judgment.

**Guidance:** 04 For roadways having a posted or statutory speed limit of 45 mph or greater, the transition taper length for a lane-reduction transition should be computed by the formula  $L = WS$ . For roadways where the posted or statutory speed limit is less than 45 mph, the formula  $L = WS^2/60$  should be used to compute the taper length.

**Support:** 05 Under both formulas, L equals the taper length in feet, W equals the width of the offset distance in feet, and S equals the 85th-percentile speed or the posted or statutory speed limit, whichever is higher.

**Guidance:** 06 Where observed speeds exceed posted or statutory speed limits, longer tapers should be used.

Section 3B.09 Lane-Reduction Transition Markings

**Support:** 01 Lane-reduction transition markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. Lane-reduction transition markings are not used for lane drops.

**Standard:** 02 Except as provided in Paragraph 3, where pavement markings are used, lane-reduction transition markings shall be used to guide traffic through transition areas where the number of through lanes is reduced, as shown in Figure 3B-14. On two-way roadways, no-passing zone markings shall be used to prohibit passing in the direction of the convergence, and shall continue through the transition area.

**Option:** 03 On low-speed urban roadways where curbs clearly define the roadway edge in the lane-reduction transition, or where a through lane becomes a parking lane, the edge line and/or delineators shown in Figure 3B-14 may be omitted as determined by engineering judgment.

**Guidance:** 04 For roadways having a posted or statutory speed limit of 45 mph or greater, the transition taper length for a lane-reduction transition should be computed by the formula  $L = WS$ . For roadways where the posted or statutory speed limit is less than 45 mph, the formula  $L = WS^2/60$  should be used to compute the taper length.

**Support:** 05 Under both formulas, L equals the taper length in feet, W equals the width of the offset distance in feet, and S equals the 85th-percentile speed or the posted or statutory speed limit, whichever is higher.

**Guidance:** 06 Where observed speeds exceed posted or statutory speed limits, longer tapers should be used.

What safety research has shown that the arrows are a benefit? Are these absolutely necessary? This would be costly for both MnDOT and especially local agencies. Ask Will Stein about this

Why not a dotted line at the end of the lane?

Ok Check with Janelle about language requiring delineators for lane-reduction (see figure 3B-14)

This contradicts Figure 3B.14.

Check RDM – Action for Jim Rosenow

Ok

**Option:**  
On new construction, where no posted or statutory speed limit is established, the design speed may be used in the transition taper length formula.

**Guidance:**  
Lane line markings should be discontinued one-quarter of the distance between the Lane Ends sign (see Section 2C.33) and the point where the transition taper begins.

Edge line markings should be installed from the location of the warning sign to beyond the beginning of the narrower roadway.

**Support:**  
Pavement markings at lane reduction transitions supplement the standard signs.

**Option:**  
07 On new construction, where no posted or statutory speed limit has been established, the design speed may be used in the transition taper length formula.

**Guidance:**  
08 Lane line markings should be discontinued one-quarter of the distance between the Lane Ends sign (see Section 2C.42) and the point where the transition taper begins.

09 Except as provided in Paragraph 3 for low-speed urban roadways, the edge line markings shown in Figure 3B-14 should be installed from the location of the Lane Ends warning sign to beyond the beginning of the narrower roadway.

**Support:**  
10 Pavement markings at lane-reduction transitions supplement the standard signs. See Section 3B.20 for provisions regarding use of lane-reduction arrows.

**Option:**  
07 On new construction, where no posted or statutory speed limit has been established, the design speed may be used in the transition taper length formula.

**Guidance:**  
08 Lane line markings should be discontinued one-quarter of the distance between the Lane Ends sign (see Section 2C.42) and the point where the transition taper begins.

09 Except as provided in Paragraph 3 for low-speed urban roadways, the edge line markings shown in Figure 3B-14 should be installed from the location of the Lane Ends warning sign to beyond the beginning of the narrower roadway.

**Support:**  
10 Pavement markings at lane-reduction transitions supplement the standard signs. See Section 3B.20 for provisions regarding use of lane-reduction arrows.

This is 200' from Figures 7.12 and 7.13  
This is 50' in Figure 7.14

Ok

This seems to support our position that lane reduction arrows shouldn't be required.

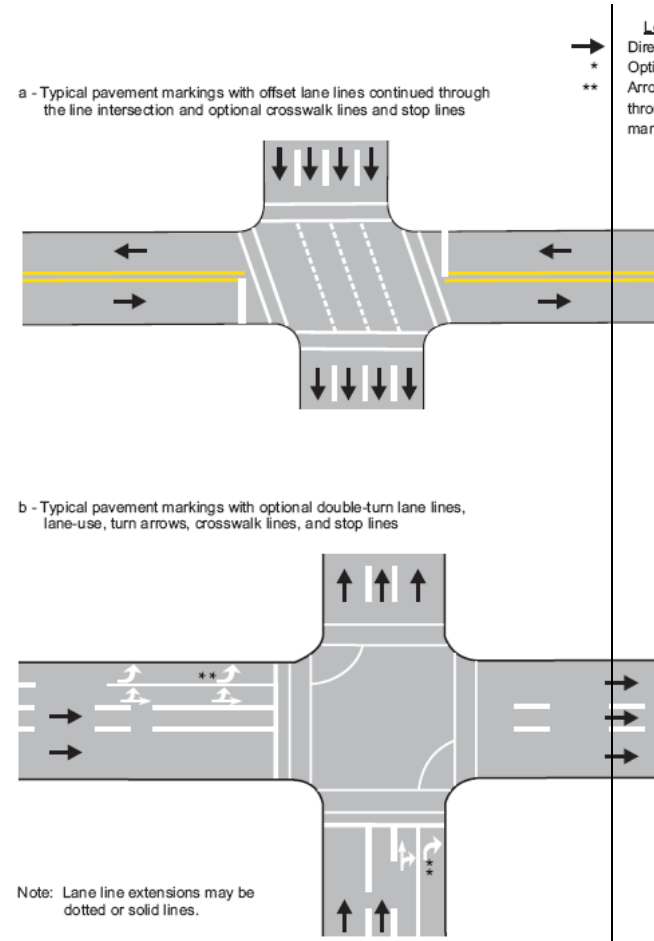
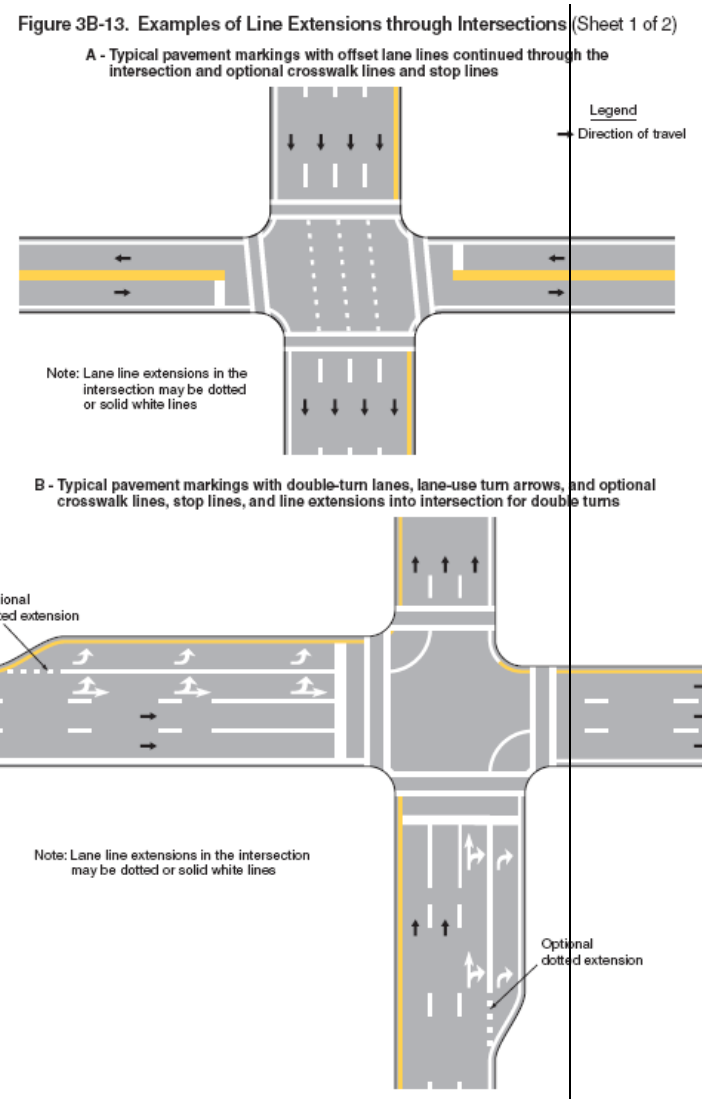


Figure 3B-11 Examples of Extensions through Intersections (Sheet 1 of 2)



Note is new

Dotted extension is shown

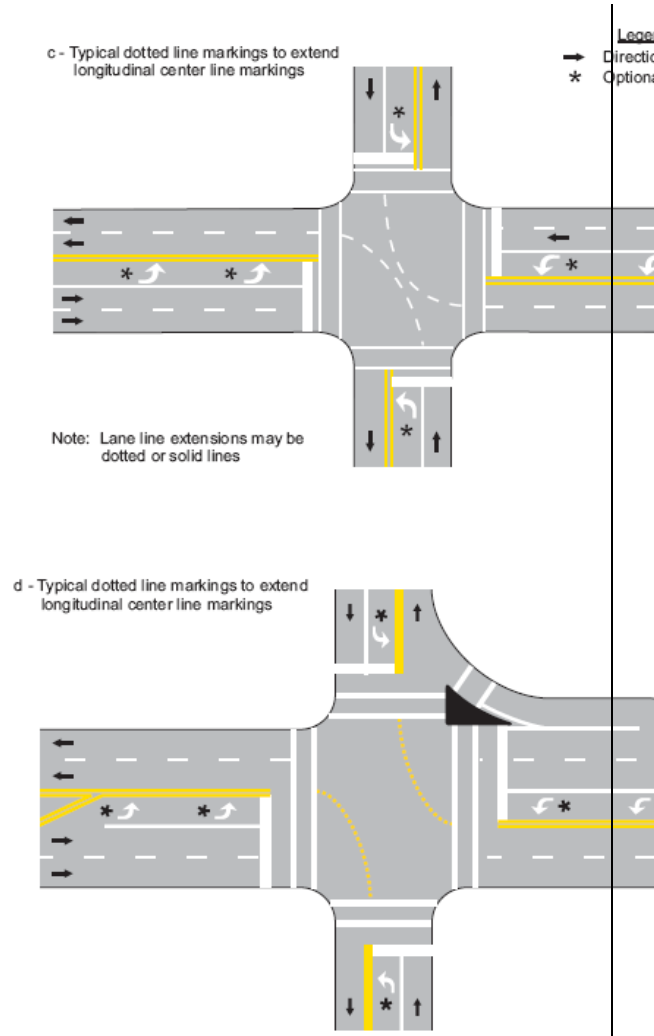
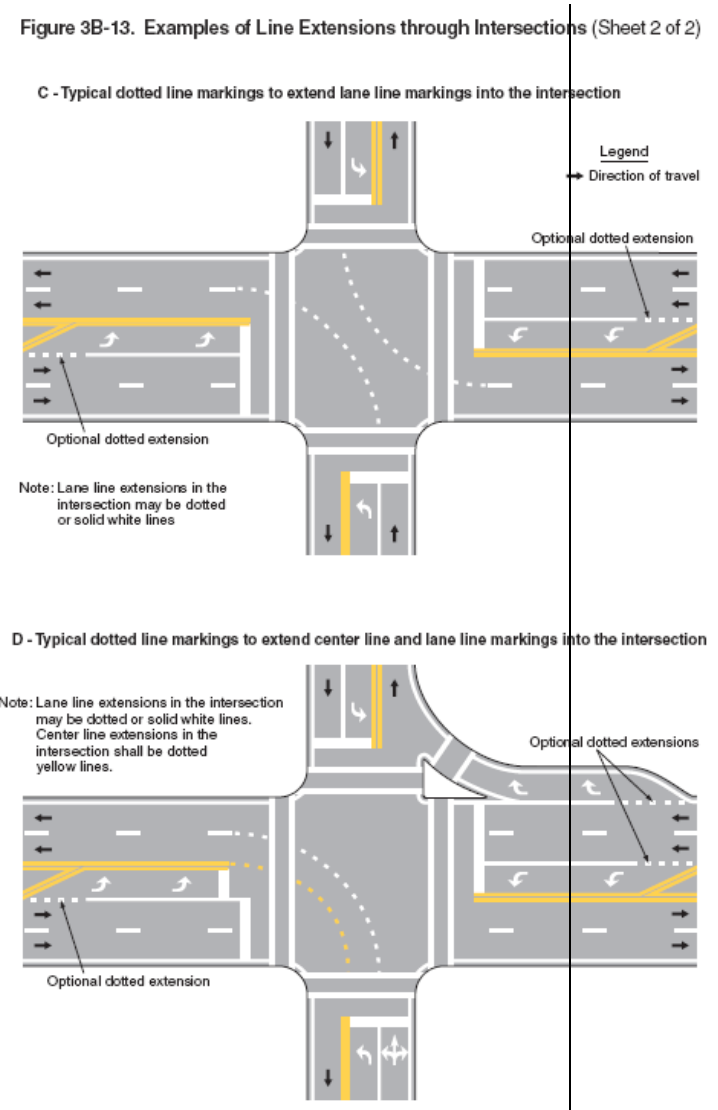


Figure 3B-11 Examples of Extensions through Intersections (Sheet 2 of 2)



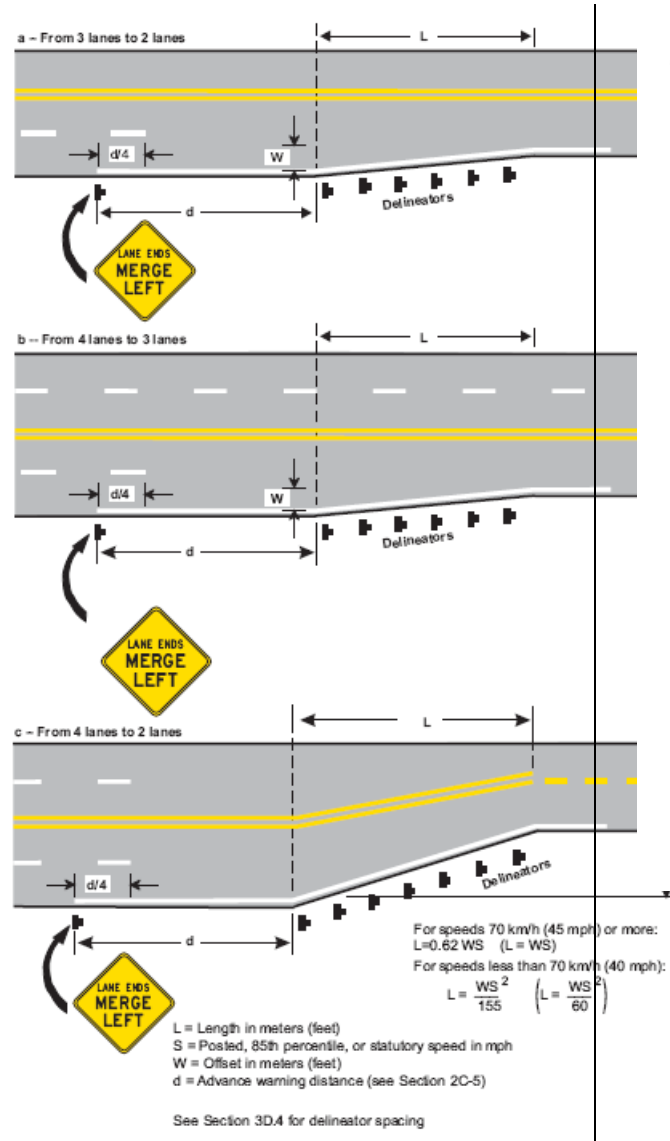
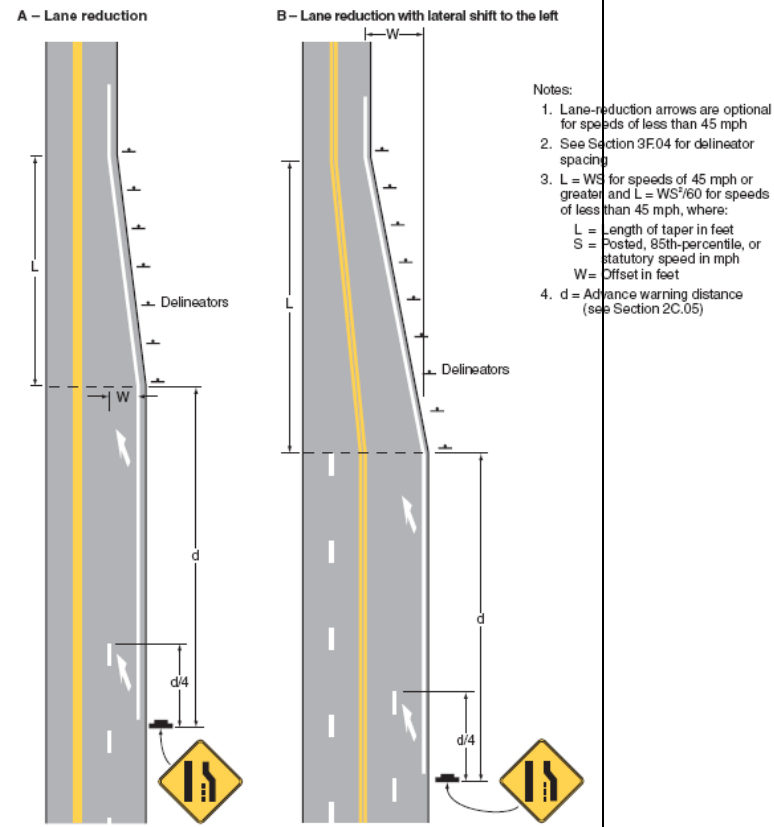


Figure 3B-12 Examples of Lane Reduction Markings

Figure 3B-14. Examples of Applications of Lane-Reduction Transition Markings



We want to eliminate the arrows as a shall.  
 Normal width dotted for xxx feet?

**3B.10 Approach Markings for Obstructions**

**Standard:**  
Pavement markings shall be used to guide traffic away from fixed obstructions within a paved roadway. Approach markings for bridge supports, refuge islands, median islands, and raised channelization islands shall consist of a tapered line or lines extending from the centerline or the lane line to a point ~~0.3 to 0.6 m~~ (1 to 2 ft) to the right side, or to both sides, of the approach end of the obstruction (see Figure 3B-13).

**Guidance:**  
For roadways having a posted or statutory speed limit of ~~70 km/h~~ (45 mph) or greater, the taper length of the tapered line markings should be computed by the formula  ~~$L = 0.62 WS$~~  for speeds in km/h (L = WS for speeds in mph). For roadways where the posted or statutory speed limit is less than ~~70 km/h~~ (45 mph), the formula  ~~$L = WS^2/155$~~  for speeds in km/h (L = WS<sup>2</sup>/60 for speeds in mph) should be used to compute taper length. Under both formulas, L equals the taper length in meters (feet), W equals the width of the offset distance in meters (feet), and S equals the 85th-percentile speed or the posted or statutory speed limit, whichever is higher. ~~Moved to Support~~

**Standard:**  
The minimum taper length shall be ~~30 m~~ (100 ft) in urban areas and ~~60 m~~ (200 ft) in rural areas. ~~Moved to Guidance~~

**Support:**  
Examples of approach markings for obstructions in the roadway are shown in Figure 3B-13.

**Option:**  
Where observed speeds exceed posted or statutory speed limits, longer tapers may be used.

**Section 3B.10 Approach Markings for Obstructions**  
**Standard:**

**Standard:**  
01 Pavement markings shall be used to guide traffic away from fixed obstructions within a paved roadway. Approach markings for bridge supports, refuge islands, median islands, toll plaza islands, and raised channelization islands shall consist of a tapered line or lines extending from the center line or the lane line to a point 1 to 2 feet to the right-hand side, or to both sides, of the approach end of the obstruction (see Figure 3B-15).

**Support:**  
02 See ~~Chapter 3E~~ for additional information on approach markings for toll plaza islands.

**Guidance:**  
03 For roadways having a posted or statutory speed limit of 45 mph or greater, the taper length of the tapered line markings should be computed by the formula L = WS. For roadways where the posted or statutory speed limit is less than 45 mph, the formula L = WS<sup>2</sup>/60 should be used to compute the taper length.

**Support:**  
04 Under both formulas, L equals the taper length in feet, W equals the width of the offset distance in feet, and S equals the 85th-percentile speed or the posted or statutory speed limit, whichever is higher.

**Guidance:**  
05 The minimum taper length should be 100 feet in urban areas and 200 feet in rural areas.

**Support:**  
06 Examples of approach markings for obstructions in the roadway are shown in Figure 3B-15.

**Section 3B.10 Approach Markings for Obstructions**  
**Standard:**

**Standard:**  
01 Pavement markings shall be used to guide traffic away from fixed obstructions within a paved roadway. Approach markings for bridge supports, refuge islands, median islands, toll plaza islands, and raised channelization islands shall consist of a tapered line or lines extending from the center line or the lane line to a point 1 to 2 feet to the right-hand side, or to both sides, of the approach end of the obstruction (see Figure 3B-15).

**Support:**  
02 See Chapter 3E for additional information on approach markings for toll plaza islands.

**Guidance:**  
03 For roadways having a posted or statutory speed limit of 45 mph or greater, the taper length of the tapered line markings should be computed by the formula L = WS. For roadways where the posted or statutory speed limit is less than 45 mph, the formula L = WS<sup>2</sup>/60 should be used to compute the taper length.

**Support:**  
04 Under both formulas, L equals the taper length in feet, W equals the width of the offset distance in feet, and S equals the 85th-percentile speed or the posted or statutory speed limit, whichever is higher.

**Guidance:**  
05 The minimum taper length should be 100 feet in urban areas and 200 feet in rural areas.

**Support:**  
06 Examples of approach markings for obstructions in the roadway are shown in Figure 3B-15.

**Option:**  
Where observed speeds exceed posted or statutory speed limits, longer tapers may be used.

Ok

Delete old Language ≠ No, keep it.

**Standard:**  
If traffic is required to pass only to the right of the obstruction, the markings shall consist of a two-direction no-passing zone marking at least twice the length of the diagonal portion as determined by the appropriate taper formula (see Figure 3B-13).

**Option:**  
If traffic is required to pass only to the right of the obstruction, yellow diagonal ~~approach~~ markings may be placed in the **neutral area** between the no-passing zone markings as shown in Figure 3B-13. Other markings, such as yellow delineators, raised pavement markers, and white crosswalk pavement markings, may also be placed in the **neutral area**.

**Standard:**  
If traffic can pass either to the right or left of the obstruction, the markings shall consist of two channelizing lines diverging from the lane line, one to each side of the obstruction. In advance of the point of divergence, a solid wide white line or solid double normal white line shall be extended in place of the broken lane line for a distance equal to the length of the diverging lines (see Figure 3B-13).

**Option:**  
If traffic can pass either to the right or left of the obstruction, additional white markings may be placed in the **neutral area** between the channelizing lines as shown in Figure 3B-13.

**Standard:**  
07 If traffic is required to pass only to the right of the obstruction, the markings shall consist of a two-direction no-passing zone marking at least twice the length of the diagonal portion as determined by the appropriate taper formula (see **Drawing A of Figure 3B-1**).

**Option:**  
08 If traffic is required to pass only to the right of the obstruction, yellow diagonal **crosshatch** markings (see **Section 3B.24**) may be placed in the **flush median area** between the no-passing zone markings as shown in **Drawings A and B of Figure 3B-1**. Other markings, such as yellow delineators, **yellow channelizing devices**, **yellow** raised pavement markers, and white crosswalk pavement markings, may also be placed in the **flush median area**.

**Standard:**  
09 If traffic can pass either to the right or left of the obstruction, the markings shall consist of two channelizing lines diverging from the lane line, one to each side of the obstruction. In advance of the point of divergence, a wide solid white line or normal solid double white line shall be extended in place of the broken lane line for a distance equal to the length of the diverging lines (see **Drawing C of Figure 3B-1**).

**Option:**  
10 If traffic can pass either to the right or left of the obstruction, additional white **chevron crosshatch** markings (see **Section 3B.24**) may be placed in the **flush median area** between the channelizing lines as shown in **Drawing C of Figure 3B-1**. Other markings, such as white delineators, white channelizing devices, white raised pavement markers, and white crosswalk markings may also be placed in the **flush median area**.

**Standard:**  
07 If traffic is required to pass only to the right of the obstruction, the markings shall consist of a two-direction no-passing zone marking at least twice the length of the diagonal portion as determined by the appropriate taper formula (see **Drawing A of Figure 3B-15**).

**Option:**  
08 If traffic is required to pass only to the right of the obstruction, yellow diagonal crosshatch markings (see **Section 3B.24**) may be placed in the **flush median area** between the no-passing zone markings as shown in **Drawings A and B of Figure 3B-15**. Other markings, such as yellow delineators, yellow channelizing devices, yellow raised pavement markers, and white crosswalk pavement markings, may also be placed in the flush median area.

**Standard:**  
09 If traffic can pass either to the right or left of the obstruction, the markings shall consist of two channelizing lines diverging from the lane line, one to each side of the obstruction. In advance of the point of divergence, a wide solid white line or normal solid double white line shall be extended in place of the broken lane line for a distance equal to the length of the diverging lines (see **Drawing C of Figure 3B-15**).

**Option:**  
10 If traffic can pass either to the right or left of the obstruction, additional white **chevron crosshatch** markings (see **Section 3B.24**) may be placed in the **flush median area** between the channelizing lines as shown in **Drawing C of Figure 3B-15**. Other markings, such as white delineators, white channelizing devices, white raised pavement markers, and white crosswalk markings may also be placed in the **flush median area**.

[Change neutral area to flush median area? Yes](#)

**3B.11 Raised Pavement Markers**

**Standard:**

A raised pavement marker shall be a device with a height of at least 40 mm (1.6 in) mounted on or in a road surface that is intended to be used as a positioning guide or to supplement or substitute for pavement markings or to mark the position of a fire hydrant.

The color of raised pavement markers under both daylight and nighttime conditions shall conform to the color of the marking for which they serve as a positioning guide, or for which they supplement or substitute.

**Option:**

Retroreflective and internally illuminated raised pavement markers are available in monodirectional and bidirectional configurations. The bidirectional marker is capable of displaying the applicable color for each direction of travel. Moved to Support

**Standard:**

Blue raised pavement markers may be used to mark the positions of fire hydrants. Moved to Support

**Section 3B.11 Raised Pavement Markers – General**

**Standard:**

01 The color of raised pavement markers under both daylight and nighttime conditions shall conform to the color of the marking for which they serve as a positioning guide, or for which they supplement or substitute.

**Option:**

02 The side of a raised pavement marker that is visible to traffic proceeding in the wrong direction may be red (see Section 3A.05).

03 Retroreflective or internally illuminated raised pavement markers may be used in the roadway immediately adjacent to curbed approach ends of raised medians and curbs of islands, or on top of such curbs (see Section 3B.23).

**Support:**

04 Retroreflective and internally illuminated raised pavement markers are available in mono-directional and bidirectional configurations. The bidirectional marker is capable of displaying the applicable color for each direction of travel.

05 Blue raised pavement markers are sometimes used in the roadway to help emergency personnel locate fire hydrants.

**Standard:**

06 When used, internally illuminated raised pavement markers shall be steadily illuminated and shall not be flashed.

**Support:**

07 Flashing raised pavement markers are considered to be In-Roadway Lights (see Chapter 4N).

**Section 3B.11 Raised Pavement Markers – General**

**Standard:**

01 The color of raised pavement markers under both daylight and nighttime conditions shall conform to the color of the marking for which they serve as a positioning guide, or for which they supplement or substitute.

**Option:**

02 The side of a raised pavement marker that is visible to traffic proceeding in the wrong direction may be red (see Section 3A.05).

03 Retroreflective or internally illuminated raised pavement markers may be used in the roadway immediately adjacent to curbed approach ends of raised medians and curbs of islands, or on top of such curbs (see Section 3B.23).

**Support:**

04 Retroreflective and internally illuminated raised pavement markers are available in mono-directional and bidirectional configurations. The bidirectional marker is capable of displaying the applicable color for each direction of travel.

05 Blue raised pavement markers are sometimes used in the roadway to help emergency personnel locate fire hydrants.

**Standard:**

06 When used, internally illuminated raised pavement markers shall be steadily illuminated and shall not be flashed.

**Support:**

07 Flashing raised pavement markers are considered to be In-Roadway Lights (see Chapter 4N).

Height requirements are covered in definition 168. Should we point to that in paragraph 1?

From 3B.14

Ok

OK

**Guidance:**

Nonretroreflective raised pavement markers should not be used alone, without supplemental retroreflective or internally illuminated markers, as a substitute for other types of pavement markings. Directional configurations should be used to maximize correct information and to minimize confusing information provided to the road user. Directional configurations also should be used to avoid confusion resulting from visibility of markers that do not apply to the road user. The spacing of raised pavement markers used to supplement or substitute for other types of longitudinal markings should correspond with the pattern of broken lines for which the markers supplement or substitute.

**Standard:**

The value of N for the spacing of raised pavement markers for a broken or dotted line shall equal the length of one line segment plus one gap. The value of N referenced for solid lines shall equal the N for the broken or dotted lines that might be adjacent to or might extend the solid lines (see Sections 3B.13 and 3B.14).

**Support:**

Figures 9-20 through 9-22 in the "Traffic Control Devices Handbook" (see Section 1A.11) contain additional information regarding the spacing of raised pavement markers on longitudinal markings.

**Guidance:**

08 Non-retroreflective raised pavement markers should not be used alone, without supplemental retroreflective or internally illuminated markers, as a substitute for other types of pavement markings.  
09 Directional configurations should be used to maximize correct information and to minimize confusing information provided to the road user. Directional configurations also should be used to avoid confusion resulting from visibility of markers that do not apply to the road user.  
10 The spacing of raised pavement markers used to supplement or substitute for other types of longitudinal markings should correspond with the pattern of broken lines for which the markers supplement or substitute.

**Standard:**

11 The value of N cited in Sections 3B.12 through 3B.14 for the spacing of raised pavement markers shall equal the length of one line segment plus one gap of the broken lines used on the highway.

**Option:**

12 For additional emphasis, retroreflective raised pavement markers may be spaced closer than described in Sections 3B.12 through 3B.14, as determined by engineering judgment or engineering study.

**Support:**

13 Figures 9-20 through 9-22 in the "Traffic Control Devices Handbook" (see Section 1A.11) contain additional information regarding the spacing of raised pavement markers on longitudinal markings.

**Guidance:**

08 Non-retroreflective raised pavement markers should not be used alone, without supplemental retroreflective or internally illuminated markers, as a substitute for other types of pavement markings.  
09 Directional configurations should be used to maximize correct information and to minimize confusing information provided to the road user. Directional configurations also should be used to avoid confusion resulting from visibility of markers that do not apply to the road user.  
10 The spacing of raised pavement markers used to supplement or substitute for other types of longitudinal markings should correspond with the pattern of broken lines for which the markers supplement or substitute.

**Standard:**

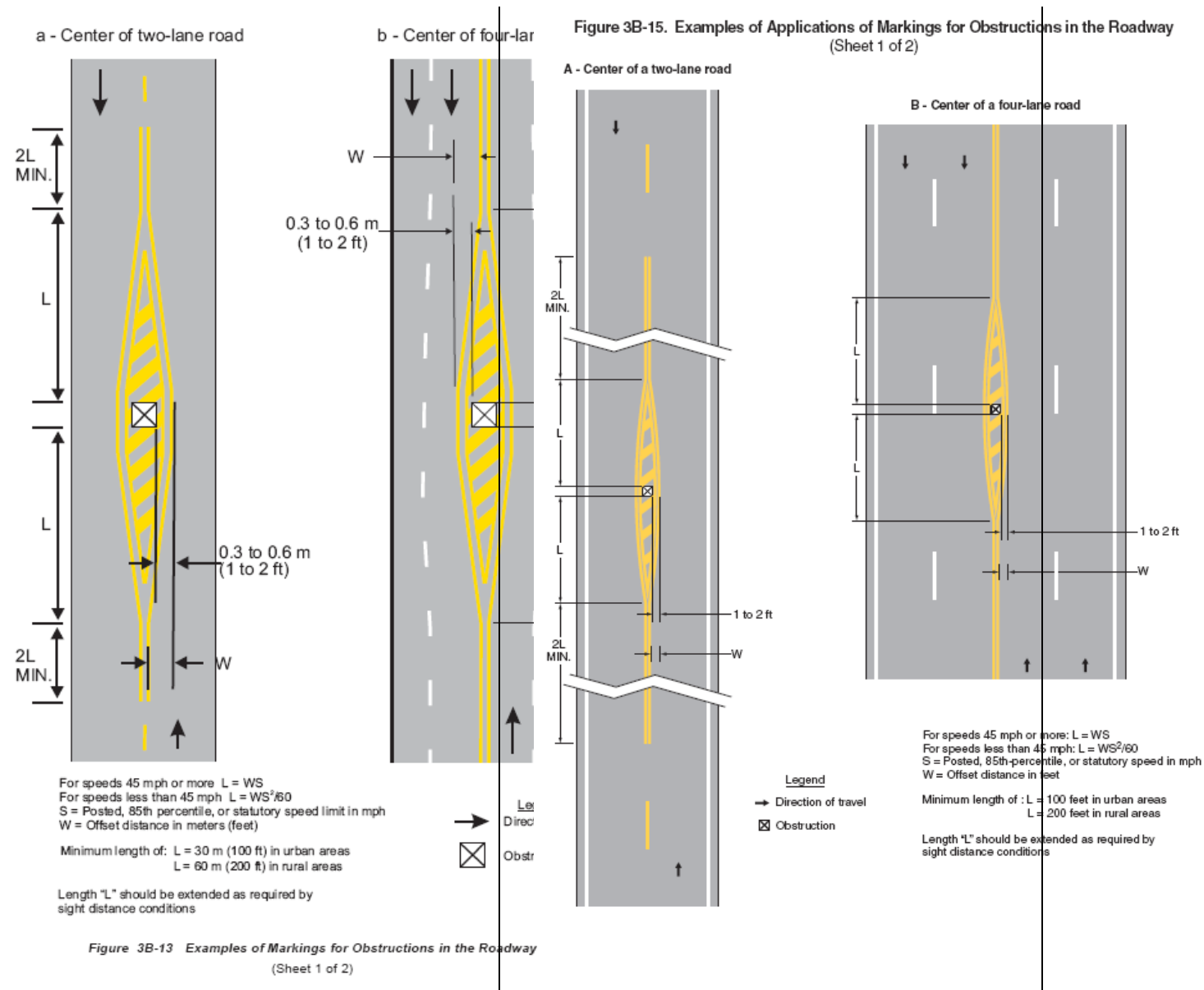
11 The value of N cited in Sections 3B.12 through 3B.14 for the spacing of raised pavement markers shall equal the length of one line segment plus one gap of the broken lines used on the highway.

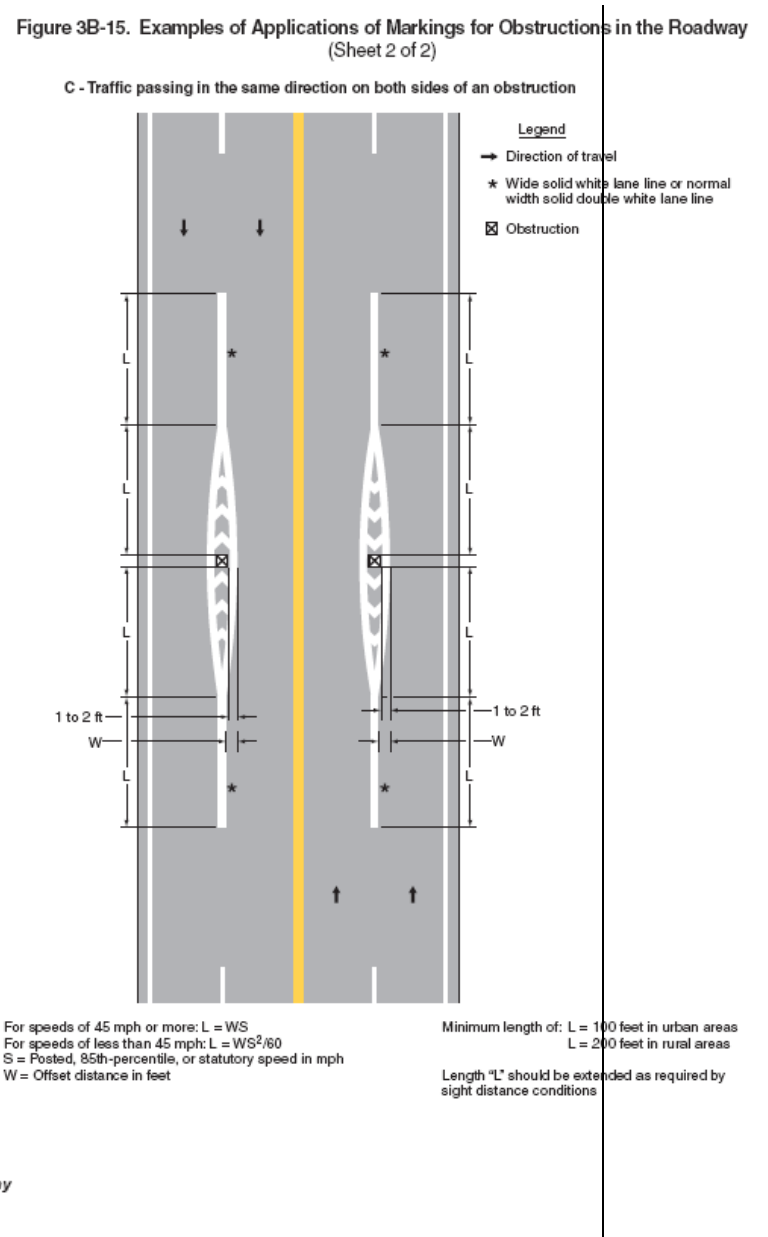
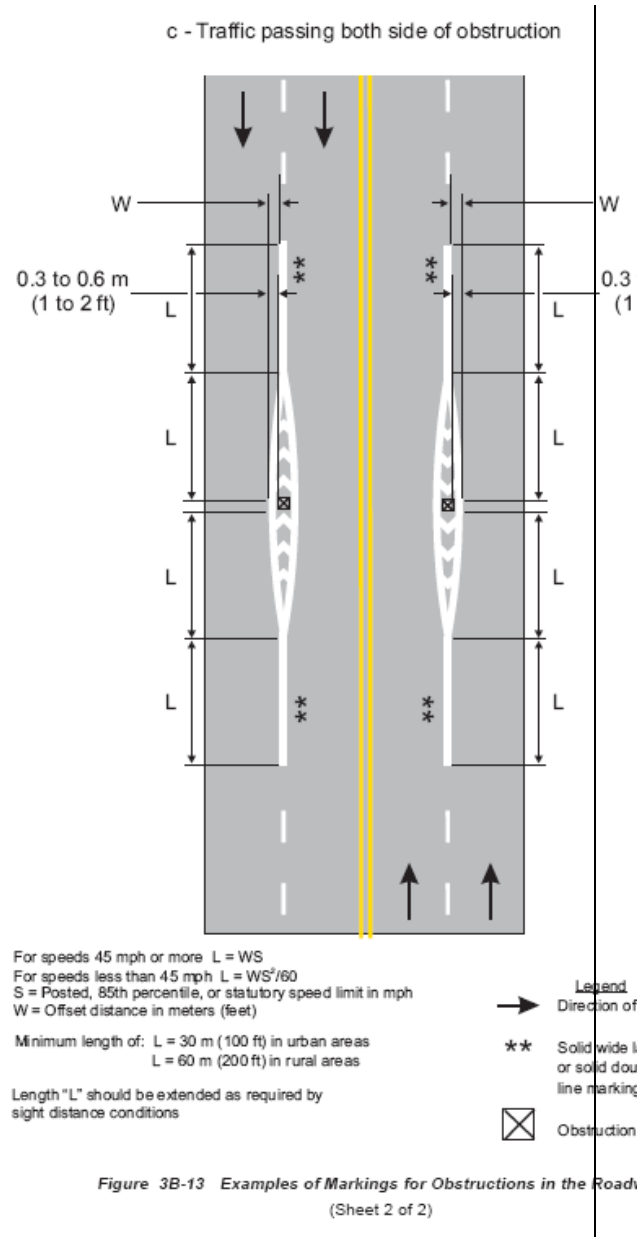
**Option:**

12 For additional emphasis, retroreflective raised pavement markers may be spaced closer than described in Sections 3B.12 through 3B.14, as determined by engineering judgment or engineering study.

**Support:**

13 Figures 9-20 through 9-22 in the "Traffic Control Devices Handbook" (see Section 1A.11) contain additional information regarding the spacing of raised pavement markers on longitudinal markings.





**3B.12 Raised Pavement Markers as Vehicle Positioning Guides with Other Longitudinal Markings**

**Option:**  
Raised pavement markers may be used as positioning guides with longitudinal line markings without necessarily conveying information to the road user about passing or lane-use restrictions. In such applications, markers may be positioned between the two lines of a one-way or two-way no-passing zone marking or positioned in line with or immediately adjacent to single solid or broken centerline or lane line markings.

**Support:**  
A typical spacing for such applications is 2N, where N equals the length of one line segment plus one gap (see Section 3B.11). Moved to Guidance

**Option:**  
Where it is desired to alert the road user to changes in the travel path, such as on sharp curves or on transitions that reduce the number of lanes or that shift traffic laterally, the spacing may be reduced to N or less.  
On freeways and expressways, a spacing of 3N may be used for relatively straight and level roadway segments where engineering judgment indicates that such spacing will provide adequate delineation under wet night conditions.

**Section 3B.12 Raised Pavement Markers as Vehicle Positioning Guides with Other Longitudinal Markings**

**Option:**  
01 Retroreflective or internally illuminated raised pavement markers may be used as positioning guides with longitudinal line markings without necessarily conveying information to the road user about passing or lane-use restrictions. In such applications, markers may be positioned in line with or immediately adjacent to a single line marking, or positioned between the two lines of a double center line or double lane line marking.

**Guidance:**  
02 The spacing for such applications should be 2N, where N equals the length of one line segment plus one gap (see Section 3B.11).

**Option:**  
03 Where it is desired to alert the road user to changes in the travel path, such as on sharp curves or on transitions that reduce the number of lanes or that shift traffic laterally, the spacing may be reduced to N or less.  
04 On freeways and expressways, the spacing may be increased to 3N for relatively straight and level roadway segments where engineering judgment indicates that such spacing will provide adequate delineation under wet night conditions.

**Section 3B.12 Raised Pavement Markers as Vehicle Positioning Guides with Other Longitudinal Markings**

**Option:**  
01 **Retroreflective or internally illuminated** raised pavement markers may be used as positioning guides with longitudinal line markings without necessarily conveying information to the road user about passing or lane-use restrictions. In such applications, markers may be positioned in line with or immediately adjacent to a single line marking, or positioned between the two lines of a double center line or double lane line marking.

**Guidance:**  
02 The spacing for such applications should be 2N, where N equals the length of one line segment plus one gap (see Section 3B.11).

**Option:**  
03 Where it is desired to alert the road user to changes in the travel path, such as on sharp curves or on transitions that reduce the number of lanes or that shift traffic laterally, the spacing may be reduced to N or less.  
04 On freeways and expressways, the spacing may be increased to 3N for relatively straight and level roadway segments where engineering judgment indicates that such spacing will provide adequate delineation under wet night conditions.

[End of Pavement Marking Task Force Meeting April 11, 2011.](#)

[Meeting 4/18](#)  
[Mitch](#)  
[Ted](#)  
[Sheila](#)  
[Cathy](#)  
[Kevin](#)

[Should stay as Support? - Yes](#)

**3B.13 Raised Pavement Markers Supplementing Other Markings**

**Guidance:**  
 The use of raised pavement markers for supplementing longitudinal line markings should conform to the following:

A. Lateral Positioning

1. When supplementing double line markings, pairs of raised pavement markers placed laterally in line with or immediately outside of the two lines should be used.
2. When supplementing wide line markings, pairs of raised pavement markers placed laterally adjacent to each other should be used.

B. Longitudinal Spacing

1. When supplementing solid line markings, raised pavement markers at a spacing no greater than N (see Section 3A.6) should be used, except when supplementing left edge line markings, a spacing no greater than N/2 should be used. **Raised markers should not supplement right edge linemarkings.**
2. When supplementing broken line markings, a spacing no greater than 3N should be used. However, when supplementing broken line markings identifying reversible lanes, a spacing no greater than N should be used.
3. When supplementing dotted line markings, a spacing appropriate for the application should be used.
4. When supplementing longitudinal line markings through at-grade intersections, one raised pavement marker for each short line segment should be used.
5. When supplementing edge line extensions through freeway interchanges, a spacing of no greater than N should be used.

**Section 3B.13 Raised Pavement Markers Supplementing Other Markings**

**Guidance:**  
 01 The use of retroreflective or internally illuminated raised pavement markers for supplementing longitudinal line markings should comply with the following:

A. Lateral Positioning

1. When supplementing double line markings, pairs of raised pavement markers placed laterally in line with or immediately outside of the two lines should be used.
2. When supplementing wide line markings, pairs of raised pavement markers placed laterally adjacent to each other should be used.

B. Longitudinal Spacing

1. When supplementing solid line markings, raised pavement markers at a spacing no greater than N (see Section 3B.11) should be used, except that when supplementing channelizing lines or edge line markings, a spacing of no greater than N/2 should be used.
2. When supplementing broken line markings, a spacing no greater than 3N should be used. However, when supplementing broken line markings identifying reversible lanes, a spacing of no greater than N should be used.
3. When supplementing dotted lane line markings, a spacing appropriate for the application should be used.
4. When supplementing longitudinal line extension markings through at-grade intersections, one raised pavement marker for each short line segment should be used.
5. When supplementing line extensions through freeway interchanges, a spacing of no greater than N should be used.

02 Raised pavement markers should not supplement right-hand edge lines unless an engineering study or engineering judgment indicates the benefits of enhanced delineation of a curve or other location would outweigh possible impacts on bicycles using the shoulder, and the spacing of raised pavement markers on the right-hand edge is close enough to avoid misinterpretation as a broken line during wet night conditions.

**Section 3B.13 Raised Pavement Markers Supplementing Other Markings**

**Guidance:**  
 01 The use of retroreflective or internally illuminated raised pavement markers for supplementing longitudinal line markings should comply with the following:

A. Lateral Positioning

1. When supplementing double line markings, pairs of raised pavement markers placed laterally in line with or immediately outside of the two lines should be used.
2. When supplementing wide line markings, pairs of raised pavement markers placed laterally adjacent to each other should be used.

B. Longitudinal Spacing

1. When supplementing solid line markings, raised pavement markers at a spacing no greater than N (see Section 3B.11) should be used, except that when supplementing channelizing lines or edge line markings, a spacing of no greater than N/2 should be used.
2. When supplementing broken line markings, a spacing no greater than 3N should be used. However, when supplementing broken line markings identifying reversible lanes, a spacing of no greater than N should be used.
3. When supplementing dotted lane line markings, a spacing appropriate for the application should be used.

This is stated in Line 02 below

**Option:**  
Raised pavement markers also may be used to supplement other markings for channelizing islands or approaches to obstructions.

02 Raised pavement markers should not supplement right-hand edge lines unless an engineering study or engineering judgment indicates the benefits of enhanced delineation of a curve or other location would outweigh possible impacts on bicycles using the shoulder, and the spacing of raised pavement markers on the right-hand edge is close enough to avoid misinterpretation as a broken line during wet night conditions.

**Option:**  
03 Raised pavement markers also may be used to supplement other markings such as channelizing islands, **gore areas, approaches to obstructions, or wrong-way arrows.**

04 To improve the visibility of horizontal curves, center lines may be supplemented with retroreflective or internally illuminated raised pavement markers for the entire curved section as well as for a distance in advance of the curve that approximates 5 seconds of travel time.

4. When supplementing longitudinal line extension markings through at-grade intersections, one raised pavement marker for each short line segment should be used.

5. When supplementing line extensions through freeway interchanges, a spacing of no greater than N should be used.

02 Raised pavement markers should not supplement right-hand edge lines unless an engineering study or engineering judgment indicates the benefits of enhanced delineation of a curve or other location would outweigh possible impacts on bicycles using the shoulder, and the spacing of raised pavement markers on the right-hand edge is close enough to avoid misinterpretation as a broken line during wet night conditions.

**Option:**  
03 Raised pavement markers also may be used to supplement other markings such as channelizing islands, **gore areas, approaches to obstructions, or wrong-way arrows.**

04 **To improve the visibility of horizontal curves, center lines may be supplemented with retroreflective or internally illuminated raised pavement markers for the entire curved section as well as for a distance in advance of the curve that approximates 5 seconds of travel time.**

OK to adopt

**3B.14 Raised Pavement Markers  
Substituting for Pavement Markings**

**Option:**  
Retroreflective or internally illuminated raised pavement markers, or nonretroreflective raised pavement markers supplemented by retroreflective or internally illuminated markers, may be substituted for markings of other types.

**Guidance:**  
If used, the pattern and color of the raised pavement markers should simulate the pattern and color of the markings for which they substitute.

The normal spacing of raised pavement markers, when substituting for other markings, should be determined in terms of the standard length of the broken line segment.

**Standard:**  
If raised pavement markers are used to substitute for broken line markings, a group of three to five markers equally spaced at a distance no greater than N/8 (see Section 3B.11) shall be used. If N is other than ~~42-m~~ (40 ft), the markers shall be equally spaced over the line segment length (at 1/2 points for 3 markers, at 1/3 points for 4 markers, and at 1/4 points for 5 markers). At least one retroreflective or internally illuminated marker per group shall be used or a retroreflective or internally illuminated marker shall be installed midway in each gap between successive groups of nonretroreflective markers.  
When raised pavement markers substitute for solid lane line markings, the markers shall be equally spaced at no greater than N/4, with retroreflective or internally illuminated units at a spacing no greater than N/2.

**Guidance:**  
Raised pavement markers should not substitute for right edge line markings.

**Section 3B.14 Raised Pavement Markers  
Substituting for Pavement Markings**

**Option:**  
01 Retroreflective or internally illuminated raised pavement markers, or non-retroreflective raised pavement markers supplemented by retroreflective or internally illuminated markers, may be substituted for markings of other types.

**Guidance:**  
02 If used, the pattern of the raised pavement markers should simulate the pattern of the markings for which they substitute.

**Standard:**  
03 If raised pavement markers are used to substitute for broken line markings, a group of three to five markers equally spaced at a distance no greater than N/8 (see Section 3B.11) shall be used. If N is other than 40 feet, the markers shall be equally spaced over the line segment length (at 1/2 points for three markers, at 1/3 points for four markers, and at 1/4 points for five markers). At least one retroreflective or internally illuminated marker per group shall be used or a retroreflective or internally illuminated marker shall be installed midway in each gap between successive groups of non retroreflective markers.

04 When raised pavement markers substitute for solid line markings, the markers shall be equally spaced at no greater than N/4, with retroreflective or internally illuminated units at a spacing no greater than N/2.

**Guidance:**  
05 Raised pavement markers should not substitute for right-hand edge line markings unless an engineering study or engineering judgment indicates the benefits of enhanced delineation of a curve or other location would outweigh possible impacts on bicycles using the shoulder, and the spacing of raised pavement markers on the right-hand edge line is close enough to avoid misinterpretation as a broken line during wet night conditions.

**Section 3B.14 Raised Pavement Markers  
Substituting for Pavement Markings**

**Option:**  
01 Retroreflective or internally illuminated raised pavement markers, or non-retroreflective raised pavement markers supplemented by retroreflective, or internally illuminated markers, may be substituted for markings of other types.

**Guidance:**  
02 If used, the pattern of the raised pavement markers should simulate the pattern of the markings for which they substitute.

**Standard:**  
03 If raised pavement markers are used to substitute for broken line markings, a group of three to five markers equally spaced at a distance no greater than N/8 (see Section 3B.11) shall be used. If N is other than 40 feet, the markers shall be equally spaced over the line segment length (at 1/2 points for three markers, at 1/3 points for four markers, and at 1/4 points for five markers). At least one retroreflective or internally illuminated marker per group shall be used or a retroreflective or internally illuminated marker shall be installed midway in each gap between successive groups of non retroreflective markers.

04 When raised pavement markers substitute for solid line markings, the markers shall be equally spaced at no greater than N/4, with retroreflective or internally illuminated units at a spacing no greater than N/2.

**Guidance:**  
05 Raised pavement markers should not substitute for right-hand edge line markings unless an engineering study or engineering judgment indicates the benefits of enhanced delineation of a curve or other location would outweigh possible impacts on bicycles using the shoulder, and the spacing of raised pavement markers on the right-hand edge line is close enough to avoid misinterpretation as a broken line during wet night conditions.

Keep old language?

N/10?  
N=50' in MN

N/5?

**Standard:**

When raised pavement markers substitute for dotted lines, they shall be spaced at no greater than N/4, with not less than one raised pavement marker per dotted line. At least one raised marker every N shall be retroreflective or internally illuminated.

**Option:**

When substituting for wide lines, raised pavement markers may be placed laterally adjacent to each other to simulate the width of the line.

**Option:**

The side of a raised pavement marker that is visible to traffic proceeding in the wrong direction may be red.  
Moved to 3B.11 Option

**Standard:**

06 When raised pavement markers substitute for dotted lines, they shall be spaced at no greater than N/4, with not less than one raised pavement marker per dotted line segment. At least one raised marker every N shall be retroreflective or internally illuminated.

**Option:**

07 When substituting for wide lines, raised pavement markers may be placed laterally adjacent to each other to simulate the width of the line.

**Standard:**

06 When raised pavement markers substitute for dotted lines, they shall be spaced at no greater than N/4, with not less than one raised pavement marker per dotted line segment. At least one raised marker every N shall be retroreflective or internally illuminated.

**Option:**

07 When substituting for wide lines, raised pavement markers may be placed laterally adjacent to each other to simulate the width of the line.

N=50'; we want to say N/5  
Check with Chapter 6 section on TRPMs

OK with move to 3B.11

End 4-18-2011

End 11/17 Update

**3B.15 Transverse Markings**

**Standard:**  
Transverse markings, which include shoulder markings, word and symbol markings, stop lines, yield lines, crosswalk lines, speed measurement markings, speed hump markings, parking space markings and others, shall be white unless otherwise specified herein.

**Guidance:**  
Because of the low approach angle at which pavement markings are viewed, transverse lines should be proportioned to provide visibility equal to that of longitudinal lines.

Pavement marking letters, numerals, and symbols shall be installed in accordance with the Mn/DOT "Standard Signs Manual" (see Map & Manual Sales Unit, page ii). Moved to Standard in Section 3B.20

**Section 3B.15 Transverse Markings**

**Standard:**  
01 Transverse markings, which include shoulder markings, word and symbol markings, **arrows**, stop lines, yield lines, crosswalk lines, speed measurement markings, **speed reduction markings**, speed hump markings, parking space markings, and others, shall be white unless otherwise provided in this Manual.

**Guidance:**  
02 Because of the low approach angle at which pavement markings are viewed, transverse lines should be proportioned to provide visibility at least equal to that of longitudinal lines.

**Section 3B.15 Transverse Markings**

**Standard:**  
01 Transverse markings, which include shoulder markings, word and symbol markings, **arrows**, stop lines, yield lines, crosswalk lines, speed measurement markings, **speed reduction markings**, speed hump markings, parking space markings, and others, shall be white unless otherwise provided in this Manual.

**Guidance:**  
02 Because of the low approach angle at which pavement markings are viewed, transverse lines should be proportioned to provide visibility at least equal to that of longitudinal lines.

Start of Pavement Marking Task Force 4/25/11  
Present:  
Ken  
Ted  
Joe  
Jim

Changed to: "Pavement Markings chapter of the "Standard Highway Signs and Markings" book"

3B.16 Stop and Yield Lines

**Guidance:**  
Stop lines should be used to indicate the point behind which vehicles are required to stop, in compliance with ~~a STOP sign, traffic control signal, or some other traffic control device, except YIELD signs.~~

**Option:**  
Yield lines may be used to indicate the point behind which vehicles are required to yield in compliance with a YIELD sign.

**Standard:**  
~~If used, s~~ Stop lines shall consist of solid white lines extending across approach lanes to indicate the point at which the stop is intended or required to be made.

~~If used, y~~ Yield lines (see Figure 3B-14) shall consist of a row of solid white isosceles triangles pointing toward approaching vehicles extending across approach lanes to indicate the point at which the yield is intended or required to be made (see Figure 3B-14).

Section 3B.16 Stop and Yield Lines

**Guidance:**  
01 Stop lines should be used to indicate the point behind which vehicles are required to stop in compliance with a traffic control signal.

**Option:**  
02 Stop lines may be used to indicate the point behind which vehicles are required to stop in compliance with a STOP (R1-1) sign, a Stop Here For Pedestrians (R1-5b or R1-5c) sign, or some other traffic control device that requires vehicles to stop, except YIELD signs that are not associated with passive grade crossings.

03 Yield lines may be used to indicate the point behind which vehicles are required to yield in compliance with a YIELD (R1-2) sign or a Yield Here To Pedestrians (R1-5 or R1-5a) sign.

**Standard:**  
04 Except as provided in Section 8B.28, stop lines shall not be used at locations where drivers are required to yield in compliance with a YIELD (R1-2) sign or a Yield Here To Pedestrians (R1-5 or R1-5a) sign or at locations on uncontrolled approaches where drivers are required by State law to yield to pedestrians.

05 Yield lines shall not be used at locations where drivers are required to stop in compliance with a STOP (R1-1) sign, a Stop Here For Pedestrians (R1-5b or R1-5c) sign, a traffic control signal, or some other traffic control device.

06 stop lines shall consist of solid white lines extending across approach lanes to indicate the point at which the stop is intended or required to be made.

07 yield lines (see Figure 3B-16) shall consist of a row of solid white isosceles triangles pointing toward approaching vehicles extending across approach lanes to indicate the point at which the yield is intended or required to be made.

Section 3B.16 Stop and Yield Lines

**Guidance:**  
01 Stop lines should be used to indicate the point behind which vehicles are required to stop in compliance with a traffic control signal.

**Option:**  
02 Stop lines may be used to indicate the point behind which vehicles are required to stop in compliance with a STOP (R1-1) sign, a Stop Here For Pedestrians (R1-5b or R1-5c) sign, or some other traffic control device that requires vehicles to stop, except YIELD signs that are not associated with passive grade crossings.

03 Yield lines may be used to indicate the point behind which vehicles are required to yield in compliance with a YIELD (R1-2) sign or a Yield Here To Pedestrians (R1-5 or R1-5a) sign.

**Support:**  
Crosswalk markings of a longitudinal width of 24 inches or greater may provide adequate indication to drivers of the required stopping location in lieu of stop lines.

**Standard:**  
04 Except as provided in Section 8B.28, stop lines shall not be used at locations where drivers are required to yield in compliance with a YIELD (R1-2) sign or a Yield Here To Pedestrians (R1-5 or R1-5a) sign or at locations on uncontrolled approaches where drivers are required by State law to yield to pedestrians.

05 Yield lines shall not be used at locations where drivers are required to stop in compliance with a STOP (R1-1) sign, a Stop Here For Pedestrians (R1-5b or R1-5c) sign, a traffic control signal, or some other traffic control device.

06 Stop lines shall consist of solid white lines extending across approach lanes to indicate the point at which the stop is intended or required to be made.

07 Yield lines (see Figure 3B-16) shall consist of a row of solid white isosceles triangles pointing toward approaching vehicles extending across approach lanes to indicate

the point at which the yield is intended or required to be made.

The Chapter 3 Task Force felt it was important to allow the absence of stop lines when there are crosswalks at a signalized intersection.

**Guidance:**  
Stop lines should be ~~300 to 600 mm~~ (12 to 24 in) wide.

The individual triangles comprising the yield line should have a base of ~~0.3 to 0.6 m~~ (12 to 24 in) wide and a height equal to 1.5 times the base. The space between the triangles should be ~~75 to 300 mm~~ (3 to 12 in).

If used, stop lines should be placed a minimum of ~~4.2 m~~ (4 ft) in advance of the nearest crosswalk line at controlled intersections and at mid-block crosswalks. In the absence of a marked crosswalk, the stop line or yield line should be placed at the desired stopping or yielding point, but should be placed no more than ~~9 m~~ (30 ft) nor less than ~~4.2 m~~ (4 ft) from the nearest edge of the intersecting traveled way. **Stop lines should be placed to allow sufficient sight distance for all other approaches to an intersection.**

Stop lines at midblock signalized locations should be placed at least ~~12 m~~ (40 ft) in advance of the nearest signal indication (see Section 4D.15).

**Support:**  
Drivers who stop too close to crosswalks on multi-lane approaches place pedestrians at risk by blocking other drivers' views of pedestrians. **Section 8B.21 contains information regarding the placement of stop and yield line markings at highway-rail grade crossings.**

**Guidance:**  
08 Stop lines should be 12 to 24 inches wide.

09 The individual triangles comprising the yield line should have a base of 12 to 24 inches wide and a height equal to 1.5 times the base. The space between the triangles should be 3 to 12 inches.

10 If used, stop **and yield lines** should be placed a minimum of 4 feet in advance of the nearest crosswalk line at controlled intersections, **except for yield lines at roundabouts as provided for in Section 3C.03** and at midblock crosswalks. In the absence of a marked crosswalk, the stop line or yield line should be placed at the desired stopping or yielding point, but should not be placed more than 30 feet or less than 4 feet from the nearest edge of the intersecting traveled way.

11 Stop lines at midblock signalized locations should be placed at least 40 feet in advance of the nearest signal indication (see **Section 4D.14**).

**12 If yield or stop lines are used at a crosswalk that crosses an uncontrolled multi-lane approach, the yield lines or stop lines should be placed 20 to 50 feet in advance of the nearest crosswalk line, and parking should be prohibited in the area between the yield or stop line and the crosswalk (see Figure 3B-17).**

**Standard:**  
13 If yield (stop) lines are used at a crosswalk that crosses an uncontrolled multi-lane approach, Yield Here To (Stop Here For) Pedestrians (R1-5 series) signs (see **Section 2B.11**) shall be used.

**Guidance:**  
14 Yield (stop) lines and Yield Here To (Stop Here For) Pedestrians signs should not be used in advance of crosswalks that cross an approach to or departure from a roundabout.

**Support:**  
15 When drivers **yield or stop** too close to crosswalks **that cross uncontrolled** multi-lane approaches, they place pedestrians at risk by blocking other drivers' views of pedestrians **and by blocking pedestrians' views of vehicles approaching in the other lanes.**

**Guidance:**  
08 Stop lines should be 12 to 24 inches wide.

09 The individual triangles comprising the yield line should have a base of 12 to 24 inches wide and a height equal to 1.5 times the base. The space between the triangles should be 3 to 12 inches.

10 If used, stop and yield lines should be placed a minimum of 4 feet in advance of the nearest crosswalk line at controlled intersections, except for yield lines at roundabouts as provided for in Section 3C.04 and at midblock crosswalks. In the absence of a marked crosswalk, the stop line or yield line should be placed at the desired stopping or yielding point, but should not be placed more than 30 feet or less than 4 feet from the nearest edge of the intersecting traveled way. **Stop lines should be placed to allow sufficient sight distance from the stopped location to all other approaches to an intersection.**

11 Stop lines at midblock signalized locations should be placed at least 40 feet in advance of the nearest signal indication (see Section 4D.14).

12 **If yield or stop lines are used at a crosswalk that crosses an uncontrolled multi-lane approach, the yield lines or stop lines should be placed 20 to 50 feet in advance of the nearest crosswalk line, and parking should be prohibited in the area between the yield or stop line and the crosswalk (see Figure 3B-17).**

**Standard:**  
13 If yield (stop) lines are used at a crosswalk that crosses an uncontrolled multi-lane approach, Yield Here To (Stop Here For) Pedestrians (R1-5 series) signs (see Section 2B.11) shall be used.

**Guidance:**  
14 **Yield (stop) lines and Yield Here To (Stop Here For) Pedestrians signs should not be used in advance of crosswalks that cross an approach to or departure from a roundabout.**

**Support:**  
15 When drivers **yield or stop** too close to crosswalks **that cross uncontrolled** multi-lane approaches, they place pedestrians at risk by blocking other drivers' views of

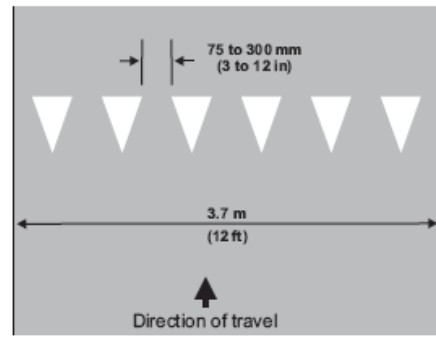
pedestrians **and by blocking pedestrians' views of vehicles approaching in the other lanes.**

Keep MN language? Yes, and modified slightly – the task force felt that this is useful guidance.

Should be in Sign section, include here anyway? Yes.

Ok

a - Minimum dimensions



b - Maximum dimensions

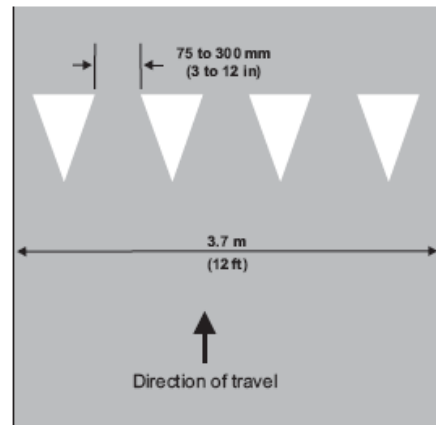
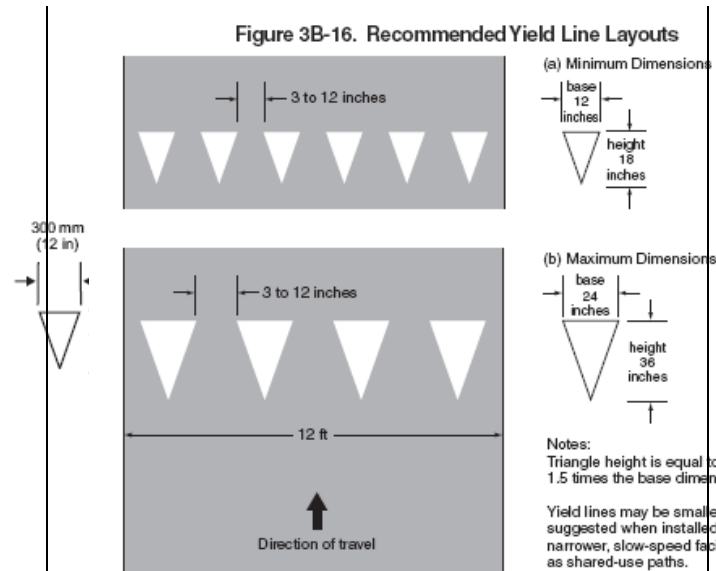


Figure 3B-14 Examples of Yield Line Layouts

Figure 3B-16. Recommended Yield Line Layouts



Notes:  
Triangle length is equal to 1.5 times the base dimension

Yield lines may be smaller than suggested when installed on much narrower, slow-speed facilities such as shared-use paths

3B-14 -> 3B-16

No Equivalent Section

**Section 3B.17 Do Not Block Intersection Markings**

**Option:**

01 Do Not Block Intersection markings may be used to mark the edges of an intersection area that is in close proximity to a signalized intersection, railroad crossing, or other nearby traffic control that might cause vehicles to stop within the intersection and impede other traffic entering the intersection. If authorized by law, Do Not Block Intersection markings with appropriate signs may also be used at other locations.

**Standard:**

02 If used, Do Not Block Intersection markings (see [Figure 3B-18](#)) shall consist of one of the following alternatives:

- A. Wide solid white lines that outline the intersection area that vehicles must not block;
- B. Wide solid white lines that outline the intersection area that vehicles must not block and a white word message such as DO NOT BLOCK or KEEP CLEAR;
- C. Wide solid white lines that outline the intersection area that vehicles must not block and white cross-hatching within the intersection area; or
- D. A white word message, such as DO NOT BLOCK or KEEP CLEAR, within the intersection area that vehicles must not block.

03 Do Not Block Intersection markings shall be accompanied by one or more Do Not Block Intersection (DRIVEWAY) (CROSSING) (R10-7) signs (see [Section 2B.53](#)), one or more Do Not Stop On Tracks (R8-8) signs (see Section 8B.09), or one or more similar signs.

**Section 3B.17 Do Not Block Intersection Markings**

**Option:**

01 Do Not Block Intersection markings may be used to mark the edges of an intersection area that is in close proximity to a signalized intersection, railroad crossing, or other nearby traffic control that might cause vehicles to stop within the intersection and impede other traffic entering the intersection. If authorized by law, Do Not Block Intersection markings with appropriate signs may also be used at other locations.

**Standard:**

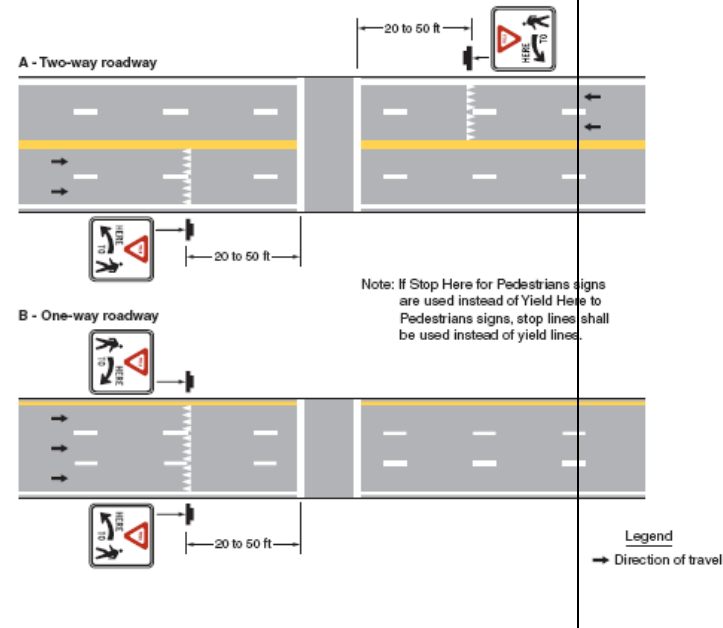
02 If used, Do Not Block Intersection markings (see Figure 3B-18) shall consist of one of the following alternatives:

- A. Wide solid white lines that outline the intersection area that vehicles must not block;
- B. Wide solid white lines that outline the intersection area that vehicles must not block and a white word message such as DO NOT BLOCK or KEEP CLEAR;
- C. Wide solid white lines that outline the intersection area that vehicles must not block and white cross-hatching within the intersection area; or
- D. A white word message, such as DO NOT BLOCK or KEEP CLEAR, within the intersection area that vehicles must not block.

03 Do Not Block Intersection markings shall be accompanied by one or more Do Not Block Intersection (DRIVEWAY) (CROSSING) (R10-7) signs (see Section 2B.53), one or more Do Not Stop On Tracks (R8-8) signs (see Section 8B.09), or one or more similar signs.

[Joe can't wait to use it.](#)

Figure 3B-17. Examples of Yield Lines at Unsignalized Midblock Crosswalks



**3B.17 Crosswalk Markings**

**Support:**  
Crosswalk markings provide guidance for pedestrians who are crossing roadways by defining and delineating paths on approaches to and within signalized intersections, and on approaches to other intersections where traffic stops.

Crosswalk markings also serve to alert road users of a pedestrian crossing point across roadways not controlled by traffic signals or STOP signs.

At nonintersection locations, crosswalk markings legally establish the crosswalk.

**Standard:**  
When crosswalk lines are used, they shall consist of solid white lines that mark the crosswalk. Transverse lines shall be not less than ~~150 mm (6 in)~~ nor greater than ~~600 mm (24 in)~~ in width. **Diagonal or longitudinal lines shall not be less than 150 mm (6 in) nor greater than 900 mm (36 in) in width.**

**Guidance:**  
If transverse lines are used to mark a crosswalk, the gap between the lines should not be less than ~~1.8 m (6 ft)~~. If diagonal or longitudinal lines are used without transverse lines to mark a crosswalk, the crosswalk should not be less than ~~1.8 m (6 ft)~~ wide.  
**Compliance Date: December 22, 2013**

Crosswalk lines, if used on both sides of the crosswalk, should extend across the full width of pavement to the edge of the intersecting crosswalk to discourage diagonal walking between crosswalks (see Figure 3B-15 and 3B-16).

**Crosswalks should be marked at all intersections where there is substantial conflict between vehicular and pedestrian movements. Marked crosswalks also should be provided at other appropriate points of pedestrian concentration, such as at loading islands, midblock pedestrian crossings, or where pedestrians could not otherwise recognize the proper place to cross.**

Crosswalk lines should not be used indiscriminately. An engineering study should be performed before they are installed at locations away from traffic signals or STOP signs.

**Section 3B.18 Crosswalk Markings**

**Support:**  
01 Crosswalk markings provide guidance for pedestrians who are crossing roadways by defining and delineating paths on approaches to and within signalized intersections, and on approaches to other intersections where traffic stops.

02 **In conjunction with signs and other measures**, crosswalk markings help to alert road users of a designated pedestrian crossing point across roadways at locations that are not controlled by traffic control signals or STOP or **YIELD** signs.

03 At non-intersection locations, crosswalk markings legally establish the crosswalk.

**Standard:**  
04 When crosswalk lines are used, they shall consist of solid white lines that mark the crosswalk. They shall not be less than 6 inches or greater than 24 inches in width.

**Guidance:**  
05 If transverse lines are used to mark a crosswalk, the gap between the lines should not be less than 6 feet. If diagonal or longitudinal lines are used without transverse lines to mark a crosswalk, the crosswalk should be not less than 6 feet wide.

06 Crosswalk lines, if used on both sides of the crosswalk, should extend across the full width of pavement or to the edge of the intersecting crosswalk to discourage diagonal walking between crosswalks (see **Figures 3B-17 and 3B-19**).

07 **At locations controlled by traffic control signals or on approaches controlled by STOP or YIELD signs, crosswalk lines should be installed where engineering judgment indicates they are needed to direct pedestrians to the proper crossing path(s).**

08 Crosswalk lines should not be used indiscriminately. An engineering study should be performed before a marked crosswalk is installed at a location away from a traffic control signal or an

**Section 3B.18 Crosswalk Markings**

**Support:**  
01 Crosswalk markings provide guidance for pedestrians who are crossing roadways by defining and delineating paths on approaches to and within signalized intersections, and on approaches to other intersections where traffic stops.

02 **In conjunction with signs and other measures**, crosswalk markings help to alert road users of a designated pedestrian crossing point across roadways at locations that are not controlled by traffic control signals or STOP or **YIELD** signs.

03 At non-intersection locations, crosswalk markings legally establish the crosswalk.

**Standard:**  
04 When crosswalk lines are used, they shall consist of solid white lines that mark the crosswalk. They shall not be less than 6 inches or greater than 24 inches in width.

**Guidance:**  
05 If transverse lines are used to mark a crosswalk, the gap between the lines should not be less than 6 feet. If diagonal or longitudinal lines are used without transverse lines to mark a crosswalk, the crosswalk should be not less than 6 feet wide.

06 Crosswalk lines, if used on both sides of the crosswalk, should extend across the full width of pavement or to the edge of the intersecting crosswalk to discourage diagonal walking between crosswalks (see Figures 3B-17 and 3B-19).

07 **At locations controlled by traffic control signals or on approaches controlled by STOP or YIELD signs, crosswalk lines should be installed where engineering judgment indicates they are needed to direct pedestrians to the proper crossing path(s).**

08 **Crosswalk lines should not be used indiscriminately.** An engineering study should be performed before a marked crosswalk is installed at a location away from a traffic

Check with Chapter 7 language which has already been completed.

approach controlled by a STOP or YIELD sign. The engineering study should consider the number of lanes, the presence of a median, the distance from adjacent signalized intersections, the pedestrian volumes and delays, the average daily traffic (ADT), the posted or statutory speed limit or 85th-percentile speed, the geometry of the location, the possible consolidation of multiple crossing points, the availability of street lighting, and other appropriate factors.

09 New marked crosswalks alone, without other measures designed to reduce traffic speeds, shorten crossing distances, enhance driver awareness of the crossing, and/or provide active warning of pedestrian presence, should not be installed across uncontrolled roadways where the speed limit exceeds 40 mph and either:

- A. The roadway has four or more lanes of travel without a raised median or pedestrian refuge island and an ADT of 12,000 vehicles per day or greater; or
- B. The roadway has four or more lanes of travel with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater.

**Support:**  
10 Chapter 4F contains information on Pedestrian Hybrid Beacons. Section 4L.03 contains information regarding Warning Beacons to provide active warning of a pedestrian's presence. Section 4N.02 contains information regarding In-Roadway Warning Lights at crosswalks. Chapter 7D contains information regarding school crossing supervision.

**Guidance:**  
11 Because non-intersection pedestrian crossings are generally unexpected by the road user, warning signs (see Section 2C.50) should be installed for all marked crosswalks at non-intersection locations and adequate visibility should be provided by parking prohibitions.

**Support:**  
12 Section 3B.16 contains information regarding placement of stop line markings near crosswalk markings.

control signal or an approach controlled by a STOP or YIELD sign. The engineering study should consider the number of lanes, the presence of a median, the distance from adjacent signalized intersections, the pedestrian volumes and delays, the average daily traffic (ADT), the posted or statutory speed limit or 85th-percentile speed, the geometry of the location, the possible consolidation of multiple crossing points, the availability of street lighting, and other appropriate factors.

09 New marked crosswalks alone, without other measures designed to reduce traffic speeds, shorten crossing distances, enhance driver awareness of the crossing, and/or provide active warning of pedestrian presence, should not be installed across uncontrolled roadways where the speed limit exceeds 40 mph and either

- A. The roadway has four or more lanes of travel without a raised median or pedestrian refuge island and an ADT of 12,000 vehicles per day or greater; or
- B. The roadway has four or more lanes of travel with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater.

**Support:**  
10 Chapter 4F contains information on Pedestrian Hybrid Beacons. Section 4L.03 contains information regarding Warning Beacons to provide active warning of a pedestrian's presence. Section 4N.02 contains information regarding In-Roadway Warning Lights at crosswalks. Chapter 7D contains information regarding school crossing supervision.

**Guidance:**  
11 Because non-intersection pedestrian crossings are generally unexpected by the road user, warning signs (see Section 2C.50) should be installed for all marked crosswalks at non-intersection locations and adequate visibility should be provided by parking prohibitions.

**Support:**  
12 Section 3B.16 contains information regarding placement of stop line markings near crosswalk markings.

Ok

Speed? Isn't 45mph considered high speed? We want to keep this language as it came from an FHWA study investigating crosswalks.

ADT numbers? We want to keep this language as it came from an FHWA study investigating crosswalks.

Because nonintersection pedestrian crossings are generally unexpected by the road user, warning signs (see Section 2C.41) should be installed and adequate visibility should be provided by parking prohibitions.

**Support:**  
Section 3B.16 contains information regarding placement of stop line markings near crosswalk markings.

**Option:**  
For added visibility, the area of the crosswalk may be marked with white diagonal lines at a 45-degree angle to the line of the crosswalk or with white longitudinal lines parallel to traffic flow as shown in Figure 3B-16.

When diagonal or longitudinal lines are used to mark a crosswalk, the transverse crosswalk lines may be omitted. This type of marking may be used at locations where substantial numbers of pedestrians cross without any other traffic control device, at locations where physical conditions are such that added visibility of the crosswalk is desired, or at places where a pedestrian crosswalk might not be expected.

**Guidance**  
If used, the diagonal or longitudinal lines should be ~~300 to 900 mm (12 to 36 in)~~ wide and spaced ~~300 to 4500 mm (12 to 60 in)~~ apart. The marking design should avoid the wheel paths, and the spacing should not exceed 2.5 times the line width.

**Option:**  
When an exclusive pedestrian phase that permits diagonal crossing is provided at a traffic control signal, a marking as shown in Figure 3B-16 may be used for the crosswalk.

**Option:**  
13 For added visibility, the area of the crosswalk may be marked with white diagonal lines at a 45-degree angle to the line of the crosswalk or with white longitudinal lines parallel to traffic flow as shown in **Figure 3B-19**.

14 When diagonal or longitudinal lines are used to mark a crosswalk, the transverse crosswalk lines may be omitted. This type of marking may be used at locations where substantial numbers of pedestrians cross without any other traffic control device, at locations where physical conditions are such that added visibility of the crosswalk is desired, or at places where a pedestrian crosswalk might not be expected.

**Guidance:**  
15 If used, the diagonal or longitudinal lines should be 12 to 24 inches wide and separated by gaps of 12 to 60 inches. The design of the lines and gaps should avoid the wheel paths if possible, and the gap between the lines should not exceed 2.5 times the width of **the diagonal or longitudinal lines**.

**Option:**  
16 When an exclusive pedestrian phase that permits diagonal crossing of an intersection is provided at a traffic control signal, a marking as shown in **Figure 3B-20** may be used for the crosswalk.

**Guidance:**  
17 **Crosswalk markings should be located so that the curb ramps are within the extension of the crosswalk markings.**

**Support:**  
18 **Detectable warning surfaces mark boundaries between pedestrian and vehicular ways where there is no raised curb. Detectable warning surfaces are required by 49 CFR, Part 37 and by the Americans with Disabilities Act (ADA) where curb ramps are constructed at the junction of sidewalks and the roadway, for marked and unmarked crosswalks. Detectable warning surfaces contrast visually with adjacent walking surfaces, either light-on- dark, or dark-on-light. The "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" (see **Section 1A.11**) contains specifications for design and placement of detectable warning surfaces.**

**Option:**  
13 For added visibility, the area of the crosswalk may be marked with white diagonal lines at a 45-degree angle to the line of the crosswalk or with white longitudinal lines parallel to traffic flow as shown in Figure 3B-19.

14 When diagonal or longitudinal lines are used to mark a crosswalk, the transverse crosswalk lines may be omitted. This type of marking may be used at locations where substantial numbers of pedestrians cross without any other traffic control device, at locations where physical conditions are such that added visibility of the crosswalk is desired, or at places where a pedestrian crosswalk might not be expected.

**Guidance:**  
15 If used, the diagonal or longitudinal lines should be 12 to ~~24~~**36** inches wide and separated by gaps of 12 to 60 inches. The design of the lines and gaps should avoid the wheel paths if possible, and the gap between the lines should not exceed 2.5 times the width **of the diagonal or longitudinal lines**.

**Option:**  
16 When an exclusive pedestrian phase that permits diagonal crossing of an intersection is provided at a traffic control signal, a marking as shown in Figure 3B-20 may be used for the crosswalk.

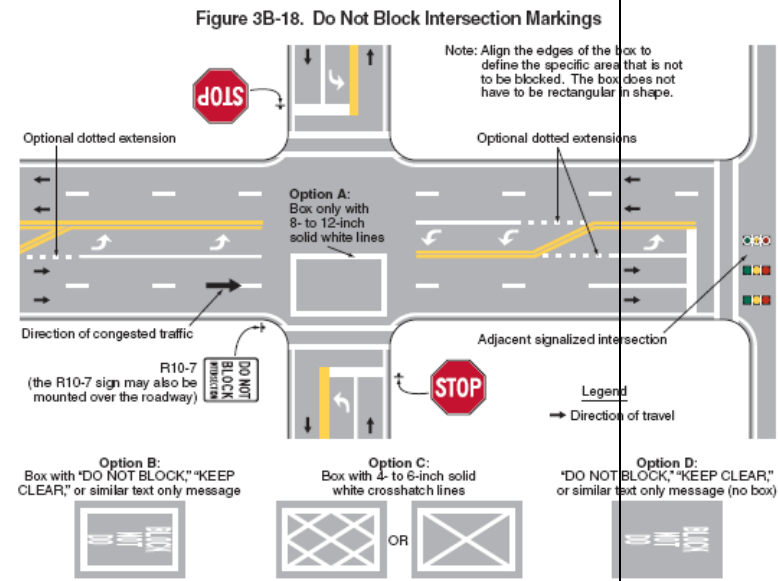
**Guidance:**  
17 **Crosswalk markings should be located so that the curb ramps are within the extension of the crosswalk markings.**

**Support:**  
18 **Detectable warning surfaces mark boundaries between pedestrian and vehicular ways where there is no raised curb. Detectable warning surfaces are required by 49 CFR, Part 37 and by the Americans with Disabilities Act (ADA) where curb ramps are constructed at the junction of sidewalks and the roadway, for marked and unmarked crosswalks. Detectable warning surfaces contrast visually with adjacent walking surfaces, either light-on- dark, or dark-on-light. The "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" (see **Section 1A.11**) contains specifications for design and placement of detectable warning surfaces.**

A width of 36 inches is Minnesota typical practice for crosswalk blocks. There is less wear if the blocks are placed correctly.

Ok

Ok



Do we do this? We will now – in fact, Joe can't wait.

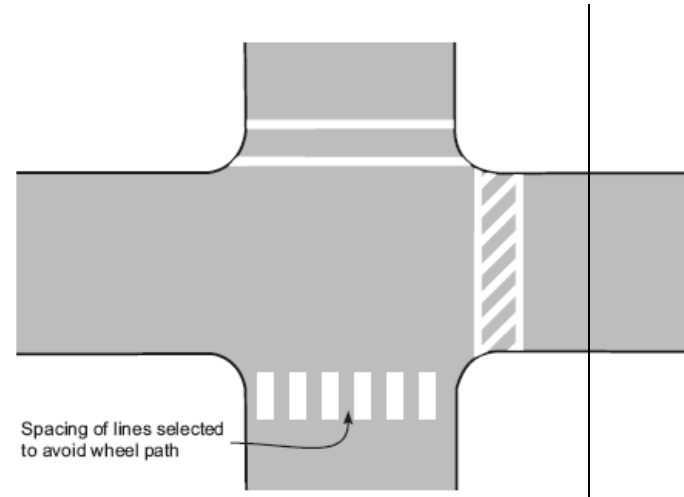


Figure 3B-16 Examples of Crosswalk Markings

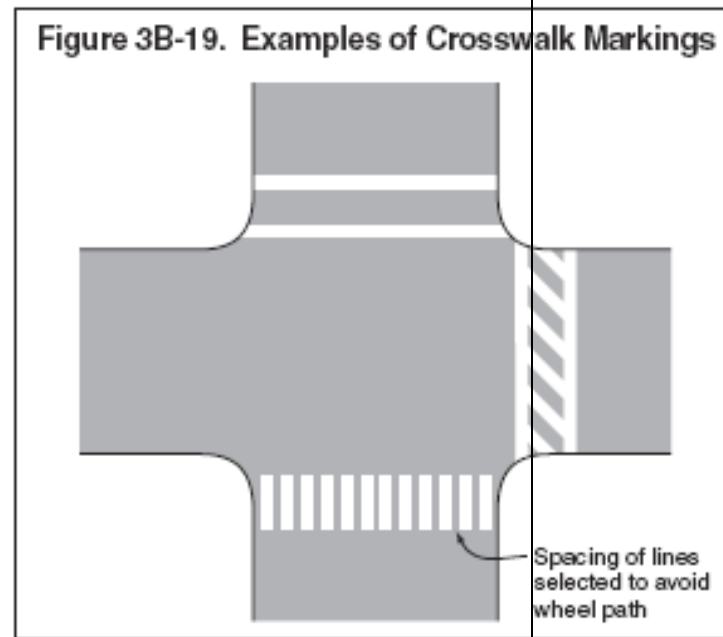


Figure 3B-19. Examples of Crosswalk Markings

[3B-16 -> 3B-19](#)  
[3B-17 -> 3B-20](#)

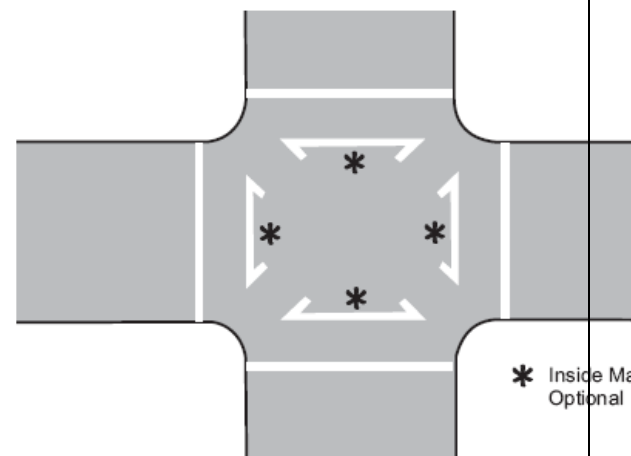


Figure 3B-17 Examples of Crosswalk Markings for Exclusive Pedestrian Phase That Permits Diagonal Crossing

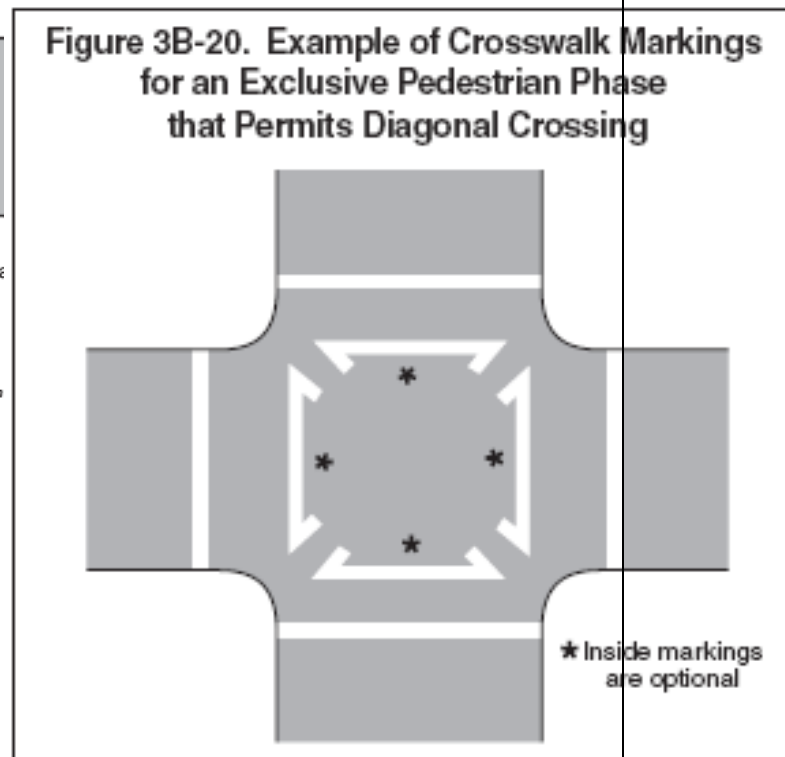


Figure 3B-20. Example of Crosswalk Markings for an Exclusive Pedestrian Phase that Permits Diagonal Crossing

**3B.18 Parking Space Markings**

**Support:**  
Marking of parking space boundaries encourages more orderly and efficient use of parking spaces where parking turnover is substantial. Parking space markings tend to prevent encroachment into fire hydrant zones, bus stops, loading zones, approaches to intersections, curb ramps, and clearance spaces for islands and other zones where parking is restricted. Examples of parking space markings are shown in Figure 3B-17.

**Standard:**  
Parking space markings shall be white.

**Option:**  
Blue lines may supplement white parking space markings of each parking space designated for use only by persons with disabilities.

**Support:**  
Additional parking space markings for the purpose of designating spaces for use only by persons with disabilities are discussed in Section 3B.19 and illustrated in Figure 3B-18.

**Section 3B.19 Parking Space Markings**

**Support:**  
01 Marking of parking space boundaries encourages more orderly and efficient use of parking spaces where parking turnover is substantial. Parking space markings tend to prevent encroachment into fire hydrant zones, bus stops, loading zones, approaches to intersections, curb ramps, and clearance spaces for islands and other zones where parking is restricted. Examples of parking space markings are shown in [Figure 3B-21](#).

**Standard:**  
02 Parking space markings shall be white.

**Option:**  
03 Blue lines may supplement white parking space markings of each parking space designated for use only by persons with disabilities.

**Support:**  
04 Additional parking space markings for the purpose of designating spaces for use only by persons with disabilities are discussed in [Section 3B.20](#) and illustrated in [Figure 3B-22](#). [The design and layout of accessible parking spaces for persons with disabilities is provided in the “Americans with Disabilities Act Accessibility Guidelines \(ADAAG\)” \(see \[Section 1A.11\]\(#\)\).](#)

**Section 3B.19 Parking Space Markings**

**Support:**  
01 Marking of parking space boundaries encourages more orderly and efficient use of parking spaces where parking turnover is substantial. Parking space markings tend to prevent encroachment into fire hydrant zones, bus stops, loading zones, approaches to intersections, curb ramps, and clearance spaces for islands and other zones where parking is restricted. Examples of parking space markings are shown in Figure 3B-21.

**Standard:**  
02 Parking space markings shall be white.

**Option:**  
03 Blue lines may supplement white parking space markings of each parking space designated for use only by persons with disabilities.

**Support:**  
04 Additional parking space markings for the purpose of designating spaces for use only by persons with disabilities are discussed in Section 3B.20 and illustrated in Figure 3B-22. **The design and layout of accessible parking spaces for persons with disabilities is provided in the “Americans with Disabilities Act Accessibility Guidelines (ADAAG)” (see Section 1A.11).**

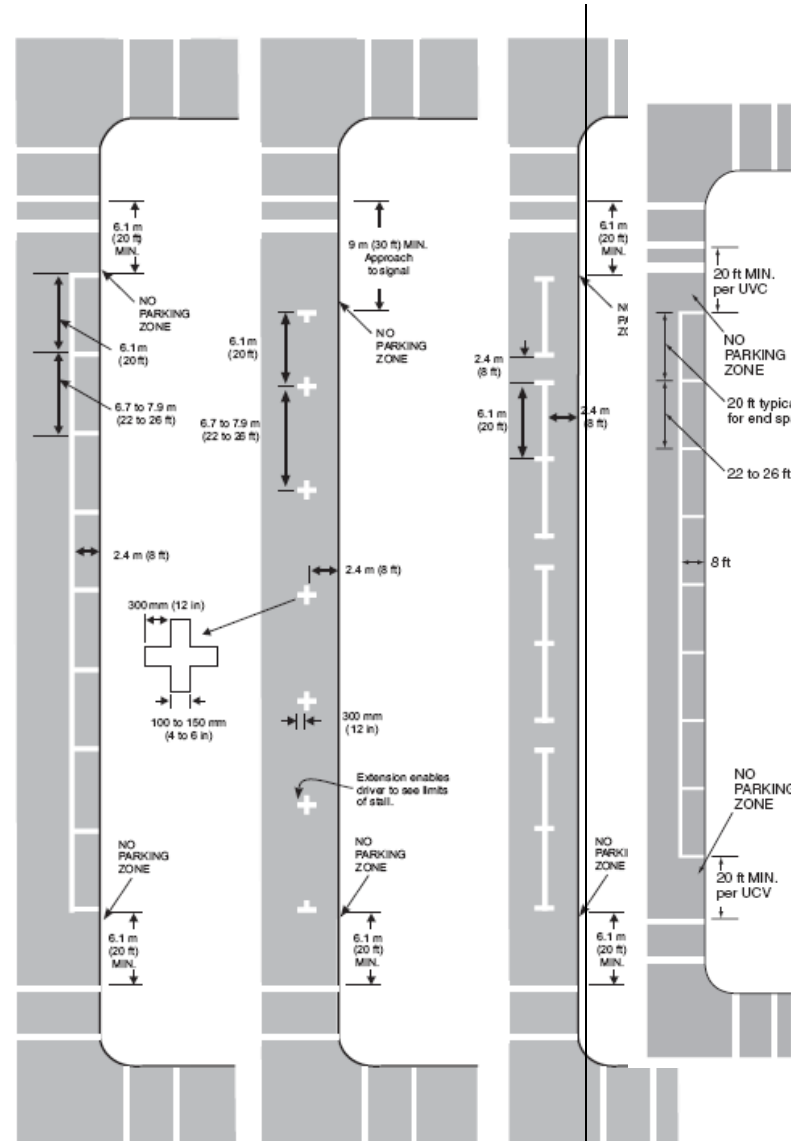
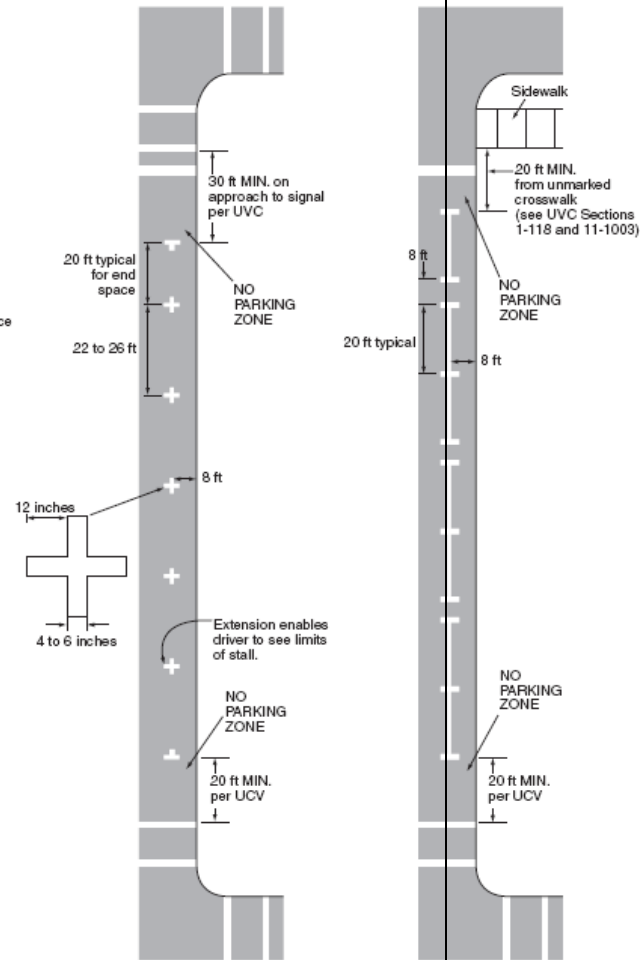


Figure 3B-18 Examples of Parking Space Markings

Figure 3B-21. Examples of Parking Space Markings



[3B-18 -> 3B-21](#)

[From the list of known errors in the MUTCD \(as of 4/8/2011\)](#)

[Figure 3B-21](#)  
[In three places near the bottom of the figure, the references to the "UCV" should be changed to "UVC."](#)

**3B.19 Pavement Word and Symbol Markings**

**Support:**  
 Word and symbol markings on the pavement are used for the purpose of guiding, warning, or regulating traffic. Symbol messages are preferable to word messages. Examples of standard word and arrow pavement markings are shown in Figures 3B-20 and 3B-21.

**Pavement marking and signing warrants for senior citizen and disabled pedestrians are addressed in Appendix B.**

**Option:**  
 Word and symbol markings may include, but are not limited to, the following. Other words or symbols may also be used under certain conditions.

- A. Regulatory:
  - 1. STOP
  - 2. RIGHT (LEFT) TURN ONLY
  - 3. 25 MPH
  - 4. Arrow Symbols
- B. Warning:
  - 1. STOP AHEAD
  - 2. YIELD AHEAD
  - 3. YIELD AHEAD Triangle Symbol
  - 4. SCHOOL XING
  - 5. SIGNAL AHEAD
  - 6. PED XING
  - 7. SCHOOL
  - 8. R X R
  - 9. BUMP
  - 10. HUMP
- C. Guide:
  - 1. US 40
  - 2. STATE 135
  - 3. ROUTE 40

**Section 3B.20 Pavement Word, Symbol, and Arrow Markings**

**Support:**  
 01 Word, symbol, and arrow markings on the pavement are used for the purpose of guiding, warning, or regulating traffic. **These pavement markings can be helpful to road users in some locations by supplementing signs and providing additional emphasis for important regulatory, warning, or guidance messages, because the markings do not require diversion of the road user's attention from the roadway surface.** Symbol messages are preferable to word messages.

Examples of standard word and arrow pavement markings are shown in **Figures 3B-23 and 3B-24.**

**Option:**  
 02 Word, symbol, and arrow markings, **including those contained in the "Standard Highway Signs and Markings" book (see Section 1A.11), may be used as determined by engineering judgment to supplement signs and/or to provide additional emphasis for regulatory, warning, or guidance messages.** Among the word, symbol, and arrow markings that may be used are the following:

- A. Regulatory:
  - 1. STOP
  - 2. YIELD
  - 3. RIGHT (LEFT) TURN ONLY
  - 4. 25 MPH
  - 5. Lane-use and wrong-way arrows
  - 6. Diamond symbol for HOV lanes
  - 7. Other preferential lane word

- markings
- B. Warning:
  - 1. STOP AHEAD
  - 2. YIELD AHEAD
  - 3. YIELD AHEAD triangle symbol
  - 4. SCHOOL XING
  - 5. SIGNAL AHEAD
  - 6. PED XING
  - 7. SCHOOL
  - 8. R X R
  - 9. BUMP
  - 10. HUMP
  - 11. Lane-reduction arrows

- C. Guide:
  - 1. Route numbers (route shield pavement marking symbols and/or words such as I-81, US 40, STATE 135, or ROUTE 10)

**Section 3B.20 Pavement Word, Symbol, and Arrow Markings**

**Support:**  
 01 Word, symbol, and arrow markings on the pavement are used for the purpose of guiding, warning, or regulating traffic. **These pavement markings can be helpful to road users in some locations by supplementing signs and providing additional emphasis for important regulatory, warning, or guidance messages, because the markings do not require diversion of the road user's attention from the roadway surface.** Symbol messages are preferable to word messages. Examples of standard word and arrow pavement markings are shown in Figures 3B-23 and 3B-24.

**Option:**  
 02 Word, symbol, and arrow markings, **including those contained in the "Standard Highway Signs and Markings" book (see Section 1A.11), may be used as determined by engineering judgment to supplement signs and/or to provide additional emphasis for regulatory, warning, or guidance messages.** Among the word, symbol, and arrow markings that may be used are the following:

- A. Regulatory:
  - 1. STOP
  - 2. YIELD
  - 3. RIGHT (LEFT) TURN ONLY
  - 4. 25 (or other speed) MPH
  - 5. Lane-use and wrong-way arrows
  - 6. Diamond symbol for HOV lanes
  - 7. Other preferential lane word markings
- B. Warning:
  - 1. STOP AHEAD
  - 2. YIELD AHEAD
  - 3. YIELD AHEAD triangle symbol
  - 4. SCHOOL XING
  - 5. SIGNAL AHEAD
  - 6. PED XING
  - 7. SCHOOL
  - 8. R X R
  - 9. BUMP
  - 10. HUMP
  - 11. Lane-reduction arrows

We assume that this refers to the appropriate speed limit and should match.

- 2. Cardinal directions (NORTH, SOUTH, EAST, or WEST)
- 3. TO
- 4. Destination names or abbreviations thereof

**Standard:**  
Word and symbol markings shall be white, except as otherwise noted in this Section.

**Standard:**  
03 Word, symbol, and arrow markings shall be white, except as otherwise provided in this Section.

04 Pavement marking letters, numerals, symbols, and arrows shall be installed in accordance with the design details in the Pavement Markings chapter of the “Standard Highway Signs and Markings” book (see Section 1A.11).

Letters and numerals should be 2.5 m (8 ft) or more in height. Word and symbol markings should not exceed three lines of information. If a pavement marking word message consists of more than one line of information, it should read in the direction of travel. The first word of the message should be nearest to the road user.

**Guidance:**  
05 Letters and numerals should be 6 feet or more in height.

06 Word and symbol markings should not exceed three lines of information.

07 If a pavement marking word message consists of more than one line of information, it should read in the direction of travel. The first word of the message should be nearest to the road user.

Except for the two opposing arrows of a two-way left turn lane marking (see Figure 3B-7), the longitudinal space between word or symbol message markings, including arrow markings, should be at least four times the height of the characters for low-speed roads, but not more than ten times the height of the characters under any conditions. Moved to Guidance

08 Except for the two opposing arrows of a two-way left-turn lane marking (see Figure 3B-7), the longitudinal space between word or symbol message markings, including arrow markings, should be at least four times the height of the characters for low-speed roads, but not more than ten times the height of the characters under any conditions.

~~Compliance Date: December 22, 2008~~

The number of different word and symbol markings used should be minimized to provide effective guidance and avoid misunderstanding. Except as noted in the ~~Option below~~, pavement word and symbol markings should be no more than one lane in width.

09 The number of different word and symbol markings used should be minimized to provide effective guidance and avoid misunderstanding.

10 Except for the SCHOOL word marking (see Section 7C.03), pavement word, symbol, and arrow markings should be no more than one lane in width.

- 12. 25 (or other speed) MPH
- C. Guide:
  - 1. Route numbers (route shield pavement marking symbols and/or words such as I-81, US 40, STATE 135, or ROUTE 10)
  - 2. Cardinal directions (NORTH, SOUTH, EAST, or WEST)
  - 3. TO
  - 4. Destination names or abbreviations thereof

**Standard:**  
03 Word, symbol, and arrow markings shall be white, except as otherwise provided in this Section.

04 Pavement marking letters, numerals, symbols, and arrows shall be installed in accordance with the design details in the Pavement Markings chapter of the “Standard Highway Signs and Markings” book (see Section 1A.11).

**Guidance**  
05 Letters and numerals should be 6 feet or more in height.

06 Word and symbol markings should not exceed three lines of information.

07 If a pavement marking word message consists of more than one line of information, it should read in the direction of travel. The first word of the message should be nearest to the road user.

08 Except for the two opposing arrows of a two-way left-turn lane marking (see Figure 3B-7), the longitudinal space between word or symbol message markings, including arrow markings, should be at least four times the height of the characters for low-speed roads, but not more than ten times the height of the characters under any conditions.

09 The number of different word and symbol markings used should be minimized to provide effective guidance and avoid misunderstanding.

10 Except for the SCHOOL word marking (see Section 7C.03), pavement word, symbol, and

Added to provide the opportunity to use for additional emphasis for an advisory speed.

Use Mn/DOT’s standard sign manual instead? No, the Standard Signs Manual doesn’t have pavement markings with all the dimensions.

Use new 6 ft or old 8 ft? Stick with 6 as this affords more flexibility for locals. In addition, as the Standard Highway Signs and Markings document is Federal – we would likely need to publish a different document with many dimensions based on the 8 feet.

**Option:**  
The SCHOOL word marking may extend to the width of two approach lanes (see Section 7C.6). Moved to Guidance

**Guidance:**  
When the SCHOOL word marking is extended to the width of two approach lanes, the characters should be 3 m (10 ft) or more in height (see Section 7C.6). Pavement word and symbol markings should be proportionally scaled to fit within the width of the facility upon which they are applied.

**Option:**  
On narrow, low-speed shared-use paths, the pavement words and symbols may be smaller than suggested, but to the relative scale.

**Standard:**  
Except at the ends of aisles in parking lots, the word STOP shall not be used on the pavement unless accompanied by a stop line (see Section 3B.16) and STOP sign (see Section 2B.4). At the ends of aisles in parking lots, the word STOP shall not be used on the pavement unless accompanied by a stop line. The word STOP shall not be placed on the pavement in advance of a stop line, unless every vehicle is required to stop at all times.

**Option:**  
A yield-ahead triangle symbol or YIELD AHEAD word pavement marking may be used on approaches to intersections where the approaching traffic will encounter a YIELD sign at the intersection (see Figure 3B-25).

**Standard:**  
The yield-ahead triangle symbol or YIELD AHEAD word pavement marking shall not be used unless a YIELD sign (see Section 2B.8) is in place at the intersection. The yield-ahead symbol marking shall be as shown in Figure 3B-25.

11 Pavement word, symbol, and arrow markings should be proportionally scaled to fit within the width of the facility upon which they are applied.

**Option:**  
12 On narrow, low-speed shared-use paths, the pavement words, symbols, and arrows may be smaller than suggested, but to the relative scale.

13 Pavement markings simulating Interstate, U.S., State, and other official highway route shield signs (see Figure 2D-3) with appropriate route numbers, but elongated for proper proportioning when viewed as a marking, may be used to guide road users to their destinations (see Figure 3B-25).

**Standard:**  
14 Except at the ends of aisles in parking lots, the word STOP shall not be used on the pavement unless accompanied by a stop line (see Section 3B.16) and STOP sign (see Section 2B.05). At the ends of aisles in parking lots, the word STOP shall not be used on the pavement unless accompanied by a stop line.

15 The word STOP shall not be placed on the pavement in advance of a stop line, unless every vehicle is required to stop at all times.

**Option:**  
16 A yield-ahead triangle symbol (see Figure 3B-26) or YIELD AHEAD word pavement marking may be used on approaches to intersections where the approaching traffic will encounter a YIELD sign at the intersection.

**Standard:**  
17 The yield-ahead triangle symbol or YIELD AHEAD word pavement marking shall not be used unless a YIELD sign (see Section 2B.08) is in place at the intersection. The yield-ahead symbol marking shall be as shown in Figure 3B-26.

arrow markings should be no more than one lane in width.

11 Pavement word, symbol, and arrow markings should be proportionally scaled to fit within the width of the facility upon which they are applied.

**Option:**  
12 On narrow, low-speed shared-use paths, the pavement words, symbols, and arrows may be smaller than suggested, but to the relative scale.

13 Pavement markings simulating Interstate, U.S., State, and other official highway route shield signs (see Figure 2D-3) with appropriate route numbers, but elongated for proper proportioning when viewed as a marking, may be used to guide road users to their destinations (see Figure 3B-25).

**Standard:**  
14 Except at the ends of aisles in parking lots, the word STOP shall not be used on the pavement unless accompanied by a stop line (see Section 3B.16) and STOP sign (see Section 2B.05). At the ends of aisles in parking lots, the word STOP shall not be used on the pavement unless accompanied by a stop line.

15 The word STOP shall not be placed on the pavement in advance of a stop line, unless every vehicle is required to stop at all times.

**Option:**  
16 A yield-ahead triangle symbol (see Figure 3B-26) or YIELD AHEAD word pavement marking may be used on approaches to intersections where the approaching traffic will encounter a YIELD sign at the intersection.

**Standard:**  
17 The yield-ahead triangle symbol or YIELD AHEAD word pavement marking shall not be used unless a YIELD sign (see Section 2B.08) is in place at the intersection. The yield-ahead symbol marking shall be as shown in Figure 3B-26.

Keep MN Language? The Task Force said no.

**Option**

The International Symbol of Accessibility parking space markings may be placed in each parking space designated for use by persons with disabilities. Moved to Guidance. A blue background with white border may supplement the wheelchair symbol as shown in Figure 3B-19.

**Support:**

Lane-use arrow markings are often used to provide guidance in turn bays (see Figure 3B-22), where turns may or may not be mandatory, and in two-way left-turn lanes (see Figure 3B-7).

**Guidance:**

18 The International Symbol of Accessibility parking space marking (see Figure 3B-22) should be placed in each parking space designated for use by persons with disabilities.

**Option:**

19 A blue background with white border may supplement the wheelchair symbol as shown in Figure 3B-22.

**Support:**

20 Lane-use arrow markings (see Figure 3B-24) are used to indicate the mandatory or permissible movements in certain lanes (see Figure 3B-27) and in two-way left-turn lanes (see Figure 3B-7).

**Guidance:**

21 Lane-use arrow markings (see Figure 3B-24) should be used in lanes designated for the exclusive use of a turning movement, including turn bays, except where engineering judgment determines that physical conditions or other markings (such as a dotted extension of the lane line through the taper into the turn bay) clearly discourage unintentional use of a turn bay by through vehicles. Lane-use arrow markings should also be used in lanes from which movements are allowed that are contrary to the normal rules of the road (see Drawing B of Figure 3B-13). When used in turn lanes, at least two arrows should be used, one at or near the upstream end of the full-width turn lane and one an appropriate distance upstream from the stop line or intersection (see Drawing A of Figure 3B-11).

**Option:**

22 An additional arrow or arrows may be used in a turn lane. When arrows are used for a short turn lane, the second (downstream) arrow may be omitted based on engineering judgment.

**Guidance:**

23 Where opposing offset channelized left-turn lanes exist, lane-use arrow markings should be placed near the downstream terminus of the offset left-turn lanes to reduce wrong-way movements (see Figure 2B-17).

**Guidance:**

18 The International Symbol of Accessibility parking space marking (see Figure 3B-22) should be placed in each parking space designated for use by persons with disabilities.

**Option:**

19 A blue background with white border may supplement the wheelchair symbol as shown in Figure 3B-22.

**Support:**

20 Lane-use arrow markings (see Figure 3B-24) are used to indicate the mandatory or permissible movements in certain lanes (see Figure 3B-27) and in two-way left-turn lanes (see Figure 3B-7).

**Guidance:**

21 Lane-use arrow markings (see Figure 3B-24) should be used in lanes designated for the exclusive use of a turning movement, including turn bays, except where engineering judgment determines that physical conditions or other markings (such as a dotted extension of the lane line through the taper into the turn bay) clearly discourage unintentional use of a turn bay by through vehicles.

Lane-use arrow markings should also be used in lanes from which movements are allowed that are contrary to the normal rules of the road (see Drawing B of Figure 3B-13). When used in turn lanes, at least two arrows should be used, one at or near the upstream end of the full-width turn lane and one an appropriate distance upstream from the stop line or intersection (see Drawing A of Figure 3B-11).

**Option:**

22 An additional arrow or arrows may be used in a turn lane. When arrows are used for a short turn lane, the second (downstream) arrow may be omitted based on engineering judgment.

**Guidance:**

23 Where opposing offset channelized left-turn lanes exist, lane-use arrow markings should be placed near the downstream terminus of the offset left-turn lanes to reduce wrong-way movements (see Figure 2B-17).

This could have major cost implications. Full committee should discuss. Question for Will – are there any studies that back this Guidance?

There may be an armed revolt by our Greater MN districts. This possibility may make it more palatable.

End of Meeting 4/25/11.

**Standard:**  
Where through traffic lanes approaching an intersection become mandatory turn lanes, lane-use arrow markings (see Figure 3B-21) shall be used and shall be accompanied by standard signs.

**Standard:**  
Where through lanes become mandatory turn lanes, signs or markings should be repeated as necessary to prevent entrapment and to help the road user select the appropriate lane in advance of reaching a queue of waiting vehicles. *Moved to Guidance*

**Support:**  
24 An arrow at the downstream end of a turn lane can help to prevent wrong way movements.

**Standard:**  
25 Where through lanes approaching an intersection become mandatory turn lanes, lane-use arrow markings (see Figure 3B-24) shall be used and shall be accompanied by standard signs.

**Guidance:**  
26 Where through lanes approaching an intersection become mandatory turn lanes, ONLY word markings (see Figures 3B-23) should be used in addition to the required lane-use arrow markings and signs (see Sections 2B.19 and 2B.20). These markings and signs should be placed well in advance of the turn and should be repeated as necessary to prevent entrapment and to help the road user select the appropriate lane in advance of reaching a queue of waiting vehicles (see Drawing A of Figure 3B-11).

**Option:**  
27 On freeways or expressways where a through lane becomes a mandatory exit lane, lane-use arrow markings may be used on the approach to the exit in the dropped lane and in an adjacent optional through-or-exit lane if one exists.

**Guidance:**  
28 A two-way left-turn lane-use arrow pavement marking, with opposing arrows spaced as shown in Figure 3B-7, should be used at or just downstream from the beginning of a two-way left-turn lane.

**Option:**  
29 Additional two-way left-turn lane-use arrow markings may be used at other locations along a two-way left-turn lane where engineering judgment determines that such additional markings are needed to emphasize the proper use of the lane.

**Support:**  
24 An arrow at the downstream end of a turn lane can help to prevent wrong way movements.

**Standard:**  
25 Where through lanes approaching an intersection become mandatory turn lanes, lane-use arrow markings (see Figure 3B-24) shall be used and shall be accompanied by standard signs.

**Guidance:**  
26 Where through lanes approaching an intersection become mandatory turn lanes, ONLY word markings (see Figure 3B-23) should be used in addition to the required lane-use arrow markings and signs (see Sections 2B.19 and 2B.20). These markings and signs should be placed well in advance of the turn and should be repeated as necessary to prevent entrapment and to help the road user select the appropriate lane in advance of reaching a queue of waiting vehicles (see Drawing A of Figure 3B-11).

**Option:**  
27 On freeways or expressways where a through lane becomes a mandatory exit lane, lane-use arrow markings may be used on the approach to the exit in the dropped lane and in an adjacent optional through-or-exit lane if one exists.

**Guidance:**  
28 A two-way left-turn lane-use arrow pavement marking, with opposing arrows spaced as shown in Figure 3B-7, should be used at or just downstream from the beginning of a two-way left-turn lane.

**Option:**  
29 Additional two-way left-turn lane-use arrow markings may be used at other locations along a two-way left-turn lane where engineering judgment determines that such additional markings are needed to emphasize the proper use of the lane.

Start of Pavement Marking Task Force – 4/27/11  
Ken Johnson  
Ted Ulven  
Jim Rosenow  
Joe Gustafson  
Sheila Johnson  
Jim Miles

**Standard:**  
Lane use, lane reduction, and wrong-way arrow markings shall be designed as shown in Figure 3B-21.

**Option:**  
Lane-use arrow markings (see Figure 3B-21) may be used to convey either guidance or mandatory messages. The ONLY word marking (see Figure 3B-20) may be used to supplement lane-use arrow markings (see Figure 3B-22). In situations where a lane reduction transition occurs, the lane reduction arrow markings shown in Figure 3B-21 may be used.

**Guidance:**  
Where crossroad channelization or ramp geometrics do not make wrong-way movements difficult, a lane-use arrow should be placed in each lane of an exit ramp near the crossroad terminal where it will be clearly visible to a potential wrong-way road user (see Figure 3B-23).

**Standard:**  
30 A single-direction lane-use arrow shall not be used in a lane bordered on both sides by yellow two-way left-turn lane longitudinal markings.

31 Lane-use, lane-reduction, and wrong-way arrow markings shall be designed as shown in Figure 3B-24 and in the "Standard Highway Signs and Markings" book (see Section 1A.11).

**Option:**  
32 The ONLY word marking (see Figure 3B-23) may be used to supplement the lane-use arrow markings in lanes that are designated for the exclusive use of a single movement (see Figure 3B-27) or to supplement a preferential lane word or symbol marking (see Section 3D.01).

**Standard:**  
33 The ONLY word marking shall not be used in a lane that is shared by more than one movement.

**Guidance:**  
34 Where a lane-reduction transition occurs on a roadway with a speed limit of 45 mph or more, the lane-reduction arrow markings shown in Drawing F in Figure 3B-24 should be used (see Figure 3B-14). Except for acceleration lanes, where a lane-reduction transition occurs on a roadway with a speed limit of less than 45 mph, the lane-reduction arrow markings shown in Drawing f in Figure 3B-24 should be used if determined to be appropriate based on engineering judgment.

**Option:**  
35 Lane-reduction arrow markings may be used in long acceleration lanes based on engineering judgment.

**Guidance:**  
36 Where crossroad channelization or ramp geometrics do not make wrong-way movements difficult, the appropriate lane-use arrow should be placed in each lane of an exit ramp near the crossroad terminal where it will be clearly visible to a potential wrong-way road user (see Figure 2B-18).

**Standard:**  
30 A single-direction lane-use arrow shall not be used in a lane bordered on both sides by yellow two-way left-turn lane longitudinal markings.

31 Lane-use, lane-reduction, and wrong-way arrow markings shall be designed as shown in Figure 3B-24 and in the "Standard Highway Signs and Markings" book (see Section 1A.11).

**Option:**  
32 The ONLY word marking (see Figure 3B-23) may be used to supplement the lane-use arrow markings in lanes that are designated for the exclusive use of a single movement (see Figure 3B-27) or to supplement a preferential lane word or symbol marking (see Section 3D.01).

**Standard:**  
33 The ONLY word marking shall not be used in a lane that is shared by more than one movement.

**Guidance:**  
34 Where a lane-reduction transition occurs on a roadway with a speed limit of 45 mph or more, the lane-reduction arrow markings shown in Drawing F in Figure 3B-24 should be used (see Figure 3B-14). Except for acceleration lanes, where a lane-reduction transition occurs on a roadway with a speed limit of less than 45 mph, the lane-reduction arrow markings shown in Drawing f in Figure 3B-24 should be used if determined to be appropriate based on engineering judgment.

**Option:**  
35 Lane-reduction arrow markings may be used in long acceleration lanes based on engineering judgment.

**Guidance:**  
36 Where crossroad channelization or ramp geometrics do not make wrong-way movements difficult, the appropriate lane-use arrow should be placed in each lane of an exit ramp near the crossroad terminal where it will be clearly visible to a potential wrong-way road user (see Figure 2B-18).

Does this affect our typical two-way left-turn lane marking? TEM Fig 7.3 This is a change in MN typical practice. We are concerned with this standard, there have been situations where applying both arrows creates driver confusion.

This seems to be contradictory of paragraph 2 of Section 3B.09 and figure 3B-14. Request for interpretation – do we have to put in lane reduction markings for all lane-reduction situations.

**Option:**  
The wrong-way arrow markings shown in Figure 3B-21 may be placed near the downstream terminus of a ramp as shown in Figures 3B-23 and 3B-24 to indicate the correct direction of traffic flow and to discourage drivers from traveling in the wrong direction.

**Option:**  
37 The wrong-way arrow markings shown in Drawing D in Figure 3B-24 may be placed near the downstream terminus of a ramp as shown in Figures 2B-18 and 2B-19, or at other locations where lane-use arrows are not appropriate, to indicate the correct direction of traffic flow and to discourage drivers from traveling in the wrong direction.

**Option:**  
37 The wrong-way arrow markings shown in Drawing D in Figure 3B-24 may be placed near the downstream terminus of a ramp as shown in Figures 2B-18 and 2B-19, or at other locations where lane-use arrows are not appropriate, to indicate the correct direction of traffic flow and to discourage drivers from traveling in the wrong direction.

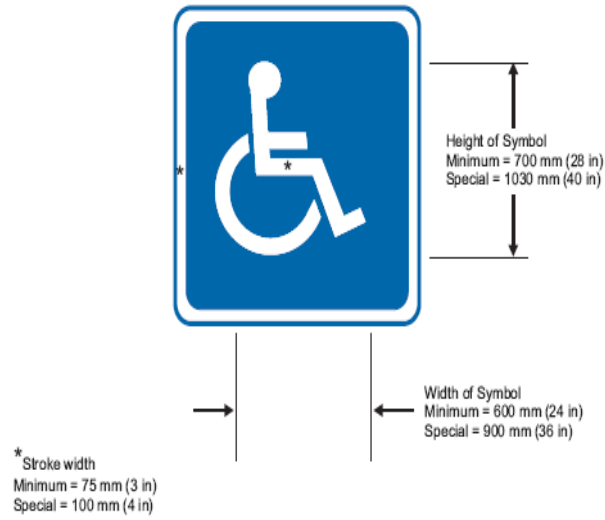


Figure 3B-19 International Symbol of Accessibility Parking Space Marking with Blue Background and White Border Options



Figure 3B-20 Example of Elongated Letters for Word Pavement Markings

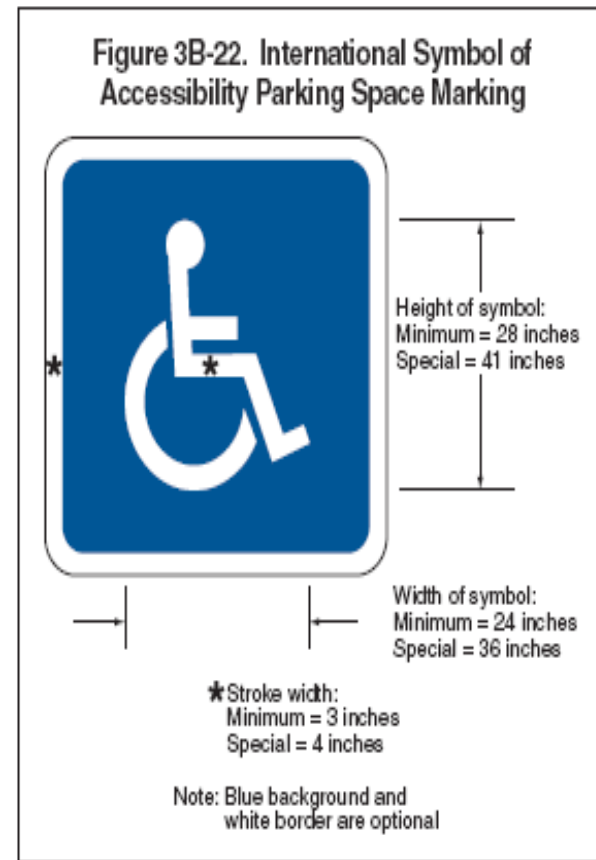
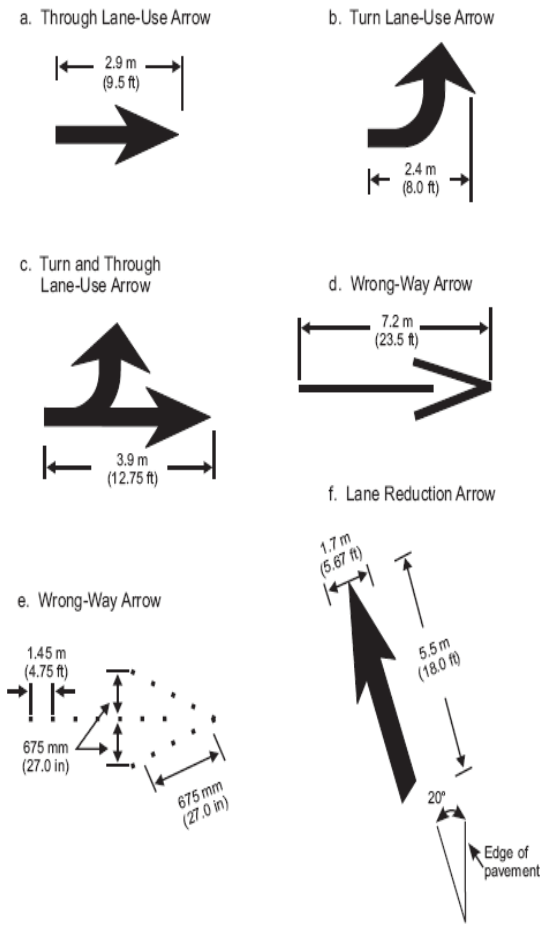


Figure 3B-23. Example of Elongated Letters for Word Pavement Markings



[3B-19 ->3B-22](#)  
[3B-20 ->3B-23](#)



Typical sizes for normal installation; smaller sizes may be reduced approximately one-third for low-speed urban conditions; larger sizes may be needed for freeways, above average speeds, and other critical locations. A narrow elongated arrow design is optional. For proper proportion, contact Minnesota Department of Transportation, Office of Traffic Engineering, see page ii.

Figure 3B-21 Examples of Standard Arrows for Pavement Markings

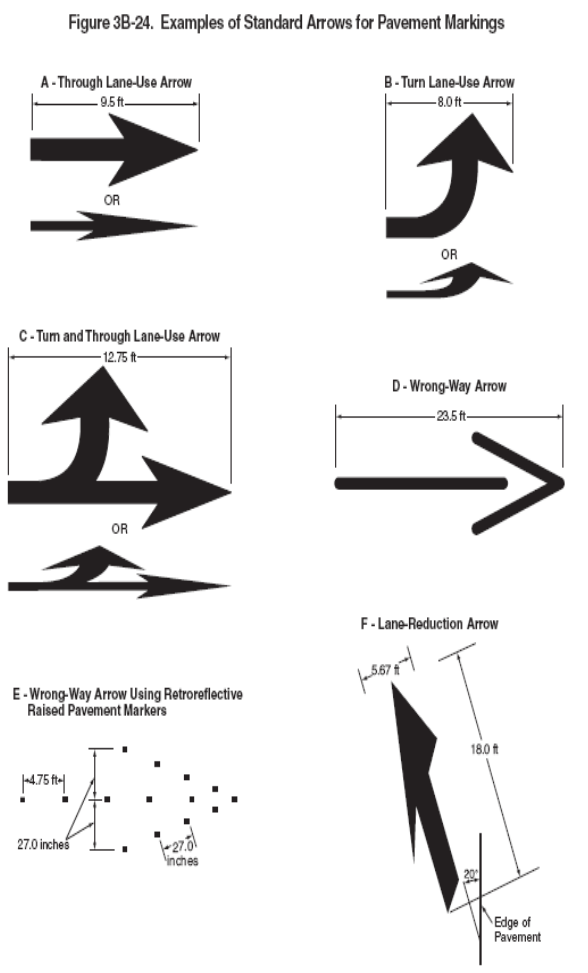
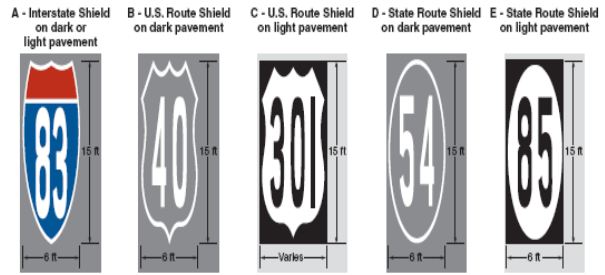


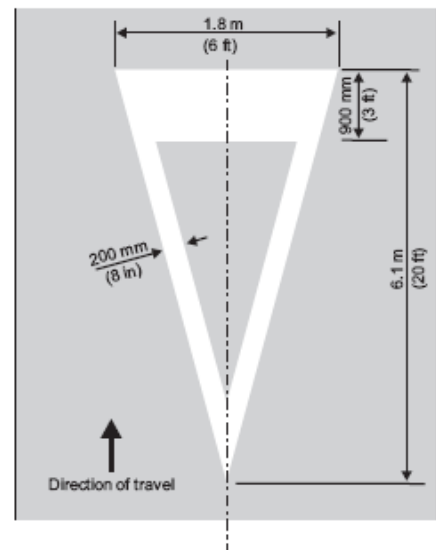
Figure 3B-24. Examples of Standard Arrows for Pavement Markings



Notes:  
 1. See the "Standard Highway Signs and Markings" book for other sizes and details  
 2. Colors and elongated shapes simulating State route shield signs may be used for route shield pavement markings where appropriate

3B-21 ->3B-25  
 3B-26 New

Posted or Statutory Speed Limit 45 mph or greater



Posted or Statutory Speed Limit less than 45 mph

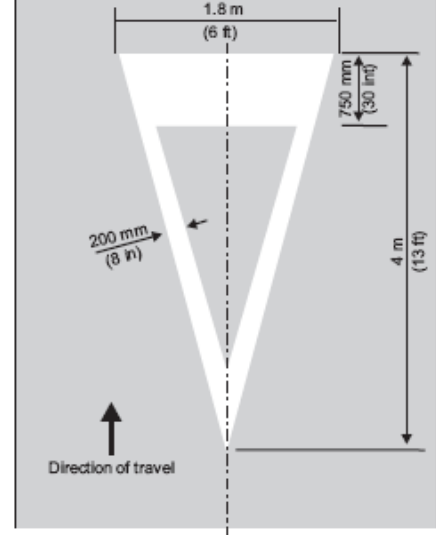
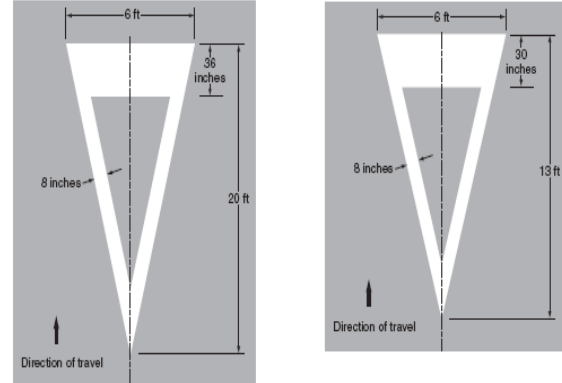


Figure 3B-25 Examples of Yield Ahead Triangle Symbols

Figure 3B-26. Yield Ahead Triangle Symbols

A - Posted or Statutory Speed Limit of 45 mph or greater B - Posted or Statutory Speed Limit of less than 45 mph



[3B-25 ->3B-26](#)

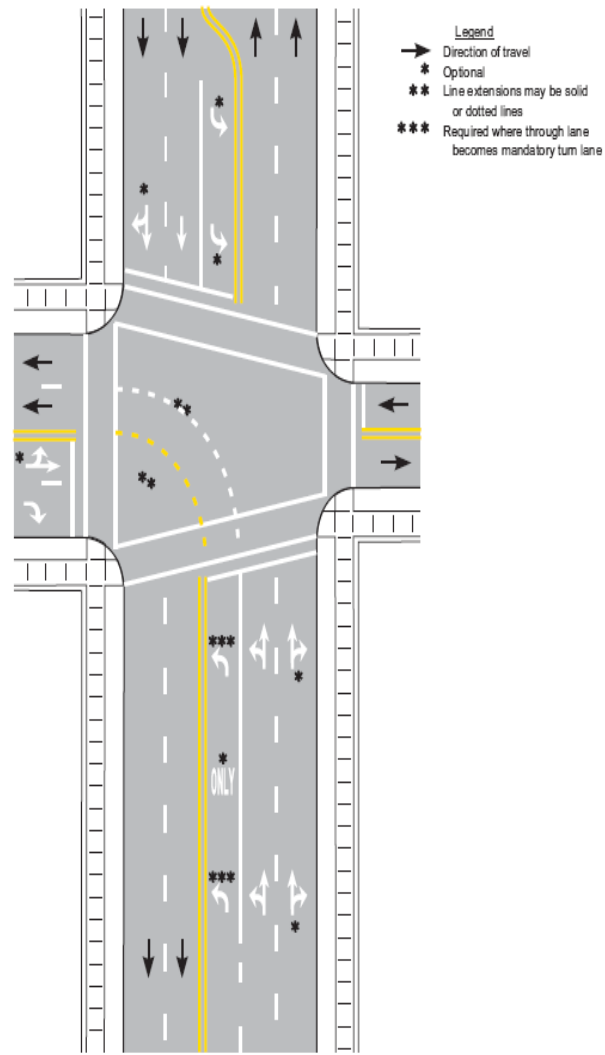
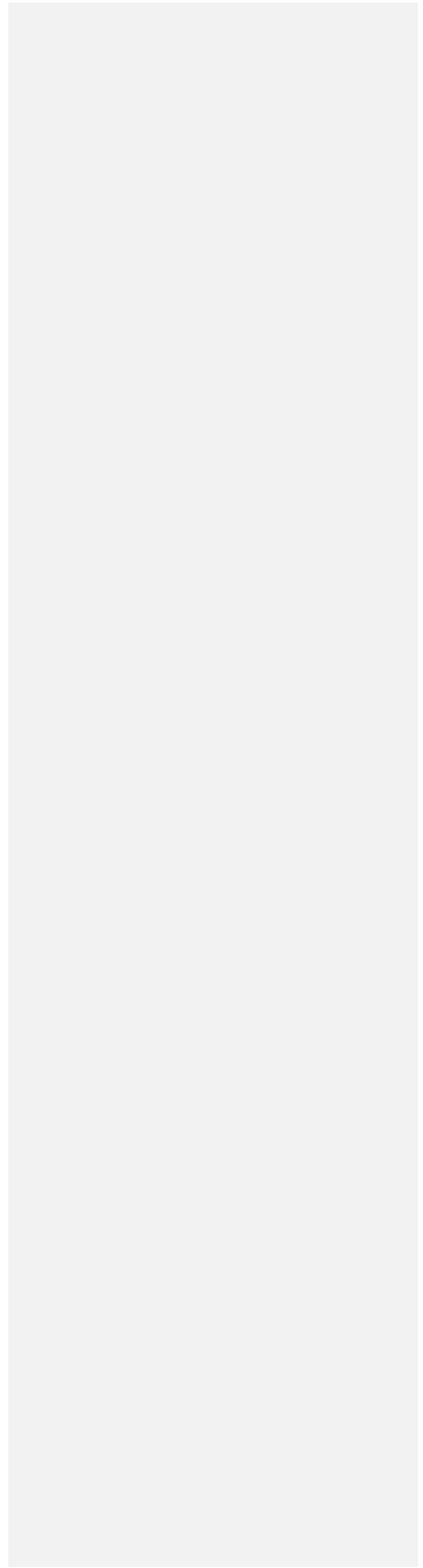
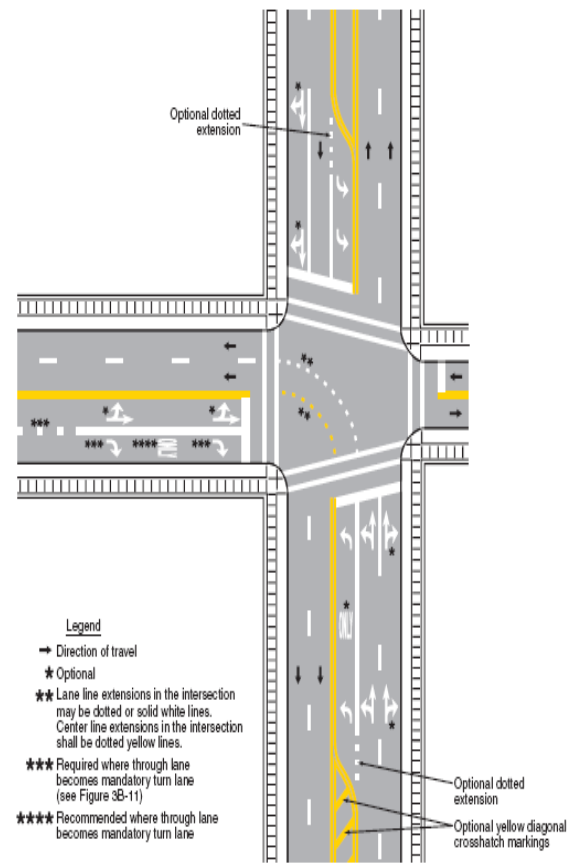


Figure 3B-22 Examples of Lane Use Control Word and Symbol Markings

Figure 3B-27. Examples of Lane-Use Control Word and Arrow Pavement Markings



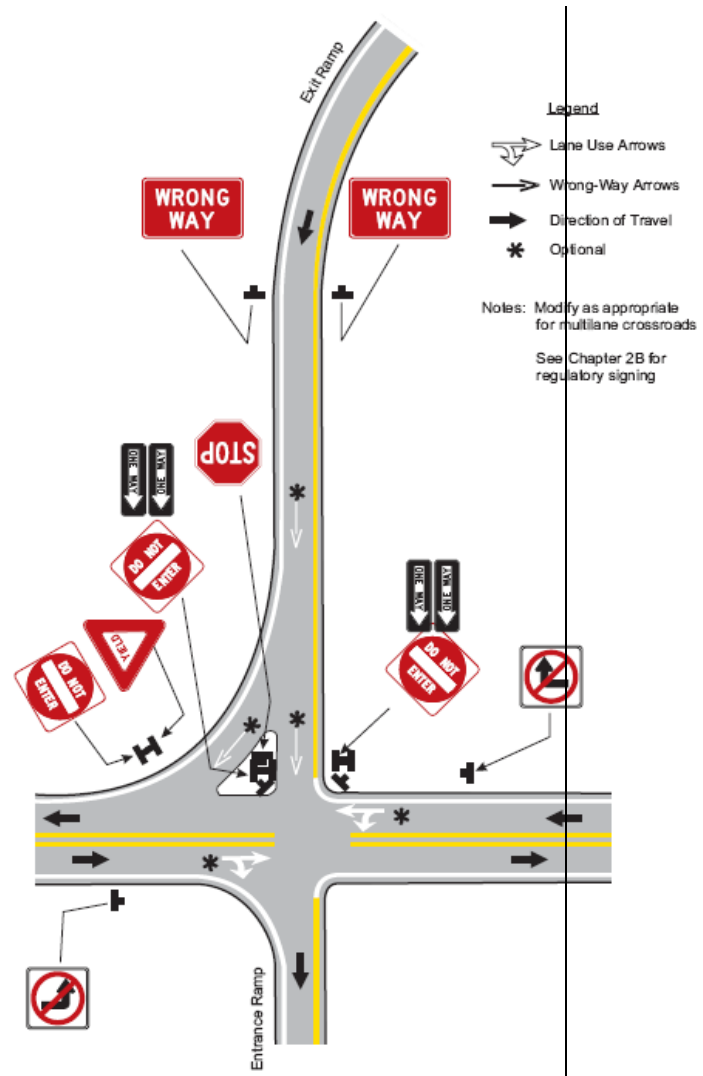


Figure 3B-23 Examples of Arrow Markings at Exit Ramp Terminals

Keep? No, refer them to 2B-18.

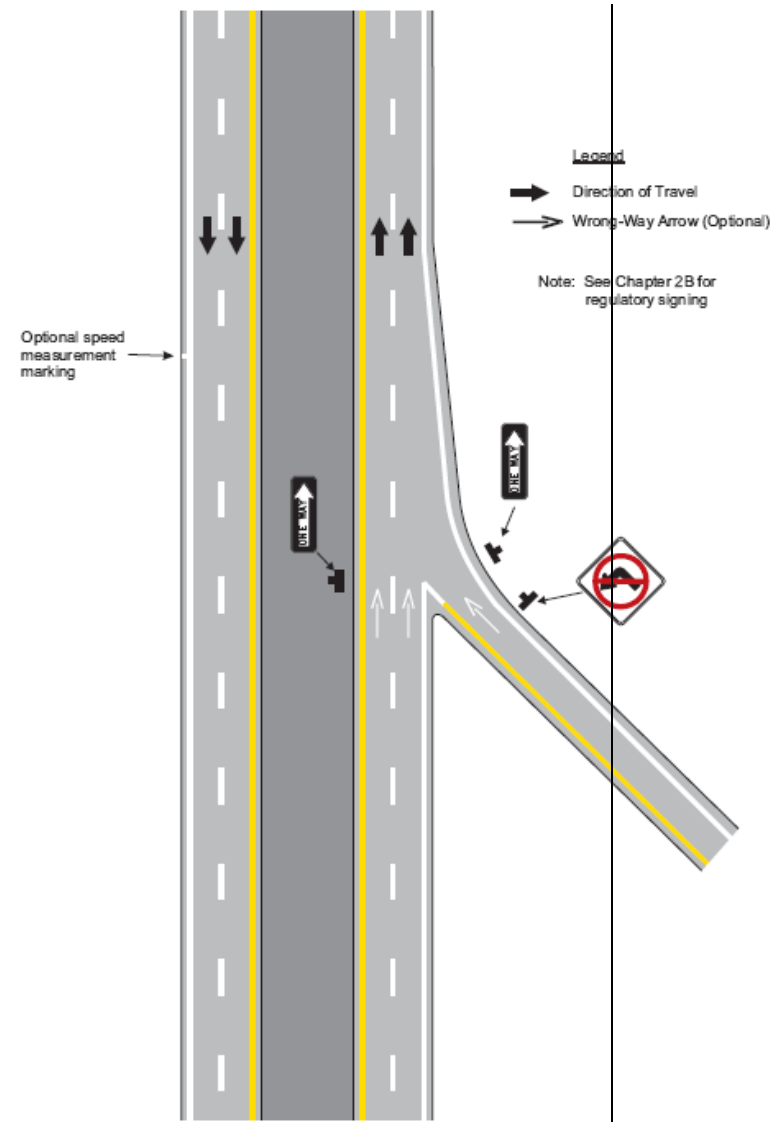


Figure 3B-24 Examples of Arrow Markings at Entrance Ramp Terminals

[Keep? No, refer them to 2B-19](#)

**B.20 Speed Measurement Markings**

**Support:**

A speed measurement marking is a transverse marking placed on the roadway to assist the enforcement of speed regulations.

**Standard:**

Speed measurement markings, if used, shall be white, and shall not be greater than ~~600 mm (24 in)~~ in width.

**Option:**

Speed measurement markings may extend ~~600 mm (24 in)~~ on either side of the centerline or ~~600 mm (24 in)~~ on either side of edge line markings at ~~0.4 km (1/4 mi)~~ intervals over a ~~1.6 km (1 mi)~~ length of roadway. When paved shoulders of sufficient width are available, the speed measurement markings may be placed entirely on these shoulders. Advisory signs may be used in conjunction with these markings (see Figure 3B-10).

**Section 3B.21 Speed Measurement Markings**

**Support:**

01 A speed measurement marking is a transverse marking placed on the roadway to assist the enforcement of speed regulations.

**Standard:**

02 Speed measurement markings, if used, shall be white, and shall not be greater than 24 inches in width.

**Option:**

03 Speed measurement markings may extend 24 inches on either side of the center line or 24 inches on either side of edge line markings at 1/4-mile intervals over a 1-mile length of roadway. When paved shoulders of sufficient width are available, the speed measurement markings may be placed entirely on these shoulders (see Drawing A of Figure 3B-10). Advisory signs may be used in conjunction with these markings.

**Section 3B.21 Speed Measurement Markings**

**Support:**

01 A speed measurement marking is a transverse marking placed on the roadway to assist the enforcement of speed regulations.

**Standard:**

02 Speed measurement markings, if used, shall be white, and shall not be greater than 24 inches in width.

**Option:**

03 Speed measurement markings may extend 24 inches on either side of the center line or 24 inches on either side of edge line markings at 1/4-mile intervals over a 1-mile length of roadway. When paved shoulders of sufficient width are available, the speed measurement markings may be placed entirely on these shoulders (see Drawing A of Figure 3B-10). Advisory signs may be used in conjunction with these markings.

No Equivalent Section

Section 3B.22 Speed Reduction Markings

Support:

01 Speed reduction markings (see Figure 3B-21) are transverse markings that are placed on the roadway within a lane (along both edges of the lane) in a pattern of progressively reduced spacing to give drivers the impression that their speed is increasing. These markings might be placed in advance of an unexpectedly severe horizontal or vertical curve or other roadway feature where drivers need to decelerate prior to reaching the feature and where the desired reduction in speeds has not been achieved by the installation of warning signs and/or other traffic control devices.

Guidance:

02 If used, speed reduction markings should be reserved for unexpected curves and should not be used on long tangent sections of roadway or in areas frequented mainly by local or familiar drivers, (e.g., school zones). If used, speed reduction markings should supplement the appropriate warning signs and other traffic control devices and should not substitute for these devices.

Standard:

03 If used, speed reduction markings shall be a series of white transverse lines on both sides of the lane that are perpendicular to the center line, edge line, or lane line. The longitudinal spacing between the markings shall be progressively reduced from the upstream to the downstream end of the marked portion of the lane.

Guidance:

04 Speed reduction markings should not be greater than 12 inches in width, and should not extend more than 18 inches into the lane.

Standard:

05 Speed reduction markings shall not be used in lanes that do not have a longitudinal line (center line, edge line, or lane line) on both sides of the lane.

Section 3B.22 Speed Reduction Markings

Support:

01 Speed reduction markings (see Figure 3B-28) are transverse markings that are placed on the roadway within a lane (along both edges of the lane) in a pattern of progressively reduced spacing to give drivers the impression that their speed is increasing. These markings might be placed in advance of an unexpectedly severe horizontal or vertical curve or other roadway feature where drivers need to decelerate prior to reaching the feature and where the desired reduction in speeds has not been achieved by the installation of warning signs and/or other traffic control devices.

Guidance:

02 If used, speed reduction markings should be reserved for unexpected curves and should not be used on long tangent sections of roadway or in areas frequented mainly by local or familiar drivers, (e.g., school zones). If used, speed reduction markings should supplement the appropriate warning signs and other traffic control devices and should not substitute for these devices.

Standard:

03 If used, speed reduction markings shall be a series of white transverse lines on both sides of the lane that are perpendicular to the center line, edge line, or lane line. The longitudinal spacing between the markings shall be progressively reduced from the upstream to the downstream end of the marked portion of the lane.

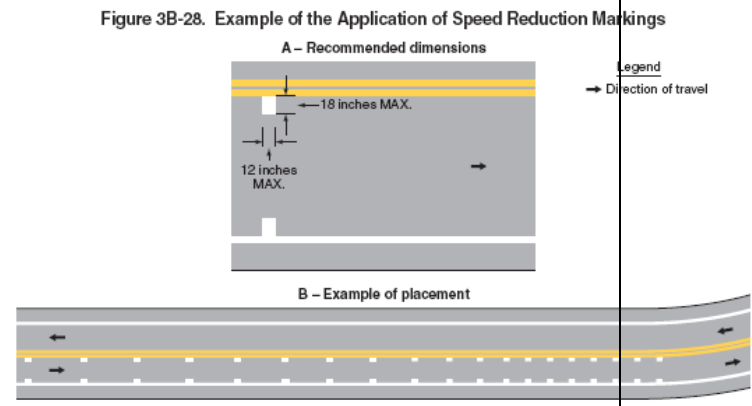
Guidance:

04 Speed reduction markings should not be greater than 12 inches in width, and should not extend more than 18 inches into the lane.

Standard:

05 Speed reduction markings shall not be used in lanes that do not have a longitudinal line (center line, edge line, or lane line) on both sides of the lane.

Are we ok with the widths?



**3B.21 Curb Markings**

**Support:**  
Curb markings are most often used to indicate parking regulations or to delineate the curb.

**Standard:**  
Signs shall be used with curb markings in those areas where curb markings are frequently obliterated by snow and ice accumulation unless the no parking zone is controlled by statute or local ordinance. Where curbs are marked, the colors shall conform to the general principles of markings (see Section 3A.4).

**Guidance:**  
Except as noted in the Option, when curb markings are used without signs to convey parking regulations, a legible word marking regarding the regulation (such as "No Parking" or "No Standing") should be placed on the curb.

**Option:**  
Curb markings without word markings or signs may be used to convey a general prohibition by statute of parking within a specified distance of a STOP sign, driveway, fire hydrant, or crosswalk.

**Option:**  
Local highway agencies may prescribe special colors for curb markings to supplement standard signs for parking regulation.

**Guidance:**  
Retroreflective solid yellow markings should be placed on the noses of raised medians and curbs of islands that are located in the line of traffic flow where the curb serves to channel traffic to the right of the obstruction. Retroreflective solid white markings should be used when traffic may pass on either side of the island.

**Section 3B.23 Curb Markings**

**Support:**  
01 Curb markings are most often used to indicate parking regulations or to delineate the curb.

**Standard:**  
02 Where curbs are marked to convey parking regulations in areas where curb markings are frequently obscured by snow and ice accumulation, signs shall be used with the curb markings except as provided in Paragraph 4.

**Guidance:**  
03 Except as provided in Paragraph 4, when curb markings are used without signs to convey parking regulations, a legible word marking regarding the regulation (such as "No Parking" or "No Standing") should be placed on the curb.

**Option:**  
04 Curb markings without word markings or signs may be used to convey a general prohibition by statute of parking within a specified distance of a STOP sign, YIELD sign, driveway, fire hydrant, or crosswalk.

05 Local highway agencies may prescribe special colors for curb markings to supplement standard signs for parking regulation.

**Support:**  
06 Since yellow and white curb markings are frequently used for curb delineation and visibility, it is advisable to establish parking regulations through the installation of standard signs (see Sections 2B.46 through 2B.48).

**Standard:**  
07 Where curbs are marked for delineation or visibility purposes, the colors shall comply with the general principles of markings (see Section 3A.05).

**Guidance:**  
08 Retroreflective solid yellow markings should be placed on the approach ends of raised medians and curbs of islands that are located in the line of traffic flow where the curb serves to channel traffic to the right of the obstruction.

09 Retroreflective solid white markings should be used when traffic is permitted to pass on either side of the island.

**Section 3B.23 Curb Markings**

**Support:**  
01 Curb markings are most often used to indicate parking regulations or to delineate the curb.

**Standard:**  
02 Where curbs are marked to convey parking regulations in areas where curb markings are frequently obscured by snow and ice accumulation, signs shall be used with the curb markings except as provided in Paragraph 4.

**Guidance:**  
03 Except as provided in Paragraph 4, when curb markings are used without signs to convey parking regulations, a legible word marking regarding the regulation (such as "No Parking" or "No Standing") should be placed on the curb.

**Option:**  
04 Curb markings without word markings or signs may be used to convey a general prohibition by statute or local ordinance of parking within a specified distance of a stop sign, YIELD sign, driveway, fire hydrant, or crosswalk.

05 Local highway agencies may prescribe special colors for curb markings to supplement standard signs for parking regulation.

**Support:**  
06 Since yellow and white curb markings are frequently used for curb delineation and visibility, it is advisable to establish parking regulations through the installation of standard signs (see Sections 2B.46 through 2B.48).

**Standard:**  
07 Where curbs are marked for delineation or visibility purposes, the colors shall comply with the general principles of markings (see Section 3A.05).

**Guidance:**  
08 Retroreflective solid yellow markings should be placed on the approach ends of raised medians and curbs of islands that are located in the line of traffic flow where the curb serves to channel traffic to the right of the obstruction.

09 Retroreflective solid white markings should be used when traffic is permitted to pass on either side of the island.

**This will allow the language in the previous MnMUTCD including local ordinances. The Task Force felt this was appropriate.**

**Support:**

Since yellow and white curb markings are frequently used for curb delineation and visibility, it is advisable to establish parking regulations through the installation of standard signs (see Sections 2B.39 through 2B.41).

Where the curbs of the islands become parallel to the direction of traffic flow, it is not necessary to mark the curbs unless an engineering study indicates the need for this type of delineation.

Curbs at openings in a continuous median island need not be marked unless an engineering study indicates the need for this type of marking.

**Support:**

10 Where the curbs of the islands become parallel to the direction of traffic flow, it is not necessary to mark the curbs unless an engineering study indicates the need for this type of delineation.

11 Curbs at openings in a continuous median island need not be marked unless an engineering study indicates the need for this type of marking.

**Option:**

12 Retroreflective or internally illuminated raised pavement markers of the appropriate color may be placed on the pavement in front of the curb and/or on the top of curbed ~~as noses~~ of raised medians and curbs of islands, as a supplement to or substitute for retroreflective curb markings used for delineation.

**Support:**

10 Where the curbs of the islands become parallel to the direction of traffic flow, it is not necessary to mark the curbs unless an engineering study indicates the need for this type of delineation.

11 Curbs at openings in a continuous median island need not be marked unless an engineering study indicates the need for this type of marking.

**Option:**

12 **Retroreflective or internally illuminated raised pavement markers of the appropriate color may be placed on the pavement in front of the curb and/or on the top of curbed ~~as noses~~ of raised medians and curbs of islands, as a supplement to or substitute for retroreflective curb markings used for delineation.**

[From the list of known errors in the MUTCD \(as of 4/8/2011\)](#)  
[Section 3B.23](#)  
[In Paragraph 12, the phrase “curbed as of” should be changed to “curbed noses of.”](#)

**3B.22 Preferential Lane Word and Symbol Markings**

See Chapter 3D

See Chapter 3D

[Moved to Ch 3D](#)

**3B.23 Preferential Lane Longitudinal Markings for Motor Vehicles**

[Moved to Ch 3D](#)

**See Chapter 3D**

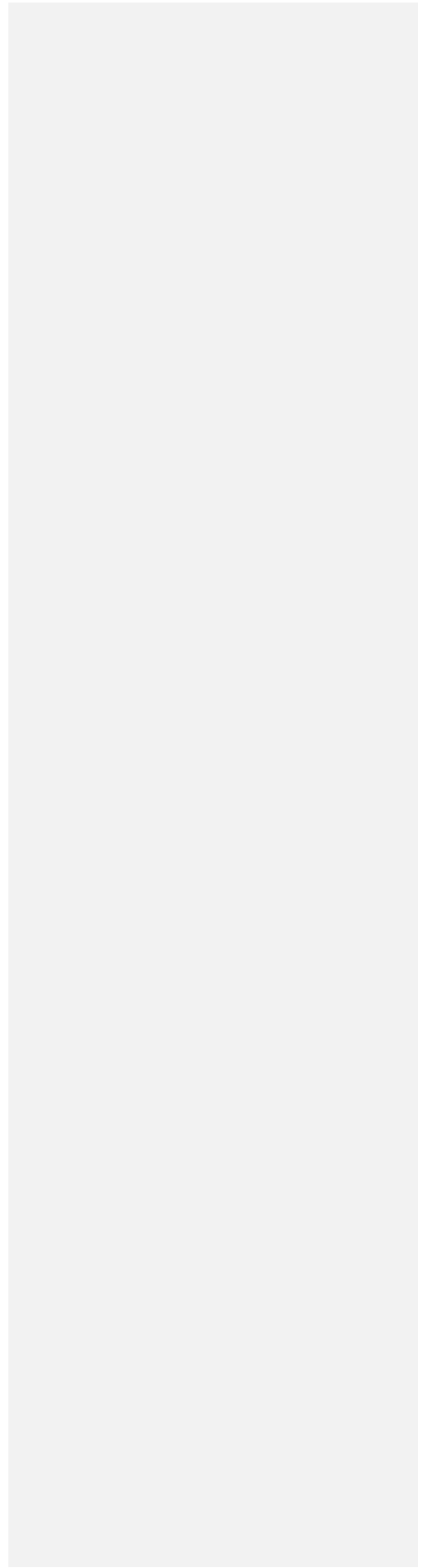
**See Chapter 3D**

**3B.24 Markings for Roundabout Intersections**

| [Moved to Chapter 3C](#)

See Chapter 3C

See Chapter 3C



No Equivalent Section

**Section 3B.24 Chevron and Diagonal Crosshatch Markings**

**Option:**

01 Chevron and diagonal crosshatch markings may be used to discourage travel on certain paved areas, such as shoulders, gore areas, flush median areas between solid double yellow center line markings or between white channelizing lines approaching obstructions in the roadway (see Section 3B.10 and Figure 3B-10), between solid double yellow center line markings forming flush medians or channelized travel paths at intersections (see Figures 3B-2 and 3B-5), buffer spaces between preferential lanes and general-purpose lanes (see Figures 3D-2 and 3D-4), and at grade crossings (see Part 8).

**Standard:**

02 When crosshatch markings are used in paved areas that separate traffic flows in the same general direction, they shall be white and they shall be shaped as chevron markings, with the point of each chevron facing toward approaching traffic, as shown in Figure 3B-8, Drawing A of Figure 3B-9, Figure 3B-10, and Drawing C of Figure 3B-15.

03 When crosshatch markings are used in paved areas that separate opposing directions of traffic, they shall be yellow diagonal markings that slant away from traffic in the adjacent travel lanes, as shown in Figures 3B-2 and 3B-5 and Drawings A and B of Figure 3B-15.

04 When crosshatch markings are used on paved shoulders, they shall be diagonal markings that slant away from traffic in the adjacent travel lane. The diagonal markings shall be yellow when used on the left-hand shoulders of the roadways of divided highways and on the left-hand shoulders of one-way streets or ramps. The diagonal markings shall be white when used on right-hand shoulders.

**Guidance:**

05 The chevrons and diagonal lines used for crosshatch markings should be at least 12 inches wide for roadways having a posted or statutory speed limit of 45 mph or greater, and at least 8 inches wide for roadways having posted or statutory speed limit of less than 45 mph. The longitudinal spacing of the chevrons or diagonal lines should be determined by engineering judgment considering factors such as speeds and desired visual impacts.

The chevrons and diagonal lines should form an angle of approximately 30 to 45 degrees with the longitudinal lines that they intersect.

**Section 3B.24 Chevron and Diagonal Crosshatch Markings**

**Option:**

01 Chevron and diagonal crosshatch markings may be used to discourage travel on certain paved areas, such as shoulders, gore areas, flush median areas between solid double yellow center line markings or between white channelizing lines approaching obstructions in the roadway (see Section 3B.10 and Figure 3B-15), between solid double yellow center line markings forming flush medians or channelized travel paths at intersections (see Figures 3B-2 and 3B-5), buffer spaces between preferential lanes and general-purpose lanes (see Figures 3D-2 and 3D-4), and at grade crossings (see Part 8).

**Standard:**

02 When crosshatch markings are used in paved areas that separate traffic flows in the same general direction, they shall be white and they shall be shaped as chevron markings, with the point of each chevron facing toward approaching traffic, as shown in Figure 3B-8, Drawing A of Figure 3B-9, Figure 3B-10, and Drawing C of Figure 3B-15.

03 When crosshatch markings are used in paved areas that separate opposing directions of traffic, they shall be yellow diagonal markings that slant away from traffic in the adjacent travel lanes, as shown in Figures 3B-2 and 3B-5 and Drawings A and B of Figure 3B-15.

04 When crosshatch markings are used on paved shoulders, they shall be diagonal markings that slant away from traffic in the adjacent travel lane. The diagonal markings shall be yellow when used on the left-hand shoulders of the roadways of divided highways and on the left-hand shoulders of one-way streets or ramps. The diagonal markings shall be white when used on right-hand shoulders.

**Guidance:**

05 The chevrons and diagonal lines used for crosshatch markings should be at least 12 inches wide for roadways having a posted or statutory speed limit of 45 mph or greater, and at least 8 inches wide for roadways having posted or statutory speed limit of less than 45 mph. The longitudinal spacing of the chevrons or diagonal lines should be determined by engineering judgment considering factors such as speeds and desired visual impacts.

The chevrons and diagonal lines should form an angle of approximately 30 to 45 degrees with the longitudinal lines that they intersect.

While creating the marking detail we decided on speeds less than 40mph. Detail used 24" solid chevron and 12" on low speeds

Keep FHWA language

**3B.25 Markings for Other Circular Intersections**

| [Moved to Ch 3C](#)

See Chapter 3C

See Chapter 3C

**3B.26 Speed Hump Markings**

**Standard:**  
If used, speed hump markings shall be a series of white markings placed on a speed hump to identify its location.

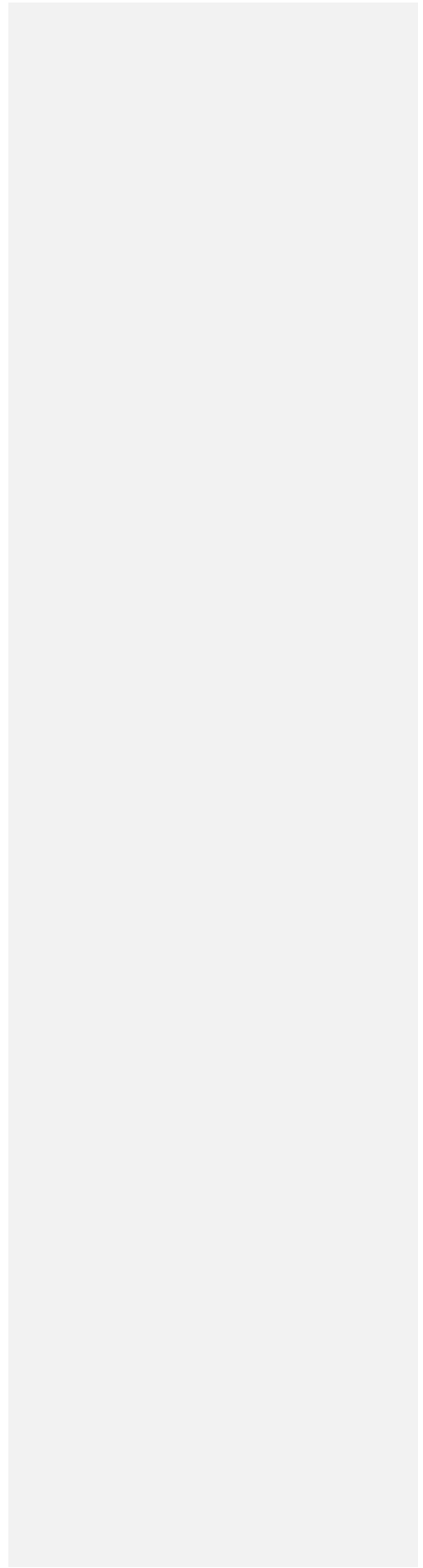
**Options:**  
Speed humps, except those used for crosswalks, may be marked in accordance with Figure 3B-29. The markings shown in Figure 3B-30 may be used where the speed hump also functions as a crosswalk or speed table. **Moved to Standard**

**Section 3B.25 Speed Hump Markings**

**Standard:**  
01 If speed hump markings are used, they shall be a series of white markings placed on a speed hump to identify its location. If markings are used for a speed hump that does not also function as a crosswalk or speed Table, the markings shall comply with Option A, B, or C shown in Figure 3B-29. **If markings are used for a speed hump that also functions as a crosswalk or speed Table, the markings shall comply with Option A or B shown in Figure 3B-30.**

**Section 3B.25 Speed Hump Markings**

**Standard:**  
01 If speed hump markings are used, they shall be a series of white markings placed on a speed hump to identify its location. If markings are used for a speed hump that does not also function as a crosswalk or speed Table, the markings shall comply with Option A, B, or C shown in Figure 3B-29. **If markings are used for a speed hump that also functions as a crosswalk or speed Table, the markings shall comply with Option A or B shown in Figure 3B-30.**



**3B.27 Advance Speed Hump Markings**

**Option:**  
Advance speed hump markings may be used in advance of an engineered vertical roadway deflection where added visibility is desired or where such deflection is not expected (see Figure 3B-31). Advance pavement wording such as BUMP or HUMP (see Section 3B.19) may be used on the approach to a speed hump either alone or in conjunction with advance speed hump markings. Appropriate advance warning signs may be used in conformance with Section 2C-24.

**Standard:**  
If used, advance speed hump markings shall be a ~~special white marking placed in advance of speed humps or other engineered vertical roadway deflections such as dips.~~

**Guidance:**  
If used, advance speed hump markings should be installed in each approach lane.

**Section 3B.26 Advance Speed Hump Markings**

**Option:**  
01 Advance speed hump markings (see Figure 3B-31) may be used in advance of speed humps or other engineered vertical roadway deflections such as dips where added visibility is desired or where such deflection is not expected.

02 Advance pavement wording such as BUMP or HUMP (see Section 3B.20) may be used on the approach to a speed hump either alone or in conjunction with advance speed hump markings. Appropriate advance warning signs may be used in compliance with Section 2C.29.

**Standard:**  
03 If advance speed hump markings are used, they shall be a series of eight white 12-inch transverse lines that become longer and are spaced closer together as the vehicle approaches the speed hump or other deflection. If advance markings are used, they shall comply with the detailed design shown in Figure 3B-31.

**Guidance:**  
04 If used, advance speed hump markings should be installed in each approach lane.

**Section 3B.26 Advance Speed Hump Markings**

**Option:**  
01 Advance speed hump markings (see Figure 3B-31) may be used in advance of speed humps or other engineered vertical roadway deflections such as dips where added visibility is desired or where such deflection is not expected.

02 Advance pavement wording such as BUMP or HUMP (see Section B.20) may be used on the approach to a speed hump either alone or in conjunction with advance speed hump markings. Appropriate advance warning signs may be used in compliance with Section 2C.29.

**Standard:**  
03 If advance speed hump markings are used, they shall be a series of eight white 12-inch transverse lines that become longer and are spaced closer together as the vehicle approaches the speed hump or other deflection. If advance markings are used, they shall comply with the detailed design shown in Figure 3B-31.

**Guidance:**  
04 If used, advance speed hump markings should be installed in each approach lane.

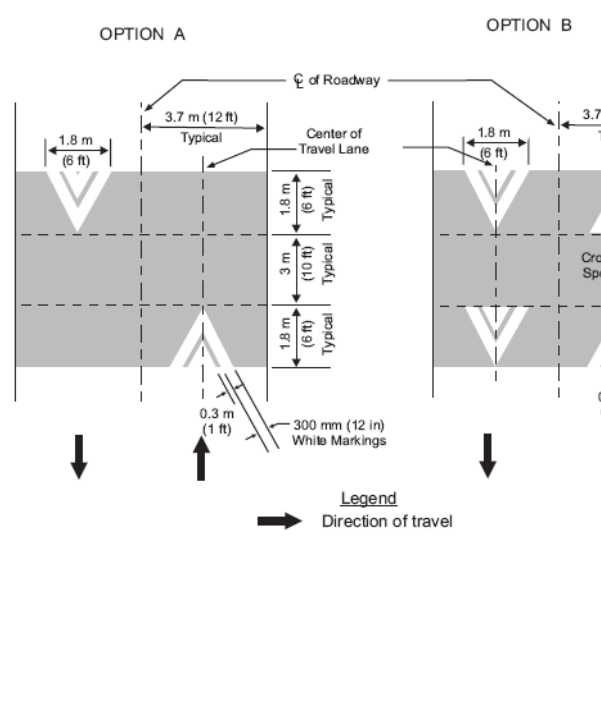


Figure 3B-30 Examples of Pavement Markings for Speed Tables or Speed Humps with Crosswalks

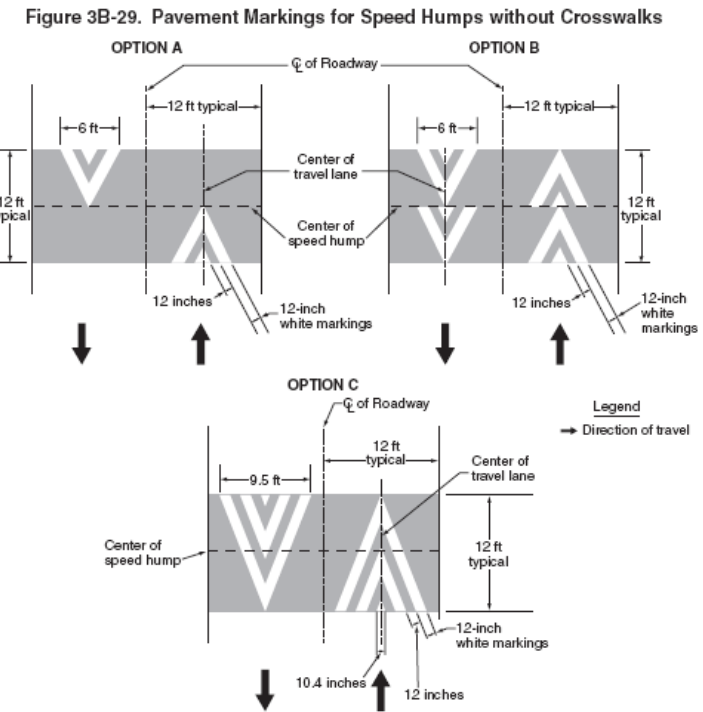
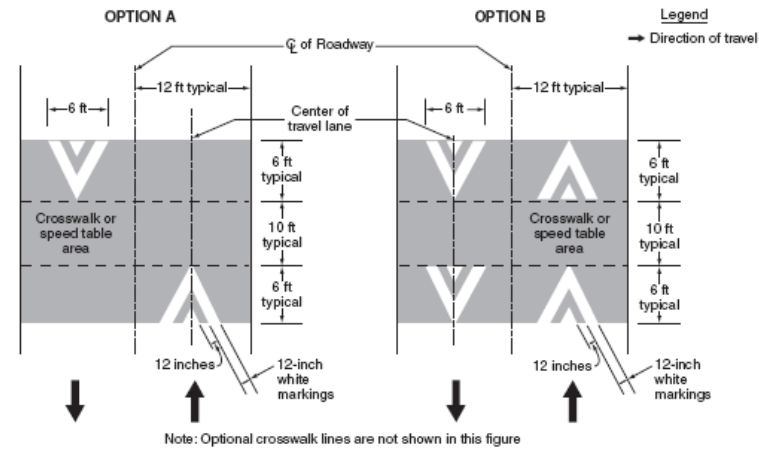


Figure 3B-30. Pavement Markings for Speed Tables or Speed Humps with Crosswalks



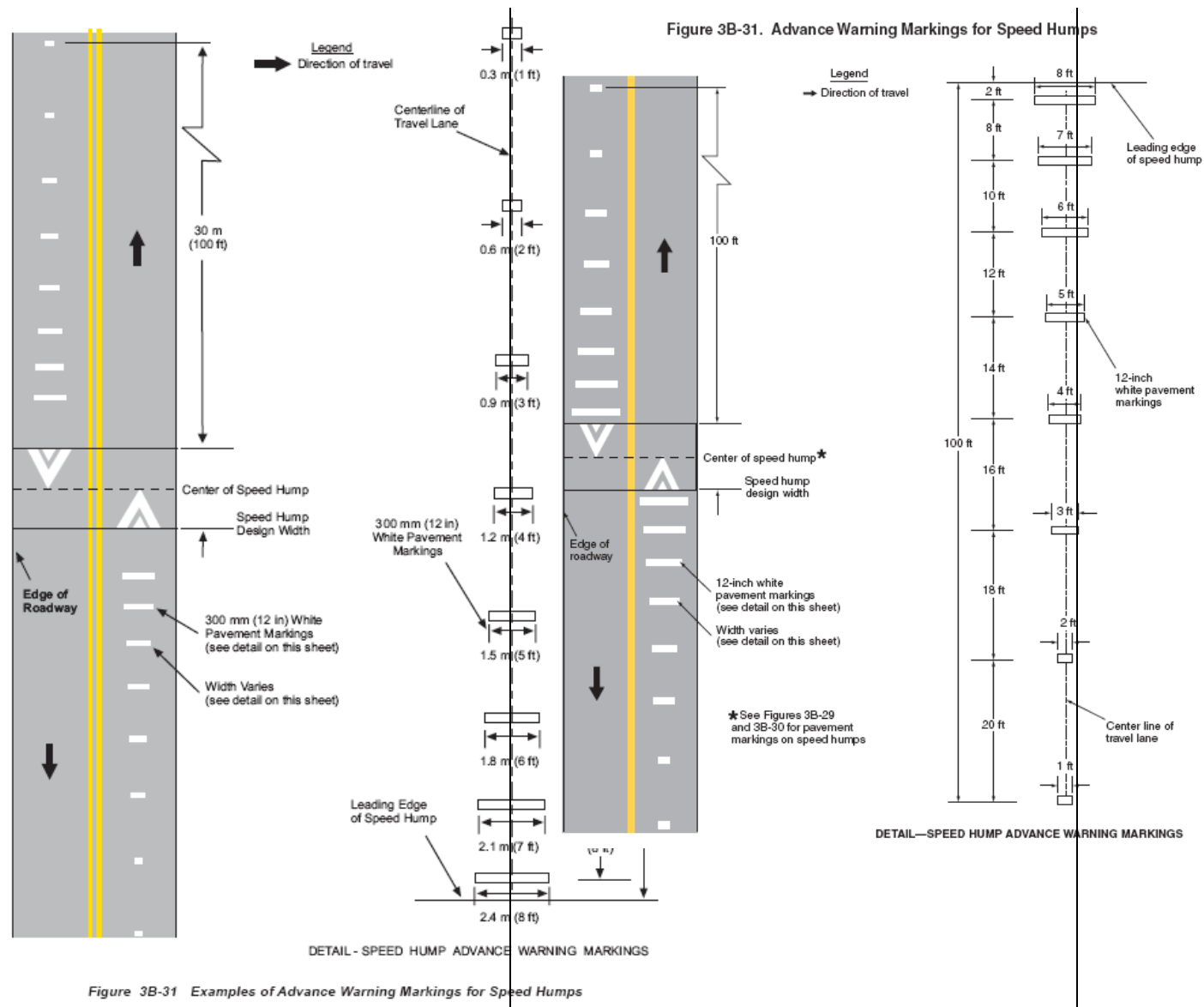


Figure 3B-31 Examples of Advance Warning Markings for Speed Humps