

Traffic Engineering Striping & Stenciling Handbook



MaineDOT

SEPTEMBER 2019

**Section 1 & 2
Striping Patterns/
Layouts & Passing
Zone Layouts
Section 3
Truck Lane Layouts
Section 4
Turning Lane Layouts
Section 5 & 6
Stencil Layout,
Square Footage**

**Points of Contacts
Region Traffic Engineers (RTE) List
Region 1 - Southern
Randy Illian - 855-7000
Bob VanLuling - 885-7000
Region 2 - Midcoast
David Allen - 624-8227
Region 3 - Western
Tim Soucie - 562-4228
Region 4 - Eastern
Bruce Mattson - 941-4310
**Andrew Allen - 941-4505
Region 5 - Northern
Raymond Demerchant - 764-2200
Erick Bechtel - 764-2200
Additional Contact:
Noah French - 557-5429**

****Contact for technical questions & future details**

Notes

1. Passing zones shall not be less than 430 feet or 10 skips long (with 11 gaps).
2. Traffic patterns are laid out using the basic “H” pattern. Use only the patterns on pages 8 & 9.
3. All travel lanes have an assumed width of 11 feet unless otherwise marked (center of line to center of line).
 - All travel lanes must be properly identified. At the beginning of each end of the new pavement, the number reflecting the lane width should be painted on the road. (Example 10’, 10’-6”, 11’, 11’-6”, etc.)
 - Any tapering or widening of a travel lane, from the original desired width, shall be properly laid out to show the appropriate new taper or new widening along with the new desired width.
4. All lanes, passing zones, intersections, islands, curve layouts, and truck lanes should follow the designs in this booklet.
5. The listed Regional Traffic Engineers are the only individuals authorized to make changes to road layouts, passing zones, intersections, edge lines, truck lanes, and lane widths within each region.
6. Any questions, concerns, or problems with the layouts need to be brought to the attention of the RTE in your region. The RTE contact information is on page 2.

Definitions

Solid White Lines (SWL): Solid line pavement markings delineating the separation of traffic lanes that have the same direction of travel & where crossing the lane line markings is discouraged. This is also used in conjunction with tick marks in aggressive curves for additional visibility. Tick marks are 2 foot dots, attached to the white line, that are 8 inches wide and gapped 6 feet between dots. Tick marks run from the PC to the PT through the curve. When tick marks run through an intersection the solid white line changes to a dotted white line forming a 12 inch wide (8 inch + 4 inch) x 2 foot long dot.

Broken White Line (BWL): Broken line pavement markings are used wherever crossing the lane line is permitted. This line is 4 inches in width, with 10 foot long painted lines separated by 30 foot long gaps. On the freeway they would be 6 inch lines, 15 feet long with 25 foot gaps.

Dotted White Line (DWL): A dotted lane line provides guidance or warning of a downstream change in lane function. A dotted line for lane extensions within an intersection should consist of 2 foot line segments and 6 foot gaps (1:3 ratio). A dotted line separating an auxiliary lane between two freeway interchange or exit ramps involving lane drops should consist of 3 foot line segments and 9 foot gaps. 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. A lane drop marking used in advance of lane drops at freeway/expressway exit ramps should begin at least 1/2 mile in advance of the theoretical gore. 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 under 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,
- D) An auxiliary lane 1 mile or less in length between two adjacent intersections,
- E) Dotted line on a curve through an intersection.

Two Solid White Lines (2SWL): A white, double line between travel lanes that strongly limits crossing. This is the most restrictive white lane lines. An exception to crossing this line would be to enter the roadway from a drive or entrance. This line consists of two parallel lines, 4 inches in width separated by a 4 inch gap.

Stop Bar: Stop lines/bars shall consist of solid white lines, 24" wide, extending across approach lanes to indicate the point at which the stop is intended or required to be made.

Two Solid Yellow Lines (2SYL): A yellow, double line on the farthest left acceptable travel lane that generally prohibits crossing. This is the most restrictive yellow lane line. An exception to crossing the line would be to enter a drive or entrance on the left side of the highway. This line consists of two parallel lines, 4 inches in width separated by a 4 inch gap.

Two Dotted Yellow Lines (2DYL): A dotted yellow line on the farthest left acceptable travel lane that provides guidance or warning of a downstream change in lane function, namely a transition to a solid double yellow line. This line consists of two parallel lines 4 inches in width, with 2 foot long painted lines separated by 6 foot long gaps, with 4 inches separating one line from the adjoining parallel line.

Solid Yellow Line (SYL): A yellow line to the left of the acceptable travel lane that generally prohibit crossing. Some examples of this line would be on the freeway between the left through lane & the center median, to the left of a right turn on an off-ramp splitter island, left side of an off-ramp after the gore, non-freeway would be around a splitter island. An exception to crossing this line would be to enter a drive or entrance on the left side of the highway. The line is 4 inches wide (6 inches on freeways), except in rare occasions 12".

Broken Yellow Line (BYL): Part A) A yellow broken line on the farthest left acceptable normal travel lane and indicates a permissive condition allowing short term crossing of the line when conditions permit. This line is 4 inches in width, with 10 foot long painted dashes separated by 30 foot long gaps (15 foot dashes separated by 25 foot long gaps on freeway applications). Part B) A yellow broken line that indicates a permissive condition allowing short term crossing of the line when conditions permit. Typically used in two-way left-turn lanes in conjunction with a solid yellow edge line.

Dotted Yellow Line (DYL): A yellow dotted line on the farthest left acceptable travel lane that provides guidance or warning of a downstream change in lane function or lane extensions within an intersection, namely a solid yellow line. This yellow line is 4 inches wide (or 6 inch width for emphasis), 2 foot long painted dots separated by 6 foot long gaps (1:3 ratio).

Cross Hatching Yellow (YCH): Yellow lines 45° to centerline painted from left to right (perspective of starting near the opposing lane & coming at a 45° angle toward the direction of travel). Lines are 12" wide (25 - 40 MPH) & 24" wide (40 mph & greater) & spaced at 1 foot per mile per hour of the posted speed. (i.e.: 45 MPH speed limit translates to 45 foot spacing) being measured upstation (leading end to leading end or trailing end to trailing end).

Cross Hatching White (WCH): White lines 45° to a theoretical mid point line through the hatched area painted in chevron format (perspective of starting on the midpoint & coming at a 45° angle toward the directions of travel). Lines are 12" wide (25 - 40 MPH) & 24" wide (40 mph & greater) & spaced at 1 foot per mile per hour of the posted speed. (i.e.: 45 MPH speed limit 45 foot spacing) being measured upstation (leading end to leading end).

Drawings in this book are **not to scale.**

Section 1

Striping Patterns

1



2



3



4



5



6



7



8



9



10



11



12



13



14

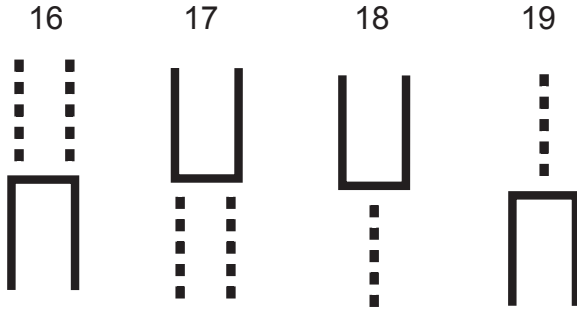


15

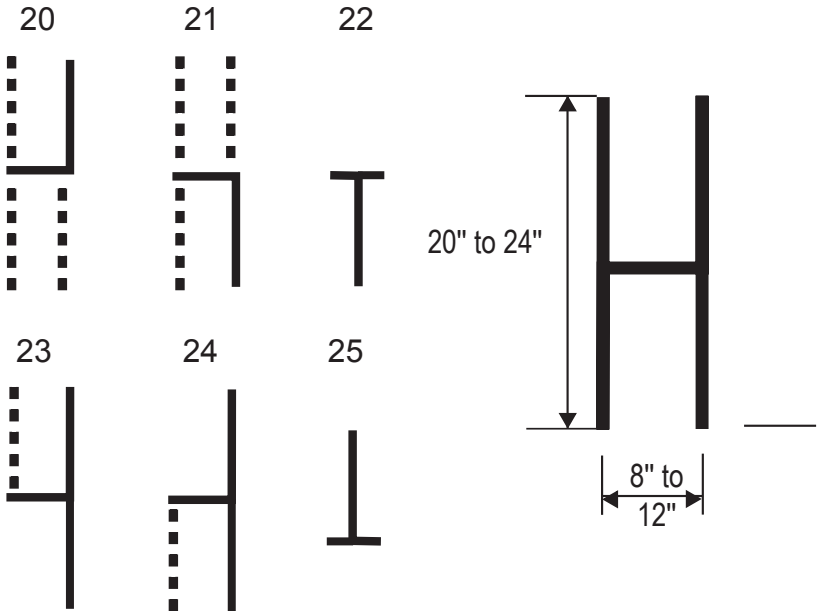


Striping Patterns

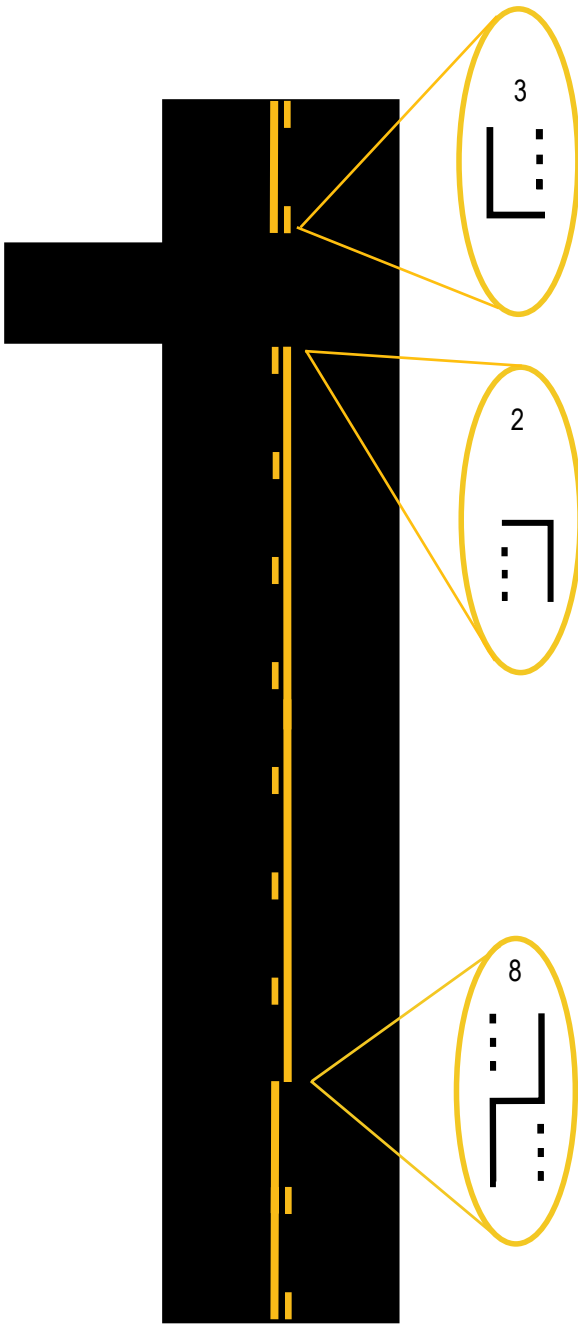
Center Line Markings & 5 Dot Patterns (For Dotted Lines)

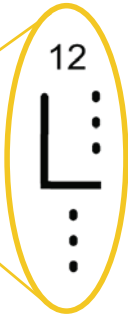


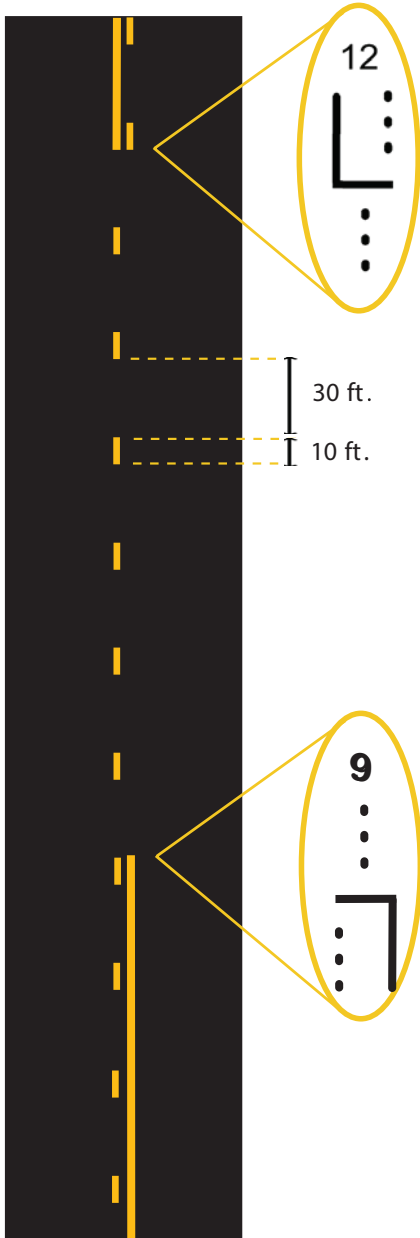
Edge Line Markings (white)



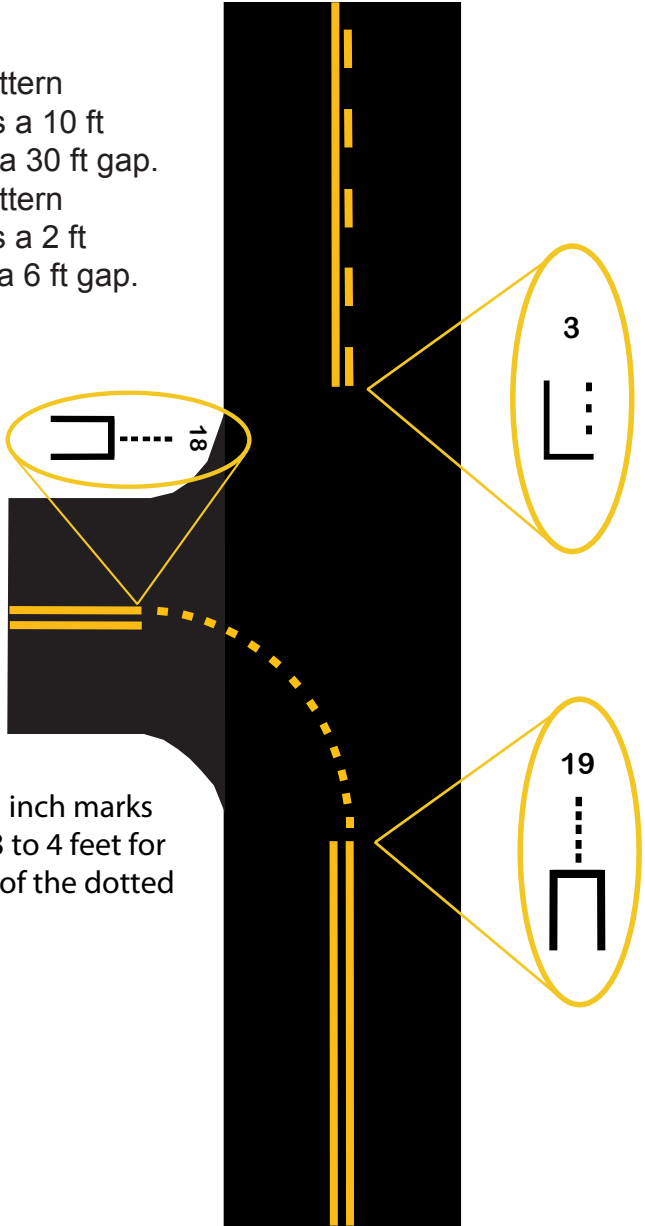
Final centerline markings are to be placed where the centerline will be striped. The striping truck may need to stripe from either direction, depending upon the direction of the sun. Marks must be placed on the high point ("center line joint") because marks under the tire of the striping truck cannot be seen by the operator. One foot off the centerline joint is not acceptable.



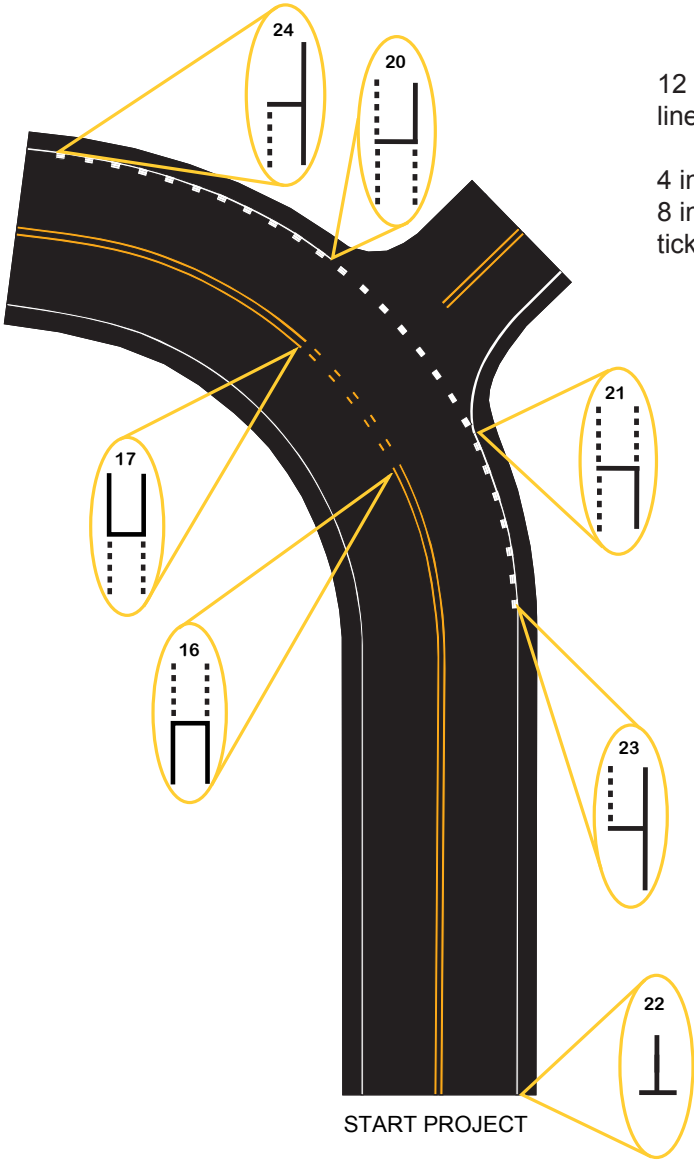




A 3 dot pattern
represents a 10 ft
dash with a 30 ft gap.
A 5 dot pattern
represents a 2 ft
"dot" with a 6 ft gap.



Place 1 inch marks
every 3 to 4 feet for
layout of the dotted line.

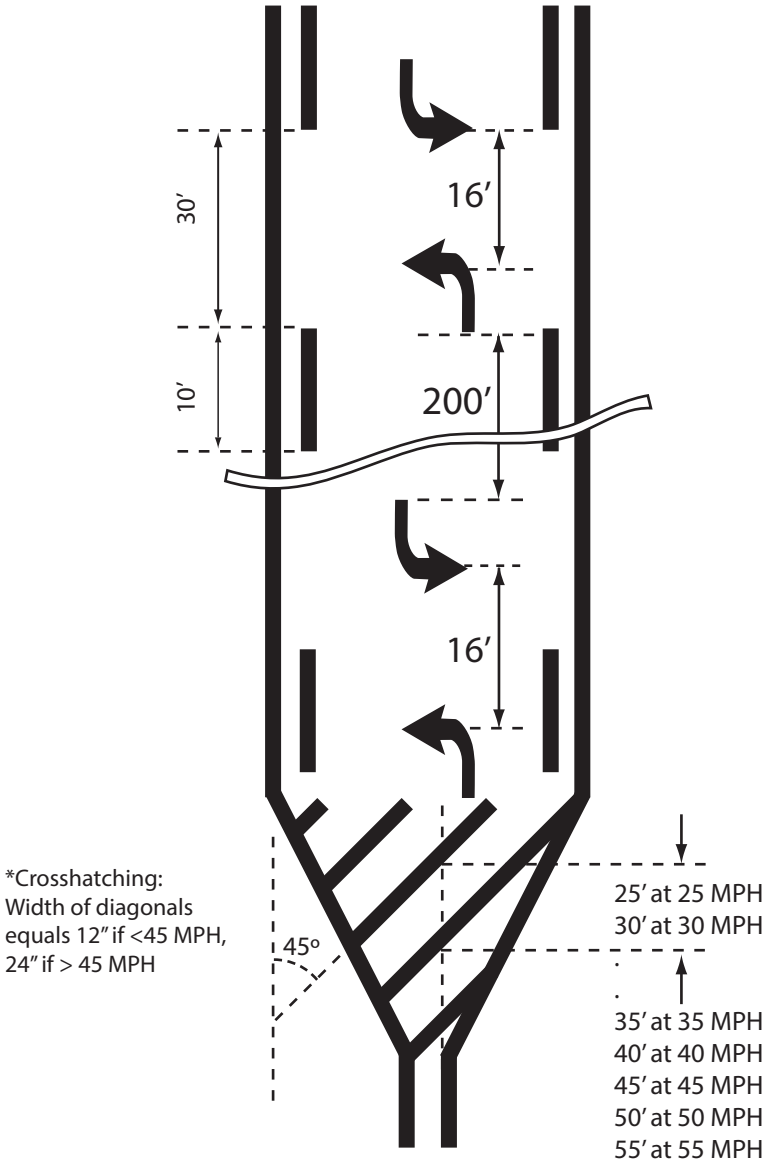


12 inch dotted
line (8" + 4")

4 inch line with
8 inch x 24 inch
tick marks

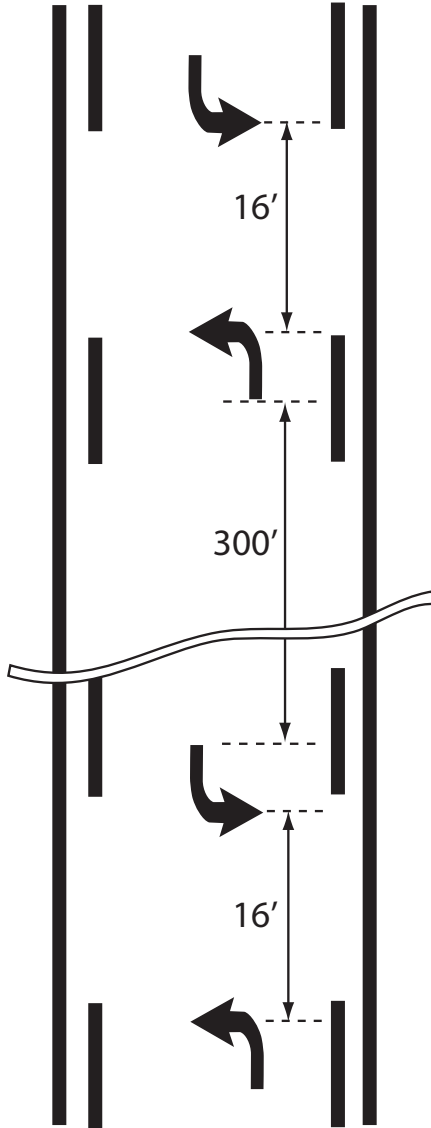
Section 2

Spacing for 25 - 30 MPH

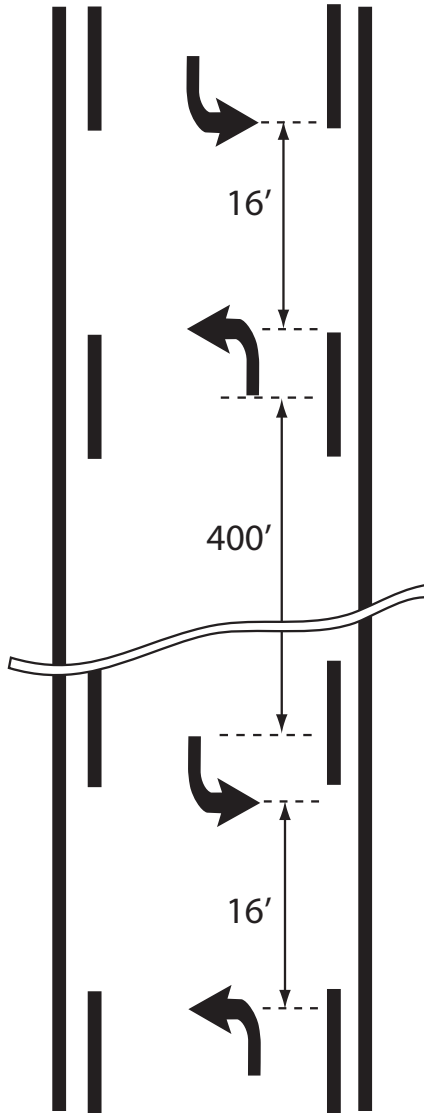


100 FT spacing when total length of center turn lane is less than 1,000 FT in length

Spacing for 35 - 40 MPH

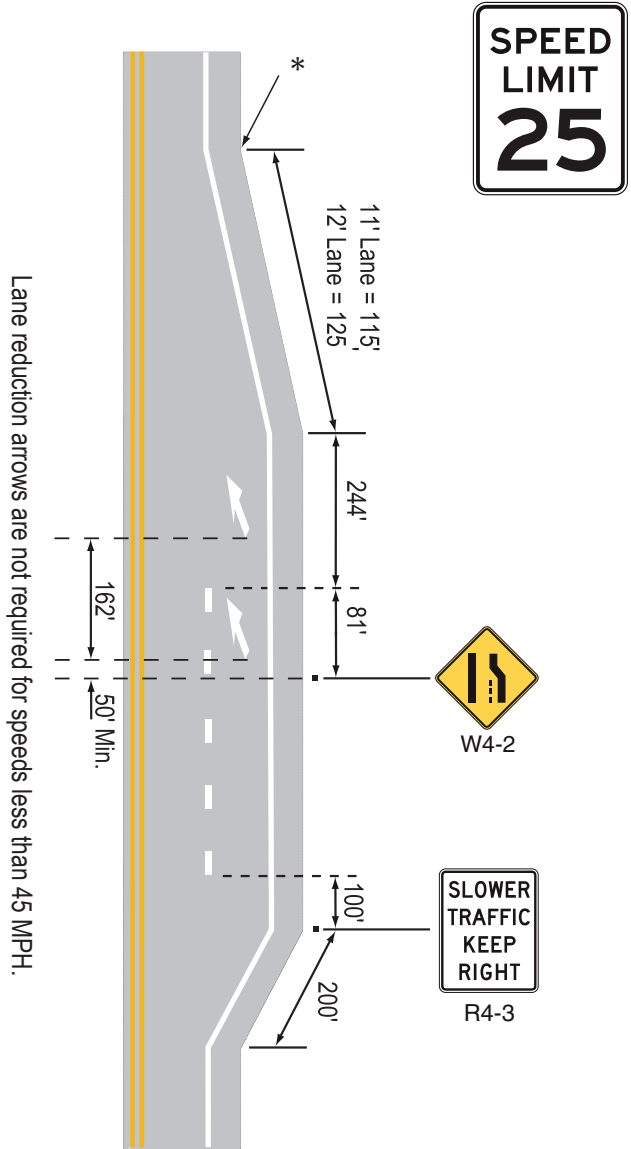


Spacing for 45 MPH & greater



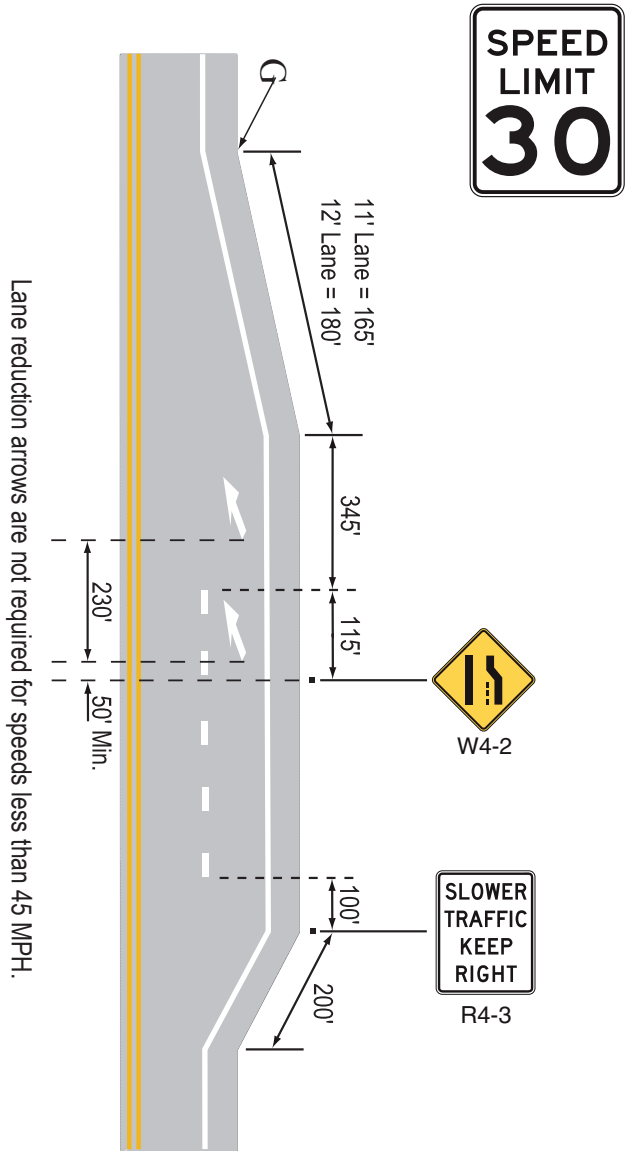
Section 3

Truck Lane



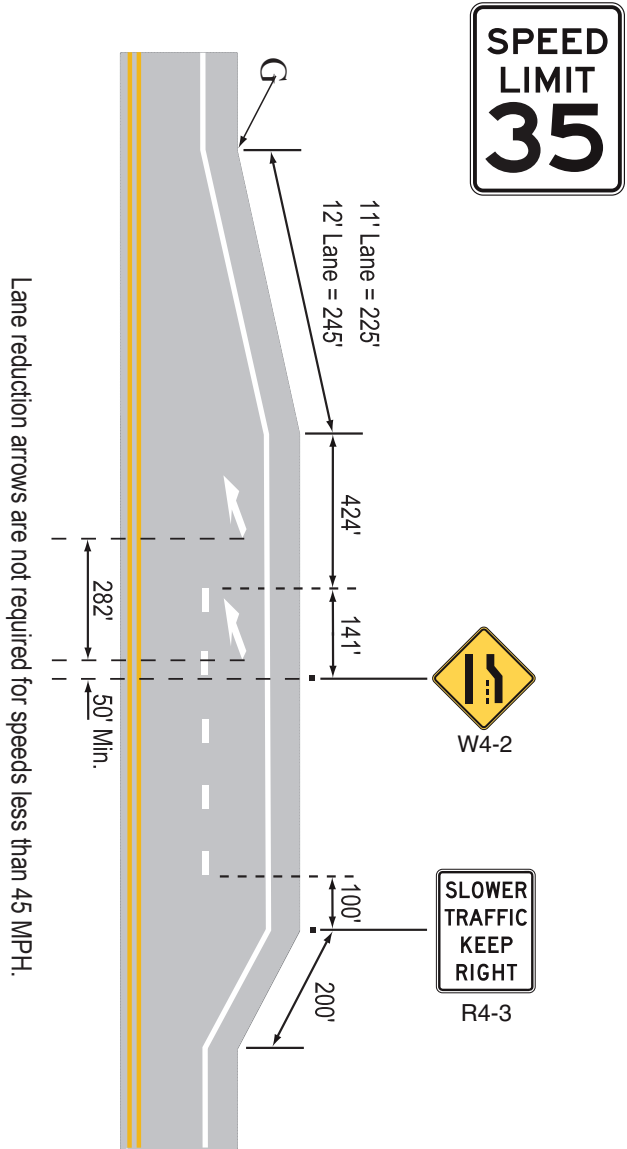
* For best results start at the trailing end (where travel lane & shoulder are back to normal width).

Truck Lane



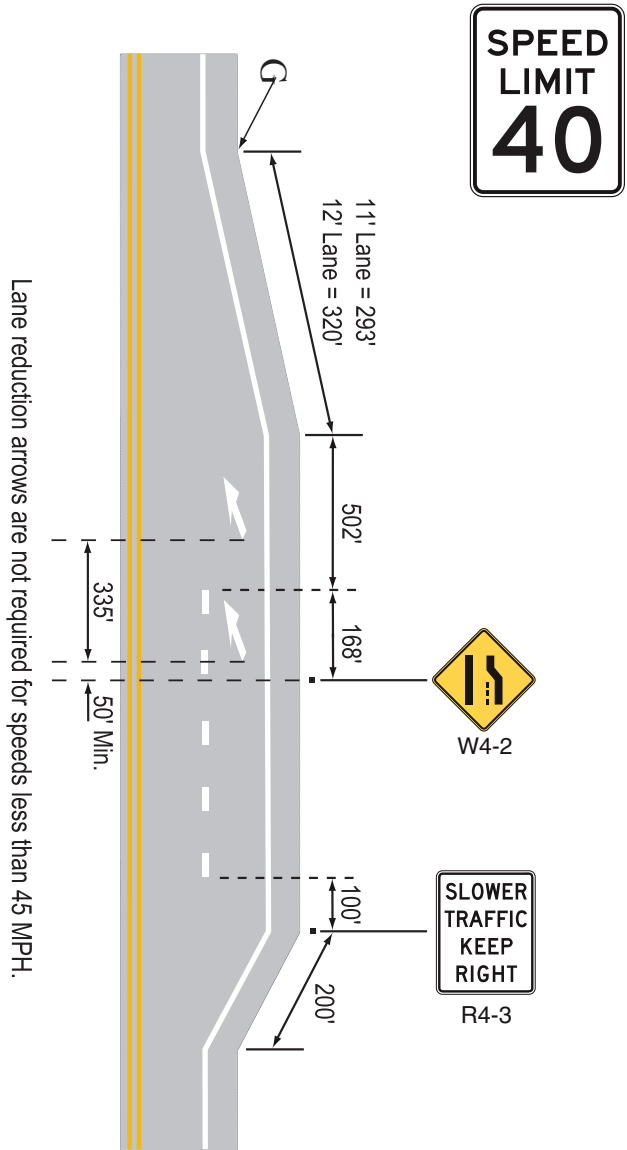
* For best results start at the trailing end (where travel lane & shoulder are back to normal width).

Truck Lane



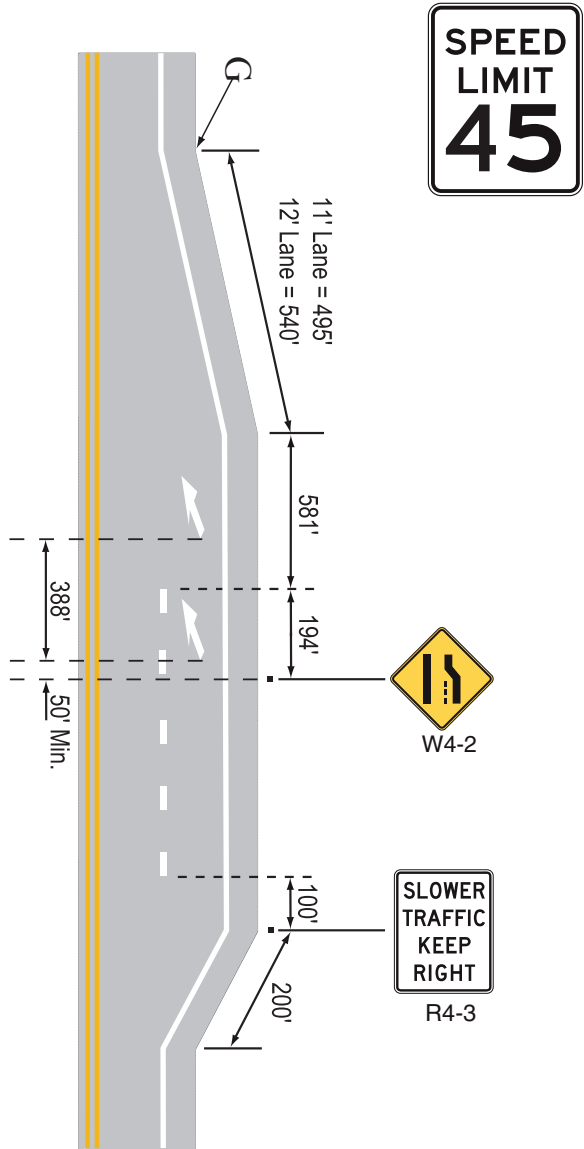
*For best results start at the trailing end (where travel lane & shoulder are back to normal width).

Truck Lane



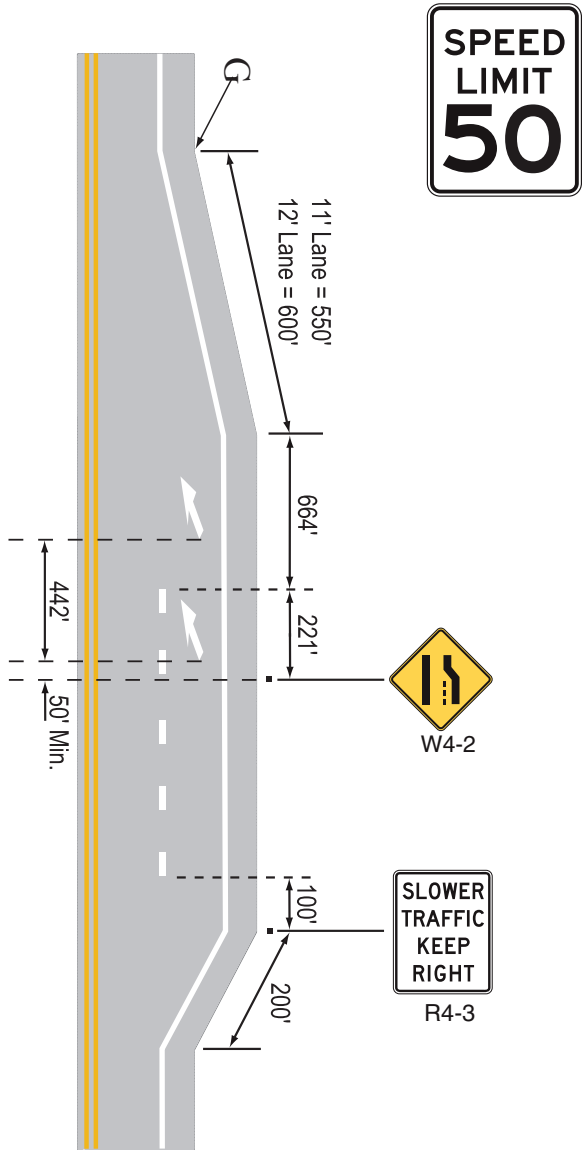
*For best results start at the trailing end (where travel lane & shoulder are back to normal width).

Truck Lane



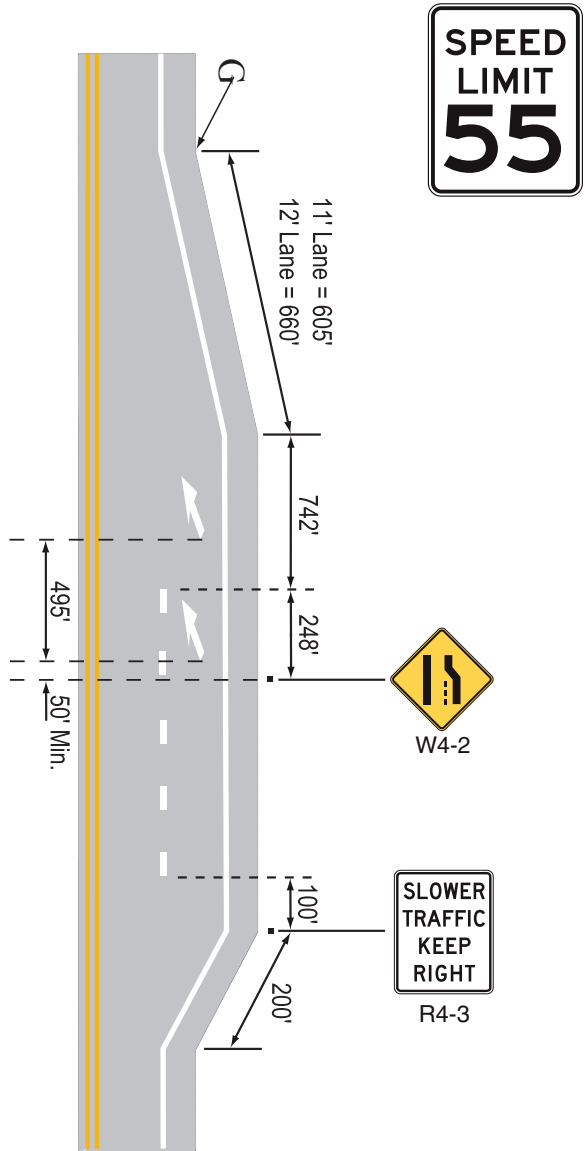
*For best results start at the trailing end (where travel lane & shoulder are back to normal width).

Truck Lane



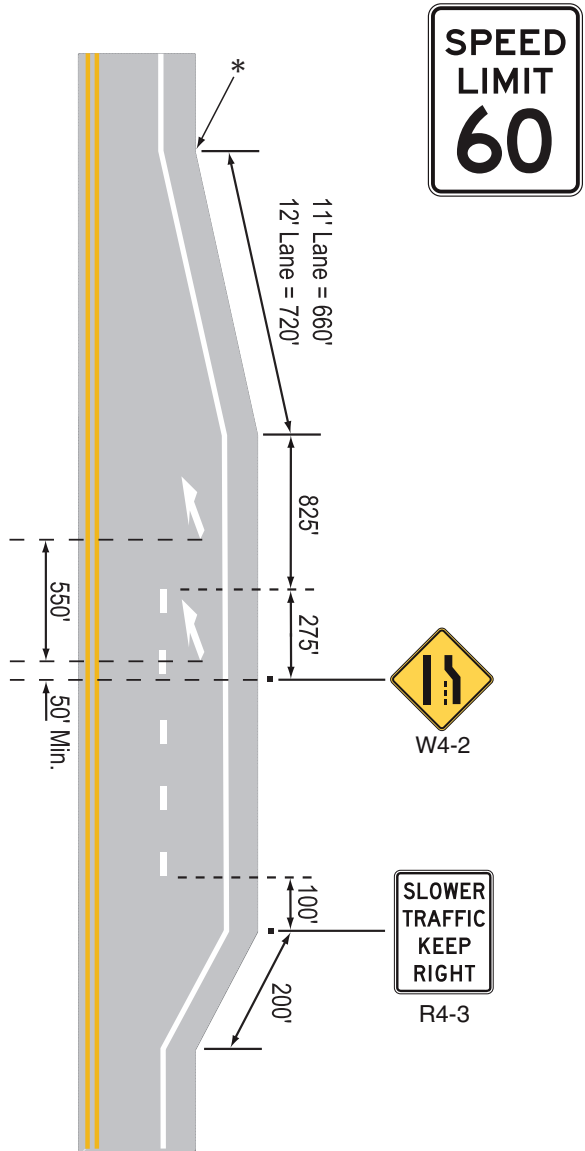
*For best results start at the trailing end (where travel lane & shoulder are back to normal width).

Truck Lane



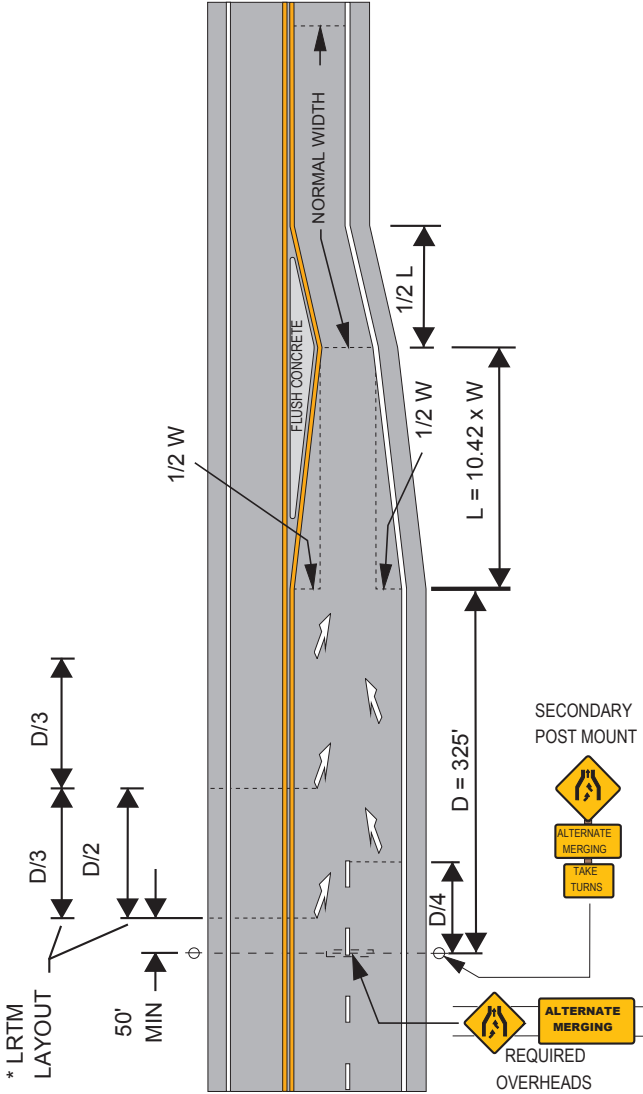
*For best results start at the trailing end (where travel lane & shoulder are back to normal width).

Truck Lane



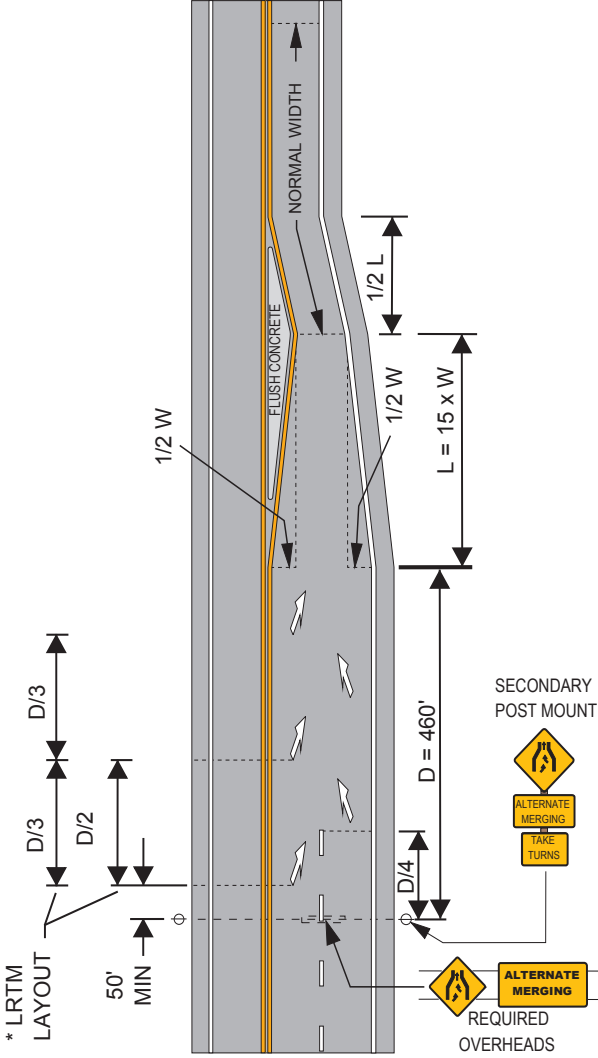
* For best results start at the trailing end (where travel lane & shoulder are back to normal width).

ALTERNATING MERGE - LAYOUT 25 MPH



- NOTES:**
- *1) LANE REDUCTION TRANSITION MARKINGS (LRTM) ARE REQUIRED FOR ALTERNATE MERGE LAYOUTS.
 - *2) LRTM SPACING IS OFTEN DICTATED BY GEOMETRY; THEREFORE SPACING MAY REQUIRE ADJUSTMENTS.
 - *3) 1/3 D CAN BE USED WHEN 3 ARROWS PER LANE IS DESIRED.

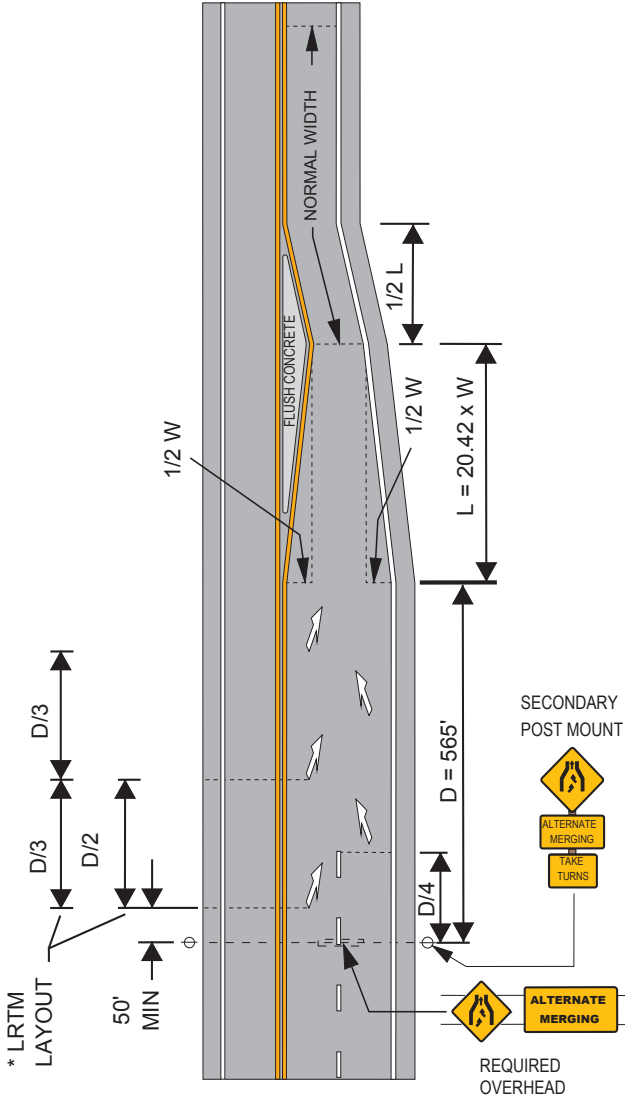
ALTERNATING MERGE - LAYOUT 30 MPH



- NOTES:**
- *1) LANE REDUCTION TRANSITION MARKINGS (LRTM) ARE REQUIRED FOR ALTERNATE MERGE LAYOUTS.
 - *2) LRTM SPACING IS OFTEN DICTATED BY GEOMETRY; THEREFORE SPACING MAY REQUIRE ADJUSTMENTS.
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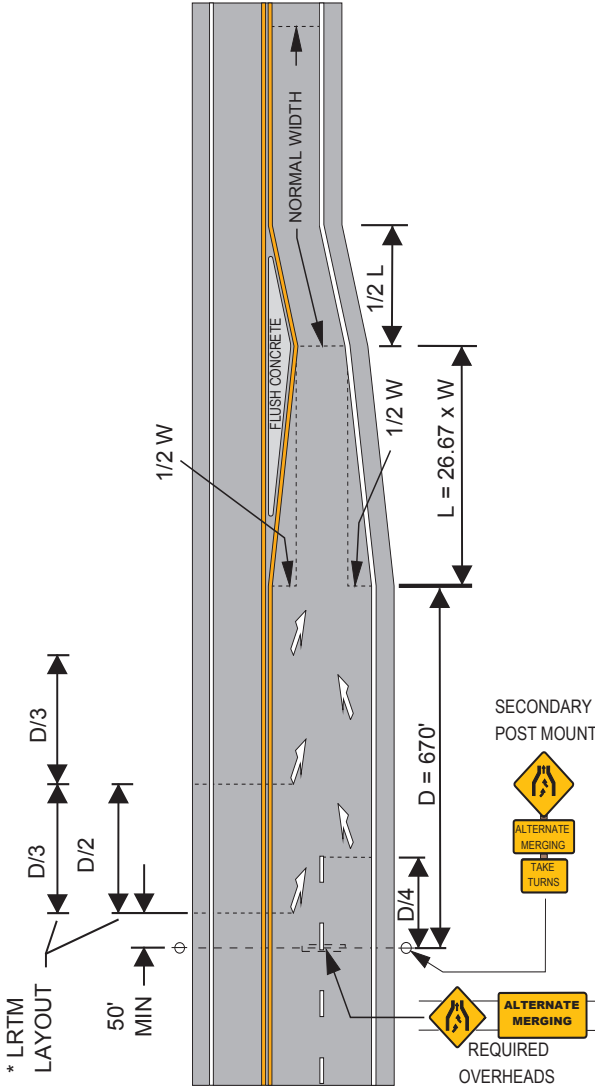
ALTERNATING MERGE - LAYOUT

35 MPH



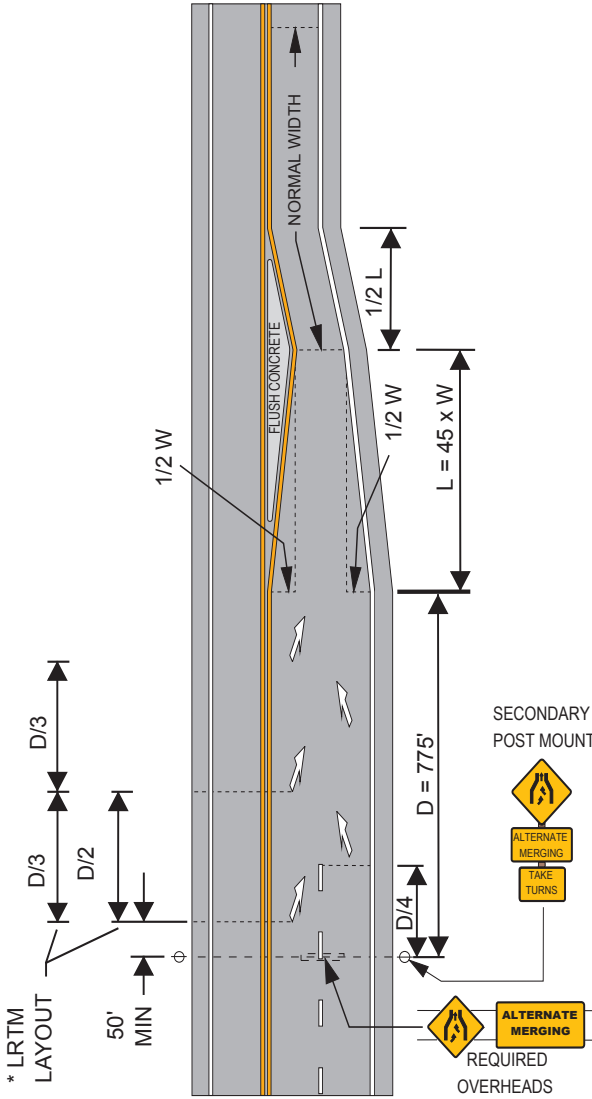
- NOTES:**
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ALTERNATING MERGE - LAYOUT 40 MPH



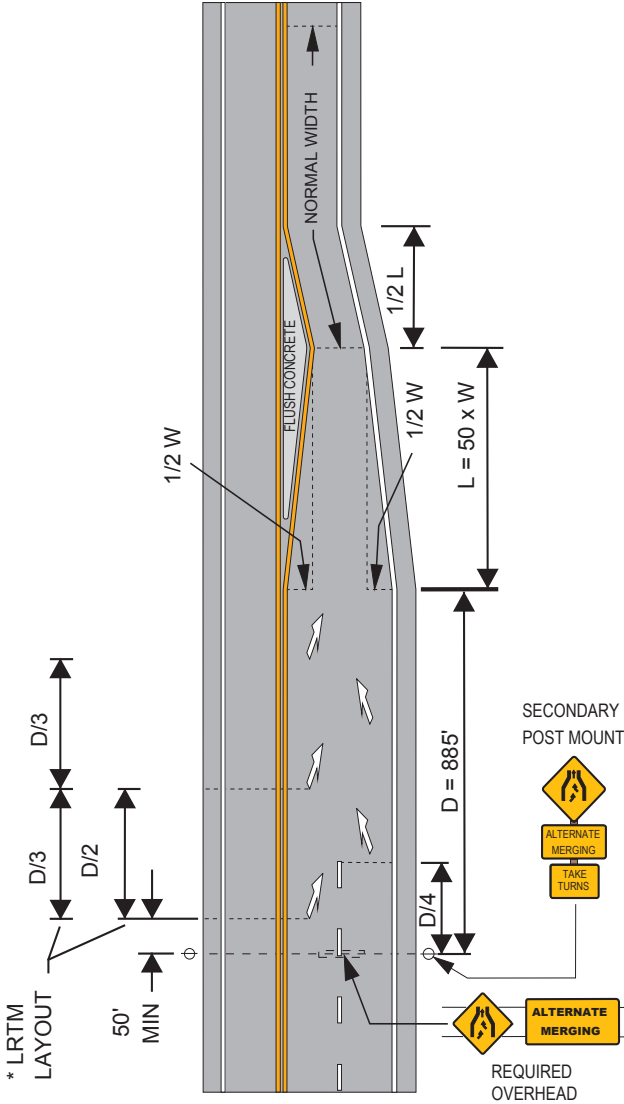
- NOTES:**
- *1) LANE REDUCTION TRANSITION MARKINGS (LRTM) ARE REQUIRED FOR ALTERNATE MERGE LAYOUTS.
 - *2) LRTM SPACING IS OFTEN DICTATED BY GEOMETRY; THEREFORE SPACING MAY REQUIRE ADJUSTMENTS.
 - *3) 1/3 D CAN BE USED WHEN 3 ARROWS PER LANE IS DESIRED.

ALTERNATING MERGE - LAYOUT 45 MPH



- NOTES:**
- * 1) LANE REDUCTION TRANSITION MARKINGS (LRTM) ARE REQUIRED FOR ALTERNATE MERGE LAYOUTS.
 - * 2) LRTM SPACING IS OFTEN DICTATED BY GEOMETRY; THEREFORE SPACING MAY REQUIRE ADJUSTMENTS.
 - * 3) 1/3 D CAN BE USED WHEN 3 ARROWS PER LANE IS DESIRED.

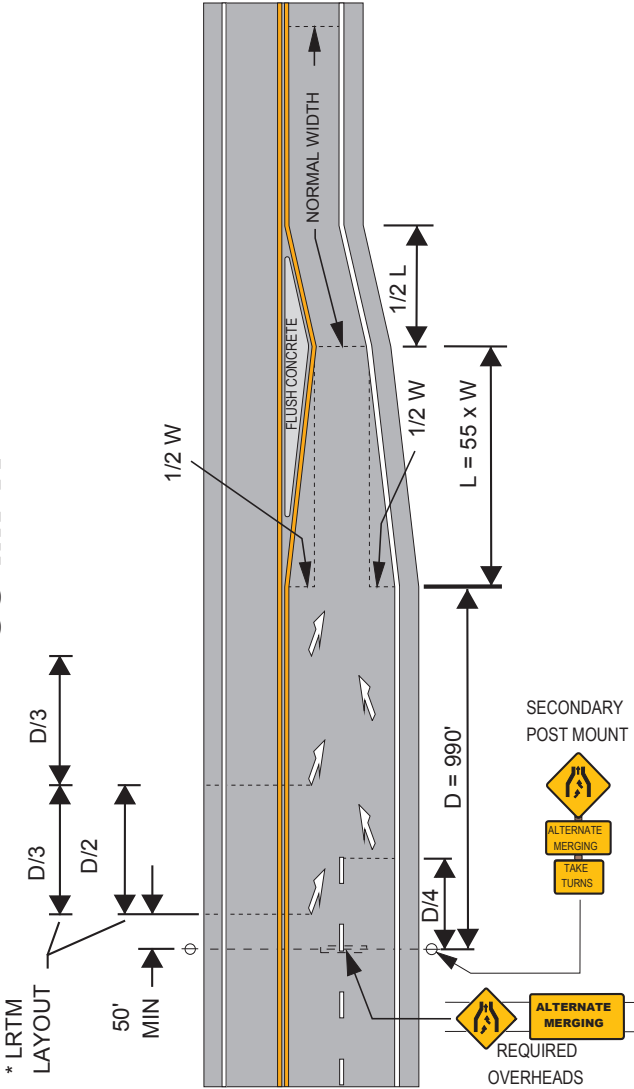
ALTERNATING MERGE - LAYOUT 50 MPH



- NOTES:**
- *1) LANE REDUCTION TRANSITION MARKINGS (LRTM) ARE REQUIRED FOR ALTERNATE MERGE LAYOUTS.
 - *2) LRTM SPACING IS OFTEN DICTATED BY GEOMETRY; THEREFORE SPACING MAY REQUIRE ADJUSTMENTS.
 - *3) $1/3 D$ CAN BE USED WHEN 3 ARROWS PER LANE IS DESIRED.

ALTERNATING MERGE - LAYOUT

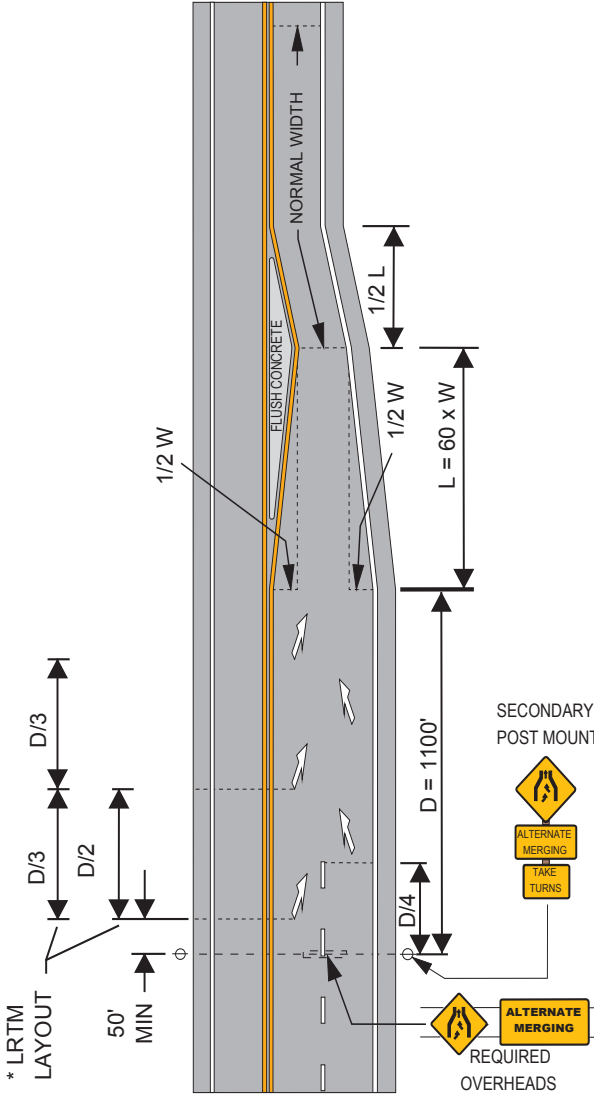
55 MPH



- NOTES:**
- *1) LANE REDUCTION TRANSITION MARKINGS (LRTM) ARE REQUIRED FOR ALTERNATE MERGE LAYOUTS.
 - *2) LRTM SPACING IS OFTEN DICTATED BY GEOMETRY; THEREFORE SPACING MAY REQUIRE ADJUSTMENTS.
 - *3) 1/3 D CAN BE USED WHEN 3 ARROWS PER LANE IS DESIRED.

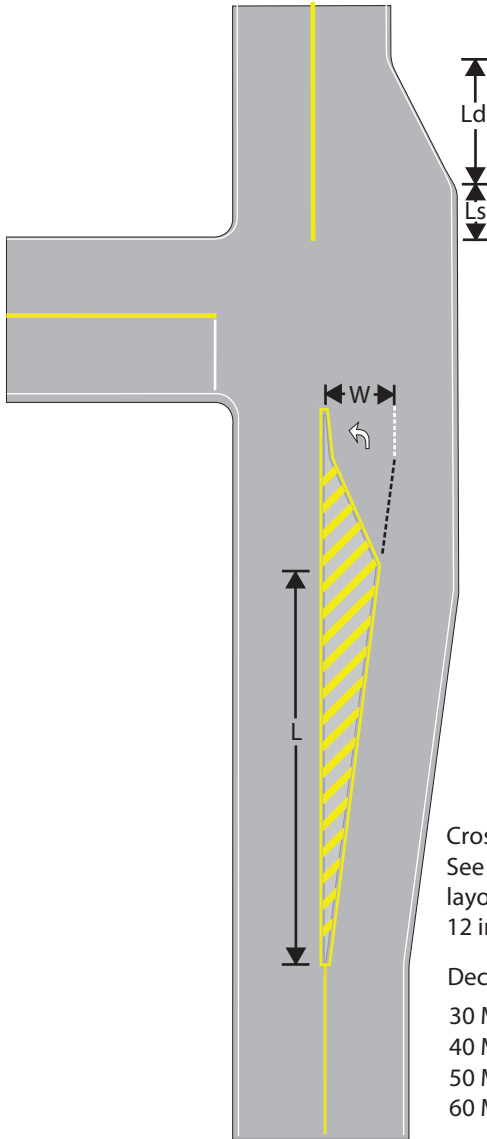
ALTERNATING MERGE - LAYOUT

60 MPH



- NOTES:**
- *1) LANE REDUCTION TRANSITION MARKINGS (LRTM) ARE REQUIRED FOR ALTERNATE MERGE LAYOUTS.
 - *2) LRTM SPACING IS OFTEN DICTATED BY GEOMETRY; THEREFORE SPACING MAY REQUIRE ADJUSTMENTS.
 - *3) 1/3 D CAN BE USED WHEN 3 ARROWS PER LANE IS DESIRED.

Bubble Island Layout



Taper (L):
 $S =$ Speed of road in MPH
 $S \geq 45 \quad L = WS$
 $S < 45 \quad L = (WS^2)/60$

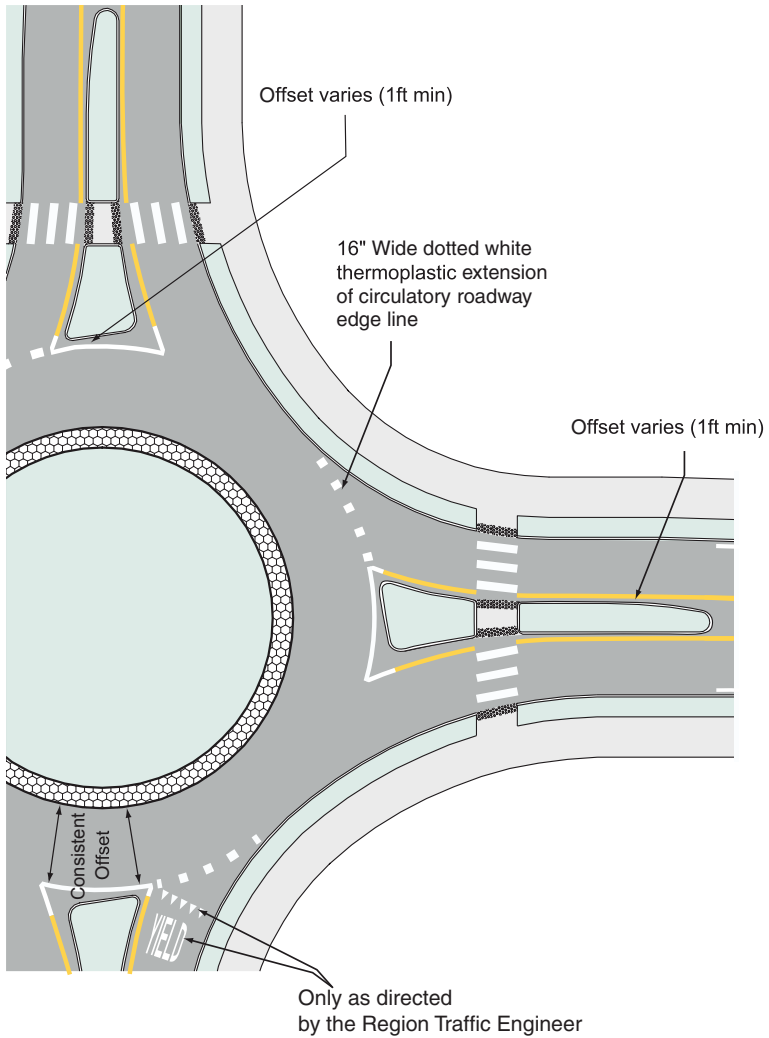
Crosshatching:
 See section 2 for crosshatching layout. Width of diagonals equals 12 inch.

Deceleration Layout (Ld):
 30 MPH = 120'
 40 MPH = 165'
 50 MPH = 265'
 60 MPH = 370'

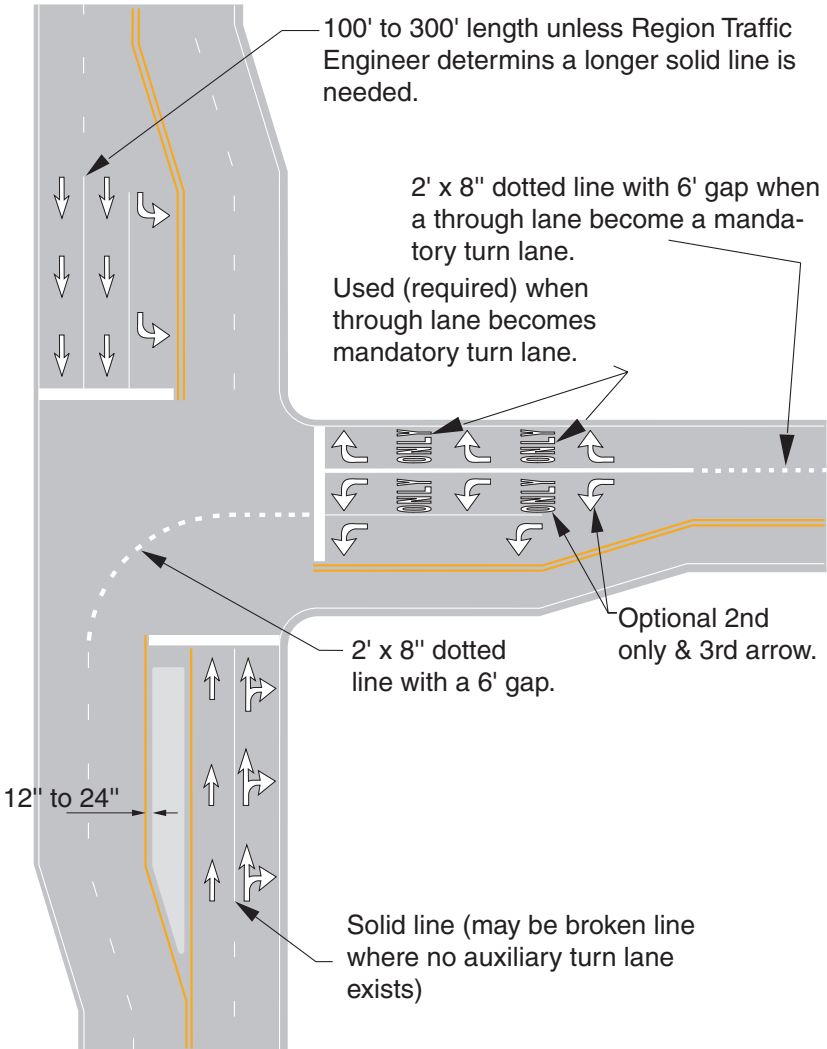
Storage Length (Ls):
 <61 Vehicles/HR = 50'
 61-120 Vehicles/HR = 100'
 121-180 Vehicles/HR = 150'
 >180 Vehicles/HR = 199'

Section 4

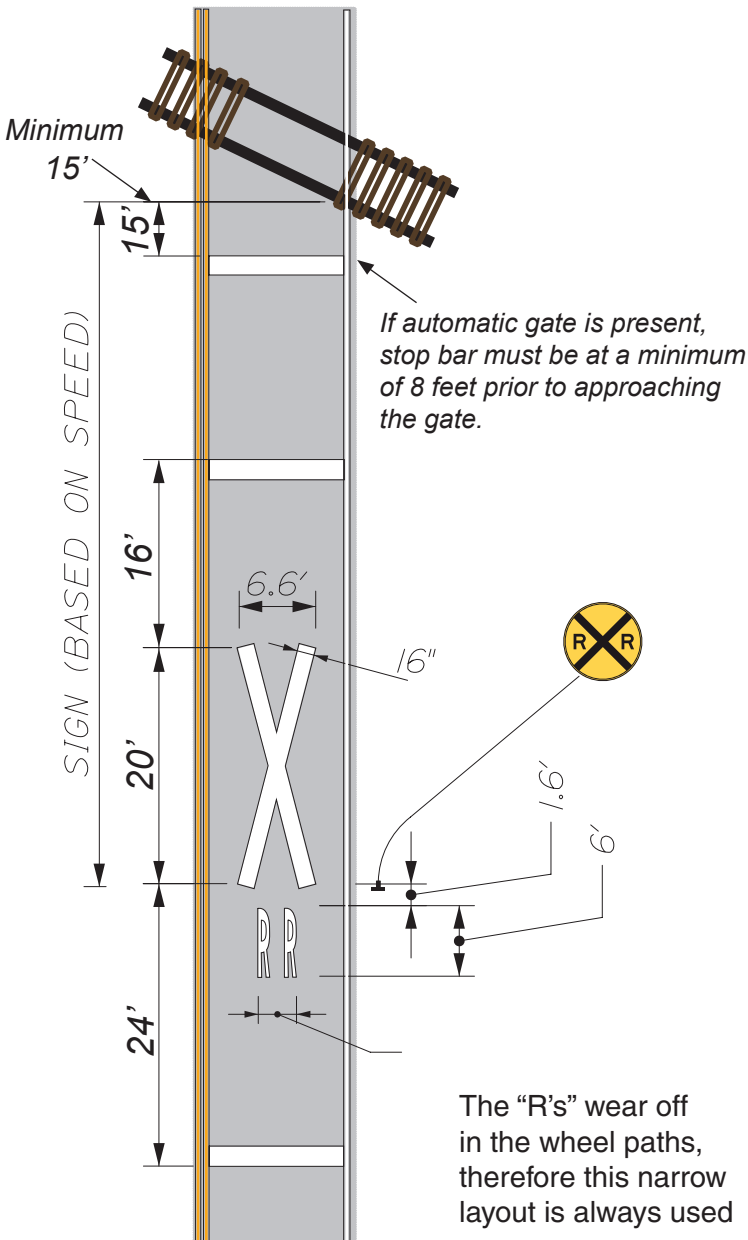
Turning Lane Layouts



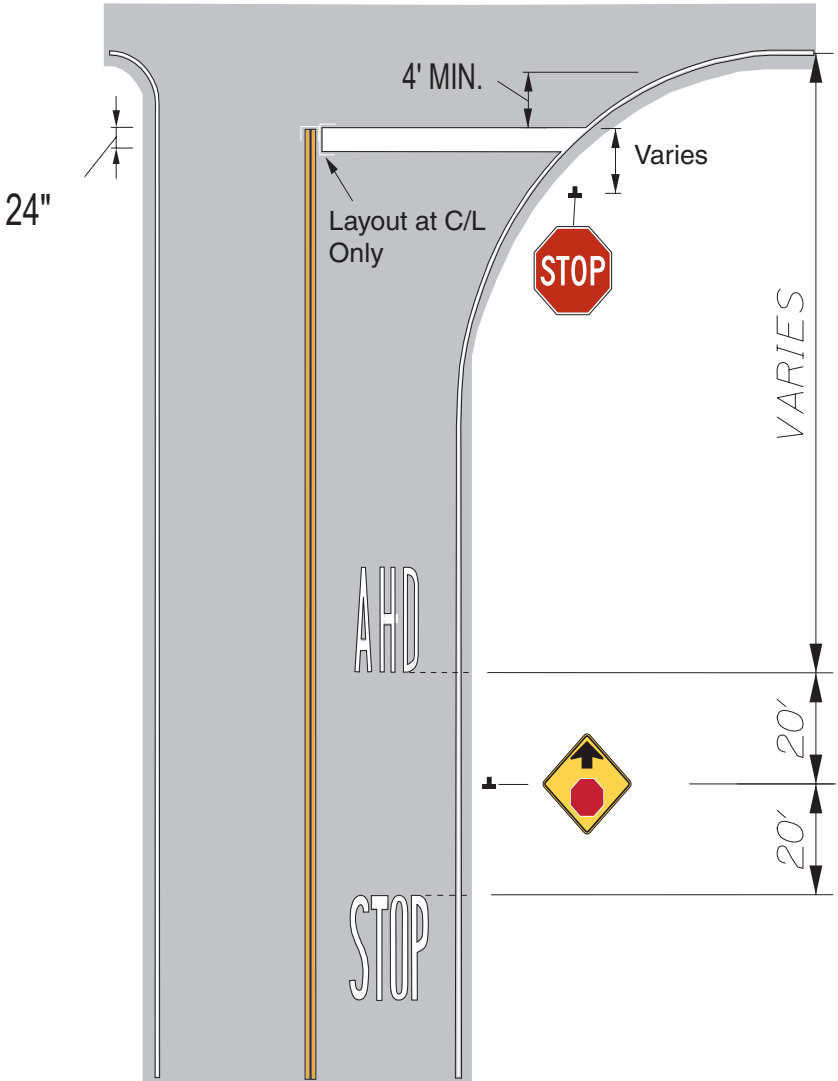
Signalized Intersection with Multiple Turn Lanes



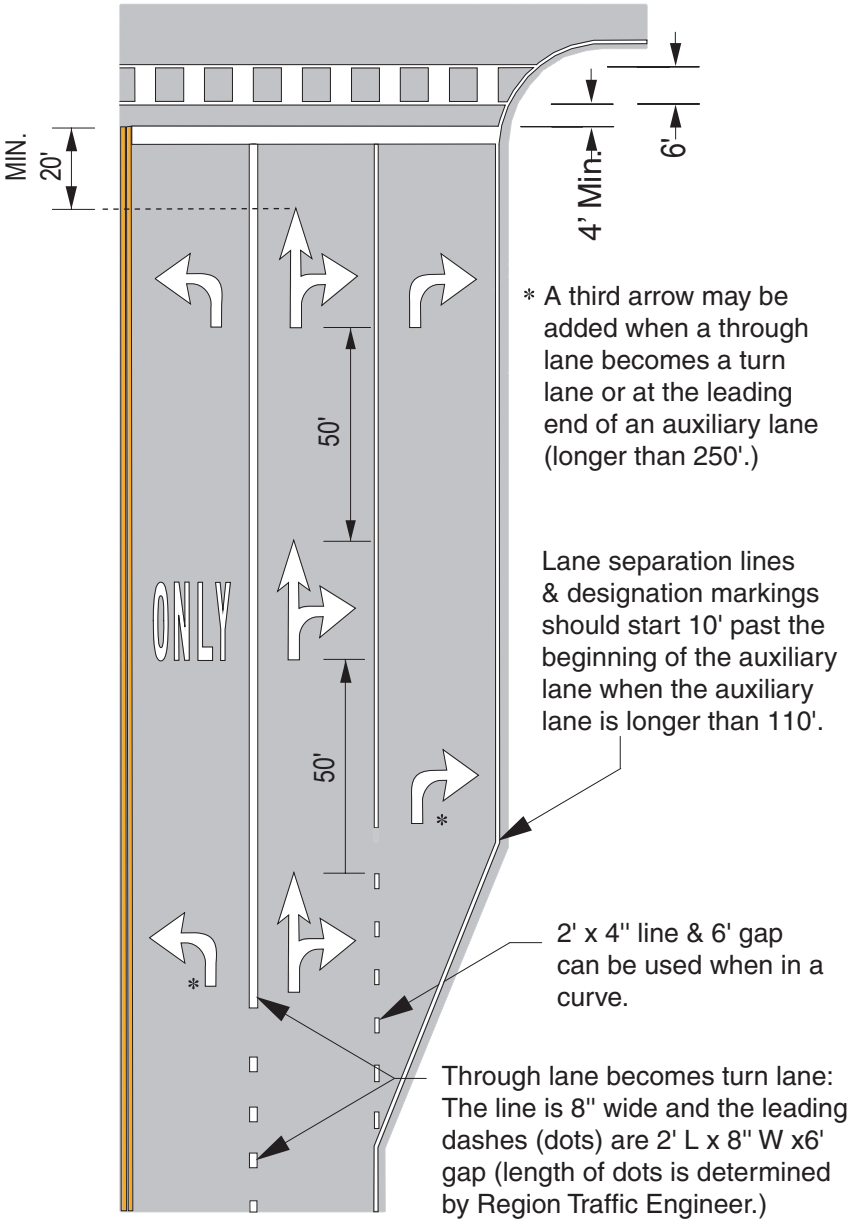
Railroad Crossing



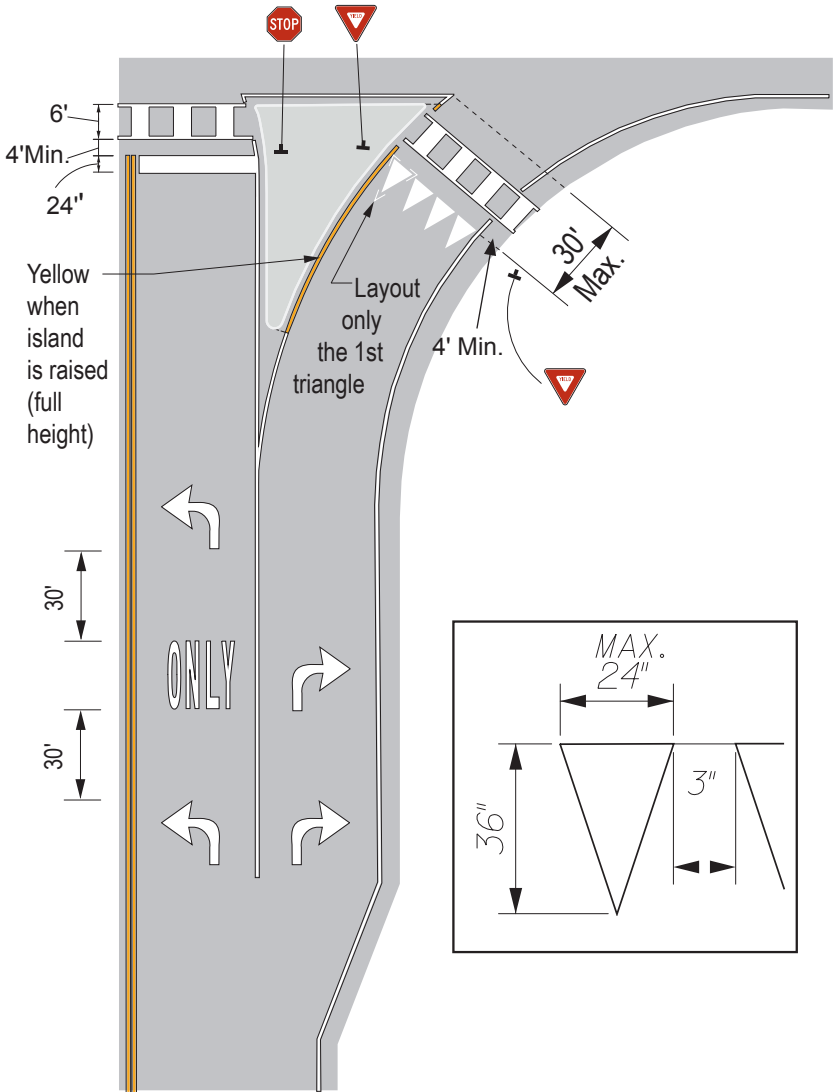
Stop Ahead



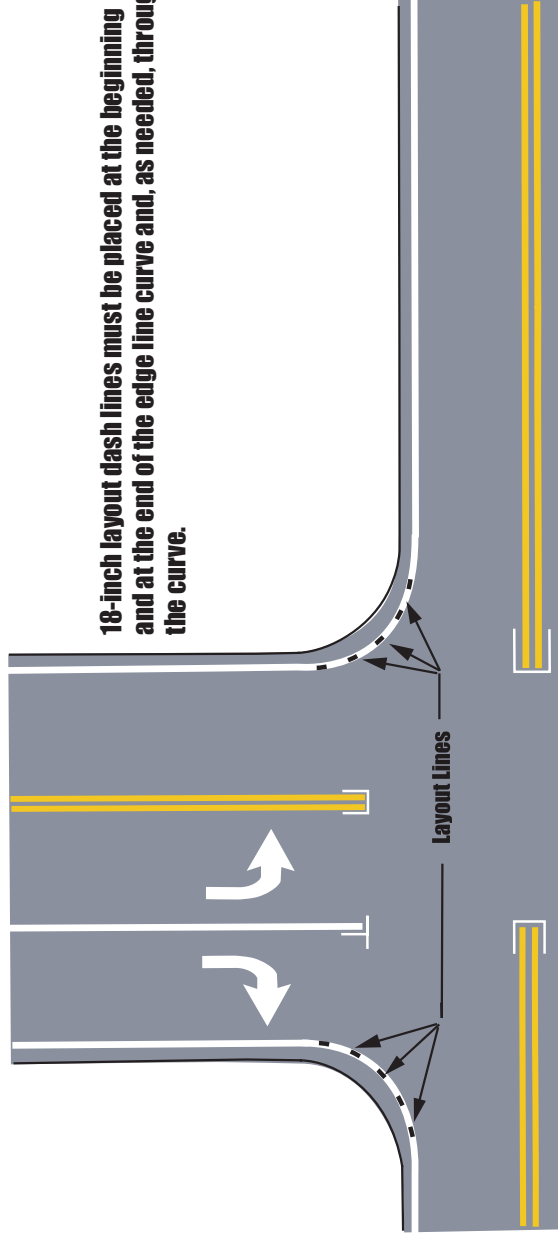
Lane Designation Layout



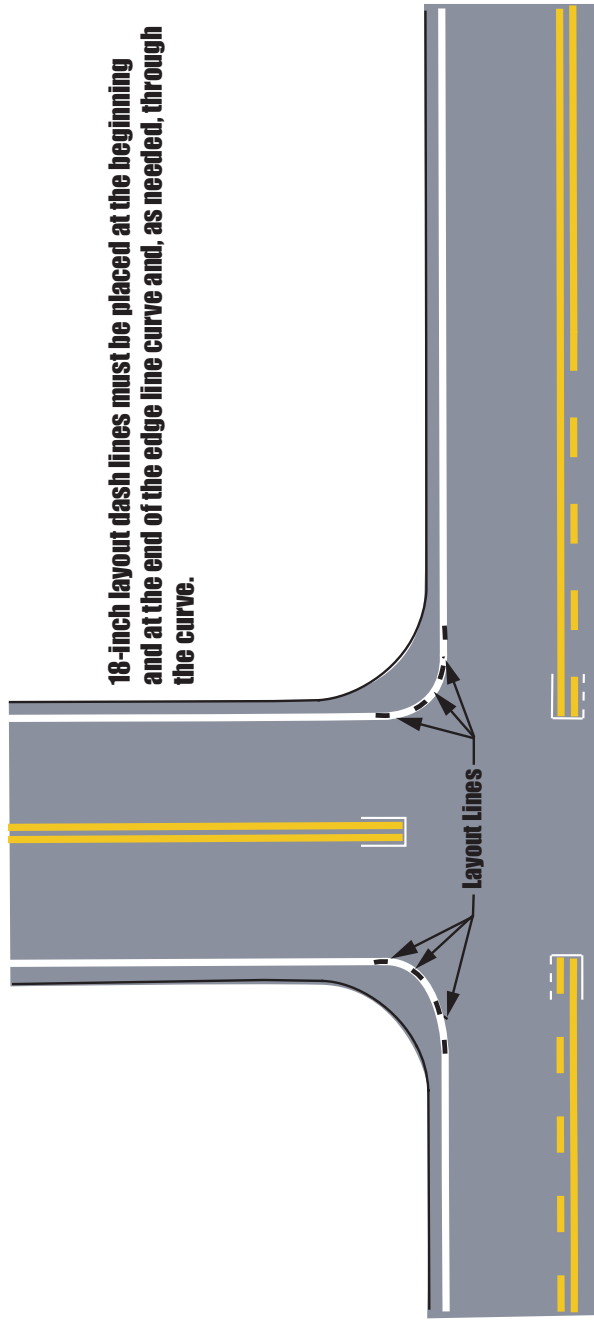
Stop & Yield



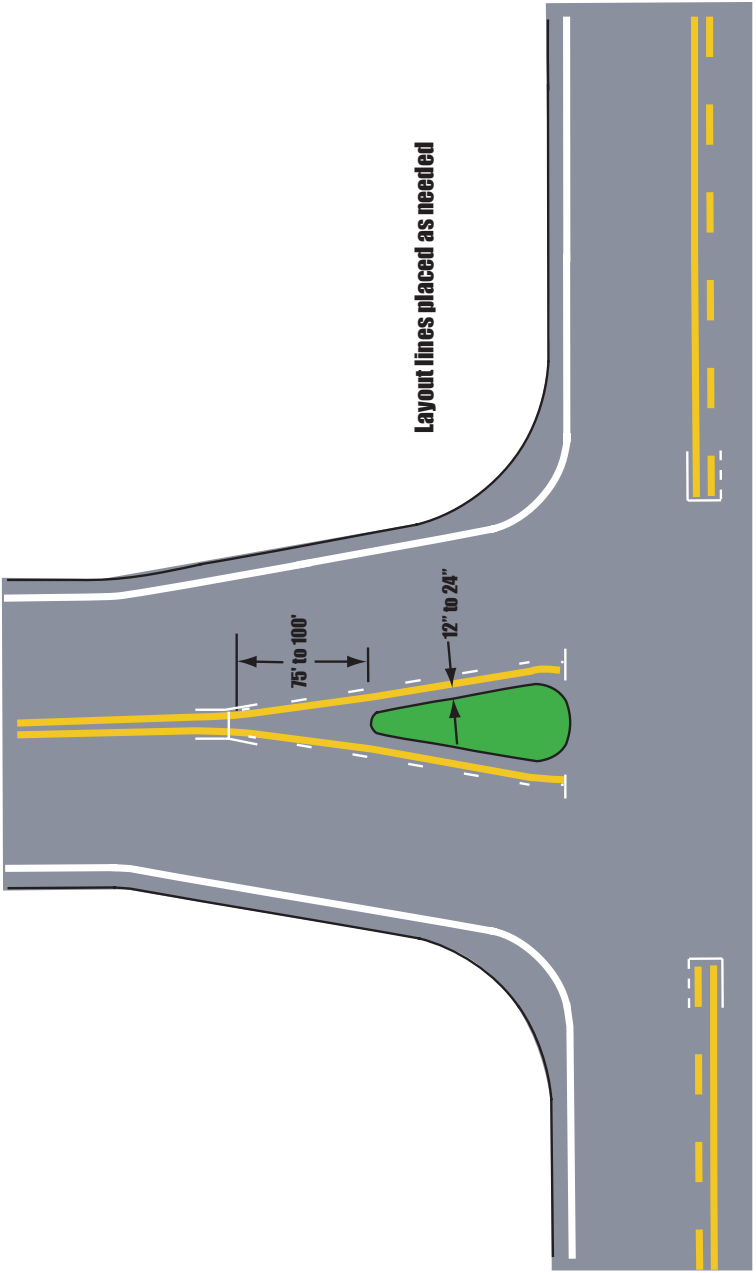
Intersection Edge Striping Layout State Aid Highways



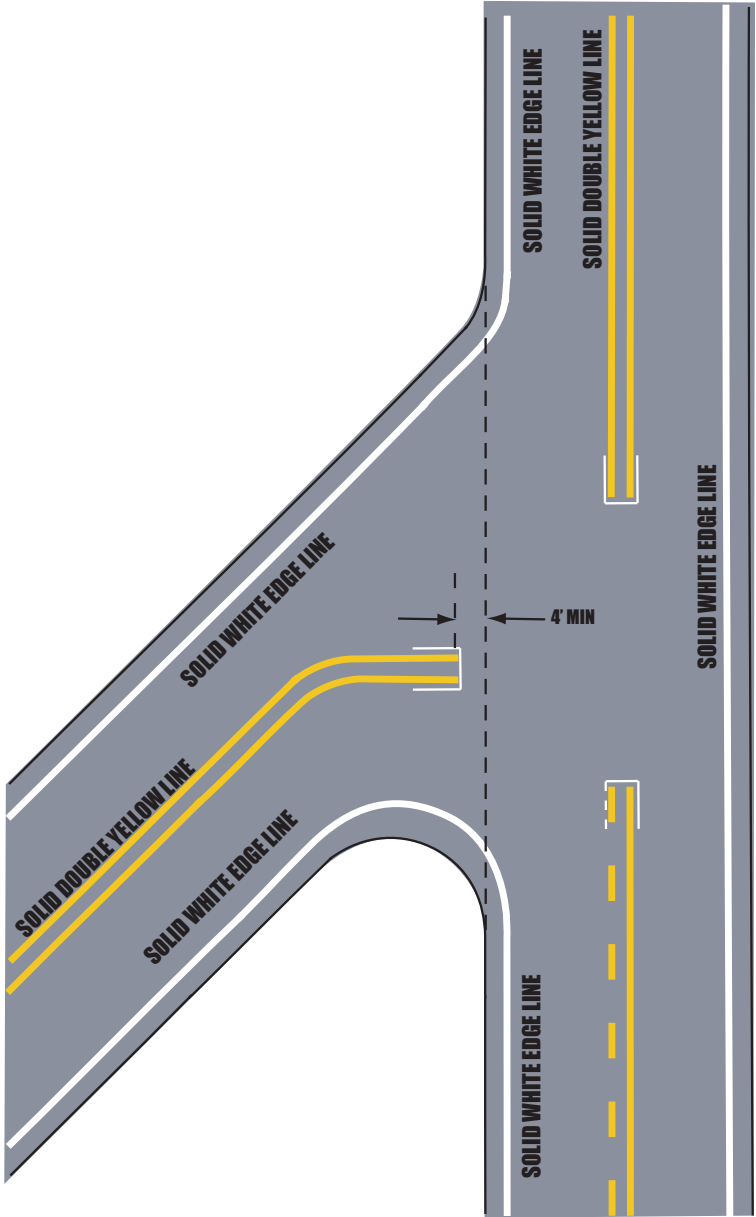
Intersection Edge Striping Layout State Highways



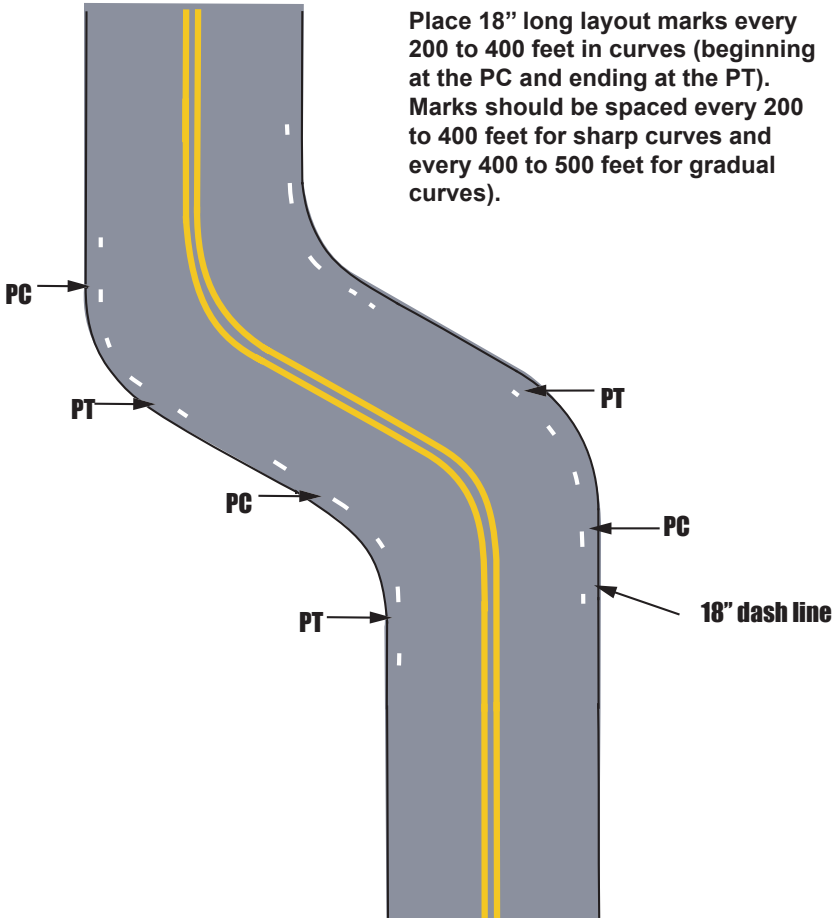
Island Striping Layout



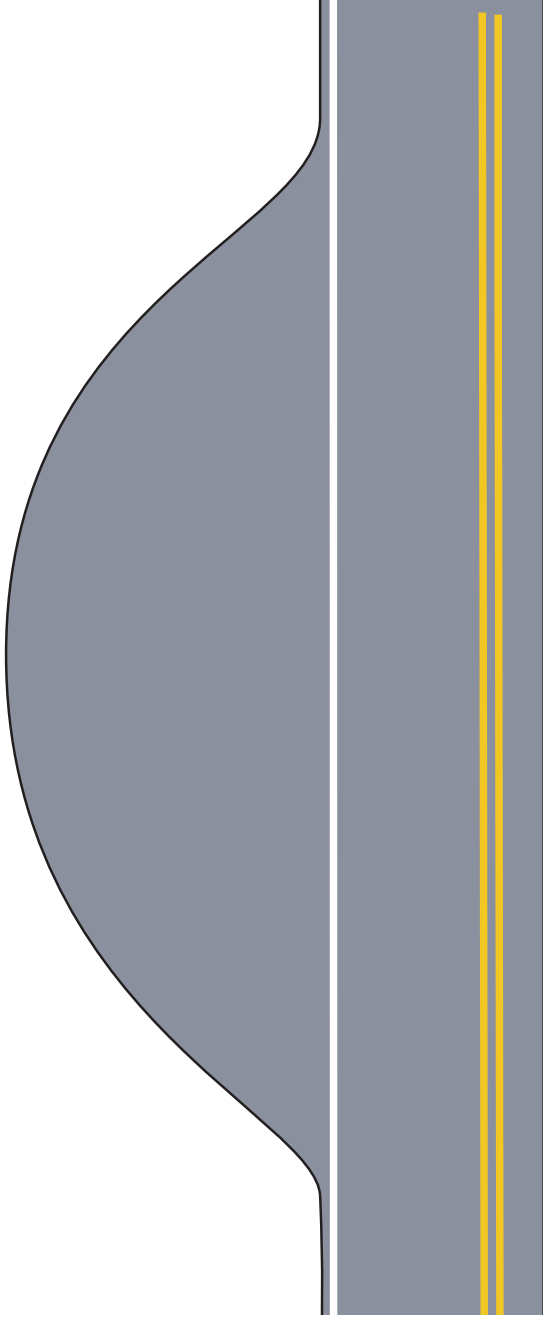
Striping Layout for Skew Intersection



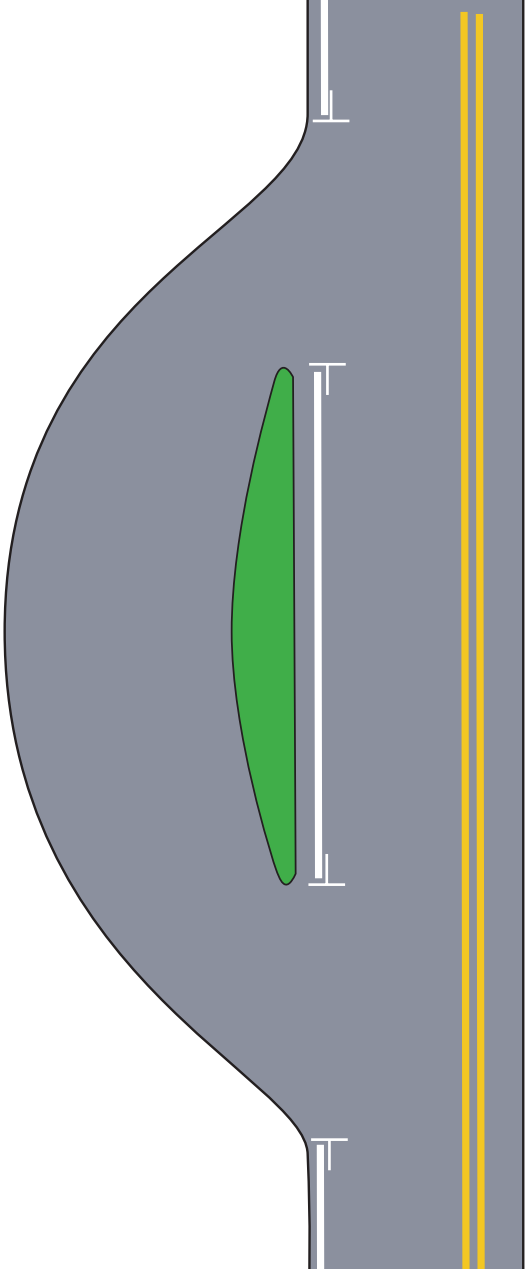
Edge Line Layout for Curves



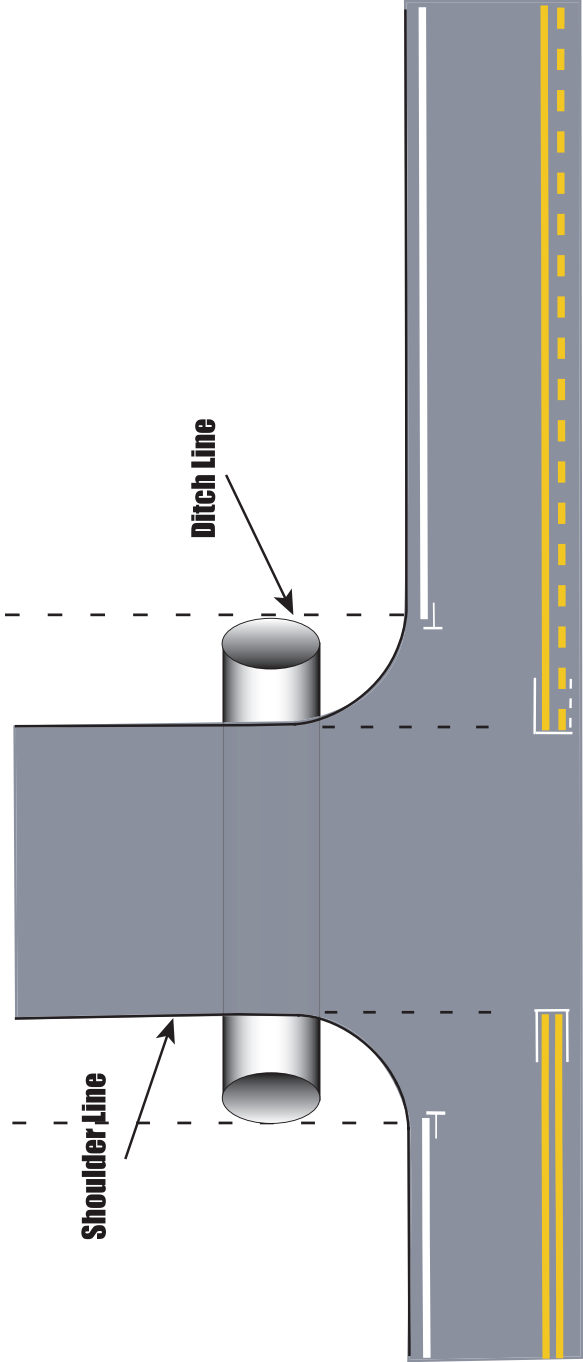
Rest Area Pulloff with out Island Striping



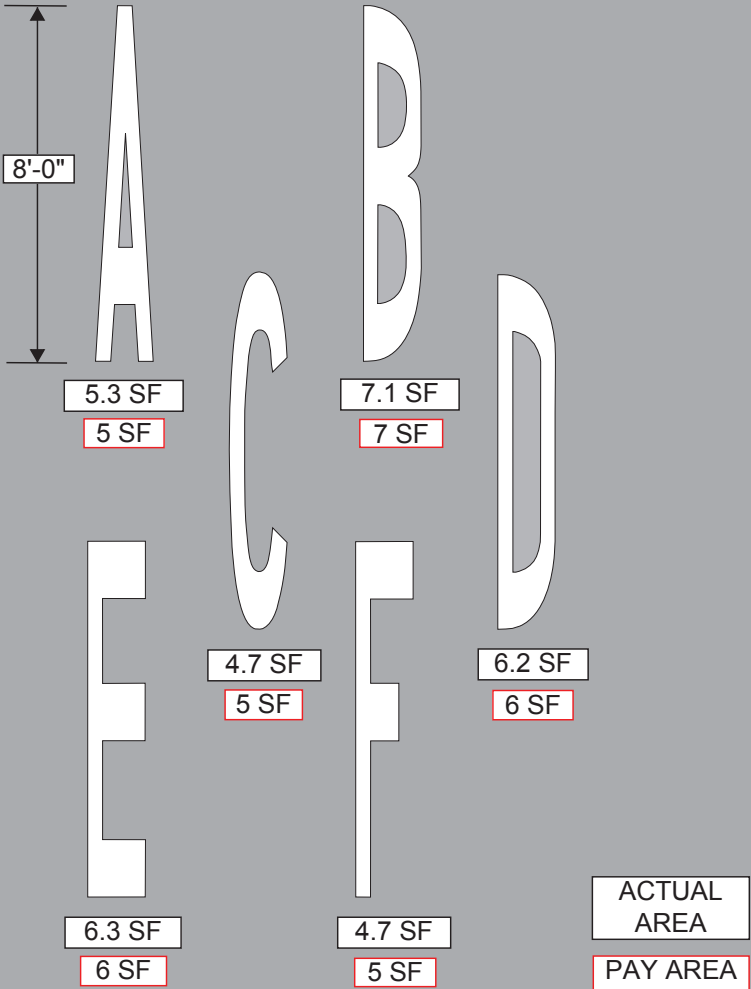
Rest Area with Island Striping Layout



Intersection Edge Striping Layout Non State-Aid Roads



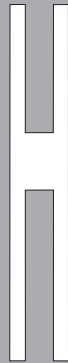
Section 5





5.6 SF

6 SF



6.2 SF

6 SF



2.6 SF

3 SF



3.6 SF

4 SF



6.1 SF

6 SF



3.9 SF

4 SF



7.4 SF

7 SF



7.2 SF

7 SF



5.8 SF

6 SF



5.3 SF

5 SF



6.1 SF

6 SF



6.3 SF

6 SF



6.2 SF
6 SF



3.9 SF
4 SF



5.8 SF
6 SF



4.9 SF
5 SF



7.1 SF
7 SF



4.8 SF
5 SF



3.9 SF

4 SF



5.1 SF

5 SF



2.6 SF

3 SF



6.2 SF

6 SF



5.6 SF

6 SF



5.2 SF

5 SF



6.3 SF

6 SF



6.7 SF

7 SF



3.9 SF

4 SF



7.3 SF

7 SF



6.7 SF

7 SF



6.2 SF

6 SF

31.4 SF

31 SF

25 MPH

30 MPH

30.7 SF

31 SF

30.9 SF

31 SF

3 5 M P H

4 O M P H

30.3 SF

30 SF

31.4 SF

31 SF

50 MPH

45 MPH

30.4 SF

30 SF

AHD

17.7 SF

18 SF

AHEAD

29.3 SF

29 SF

BUS

19.1 SF

19 SF

FIRE

19.9 SF

20 SF

LANE

22.8 SF

23 SF

LEFT

18.8 SF

19 SF

ONLY

20.9 SF

21 SF

PED

17.8 SF

18 SF

RIGHT

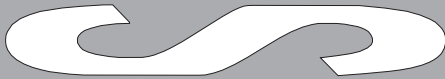
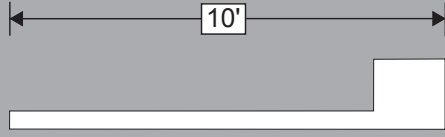
24.6 SF

25 SF

SLOW

23.0 SF

23 SF



51.1 SF

51 SF

10' lettering for two lane application
8' lettering for only one lane (33 SF)

SIGNAL

30.9 SF

31 SF

TURN

23.2 SF

23 SF

XING

20.3 SF

20 SF

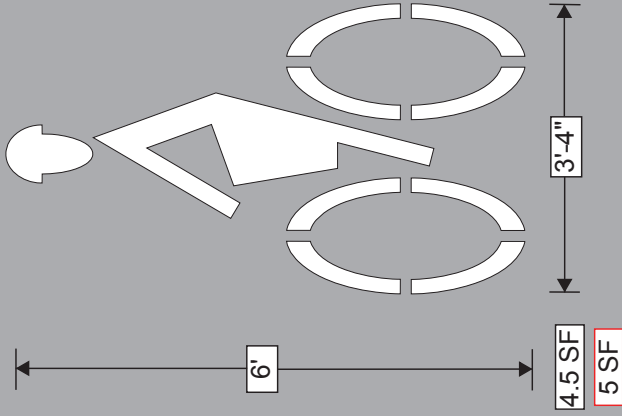
YIELD

22.9 SF

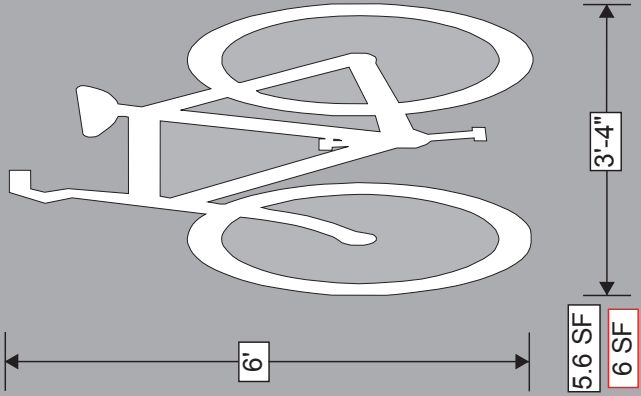
23 SF

Section 6

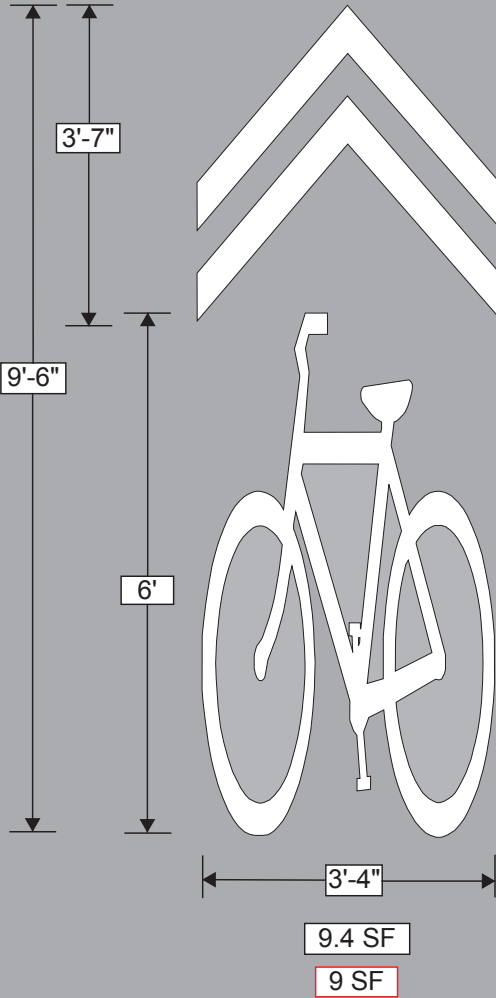
Bike with Passenger



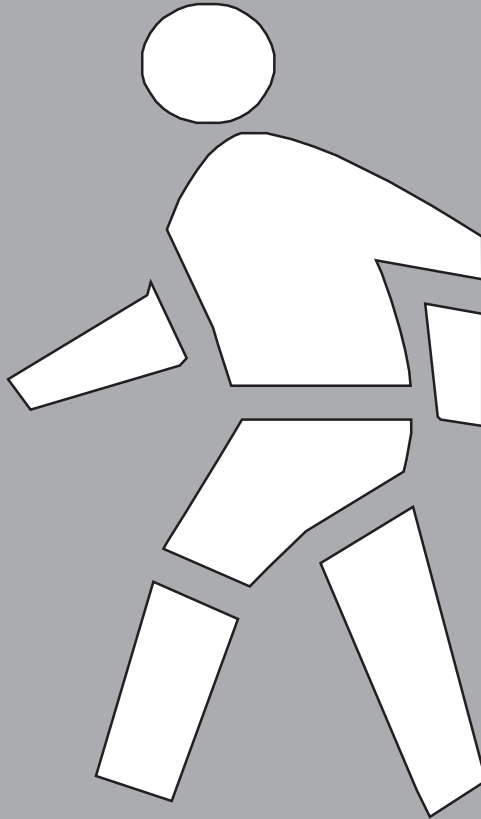
Bike Lane Marker



Sharrow (Shared Bike Lane Marker)



PEDESTRIAN CROSSING



7.92 SF

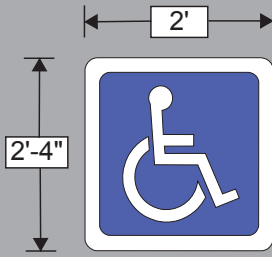
8 SF

3"

6'

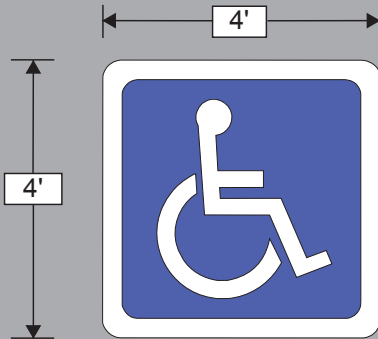
3'-6"

Handicap Markers



3.9 SF

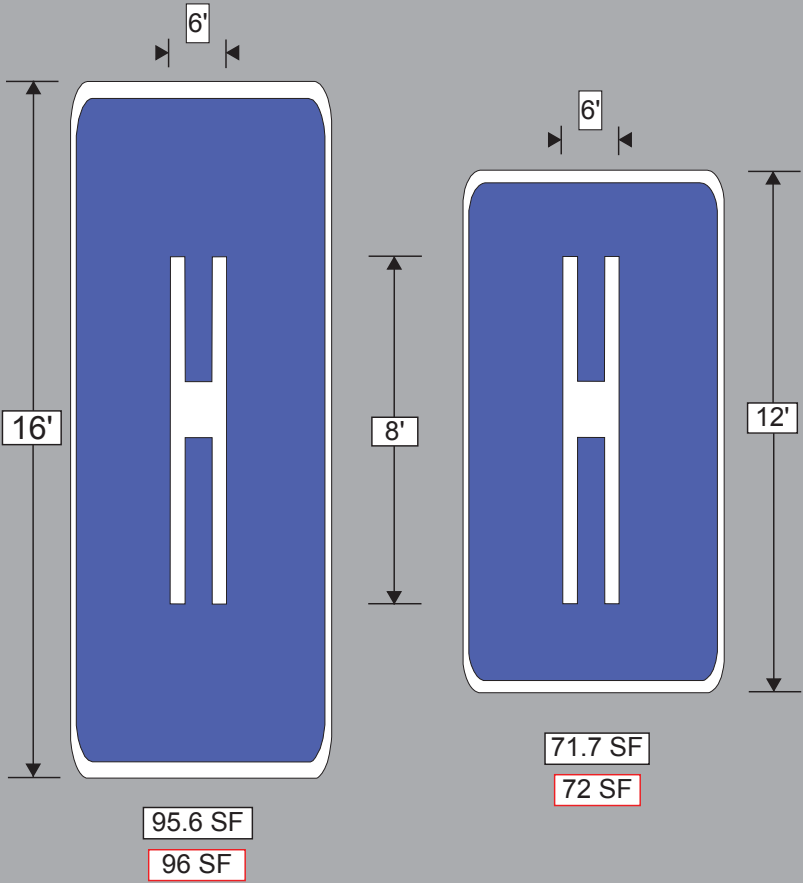
4 SF



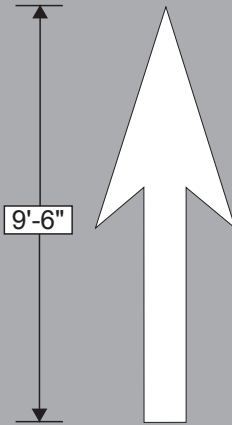
15.9 SF

16 SF

Hospital Symbols
(high speed/low speed)



Straight Only Arrow

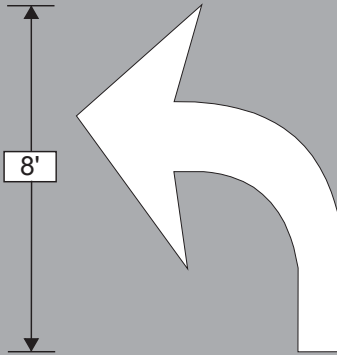


9'-6"

11.4 SF

11 SF

Left Only Arrow

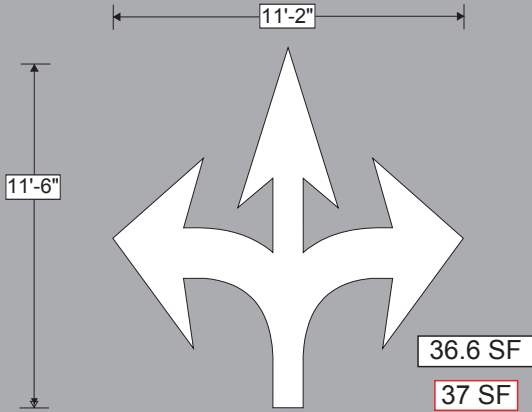


8'

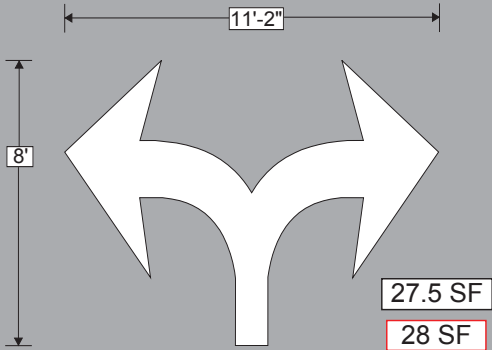
15.6 SF

16 SF

Any Direction Arrow



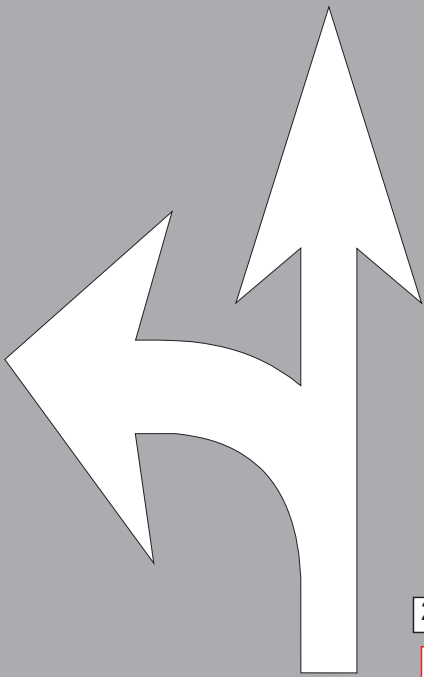
Right or Left Option Arrow



Left of Straight Option Arrow

7'-6"

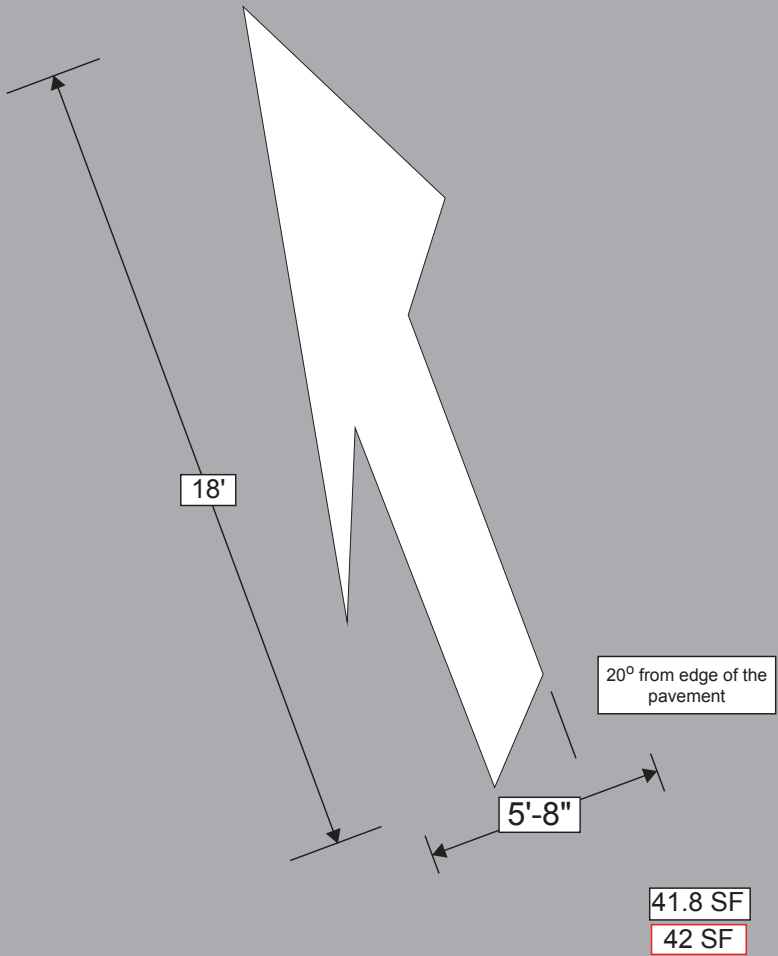
11'-6"



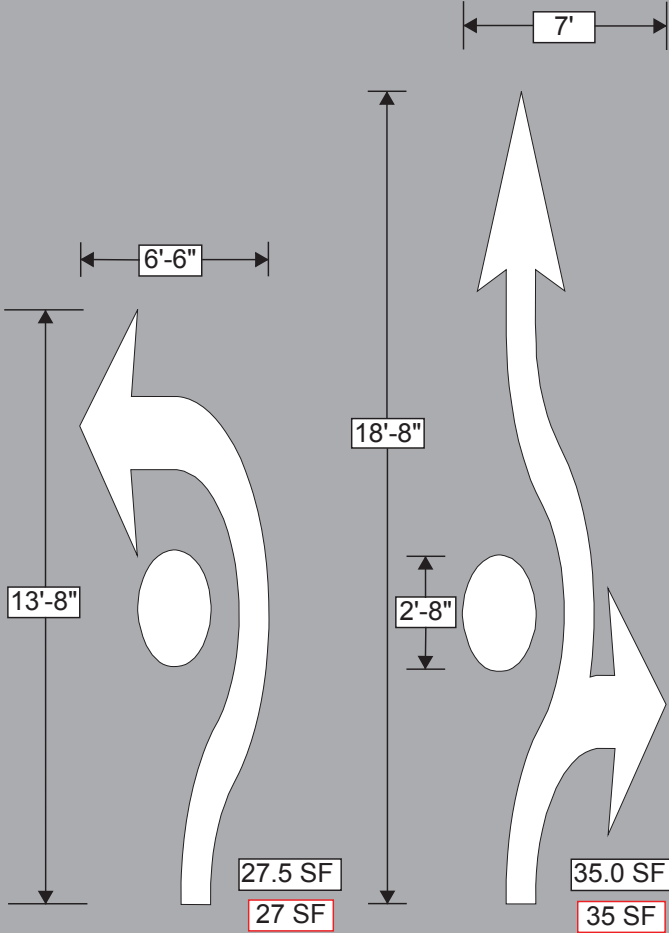
24.9 SF

25 SF

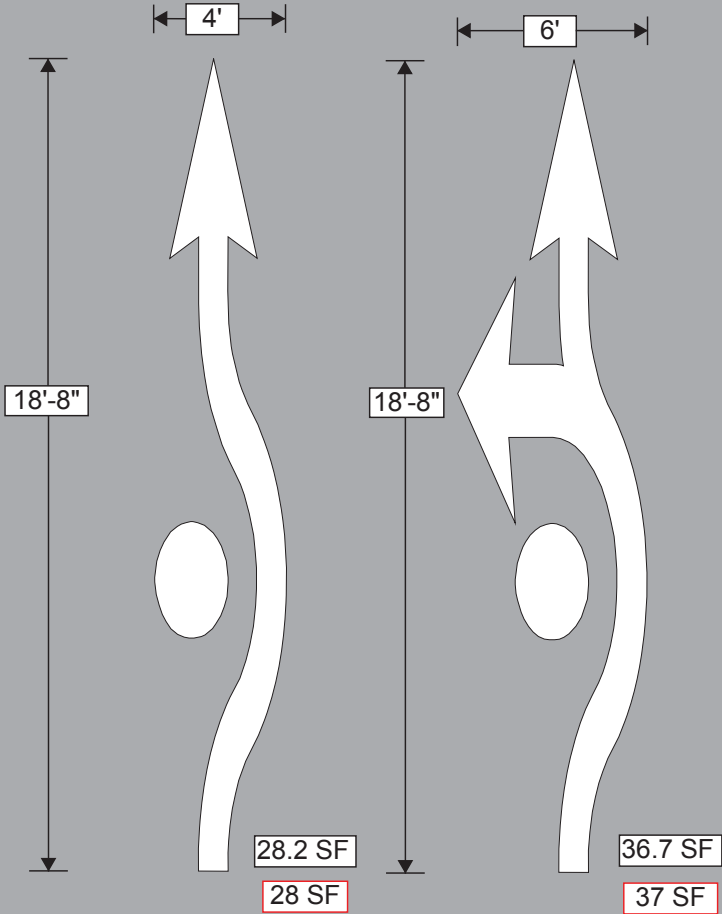
Merge Arrow



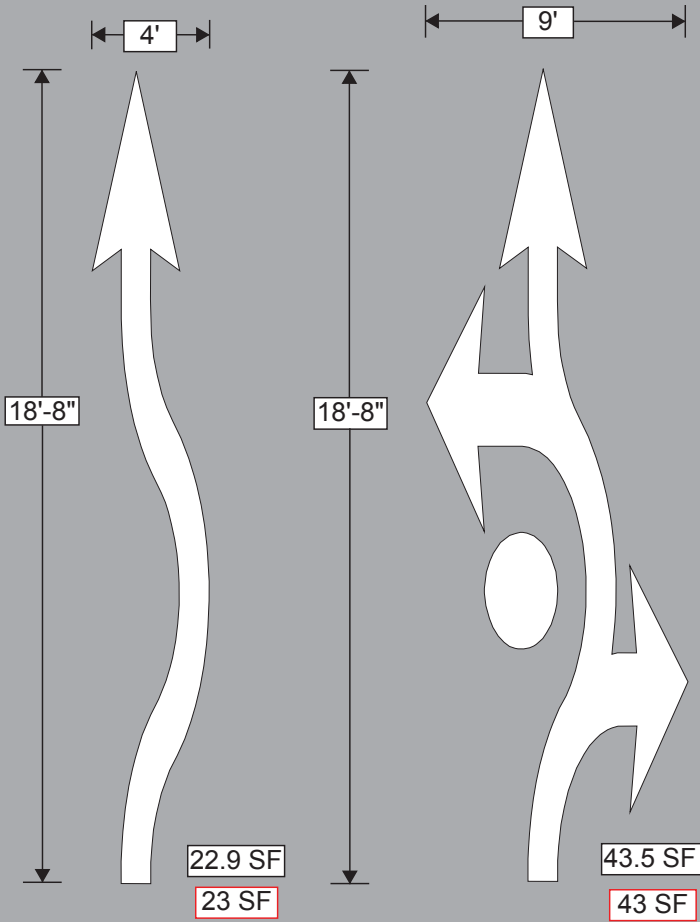
Roundabout Arrows
(Type LE & TRE)



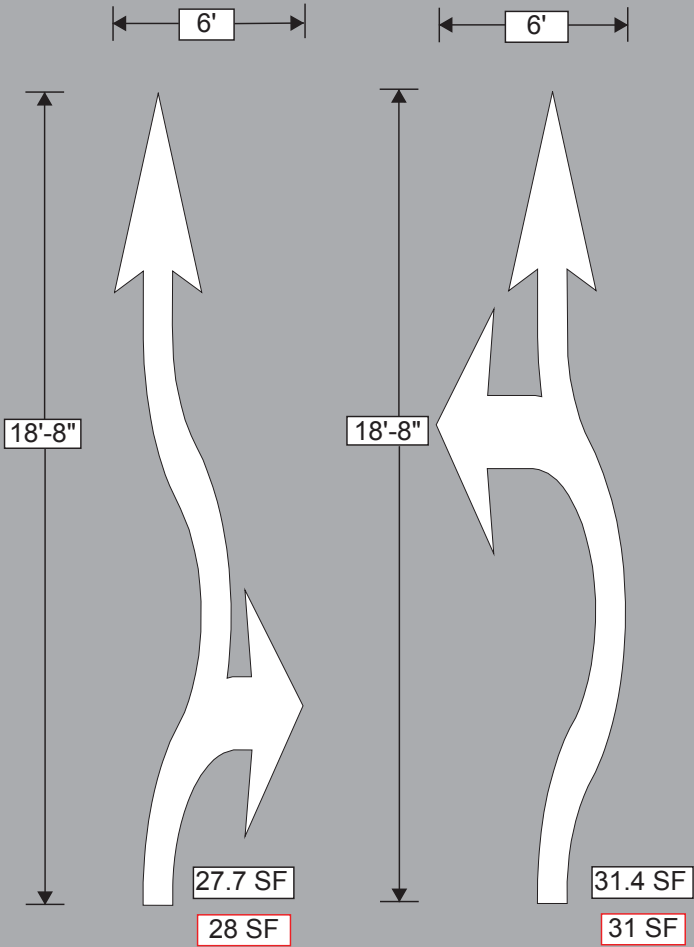
Roundabout Arrows
(Types TE & LTE)



Roundabout Arrows
(Types T & LTRE)



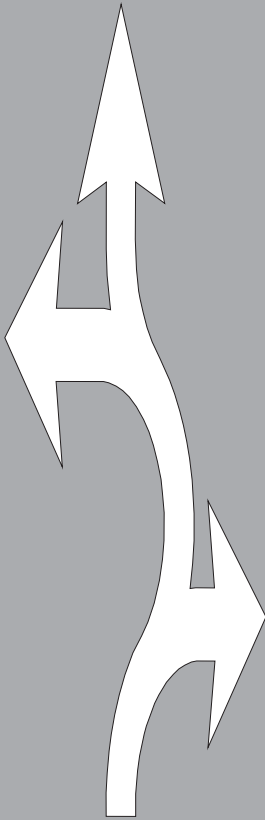
Roundabout Arrows
(Types TR & LT)



Roundabout Arrows
(Type TLR)

9'

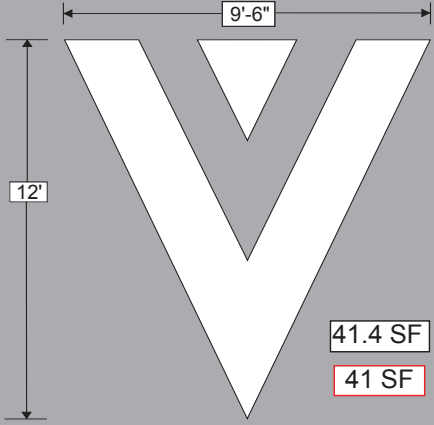
18'-8"



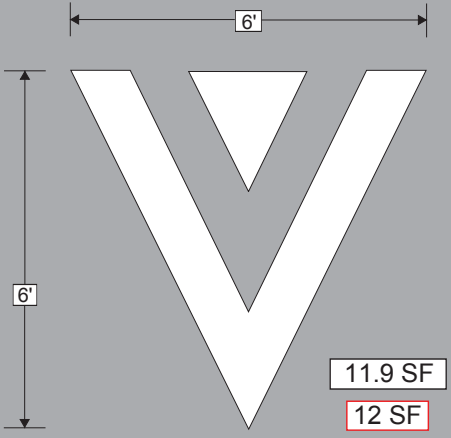
38.2 SF

38 SF

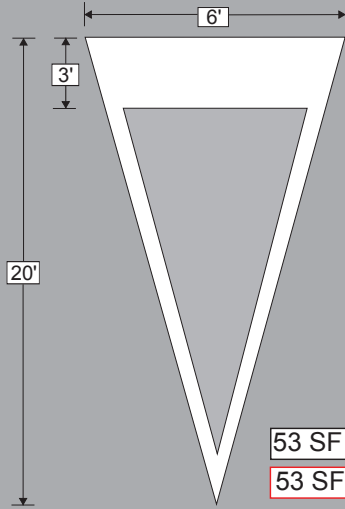
Large Speed Bump
Warning Marker



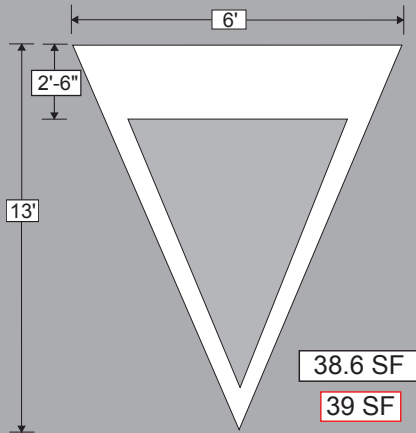
Small Speed Bump
Warning Marker



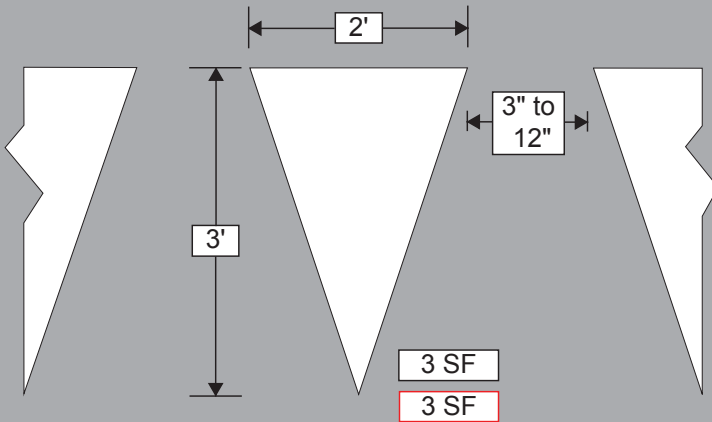
Large Yield Triangle



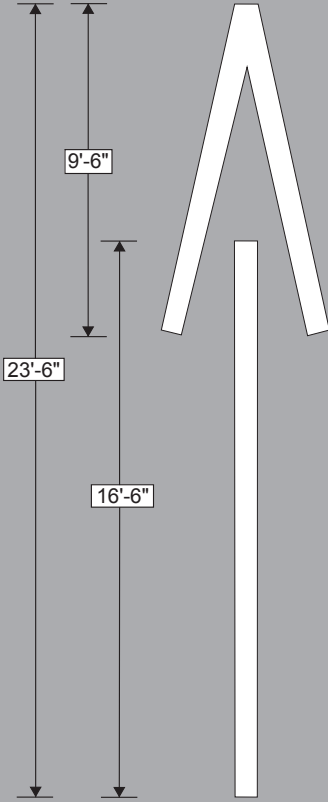
Small Yield Triangle



Yield Triangles
"Shark Teeth"



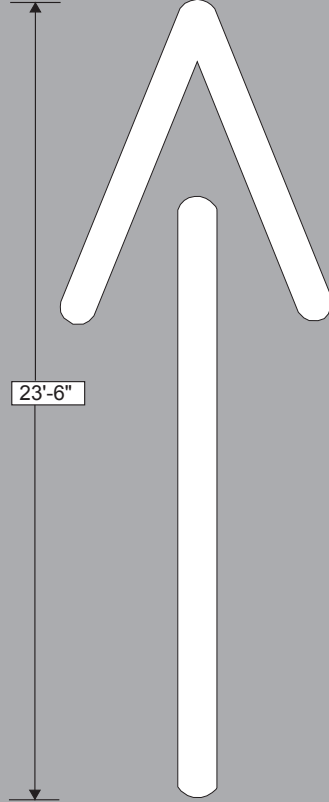
Interchange Ramp Arrow



24.3 SF

24 SF

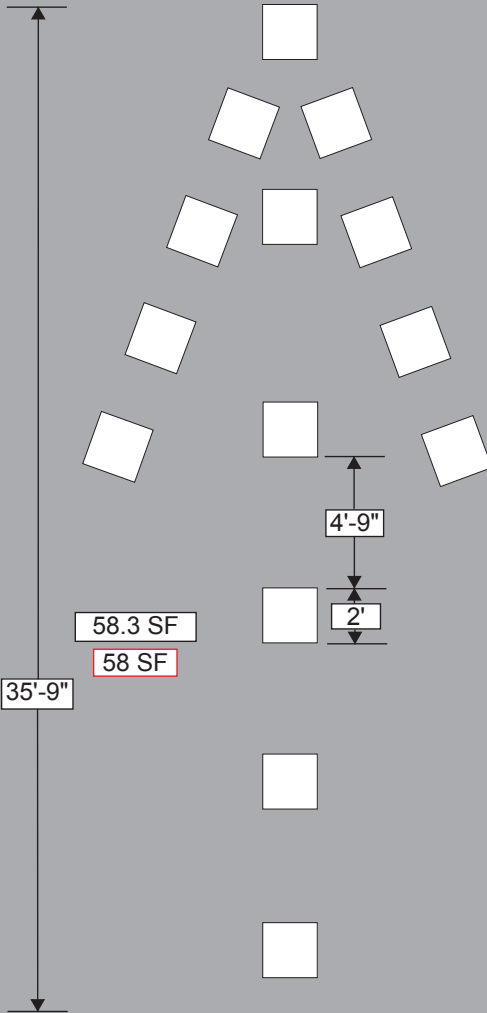
Wrong Way Arrow



40.2 SF

40 SF

Wrong Way Arrow (Reflectors)



Preferential Lane Symbol

