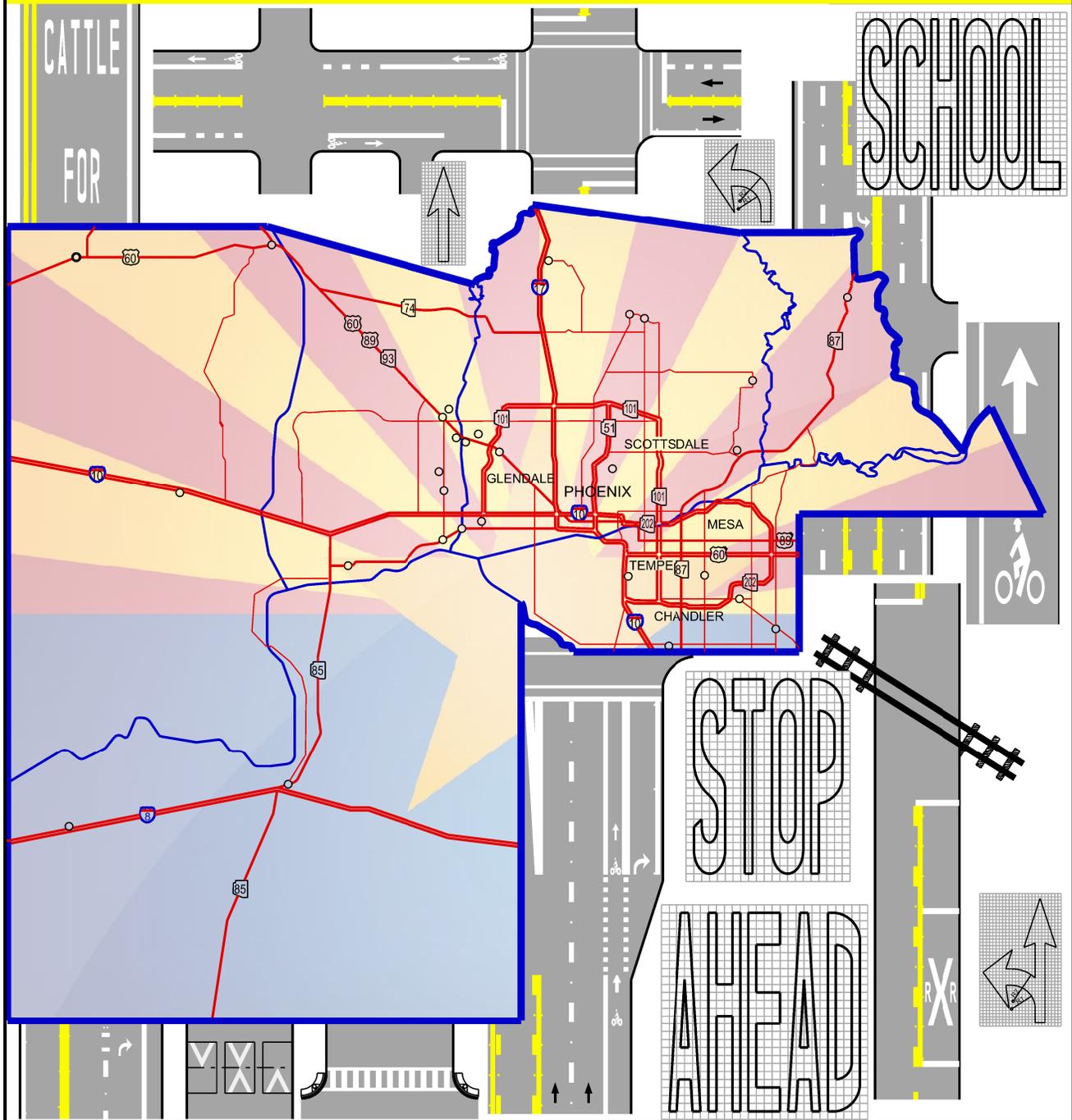


Maricopa County Department of Transportation



Pavement Marking Manual





Maricopa County
Department of Transportation

Director's Office
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Date: April 28, 2020
To: Agency, Consultants, Contractors, Engineers, and Department Staff
From: Jennifer Toth, P.E.
Director/County Engineer
Subject: 2020 MCDOT Pavement Marking Manual

Effective April 28, 2020, work performed within Maricopa County right-of-way shall comply with the Maricopa County Department of Transportation (MCDOT) Pavement Marking Manual. This comprehensive manual shall supersede all previous memoranda and both written and unwritten guidelines for pavement markings. The attached manual shall remain in effect until reissued or updated. Please address any specific concerns to:

Nicolaas Swart, P.E., Transportation Systems Management Division Manager
(602) 506-0599 (email: Nicolaas.Swart@maricopa.gov)

The manual is available on the MCDOT website
<https://www.maricopa.gov/190/Technical>

or for purchase at MCDOT's Customer Service counter:

2901 West Durango Street
Phoenix, Arizona 85009
(602) 506-8600



Jennifer Toth, P.E.,
Director / County Engineer

04/28/2020
Date

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1.

Pavement Marking Applications



1. Pavement Marking Applications

1.1 General

Pavement markings are used to convey important traffic control guidance and information to a driver. Pavement markings may be used alone or to supplement other traffic control devices such as traffic signs and traffic signals. It is important that the appropriate signs and signal controls be used in conjunction with pavement markings where intended. In addition, all pavement markings must be visible both day and night, and any pavement markings that are no longer applicable may create confusion and shall be removed.

1.2 Policies and Procedures

Maricopa County Department of Transportation (MCDOT) has established a number of pavement marking policies and procedures using thermoplastic, paint, retroreflective raised pavement markers, and non-retroreflective raised pavement markers. Any consultant or agency preparing pavement marking plans and/or installing pavement markings on the County Roadway System shall submit a copy of the pavement marking plans for review and approval by MCDOT prior to the start of work. All pavement marking plans shall conform to the standards set forth in Chapter 2 of this manual.

It shall be the responsibility of the consultant or agency preparing the pavement marking plans to:

- Obtain pavement marking plan approval from MCDOT.
- Provide MCDOT with a set of as-built plans for all pavement preservation projects including chip seal, slurry seal, and micro seal.
- Determine pavement marking materials and specifications including use of raised pavement markers (RPMs) following the standards set forth in this manual.
- Schedule inspection and receive inspection approval prior to pavement marking application.

2.

Pavement Marking Plan Requirements



2. Pavement Marking Plan Requirements

2.1 General Requirements for Pavement Marking Plans

1. Any project located fully or partially within Maricopa County jurisdiction shall require a pavement marking plan to be submitted to MCDOT for approval.
2. All pavement markings shall be in compliance with the most current edition of the Manual on Uniform Traffic Control Devices (MUTCD) as supplemented by the Arizona Department of Transportation, and this Maricopa County Department of Transportation Pavement Marking Manual. Any deviation shall require the specific approval of the County Traffic Engineer or a designated representative.
3. Pavement Marking Plans shall be prepared at a scale of 1" = 40'.
4. A redline copy of the last traffic review comments shall be submitted for each pavement marking review.
5. Show the existing roadway conditions, including the entire right-of-way width. Show how the proposed project ties into the existing roadway.
6. Show the existing roadway and pavement markings 500 feet (minimum) prior to the beginning of the project and for 500 feet (minimum) beyond the end of the project.
7. Show the existing pavement marking line styles in dashed lines (line wt. 0) and proposed pavement marking line styles in solid lines. Show all lane widths (12', 14', etc.) and the length of all left-turn/right-turn lanes (100', 160', etc.). All existing/proposed pavement markings on the plans are to be exactly as they exist in the field (e.g., 10' line/30' gap).
8. Identify and show stationing for all accesses including: intersections, commercial strip centers, emergency facilities, schools, post offices, hospitals, etc. Stationing for single residential accesses is not required.
9. Dimension and show all City Limits and County Right-of-Way.
10. Show all advance traffic signal loops in the pavement (where applicable). This is critical in producing pavement marking plans.

2.2 General Notes to be Included on Pavement Marking Plans

1. It shall be the responsibility of the contractor to provide a MCDOT approved traffic control plan and all temporary traffic control devices necessary for the safety of the public and the workers before any pavement marking layout begins.
2. Contractor shall spot the entire project before applying pavement markings. Contractor to call Maricopa County Department of Transportation Project Inspector to make arrangements for inspection prior to applying pavement markings. The permanent pavement marking plans may be modified as directed by the engineer or a designated representative. ANY PAVEMENT MARKINGS APPLIED BEFORE LAYOUT APPROVAL BY INSPECTOR SHALL BE SUBJECT TO REMOVAL AND RESTRIPING AT THE CONTRACTOR'S EXPENSE.
3. All no passing zones shown on the plans are subject to change in the field by the County's Traffic Engineer or a designated representative. Pavement Markings quantities may vary.
4. All pavement markings shall be done in approved thermoplastic materials. Crosswalks, stop bars, holding bars, and all longitudinal lines such as lane lines, edge lines, center lines, and taper lines shall be installed with a thickness of ninety (90) mils. Pavement markings in paint - if approved - shall be installed with a thickness of fifteen (15) mils. Thermoplastic shall not be applied to chip seal projects.
5. Thermoplastic pavement markings shall not be applied to any new Superpave or Marshall asphalt pavement surface within the first 72 hours.
6. Thermoplastic pavement markings shall not be applied to any new asphalt-rubber pavement surface within the first 30 days after the pavement placement. The contractor shall install painted temporary pavement markings at the locations where thermoplastic pavement markings are required.
7. Thermoplastic pavement Markings shall not be applied to any new surface treatment (Slurry Seal, Microsurfacing and other Surface Treatments) within the first 30 days after placement. Contractor shall install painted temporary pavement markings at locations where thermoplastic pavement markings are required.
8. Raised pavement markers will be installed on the new pavement if raised pavement markers were existing within the project.
9. For construction projects where new pavement markings shall match existing pavement markings and obliteration is necessary, it shall be accomplished by water blasting or other approved methods. The contractor shall seal the area with slurry

as per MAG Standard, Specification 715, with emulsified asphalt slurry type II or as directed by the project inspector. The contractor shall verify with the MCDOT inspector or a designated representative of the time lapse the slurry was applied to coordinate installation of new thermoplastic markings.

10. Painting over pavement markings does not constitute pavement marking obliteration. Pavement marking obliteration may go beyond designated project limits. Pavement marking obliteration shall extend as needed to allow appropriate matching of the new pavement markings with the existing pavement markings.
11. Pavement Marking dimensions are to the center of stripe for single lines and to the center of the space between two lines for double lines except where there is curb and gutter the dimension is taken from the face of curb.
12. All symbols and word legends shall be Preformed Pavement Markings per the Specification Section 462.24

3.

Plan Symbols and Raised Pavement Markers

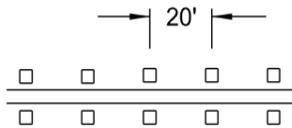
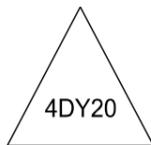


3. Plan Symbols and Raised Pavement Markers

3.1 Plan Symbol Coding

The MUTCD categorizes pavement markings as longitudinal or transverse markings. Longitudinal markings include: center lines, lane lines, edge lines, and dotted lines. Transverse markings include: diagonal lines, stop lines, crosswalk lines, arrows, legends, and symbols. The meaning of these longitudinal and transverse markings are denoted by their color, line type, line width, and the pavement marking pattern. The following examples outline the plan symbol coding.

Example 1:



4" Double yellow line
with Type 'D' RPMs @ 20' spacing

Line Width – 4"
Line Type – Double
Line Color – Yellow
RPM Spacing (where applicable) – 20'

Example 2:



24" Solid white line

Line Width – 24"
Line Type – Solid
Line Color – White

MCDOT Transportation Systems Management Division follows the standard convention for plan symbols. The plan symbols are included for reference and used throughout this manual. These plan symbols simplify the pavement marking standard details. The plan symbols shall be used when preparing pavement marking plans.

3.2 Retroreflective and Non-Retroreflective Raised Pavement Markers

Retroreflective and non-retroreflective raised pavement markers (RPMs) are used to supplement pavement markings. RPMs shall conform to the color of the markings for which they supplement, and are designed to be visible as mono-directional or bi-directional. Bi-directional RPMs shall have a minimum of one retroreflective side which conforms to the marking for which it supplements. The opposing side of a bi-directional RPM may conform to the marking for which it supplements or it may be retroreflective red. When an RPM with a retroreflective red side is required, the retroreflective red side of the RPM shall only be used to delineate one-way roadways and travel lanes that shall not be entered or used in the direction from which the retroreflective red side of the RPM is visible. The spacing of RPMs should conform to the standards set forth in this manual.

3.3 RPMs and Plan Symbols

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RAISED PAVEMENT MARKER (RPM) TYPES

LEGEND:

Type A = White (non reflective)



Type AY = Yellow (non reflective)



Type AB = Black (non reflective)



Type BB = Blue, two-way (reflective)



Type C = White / Red, two-way (reflective)



Type D = Yellow, two-way (reflective)



Type E = Yellow / Red, two-way (reflective)



Type G = White, one-way (reflective)



Type H = Yellow, one-way (reflective)



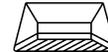
Type J = White, dagmar (reflective)



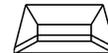
Type JY = Yellow, dagmar (reflective)



Bridge Abutment (yellow)



Bridge Abutment (white)



GENERAL NOTES:

1. Raised pavement markers shall be installed as directed by the County Traffic Engineer or a designated representative.
2. Raised pavement markers shall be placed so that the reflective face of the marker is facing and perpendicular to traffic.



Raised Pavement Marker (RPM) Types

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TRANSPORTATION SYSTEMS MANAGEMENT DIVISION

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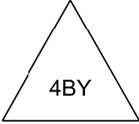
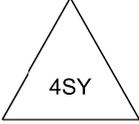
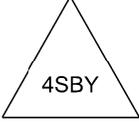
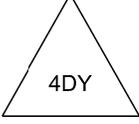
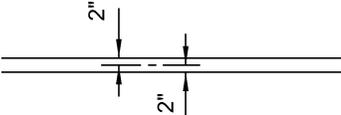
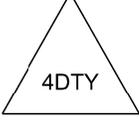
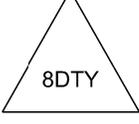
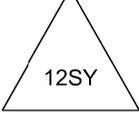
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PLAN SYMBOLS FOR YELLOW PAVEMENT MARKING

LEGEND:

 <p>4BY</p>		4" Broken yellow line with a 10' line segment and a 30' gap
 <p>4SY</p>		4" Solid yellow line
 <p>4SBY</p>		4" Double yellow line, one solid, one broken with a 10' line segment and a 30' gap
 <p>4DY</p>		4" Double yellow line
 <p>4DTY</p>		4" Dotted yellow line with a 2' line segment and a 4' gap
 <p>8DTY</p>		8" Dotted yellow line with a 2' line segment and a 4' gap
 <p>12SY</p>		12" Solid yellow line
 <p>24SY</p>		24" Solid yellow line



Yellow Pavement Marking Symbols

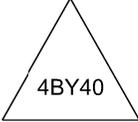
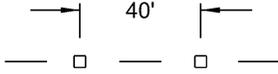
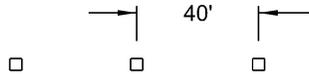
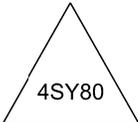
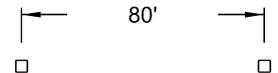
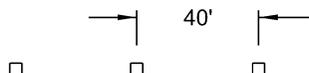
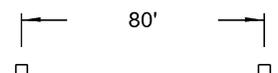
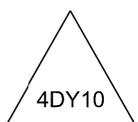
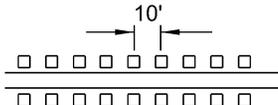
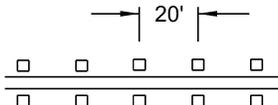
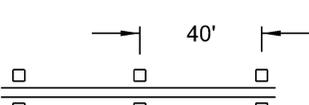
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PLAN SYMBOLS FOR YELLOW PAVEMENT MARKING WITH RPMs (CONTINUED ON NEXT PAGE)

LEGEND:

 <p>4BY40</p>		<p>4" Broken yellow line with a 10' line segment and a 30' gap, with Type 'D' RPMs @ 40' spacing</p>
 <p>4SY40</p>		<p>4" Solid yellow line with Type 'D' RPMs @ 40' spacing (Use on curved or tapered sections of roadway)</p>
 <p>4SY80</p>		<p>4" Solid yellow line with Type 'D' RPMs @ 80' spacing (Use on straight sections of roadway)</p>
 <p>4SYH40</p>		<p>4" Solid yellow line with Type 'H' RPMs @ 40' (Use on curved or tapered sections of roadway with dirt medians)</p>
 <p>4SYH80</p>		<p>4" Solid yellow line with Type 'H' RPMs @ 80' (Use on straight sections of roadway with dirt medians)</p>
 <p>4DY10</p>		<p>4" Double yellow line with Type 'D' RPMs @ 10' spacing</p>
 <p>4DY20</p>		<p>4" Double yellow line with Type 'D' RPMs @ 20' spacing</p>
 <p>4DY40</p>		<p>4" Double yellow line with Type 'D' RPMs @ 40' spacing</p>



Yellow Pavement Marking Symbols w/ RPM's

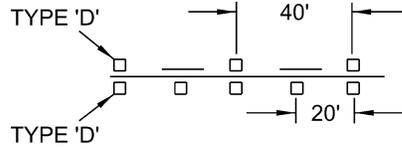
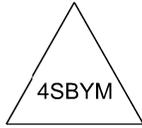
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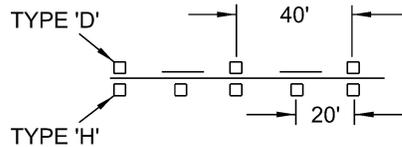
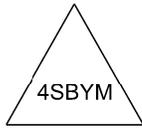
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PLAN SYMBOLS FOR YELLOW PAVEMENT MARKING WITH RPMs (CONTINUED FROM PREVIOUS PAGE)

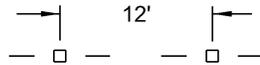
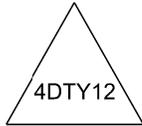
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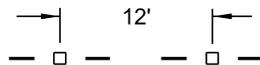
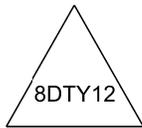
4" Double yellow line, one solid, one broken with a 10' line segment and a 30' gap with Type 'D' RPMs @ 20' spacing (solid) and Type 'D' RPMs @ 40' spacing (broken)



4" Double yellow line, one solid, one broken with a 10' line segment and a 30' gap, with Type 'H' RPMs @ 20' spacing (solid) and Type 'D' RPMs @ 40' spacing (broken)



4" Dotted yellow line with a 2' line segment and a 4' gap with Type 'D' RPMs @ 12' spacing.



8" Dotted yellow line with a 2' line segment and a 4' gap with Type 'D' RPMs @ 12' spacing



Yellow Pavement Marking Symbols w/ RPM's

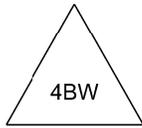
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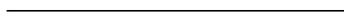
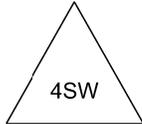
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3-7

PLAN SYMBOLS FOR WHITE PAVEMENT MARKING

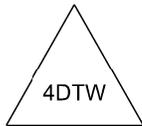
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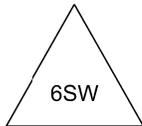
4" Broken white line with a
10' line segment and a 30' gap



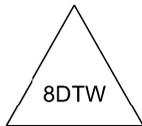
4" Solid white line



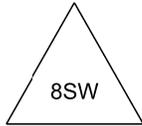
4" Dotted white line with a
2' line segment and a 4' gap



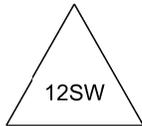
6" Solid white line
(Use as directed by the County Traffic
Engineer or a designated representative)



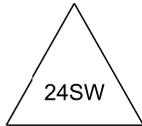
8" Dotted white line with a
2' line segment and a 4' gap



8" Solid white line



12" Solid white line



24" Solid white line



White Pavement Marking Symbols

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TRANSPORTATION SYSTEMS MANAGEMENT DIVISION

DATE

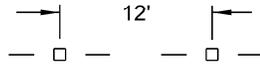
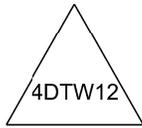
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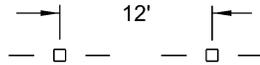
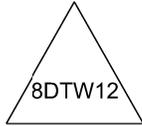
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PLAN SYMBOLS FOR WHITE PAVEMENT MARKING WITH RPMs

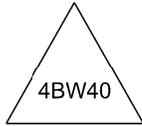
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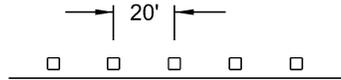
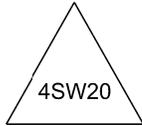
4" Dotted white line with a 2' line segment and a 4' gap with Type "D" RPMs @ 12' spacing



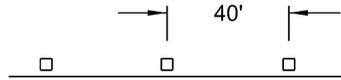
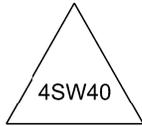
8" Dotted white line with a 2' line segment and a 4' gap with Type "D" RPMs @ 12' spacing



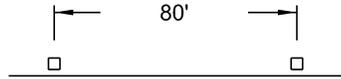
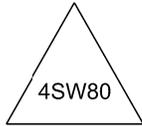
4" Broken white line with a 10' line segment and a 30' gap with Type 'G' RPMs @ 40' spacing



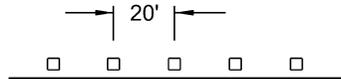
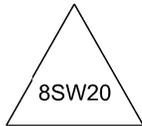
4" Solid white line with Type 'G' RPMs @ 20' spacing



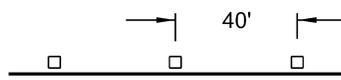
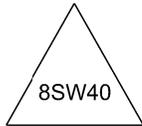
4" Solid white line with Type 'G' RPMs @ 40' spacing (Use on curved or tapered sections of roadway)



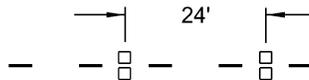
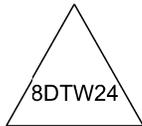
4" Solid white line with Type 'G' RPMs @ 80' spacing (Use on straight sections of roadway)



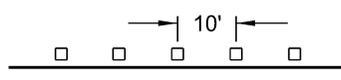
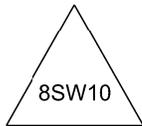
8" Solid white line with Type 'G' RPMs @ 20' spacing



8" Solid white line with Type 'G' RPMs @ 40' spacing



8" Dotted white line with a 3' line segment and a 9' gap with two Type 'G' RPMs @ 24' spacing



8" Solid white line with Type 'G' RPMs @ 10' spacing



White Pavement Marking Symbols w/ RPM's

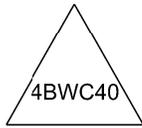
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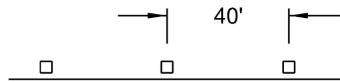
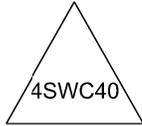
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PLAN SYMBOLS FOR PAVEMENT MARKING WITH RED RPMs

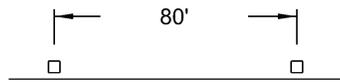
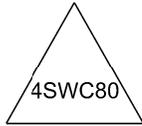
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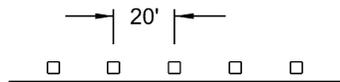
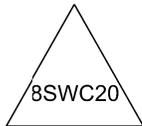
4" Broken white line with a 10' line segment and a 30' gap with Type 'C' RPMs @ 40' spacing



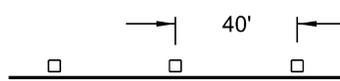
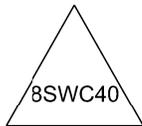
4" Solid white line with Type 'C' RPMs @ 40' spacing (Use on curved or tapered sections of roadway)



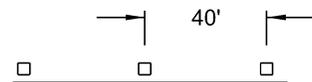
4" Solid white line with Type 'C' RPMs @ 80' spacing (Use on straight sections of roadway)



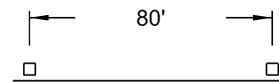
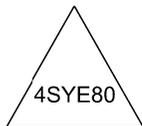
8" Solid white line with Type 'C' RPMs @ 20' spacing



8" Solid white line with Type 'C' RPMs @ 40' spacing



4" Solid yellow line with Type 'E' RPMs @ 40' spacing (Use on curved or tapered sections of roadway)



4" Solid yellow line with Type 'E' RPMs @ 80' spacing (Use on straight sections of roadway)

GENERAL NOTES:

1. Raised pavement markers with a red reflective side (Type C and Type E) shall be installed on divided roadways as directed by the County Traffic Engineer or a designated representative.



Pavement Marking Symbols w/ RED RPM's

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4.

Standard Roadway Cross Sections



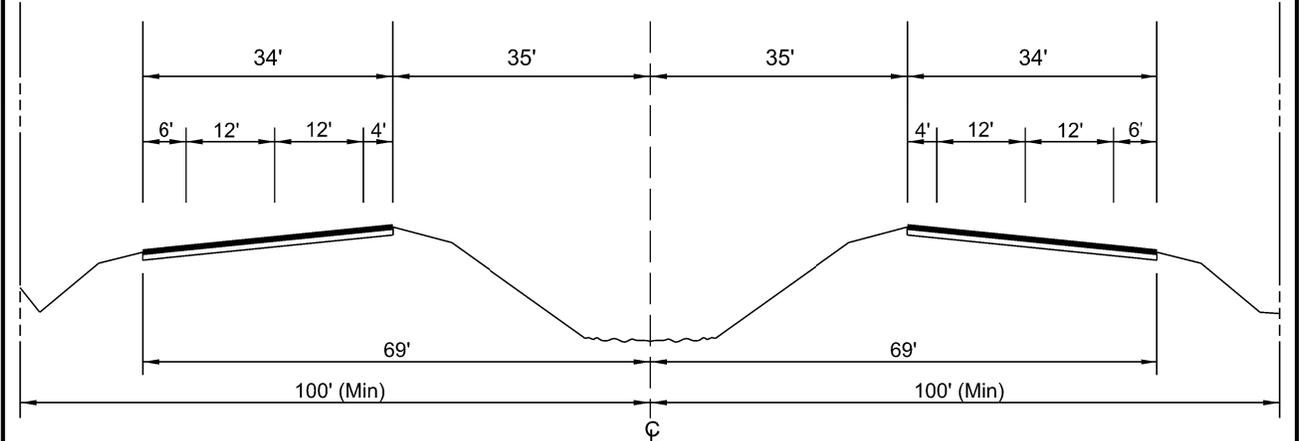
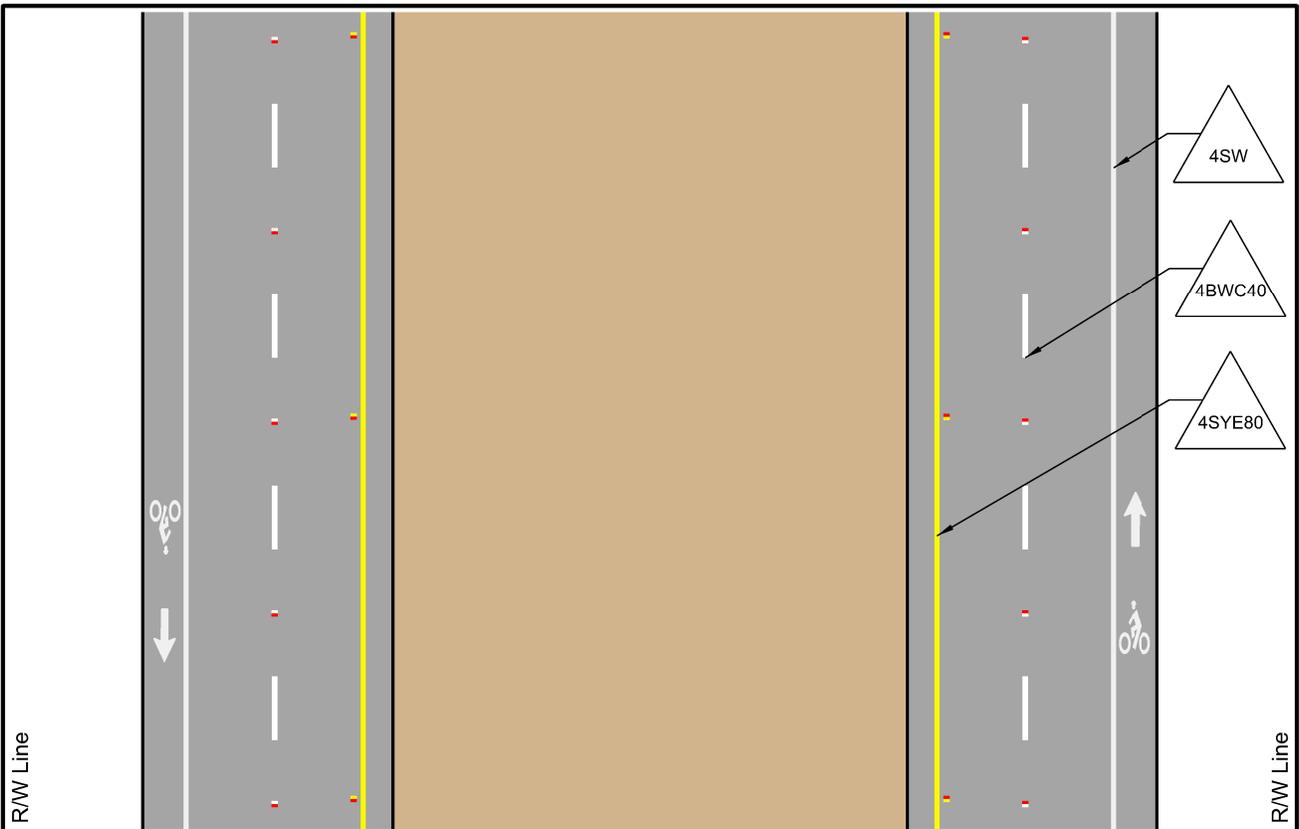
4. Standard Roadway Cross Sections

4.1 Placement of Pavement Markings on Standard Roadway Cross Sections

The following standard cross sections, by functional classification, are from the MCDOT Roadway Design Manual, Chapter 5: Geometric Design Standards. These standard details are intended to illustrate the typical pavement markings associated with each roadway classification's standard cross section. Where existing roadway pavement widths do not allow pavement marking to be installed per these standards, a reference should be made to the MCDOT Roadway Design Manual and/or discussed with a representative from the MCDOT Transportation Systems Management Division prior to plan preparation or actual installation of pavement markings.

4.2 Standard Roadway Cross Sections

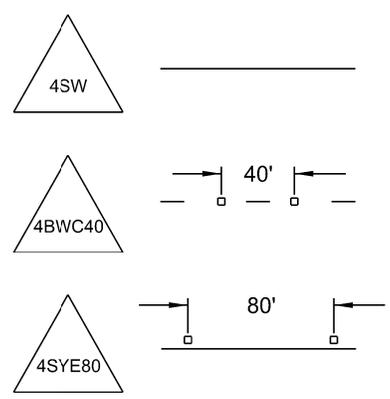
- Rural Parkway..... 4-3
- Rural Principal Arterial 4-4
- Rural Minor Arterial 4-5
- Rural Major Collector 4-6
- Rural Minor Collector..... 4-7
- Rural Local Road 4-8
- Urban Parkway 4-9
- Urban Principal Arterial..... 4-10
- Urban Minor Arterial..... 4-11
- Urban Major Collector..... 4-12
- Urban Minor Collector 4-13
- Urban Local Residential Road 4-14
- Urban Frontage Road (Residential) 4-15
- Roadways for Industrial/Commercial Subdivisions..... 4-16



GENERAL NOTES:

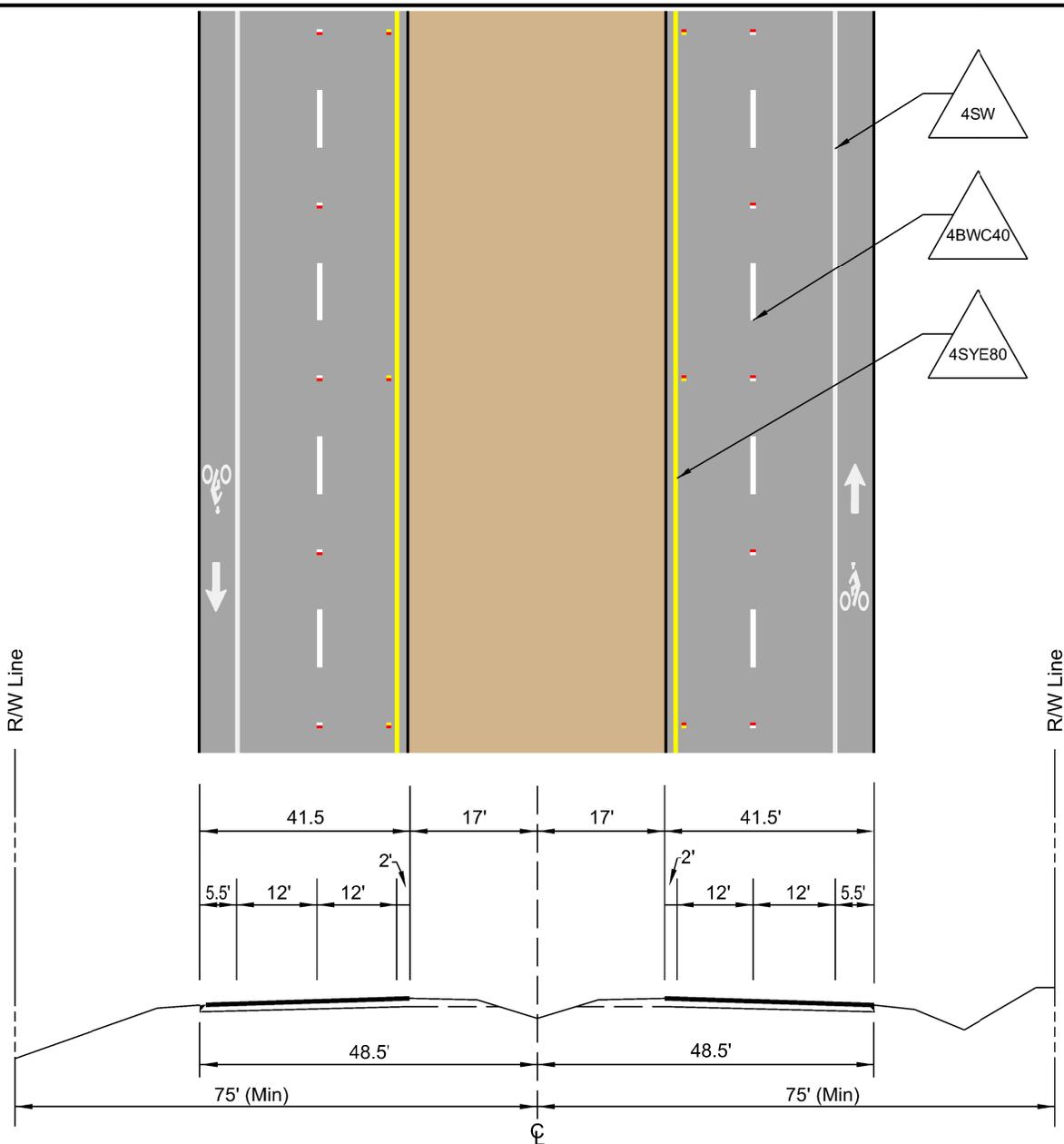
1. Cross-sections are per the functional classifications designated in the MCDOT Roadway Design Manual.
2. Where Roadway conditions do not permit use of this standard, alternate treatment shall be approved by the County Traffic Engineer or a designated representative.
3. All pavement marking dimensions shall be from center of stripe to center of stripe.
4. Final layout and/or field adjustments of pavement marking shall be approved by the County Traffic Engineer or a designated representative.
5. For information on: Clear Zones, Intersections, Geometric Design, and Access Control reference the MCDOT Roadway Design Manual.

LEGEND:



Rural Parkway

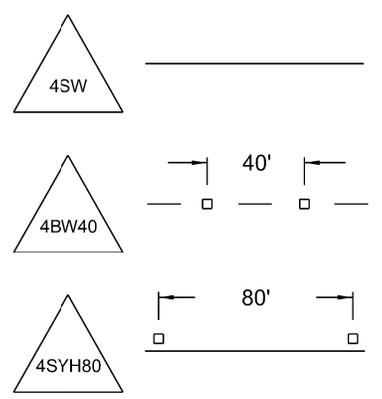
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GENERAL NOTES:

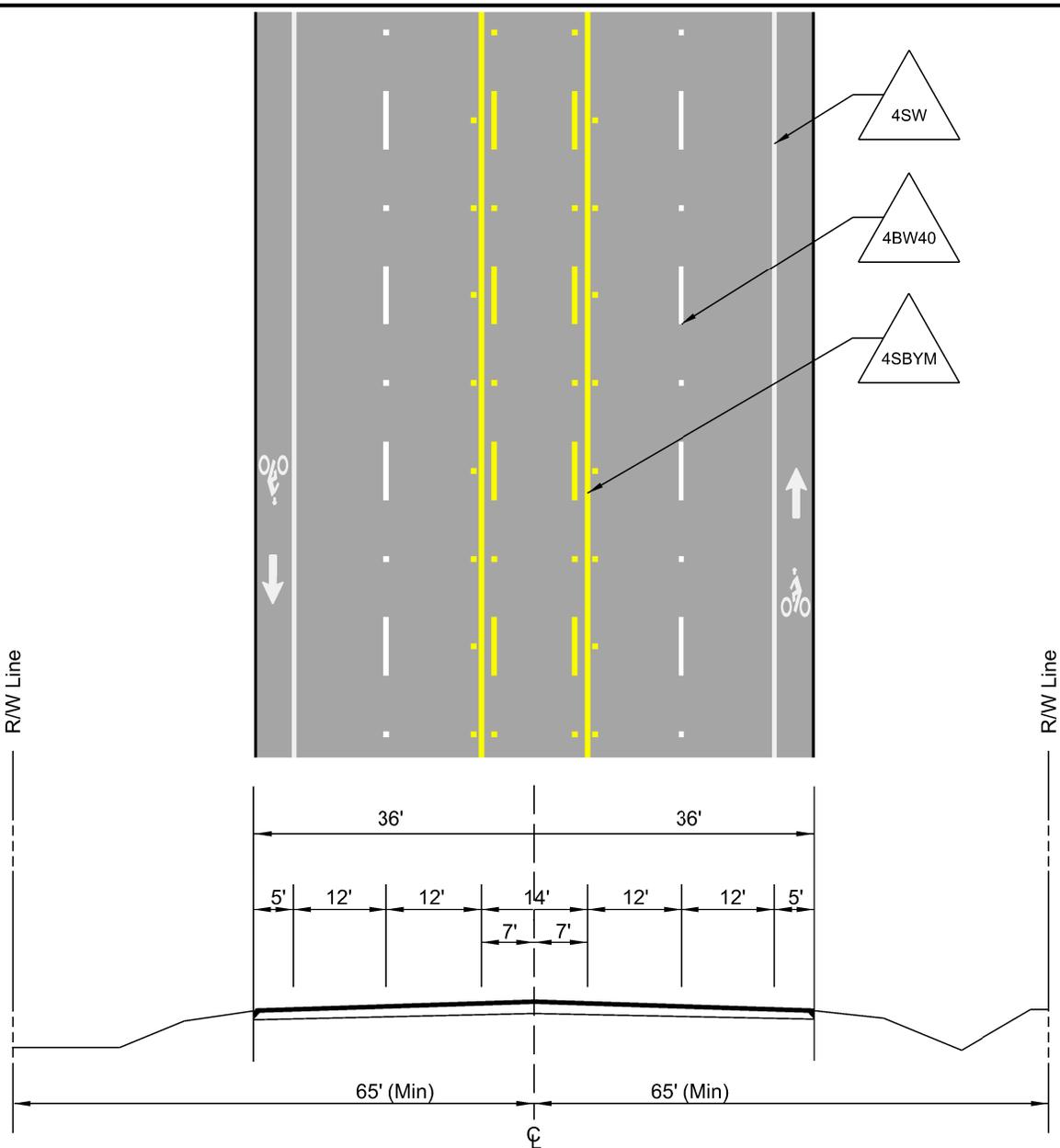
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LEGEND:



Rural Principal Arterial

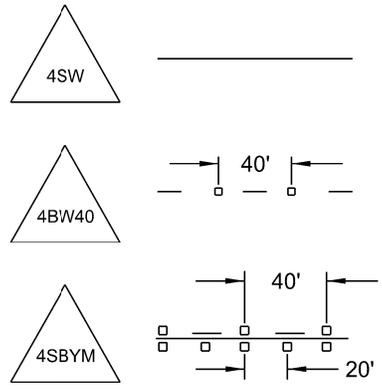
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GENERAL NOTES:

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LEGEND:

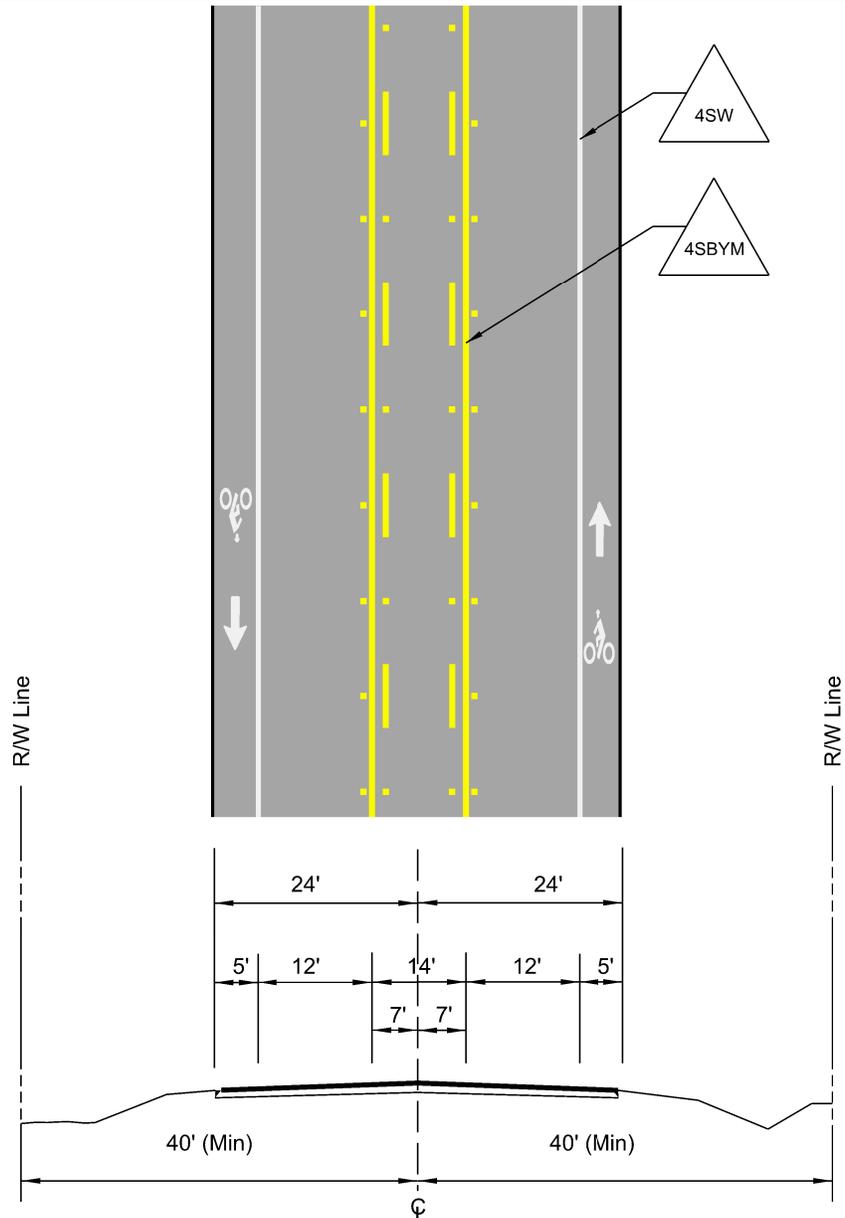


Rural Minor Arterial

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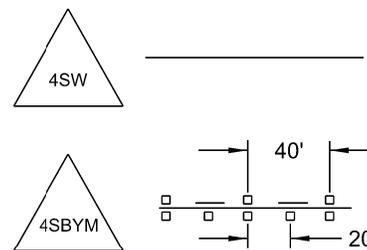
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GENERAL NOTES:

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LEGEND:

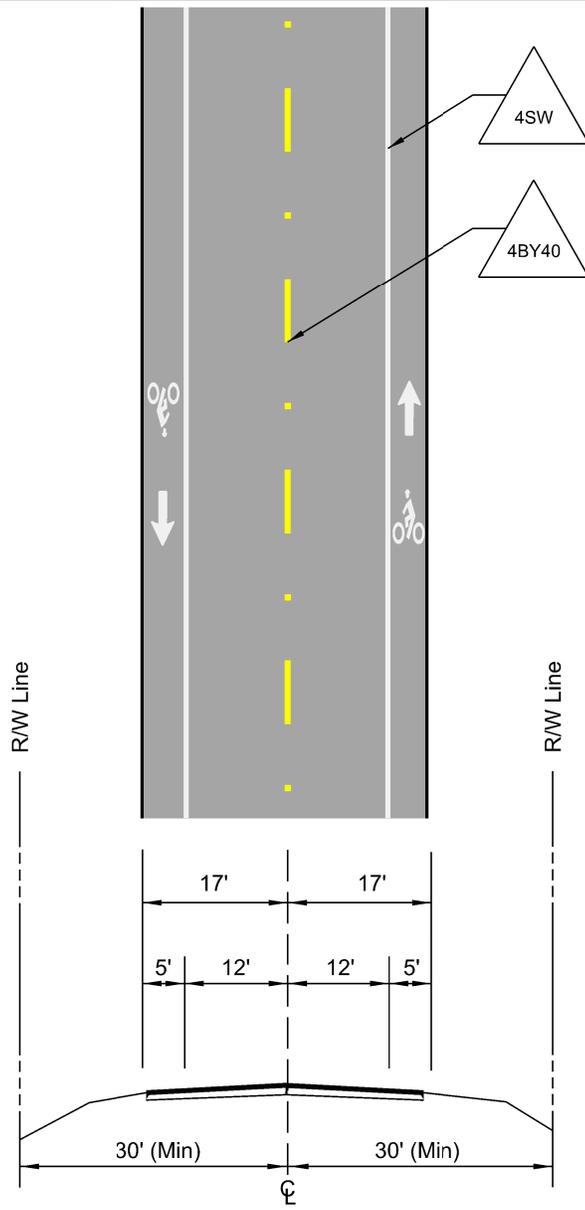


Rural Major Collector

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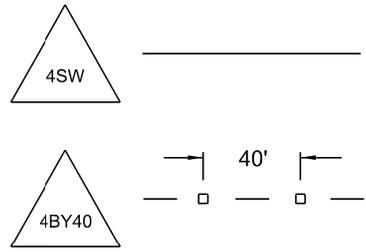
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GENERAL NOTES:

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LEGEND:

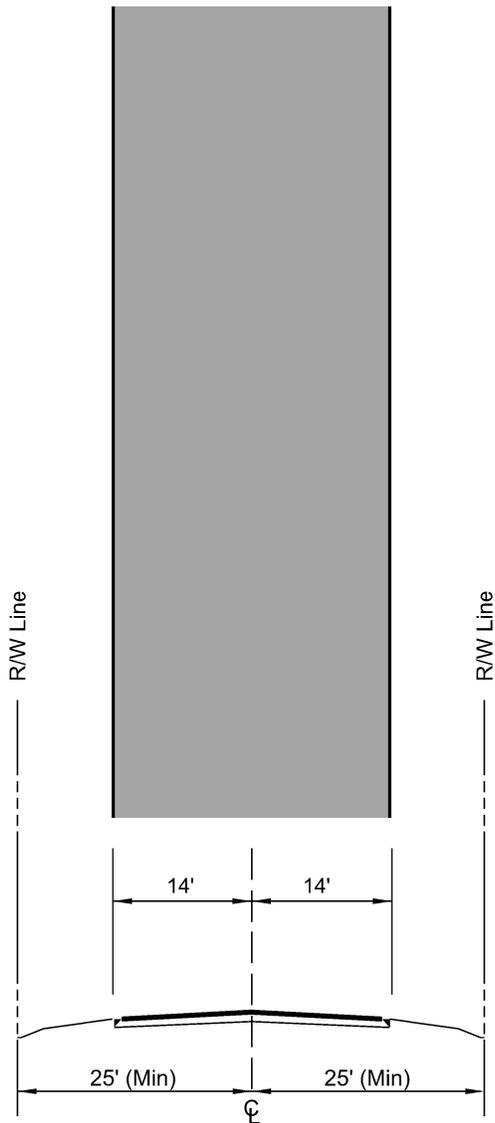


Rural Minor Collector

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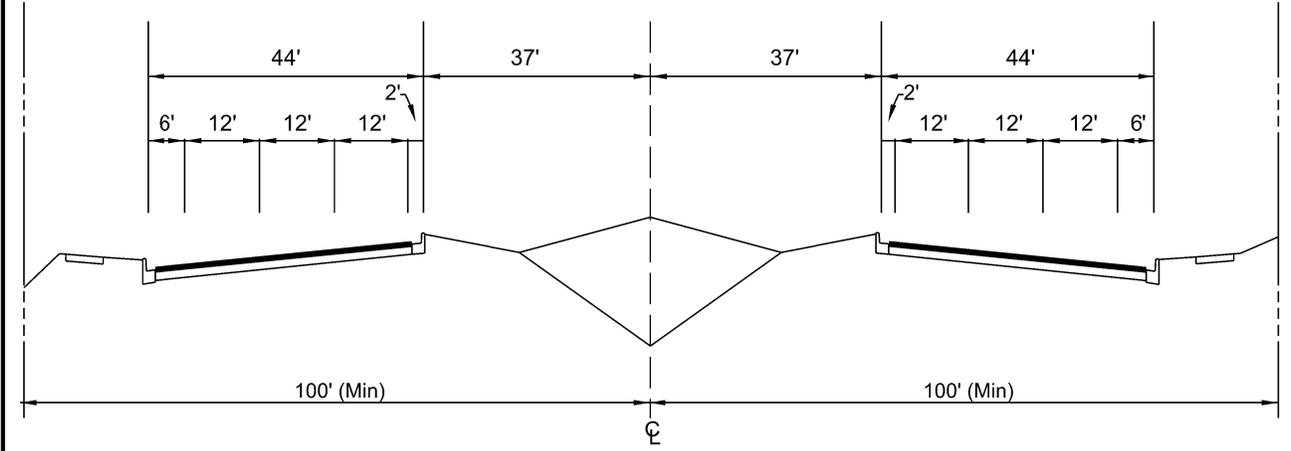
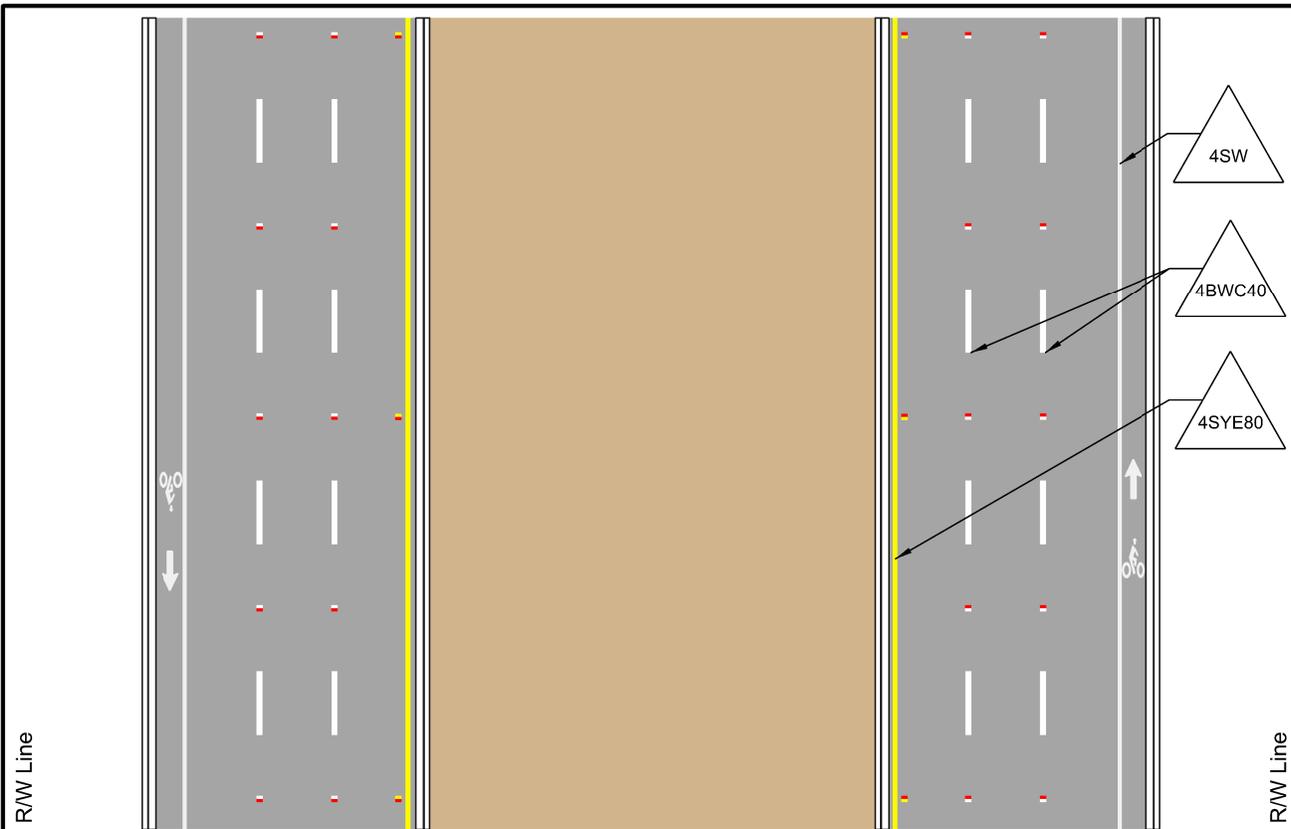
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Rural Local Road

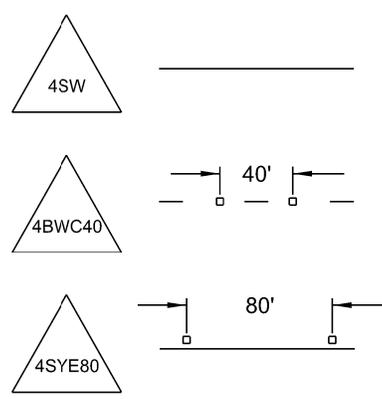
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LEGEND:

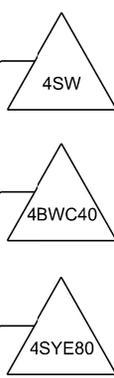
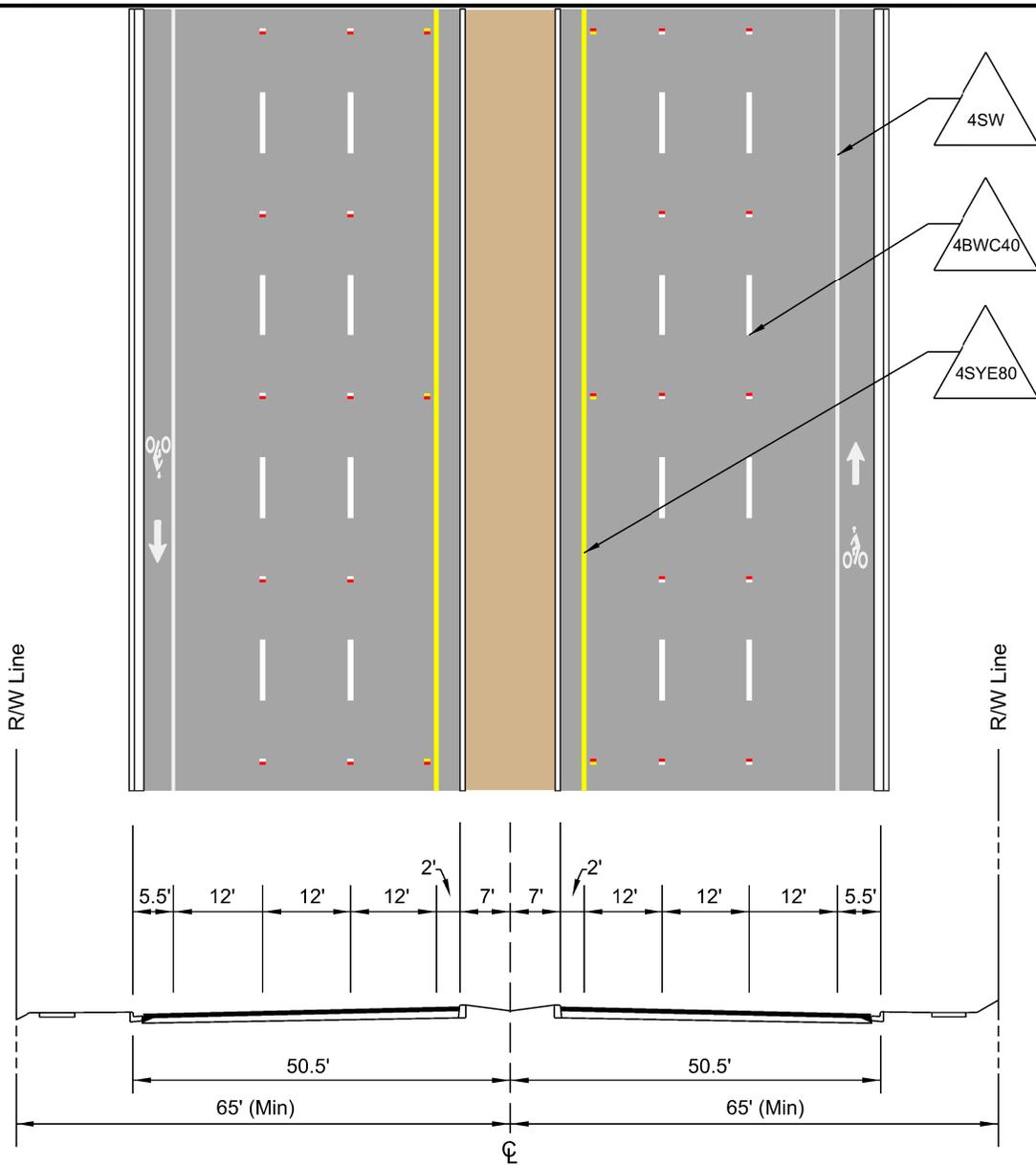


Urban Parkway

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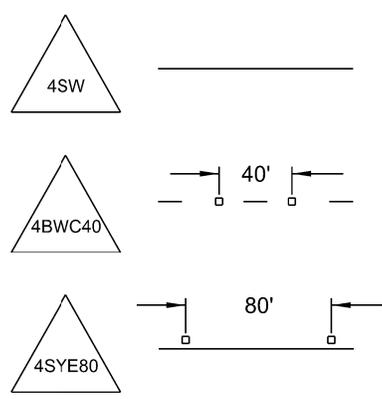
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GENERAL NOTES:

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LEGEND:

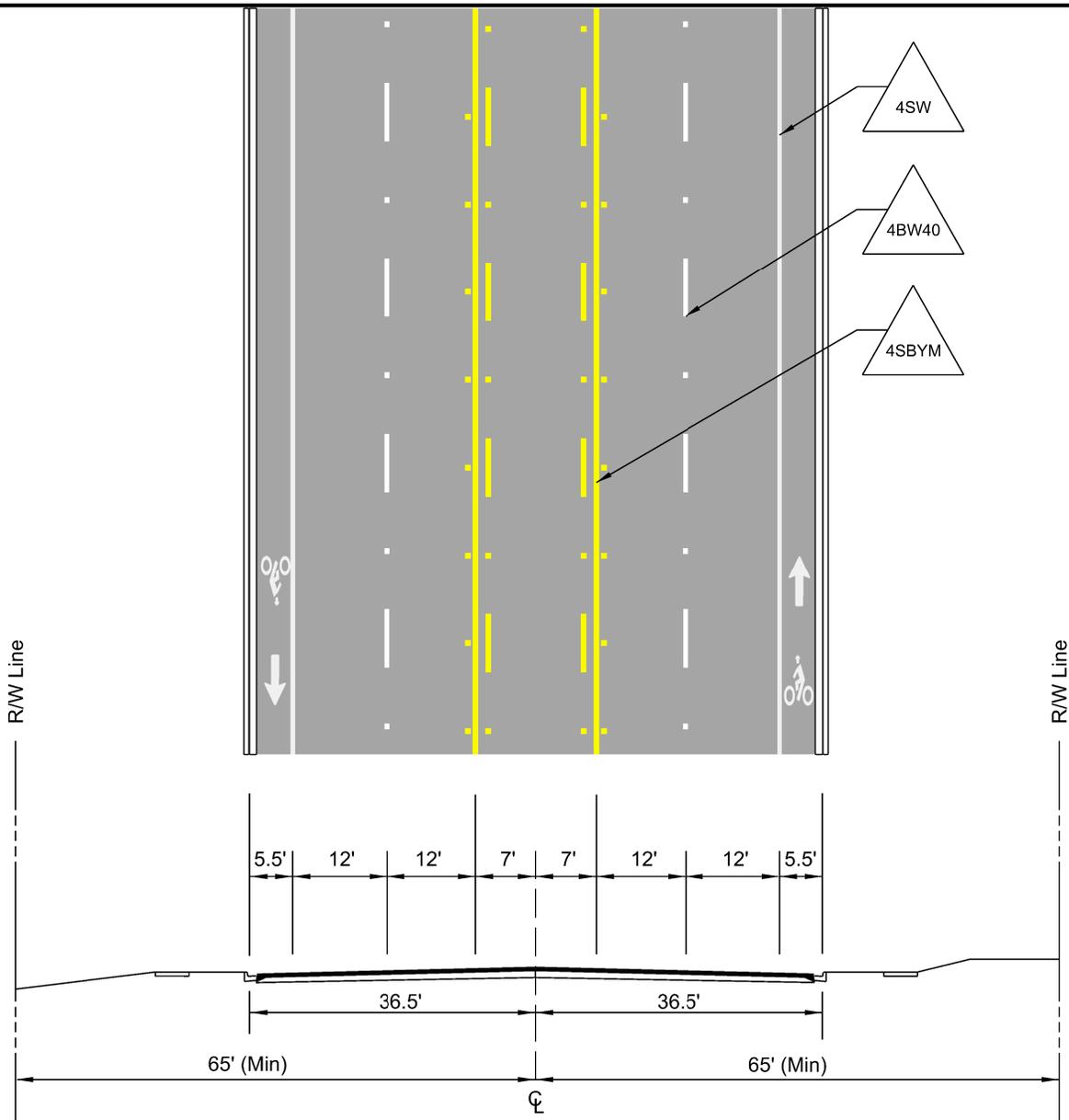


Urban Principal Arterial

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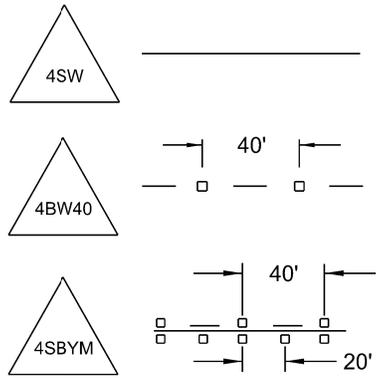
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GENERAL NOTES:

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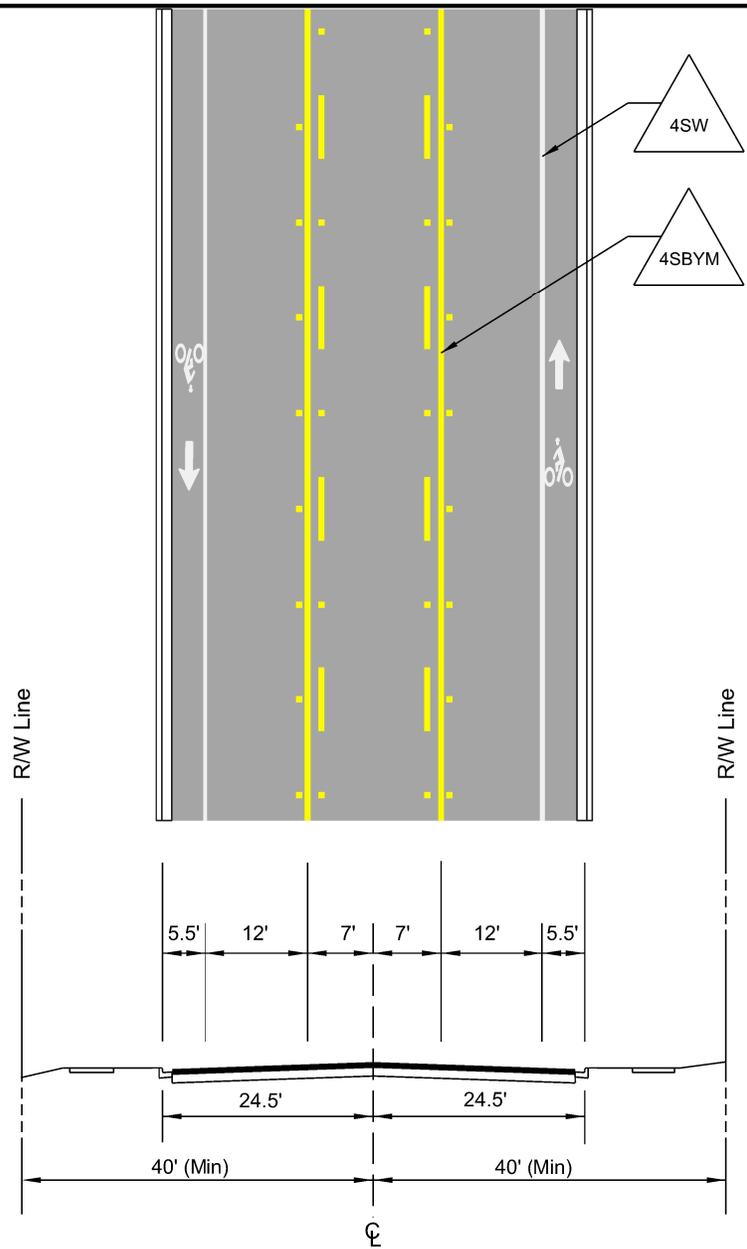


Urban Minor Arterial

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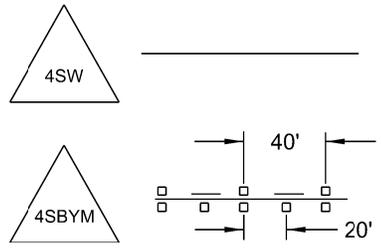
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GENERAL NOTES:

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3. All pavement marking dimensions shall be from center of stripe to center of stripe.
4. Final layout and/or field adjustments of pavement marking shall be approved by the County Traffic Engineer or a designated representative.
5. For information on: Clear Zones, Intersections, Geometric Design, and Access Control reference the MCDOT Roadway Design Manual.

LEGEND:

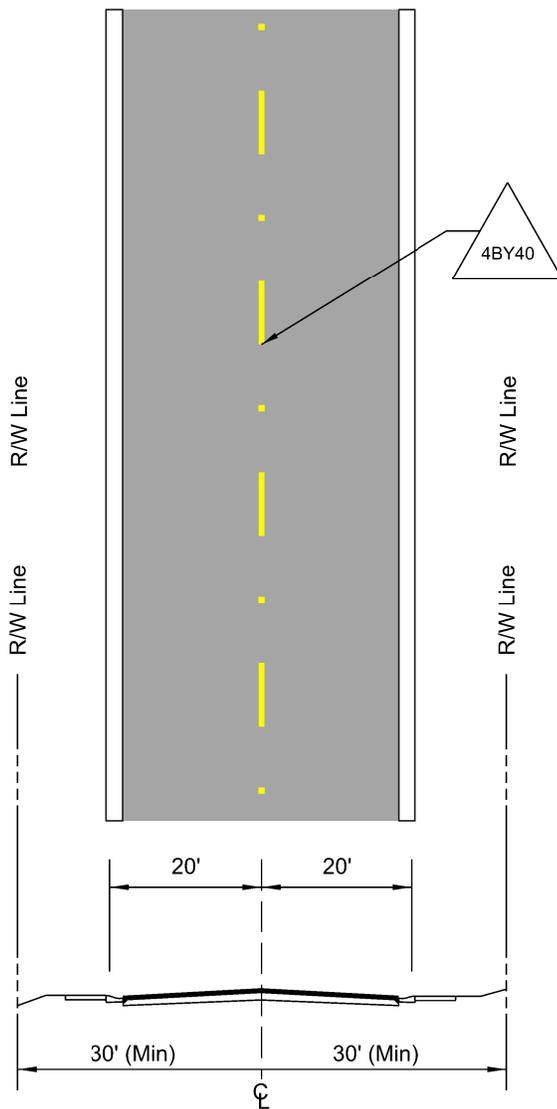


Urban Major Collector

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
TRANSPORTATION SYSTEMS MANAGEMENT DIVISION

DATE
04/20

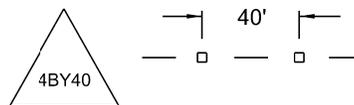
PAGE
4-12



GENERAL NOTES:

1. Cross-sections are per the functional classifications designated in the MCDOT Roadway Design Manual.
2. Where Roadway conditions do not permit use of this standard, alternate treatment shall be approved by the County Traffic Engineer or a designated representative.
3. All pavement marking dimensions shall be from center of stripe to center of stripe.
4. Final layout and/or field adjustments of pavement marking shall be approved by the County Traffic Engineer or a designated representative.
5. For information on: Clear Zones, Intersections, Geometric Design, and Access Control reference the MCDOT Roadway Design Manual.

LEGEND:



Urban Minor Collector

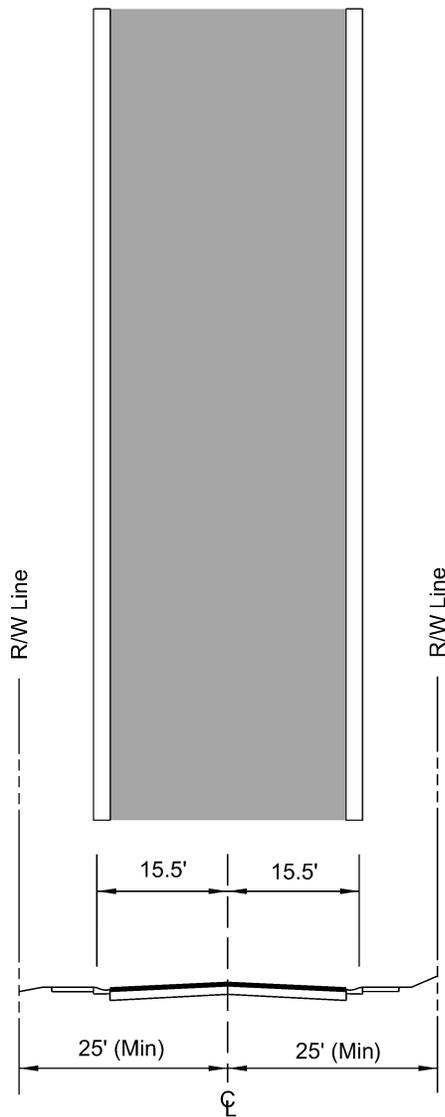
MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
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GENERAL NOTES:

1. Cross-sections are per the functional classifications designated in the MCDOT Roadway Design Manual.
2. Where Roadway conditions do not permit use of this standard, alternate treatment shall be approved by the County Traffic Engineer or a designated representative.
3. All pavement marking dimensions shall be from center of stripe to center of stripe.
4. Final layout and/or field adjustments of pavement marking shall be approved by the County Traffic Engineer or a designated representative.
5. For information on: Clear Zones, Intersections, Geometric Design, and Access Control reference the MCDOT Roadway Design Manual.
6. No pavement marking on residential roads unless directed by the County Traffic Engineer or a designated representative.

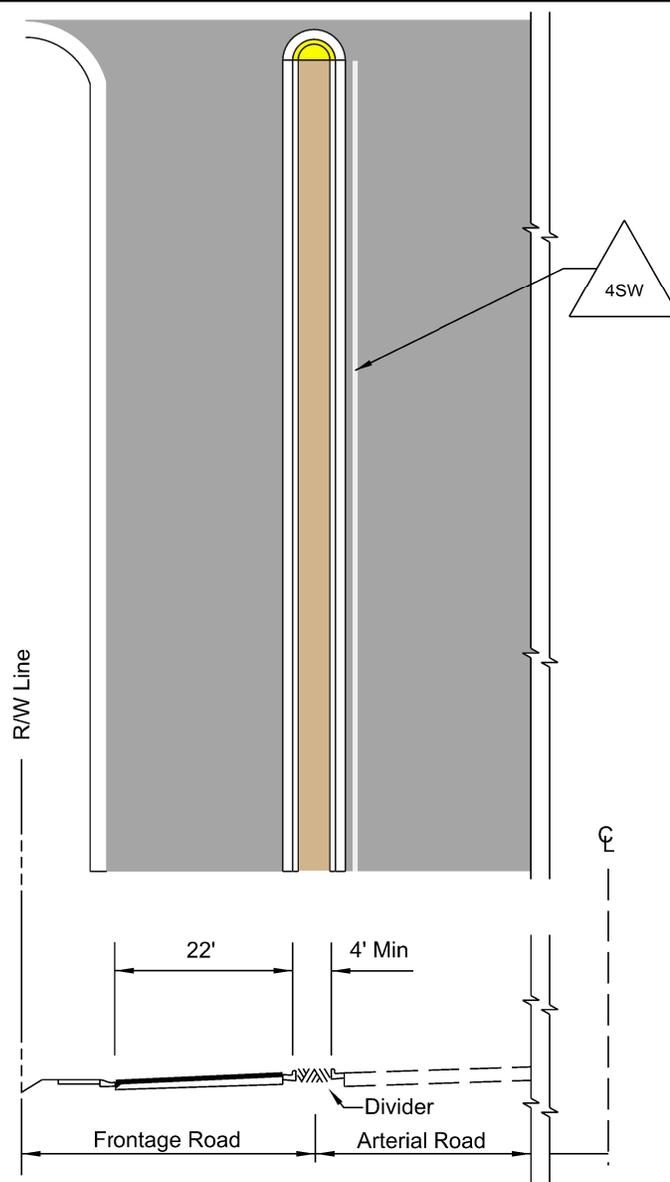


Urban Local Residential Road

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
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DATE
04/20

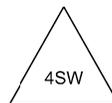
PAGE
4-14



GENERAL NOTES:

1. Cross-sections are per the functional classifications designated in the MCDOT Roadway Design Manual.
2. Where Roadway conditions do not permit use of this standard, alternate treatment shall be approved by the County Traffic Engineer or a designated representative.
3. All pavement marking dimensions shall be from center of stripe to center of stripe.
4. Final layout and/or field adjustments of pavement marking shall be approved by the County Traffic Engineer or a designated representative.
5. For information on: Clear Zones, Intersections, Geometric Design, and Access Control reference the MCDOT Roadway Design Manual.

LEGEND:



**Urban Frontage Road
(Residential)**

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
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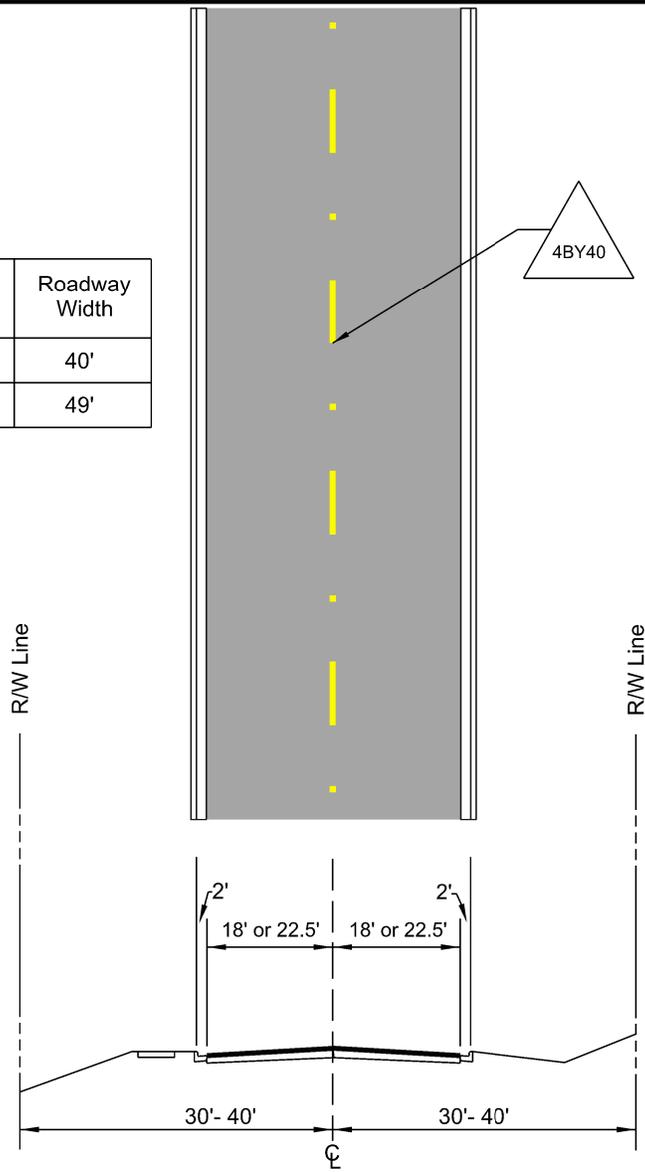
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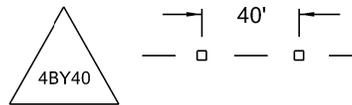
	Right of Way	Roadway Width
LOCAL	60'	40'
COLLECTOR	80'	49'



GENERAL NOTES:

1. Cross-sections are per the functional classifications designated in the MCDOT Roadway Design Manual.
2. Where Roadway conditions do not permit use of this standard, alternate treatment shall be approved by the County Traffic Engineer or a designated representative.
3. All pavement marking dimensions shall be from center of stripe to center of stripe.
4. Final layout and/or field adjustments of pavement marking shall be approved by the County Traffic Engineer or a designated representative.
5. For information on: Clear Zones, Intersections, Geometric Design, and Access Control reference the MCDOT Roadway Design Manual.

LEGEND:



Roadways For Industrial / Commercial Subdivisions

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5.

Standard Pavement Markings

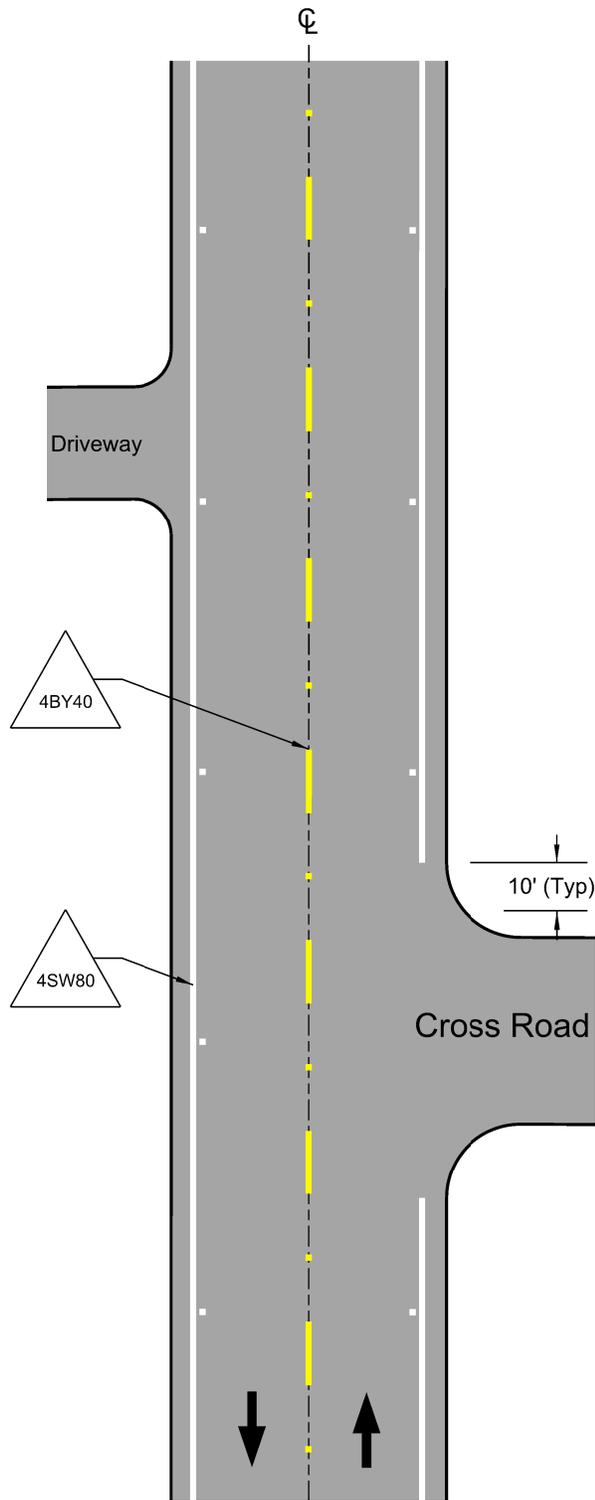


5. Standard Pavement Markings

5.1 Standard Roadway Segments

- Centerlines and Edge Lines5-2
- Centerlines and Edge Lines at Curves.....5-3
- Centerlines and Edge Lines with Unpaved Median.....5-4
- No Passing Zones5-5
- No Passing Zones at Intersections (Arterial/Collector).....5-6
- Lane Reduction5-7
- Channelizing Lines (Reduction in Pavement Width).....5-8
- Channelizing Lines (Reduction at Cross Road).....5-9
- Center Two-Way Left Turn Lanes (Minor Intersection) 5-10
- Center Two-Way Left Turn Lanes (Major Intersection) 5-11
- Painted Median Island 5-12
- Turn Lane Pavement Markings..... 5-13
- Mandatory Right Turn Only From Thru Lane.....5-14

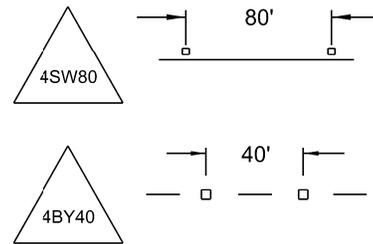
NOT TO SCALE



GENERAL NOTES:

1. Edge line pavement marking shall not be broken for driveways unless the driveway is Stop controlled.

LEGEND:



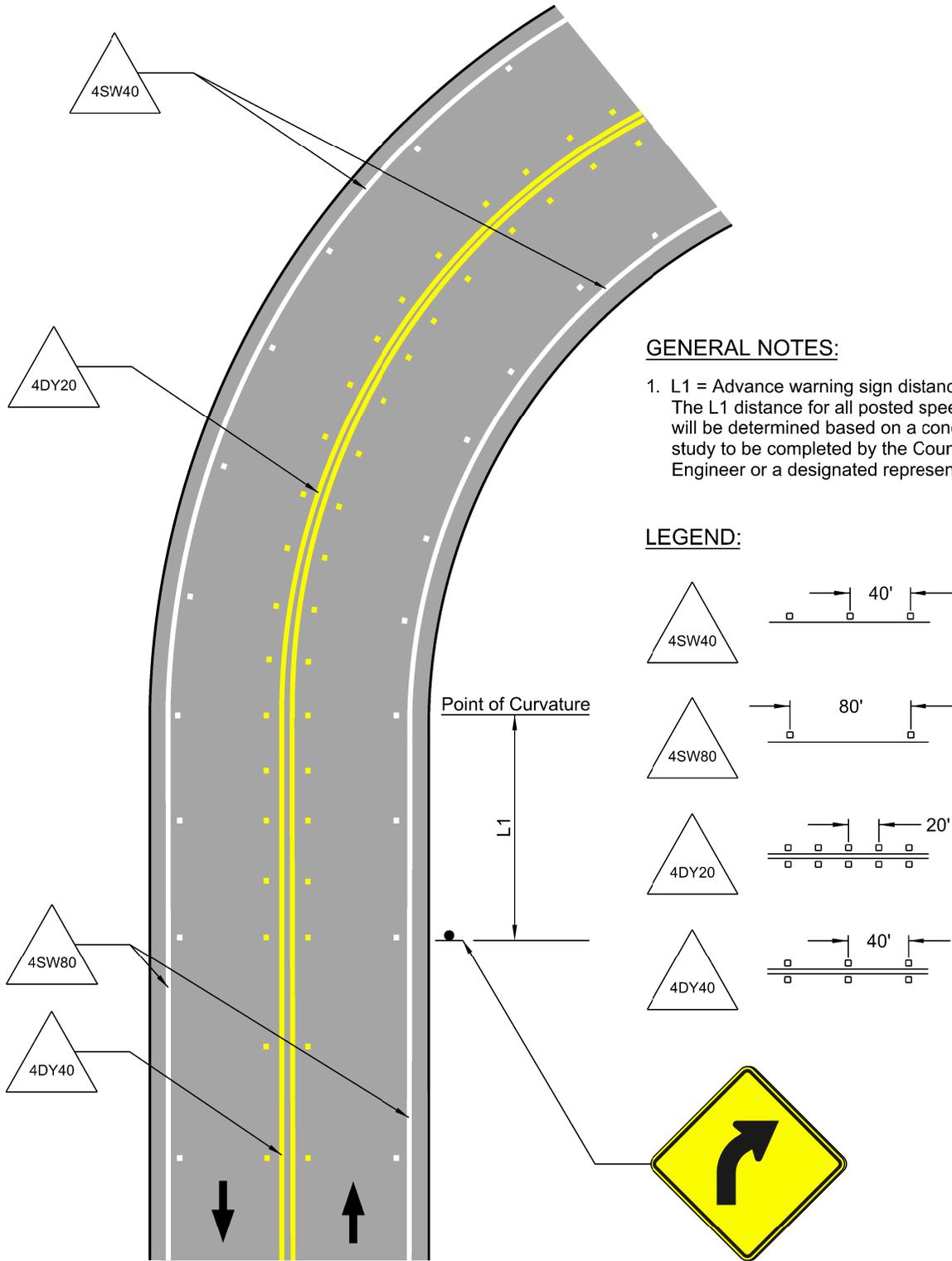
Centerlines and Edge Lines

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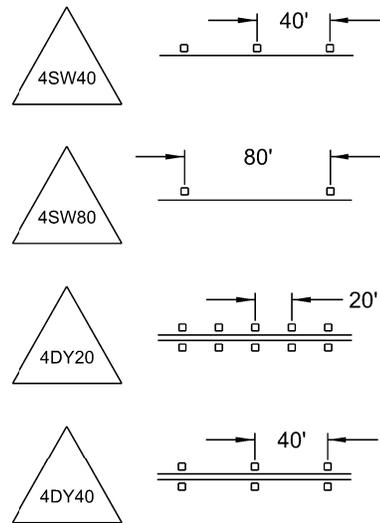
NOT TO SCALE



GENERAL NOTES:

1. L1 = Advance warning sign distance.
The L1 distance for all posted speeds will be determined based on a condition study to be completed by the County Traffic Engineer or a designated representative.

LEGEND:

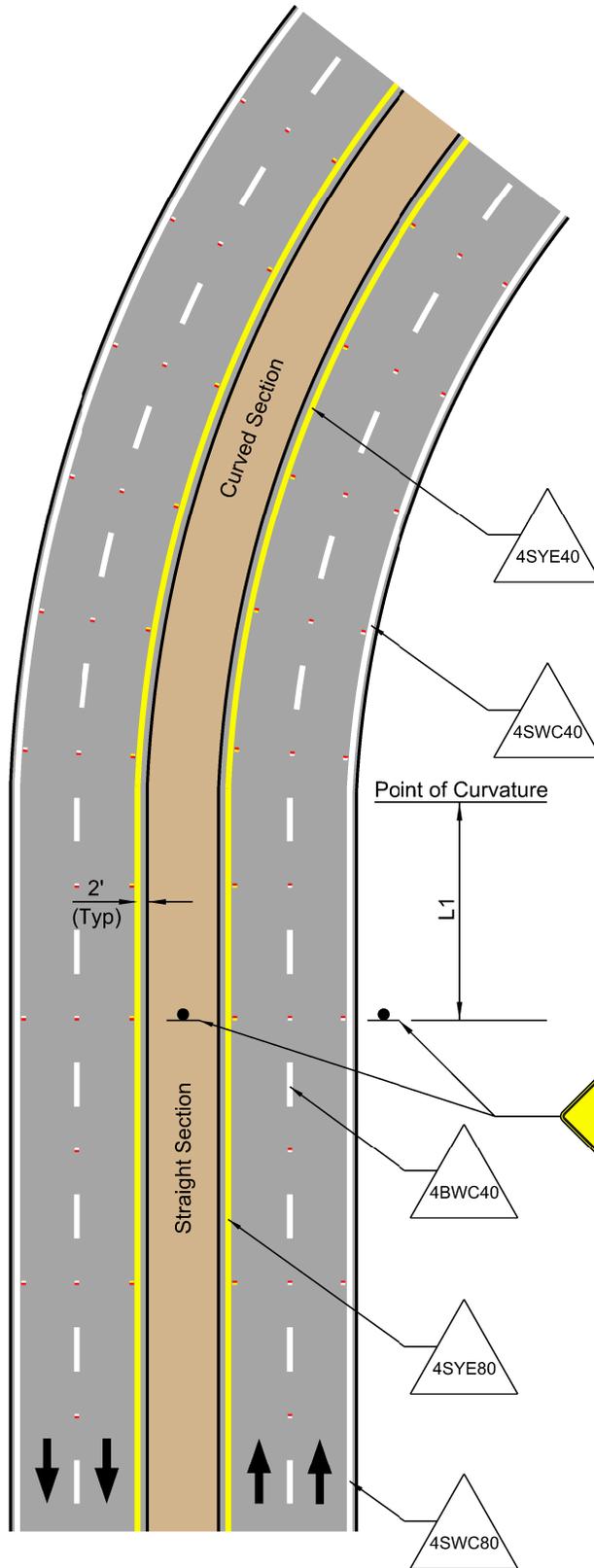


**Center Lines and
Edge Lines at Curves**

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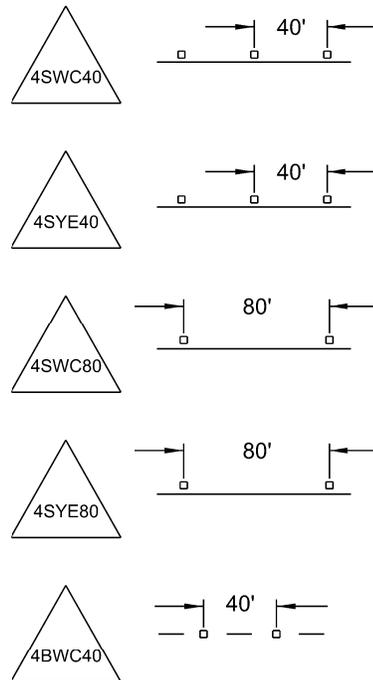
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GENERAL NOTES:

1. Offset dimension may vary with pavement width.
2. L1 = Advance warning sign distance. The L1 distance for all posted speeds will be determined based on a condition study to be completed by the County Traffic Engineer or a designated representative.

LEGEND:



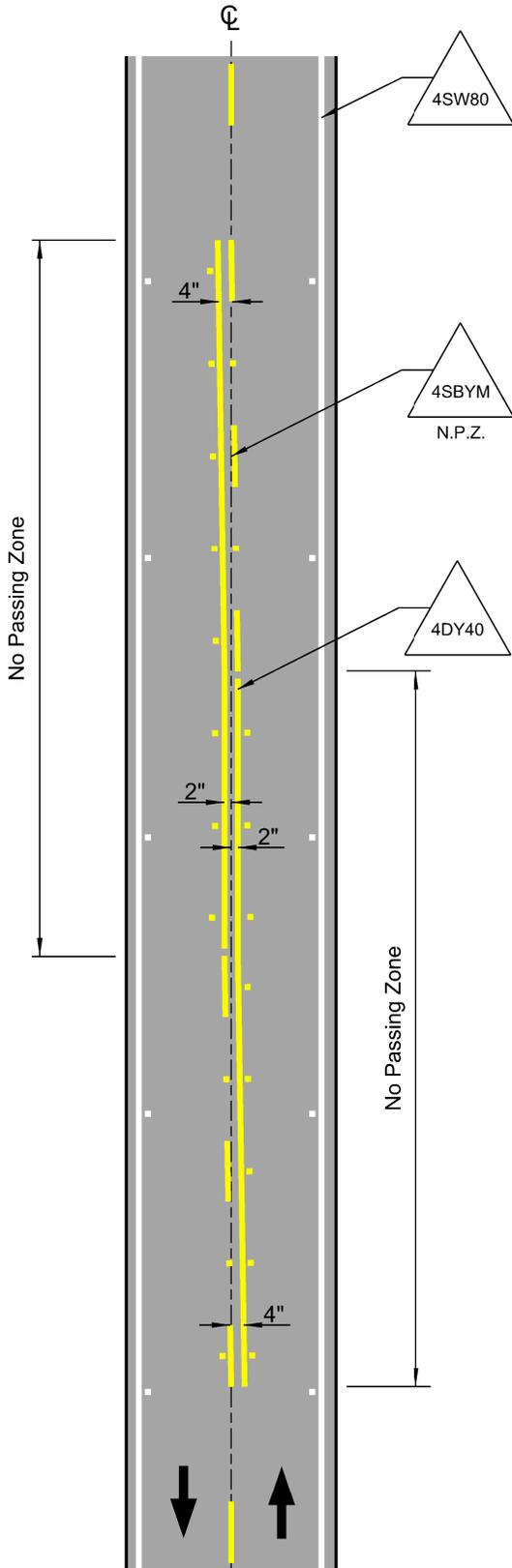
**Centerlines and Edge Lines
with Unpaved Median**

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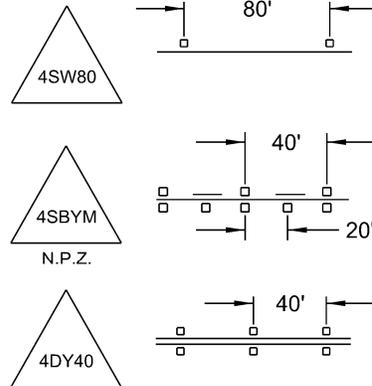
NOT TO SCALE



GENERAL NOTES:

1. No Passing Zones shall be installed per MUTCD guidelines.
2. Final layout of No Passing Zones shall be checked by the County Traffic Engineer or a designated representative.

LEGEND:



No Passing Zones

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
TRANSPORTATION SYSTEMS MANAGEMENT DIVISION

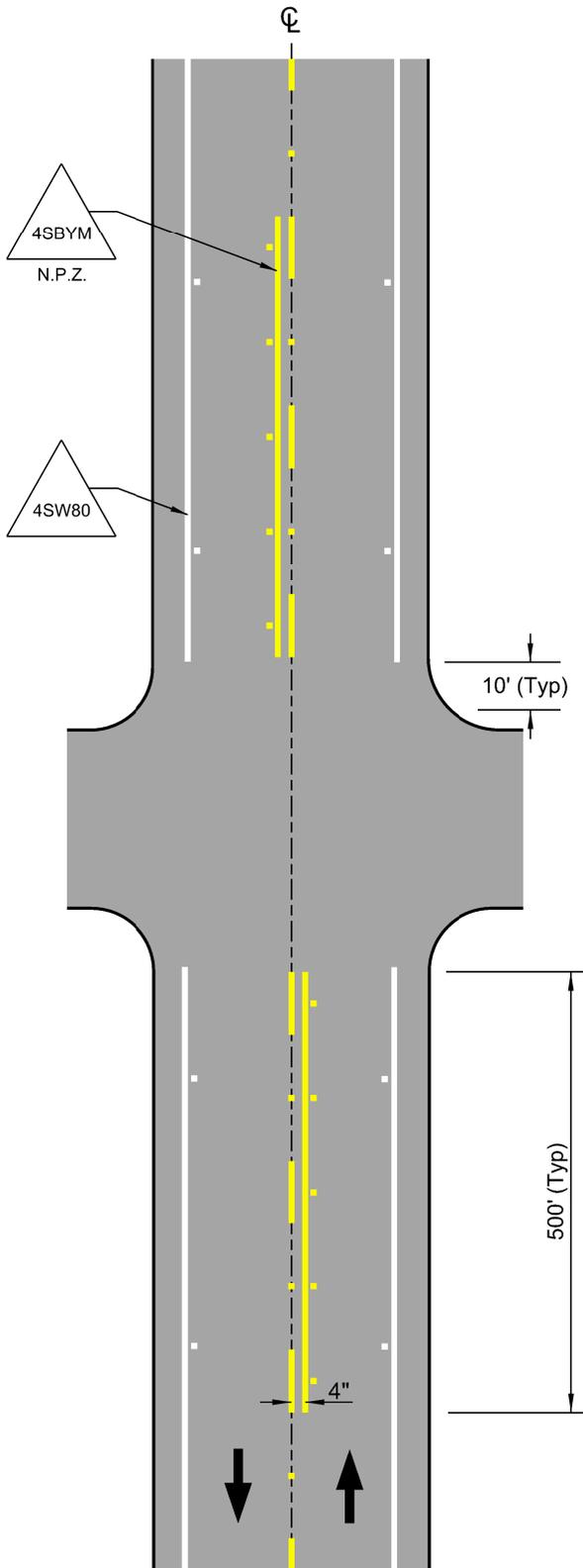
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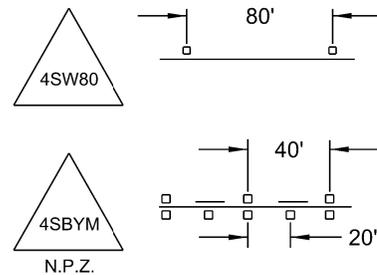
NOT TO SCALE



GENERAL NOTES:

1. No Passing Zones shall be installed per MUTCD guidelines.
2. Installation of No Passing Zones approaching collectors shall be determined by the County Traffic Engineer or a designated representative.
3. Final layout of No Passing Zones shall be checked by the County Traffic Engineer or a designated representative.

LEGEND:



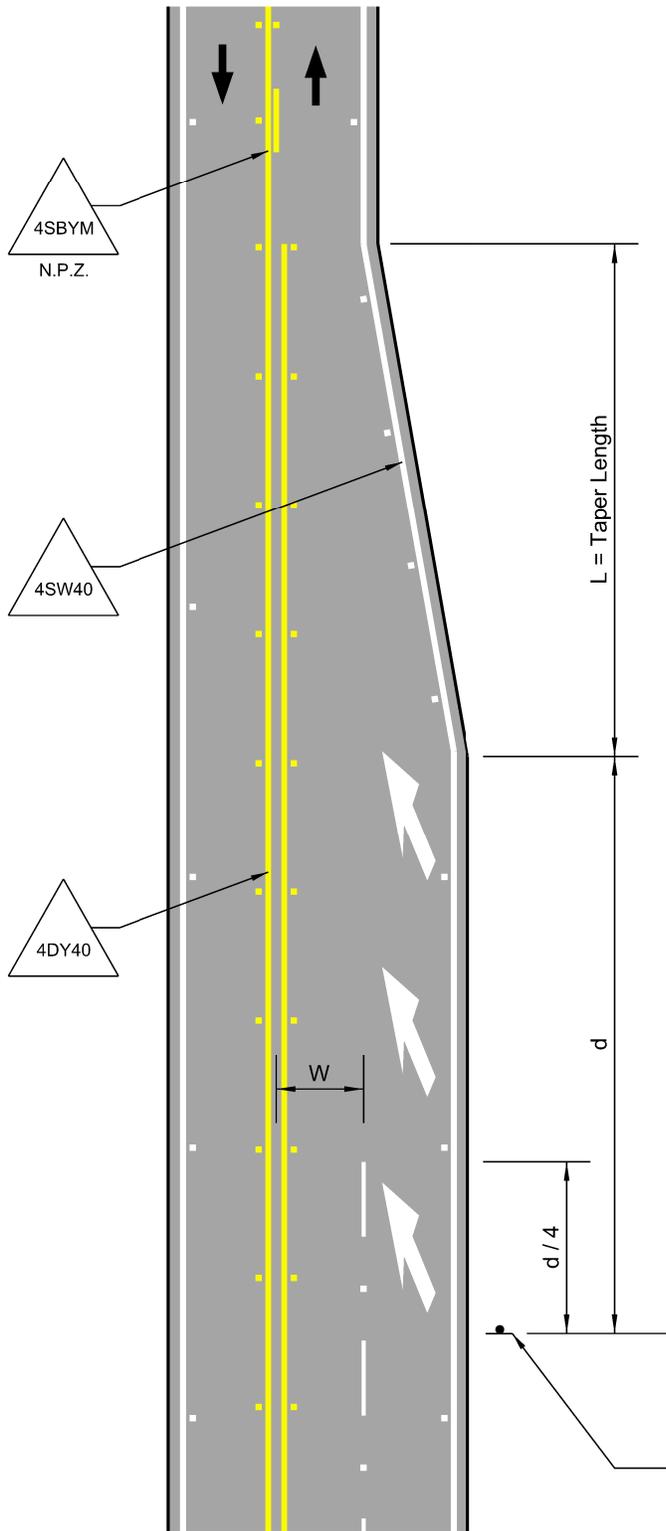
**No Passing Zones
At Intersections
(Arterial / Collector)**

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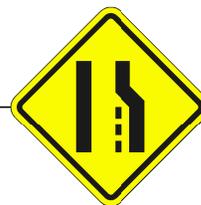
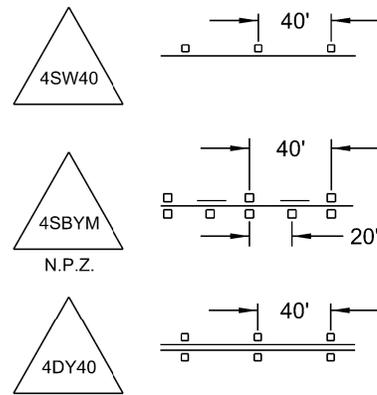
NOT TO SCALE



GENERAL NOTES:

1. $L = WS$ for speeds of 45 mph or greater.
2. $L = WS^2 / 60$ for speeds of less than 45 mph, where:
 L = Length of taper in feet
 S = Posted or 85th-percentile speed
 W = Offset in feet
4. d = Advance warning sign distance (See MUTCD Table 2C-4 Condition A)
5. Lane reduction arrows are optional for posted speeds of less than 45 mph. When used, one arrow should be placed between the advance warning sign and the end of the lane line markings, and one arrow should be placed at the beginning of the taper. When used, the third arrow is centered between the other two.
6. See Lane-Reduction Arrow symbol on pg. 5-35.

LEGEND:



Lane Reduction

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
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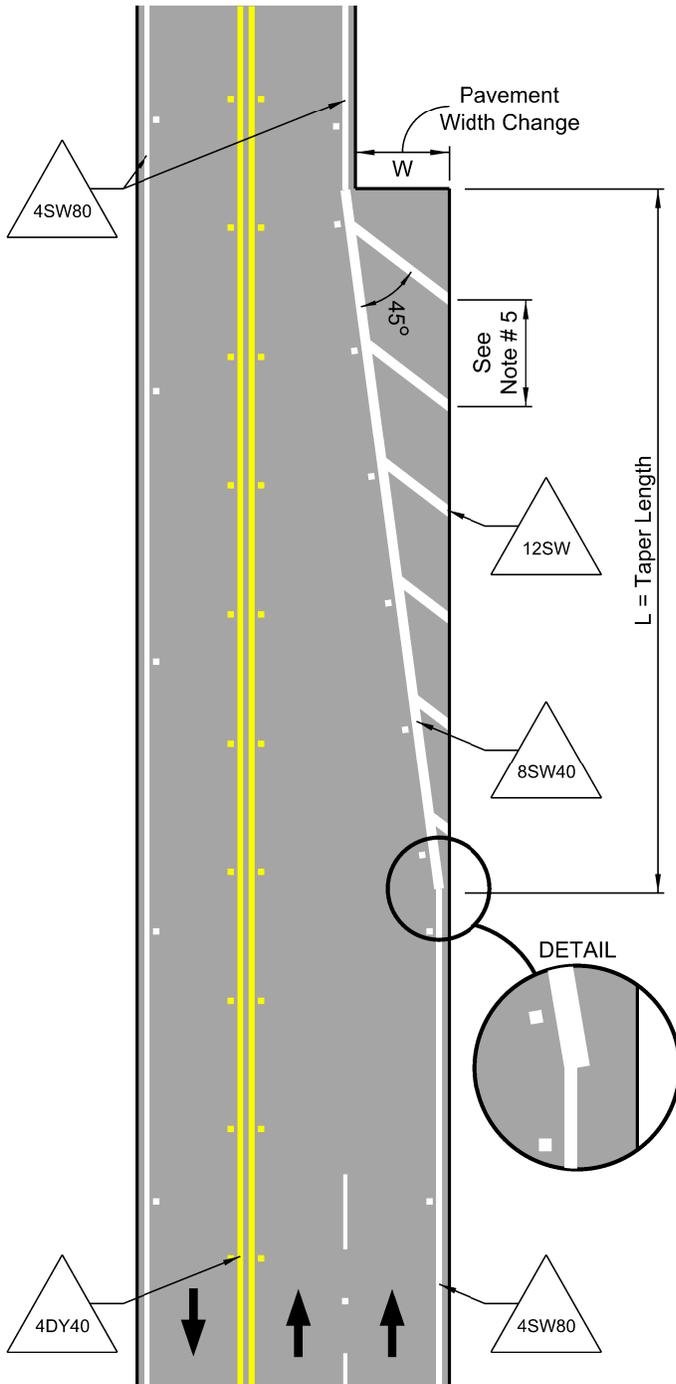
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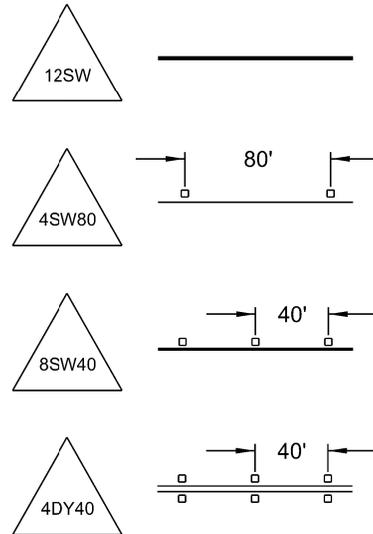
NOT TO SCALE



GENERAL NOTES:

1. Changes in pavement width may require pavement marking channelization.
2. $L = WS$ for speeds of 45 mph or greater.
3. $L = WS^2 / 60$ for speeds of less than 45 mph, where:
 L = Length of taper in feet
 S = Posted or 85th-percentile speed
 W = Offset in feet
4. Spacing of crosshatching shall correspond with the posted speed limit of the roadway (e.g. 30 mph = 30' spacing) not to exceed 50'.
5. For details on Lane Reductions, see pg. 5-7.

LEGEND:



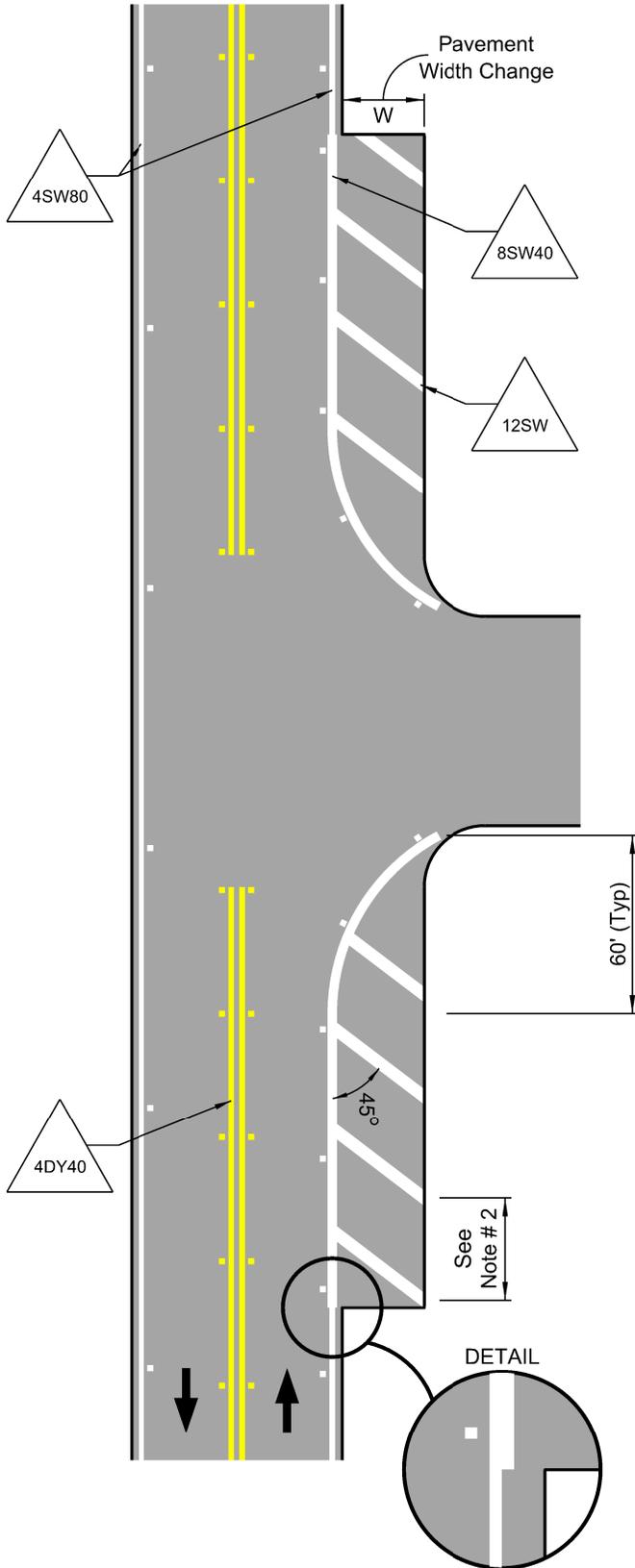
**Channelizing Lines
(Reduction in Pavement Width)**

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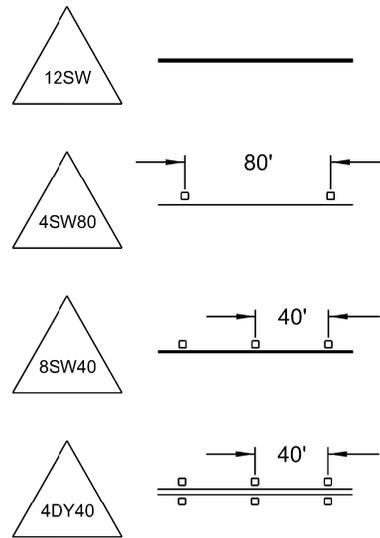
NOT TO SCALE



GENERAL NOTES:

- 1. Changes in pavement width may require pavement marking channelization.
- 2. Spacing of crosshatching shall correspond with the posted speed limit of the roadway (e.g. 30 mph = 30' spacing) not to exceed 50'.

LEGEND:



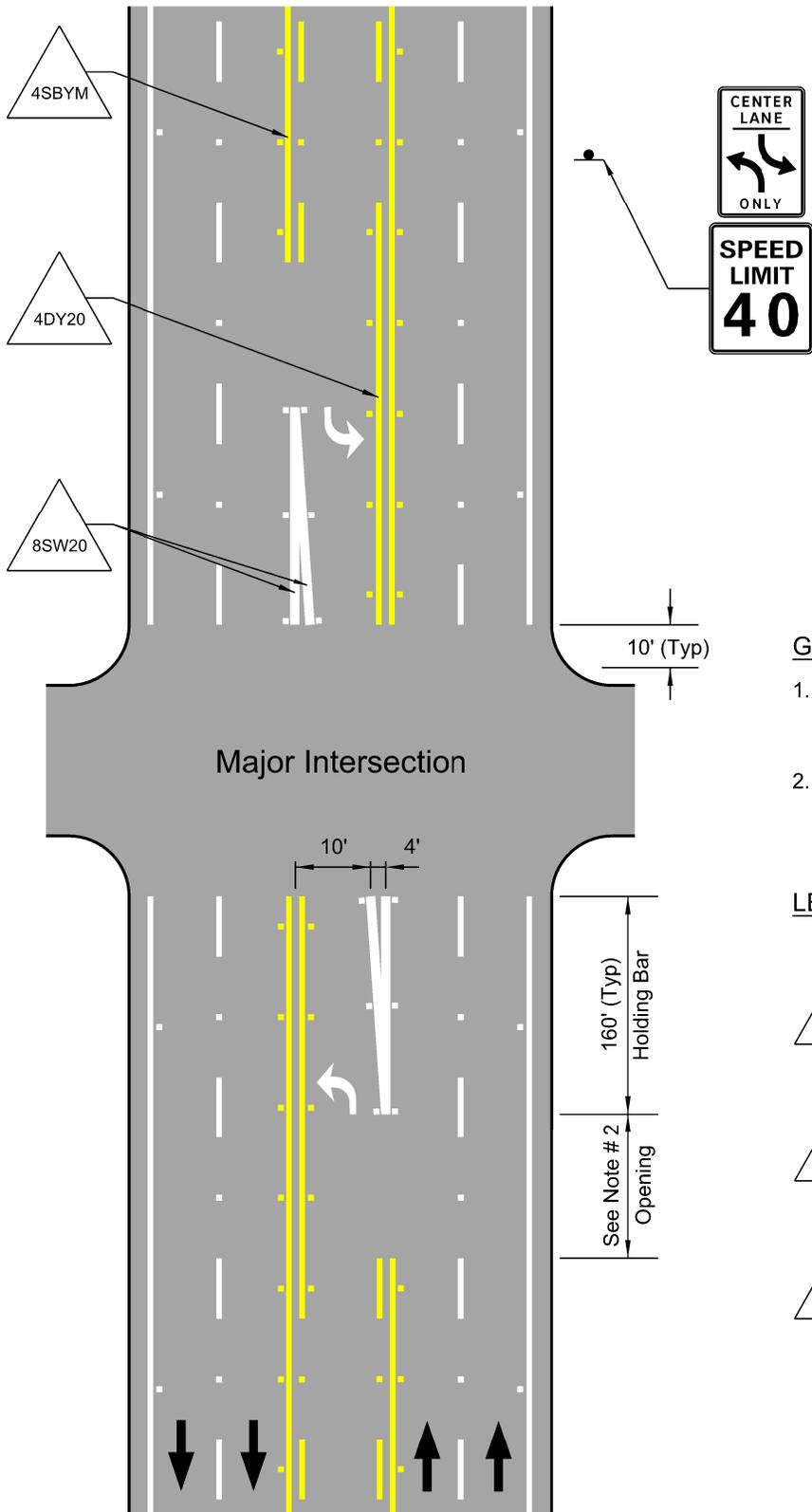
**Channelizing Lines
(Reduction at Cross Road)**

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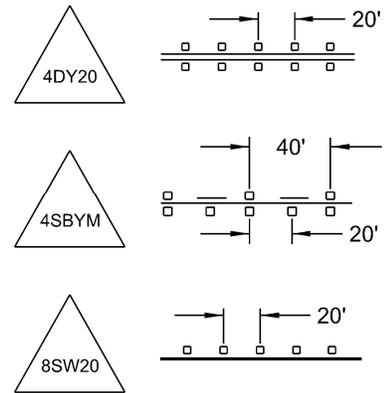
NOT TO SCALE



GENERAL NOTES:

- 1. Typical pavement marking layout for major intersections for high left turn volumes.
- 2. 100' opening for posted speeds of 45mph or less. 120' opening for posted speeds of 50mph or greater.

LEGEND:



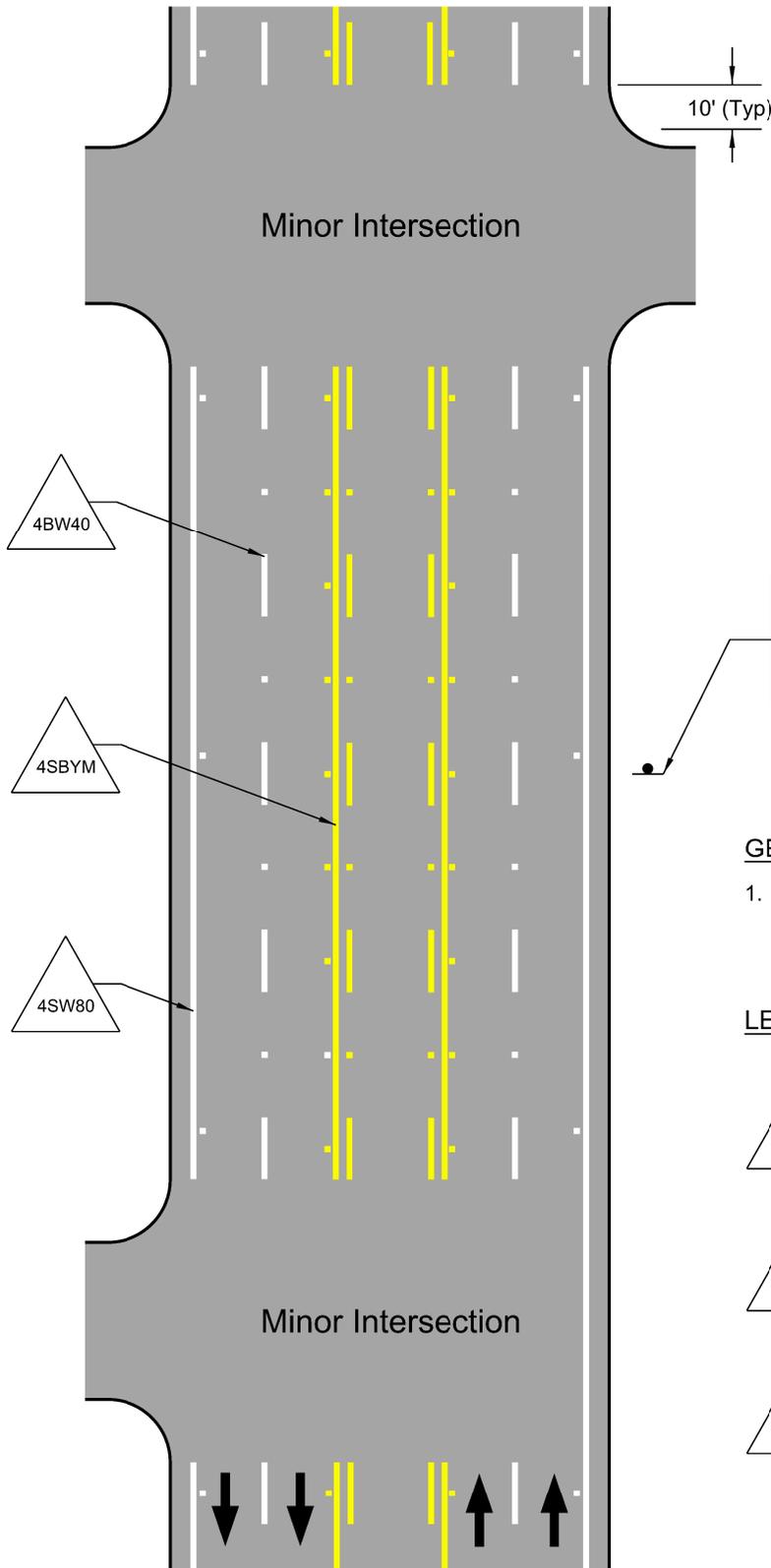
**Center Two-Way Left
Turn Lanes
(Major Intersection)**

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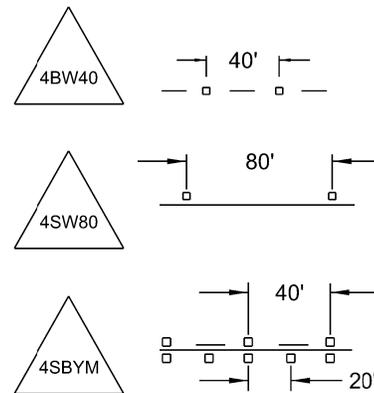
NOT TO SCALE



GENERAL NOTES:

- 1. Typical pavement marking layout for minor intersections with low left turn volumes.

LEGEND:



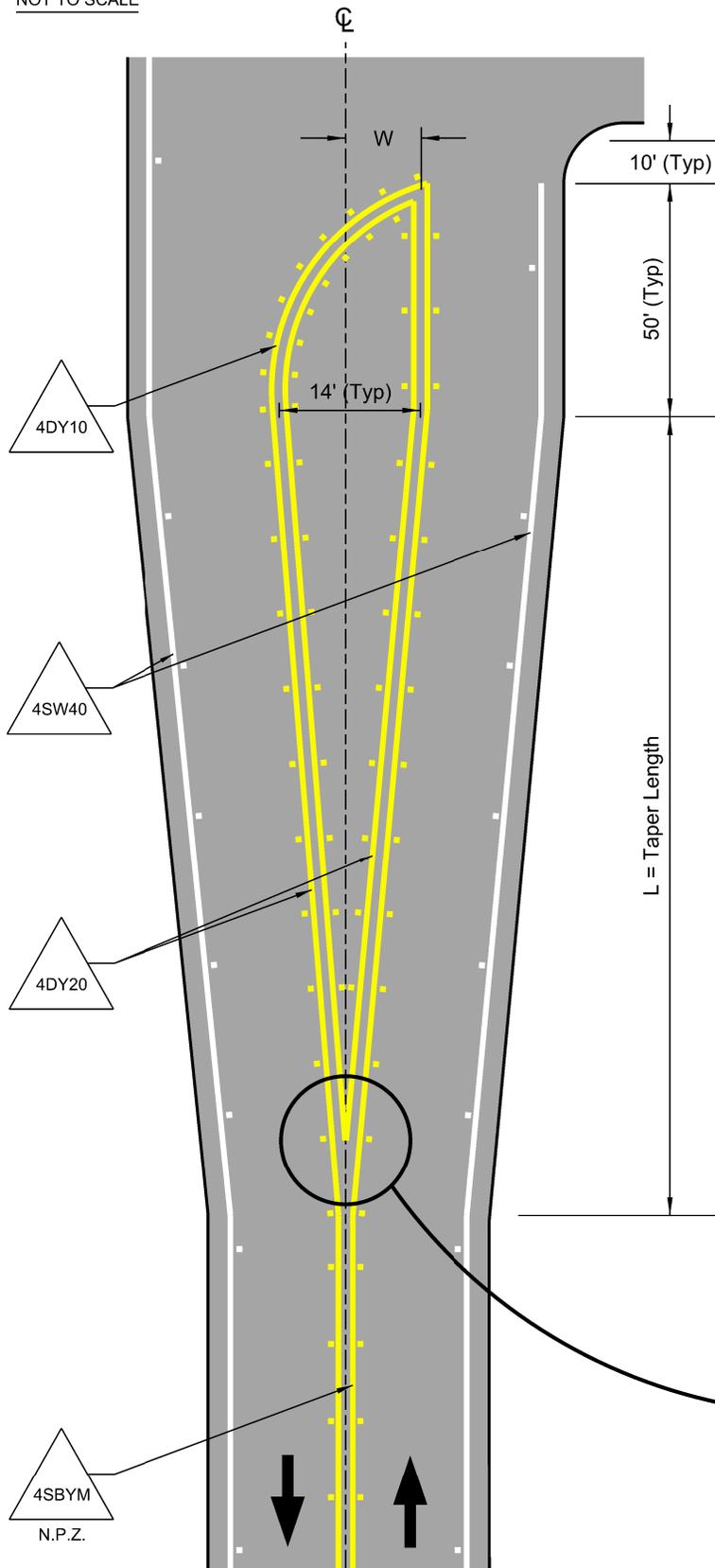
**Center Two-Way Left
Turn Lanes
(Minor Intersection)**

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NOT TO SCALE

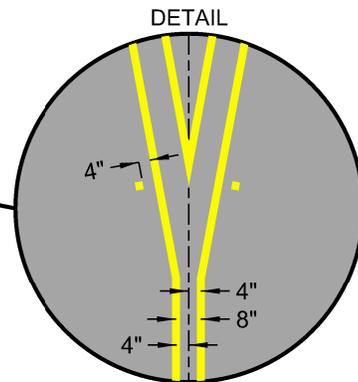
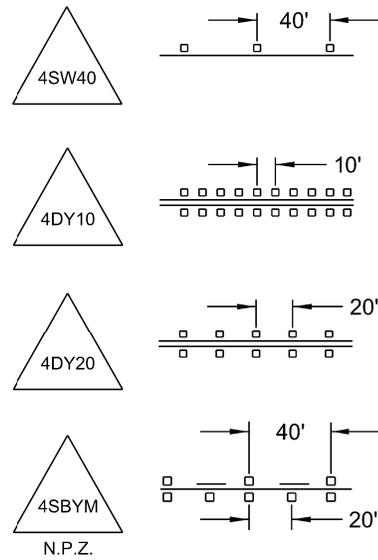


GENERAL NOTES:

1. $L = WS$ for speeds of 45 mph or greater.
2. $L = WS^2 / 60$ for speeds of less than 45 mph, where:

L = Length of taper in feet
 S = Posted or 85th-percentile speed
 W = Offset in feet

LEGEND:



Painted Median Island

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
TRANSPORTATION SYSTEMS MANAGEMENT DIVISION

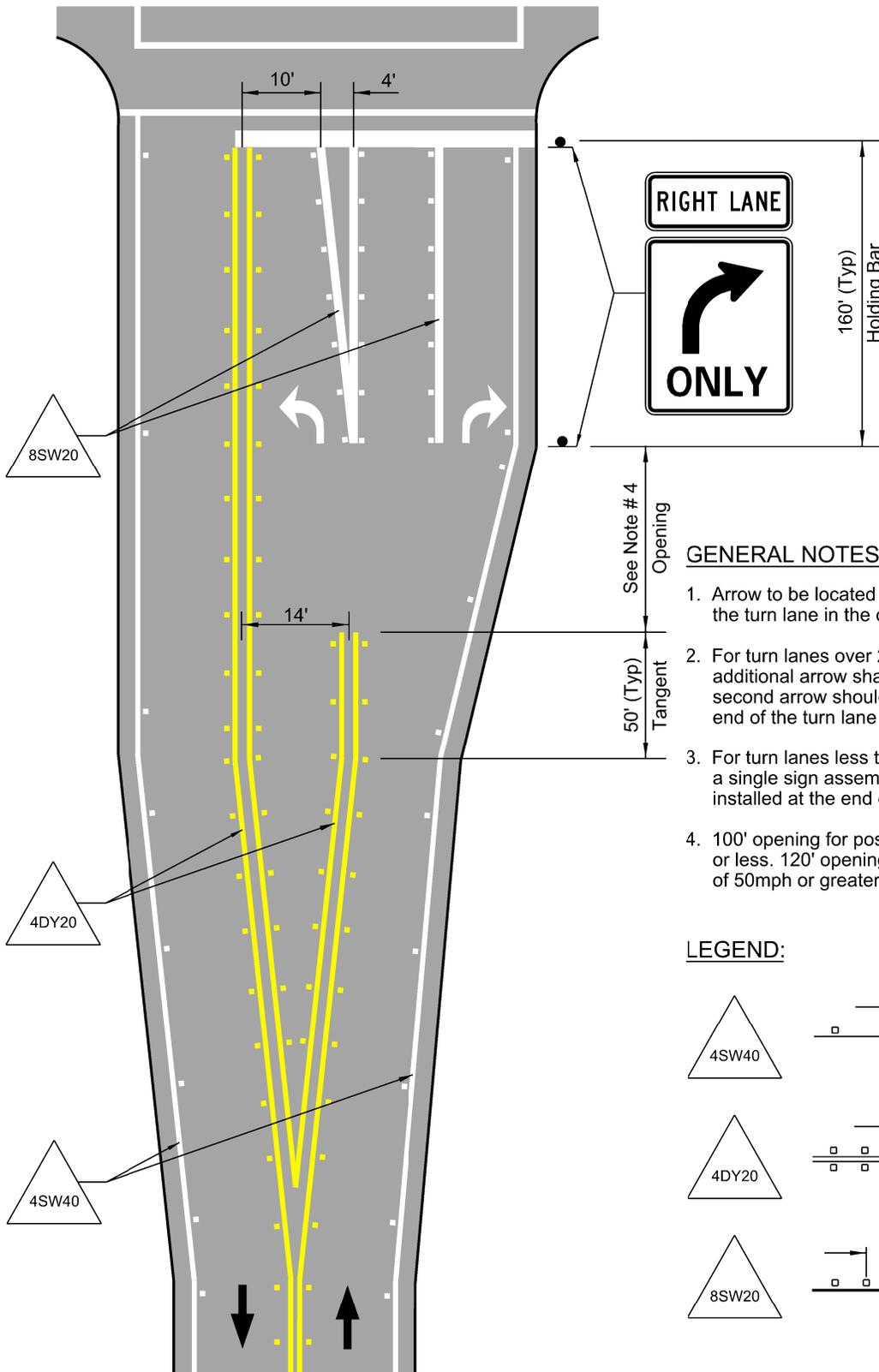
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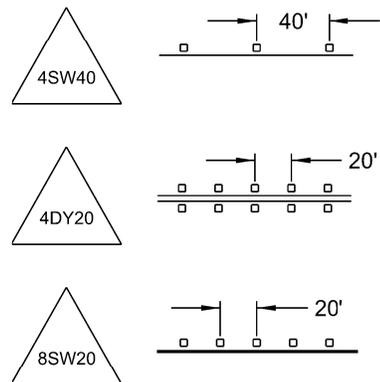
NOT TO SCALE



GENERAL NOTES:

1. Arrow to be located at the beginning of the turn lane in the center of the lane.
2. For turn lanes over 200ft in length, an additional arrow shall be installed. The second arrow should be 50ft from the end of the turn lane in the center of the lane.
3. For turn lanes less than 160ft in length, a single sign assembly should be installed at the end of the turn lane.
4. 100' opening for posted speeds of 45mph or less. 120' opening for posted speeds of 50mph or greater.

LEGEND:

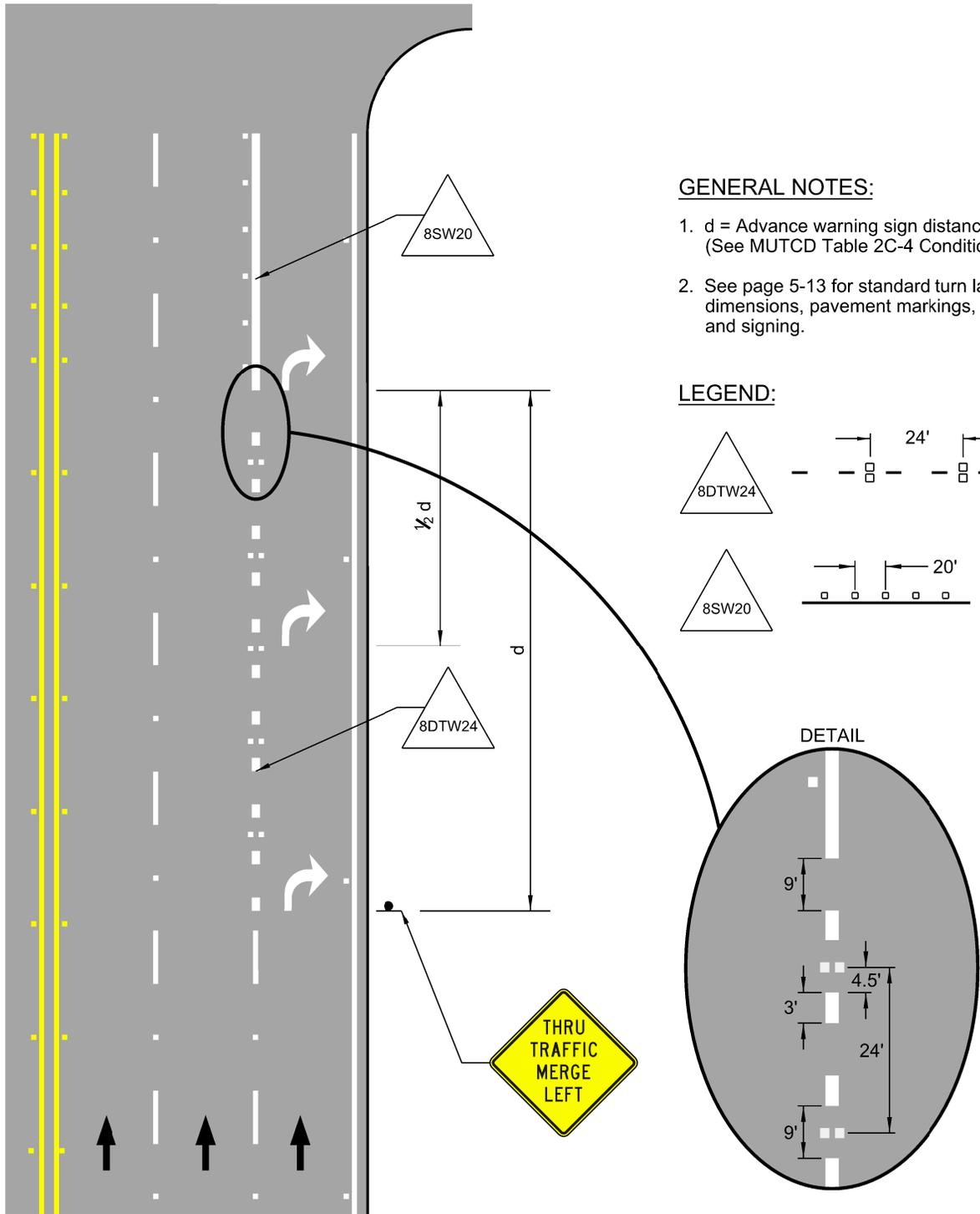


Turn Lane Pavement Markings

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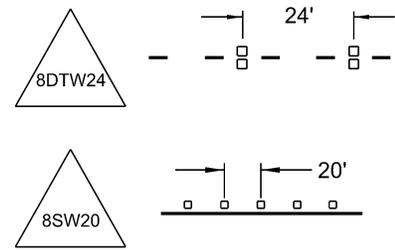
PAGE
5-13



GENERAL NOTES:

- 1. d = Advance warning sign distance (See MUTCD Table 2C-4 Condition A)
- 2. See page 5-13 for standard turn lane dimensions, pavement markings, and signing.

LEGEND:



**Mandatory Right Turn Only
From Thru Lane**

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
TRANSPORTATION SYSTEMS MANAGEMENT DIVISION

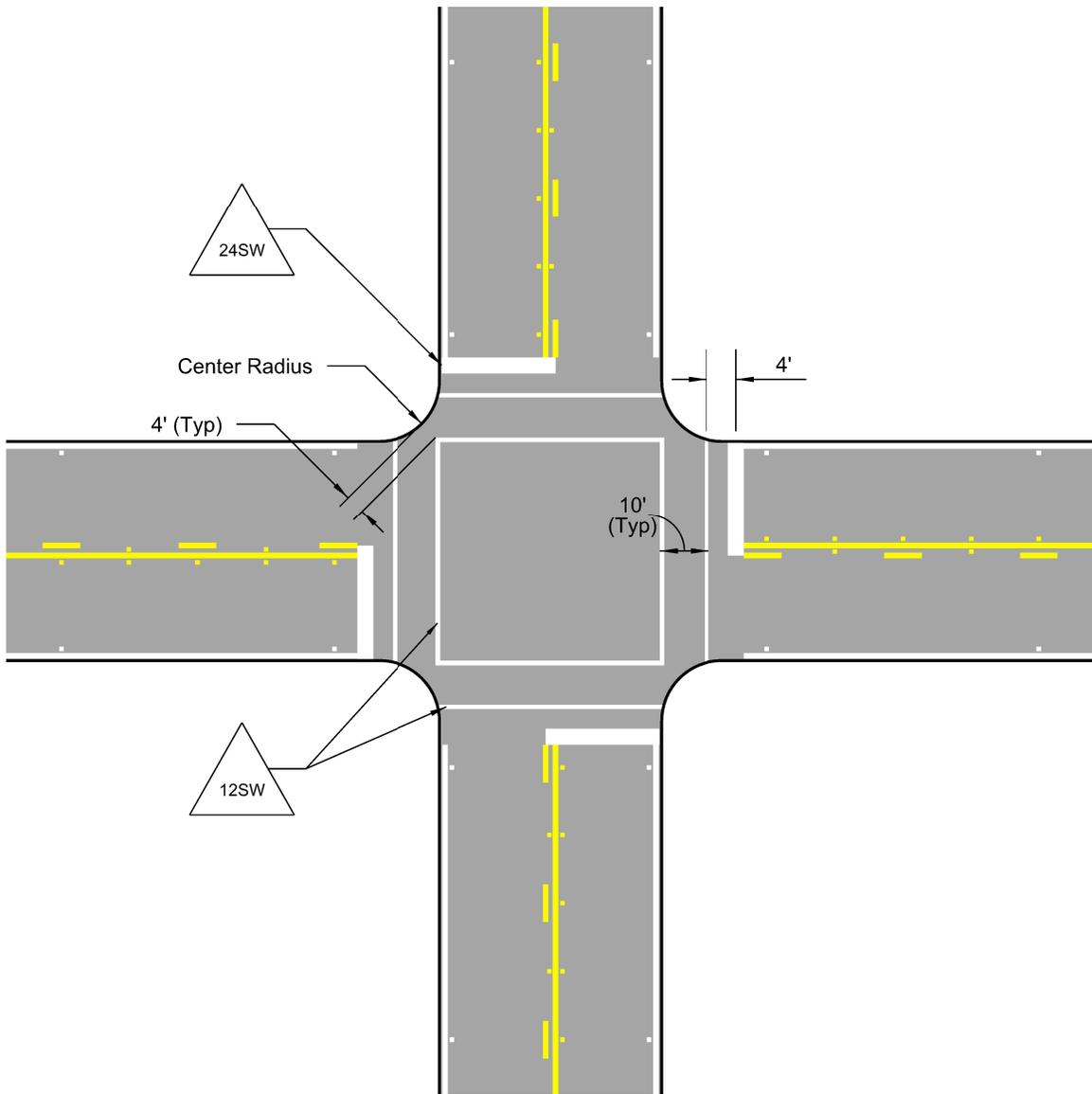
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5.2 Intersections and Crosswalks

Standard Crosswalk and Stop Bars (Rural)	5-16
Standard Crosswalk and Stop Bars (Urban).....	5-17
Dual Ramp Crosswalk and Stop Bars	5-18
Retrofit of Existing Crosswalks and Stop Bars (For A.D.A. Ramps)	5-19
Pavement Marking Extensions through Intersections	5-20
Roundabout (Local).....	5-21
Roundabout (Collector)	5-22
Pedestrian Crossings (Collector/Arterial).....	5-23
Pedestrian Hybrid Beacon Crossing.....	5-24

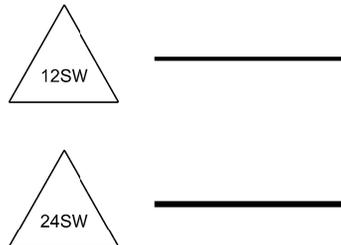
NOT TO SCALE



GENERAL NOTES:

1. Marked crosswalks shall be installed at signalized and All-Way stop intersections as approved by the County Traffic Engineer or a designated representative.
2. All new crosswalks shall be installed based on an engineering study.
3. All pavement marking dimensions shall be from center of stripe to center of stripe.

LEGEND:



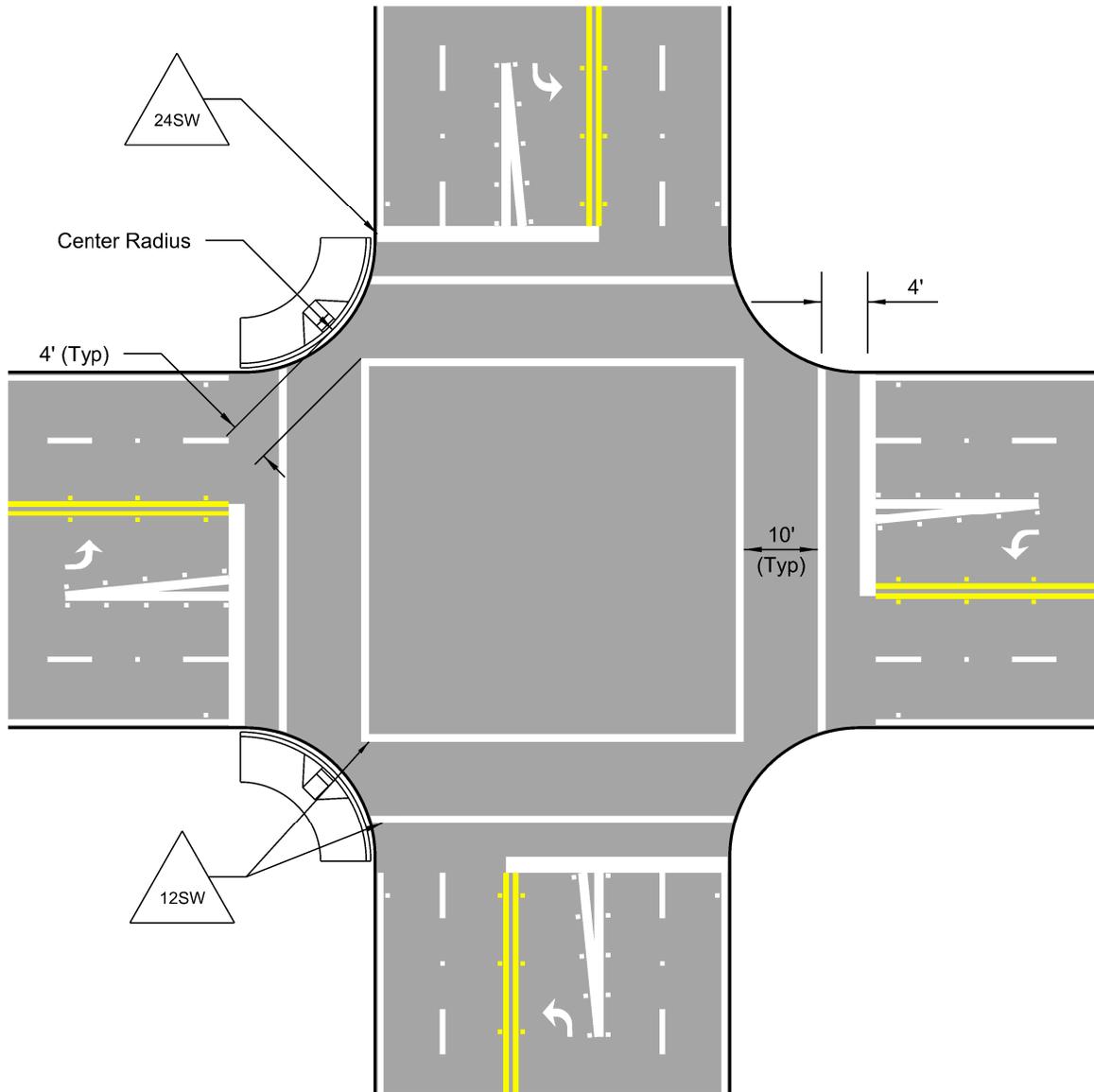
**Standard Crosswalk
and Stop Bars
(Rural)**

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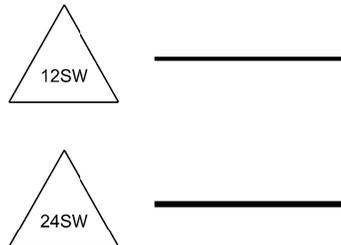
NOT TO SCALE



GENERAL NOTES:

1. Marked crosswalks shall be installed at signalized and All-Way stop intersections as approved by the County Traffic Engineer or a designated representative.
2. All new crosswalks shall be installed based on an engineering study.
3. All pavement marking dimensions shall be from center of stripe to center of stripe.

LEGEND:



**Standard Crosswalk
and Stop Bars
(Urban)**

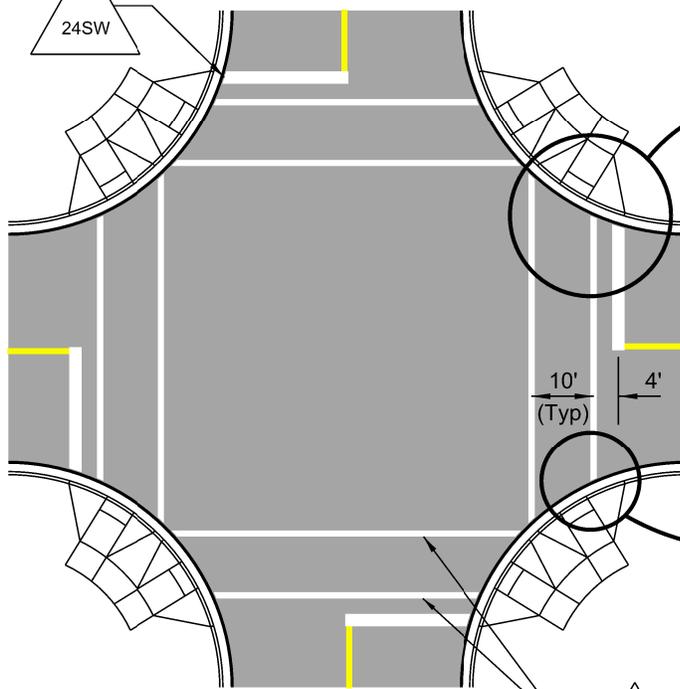
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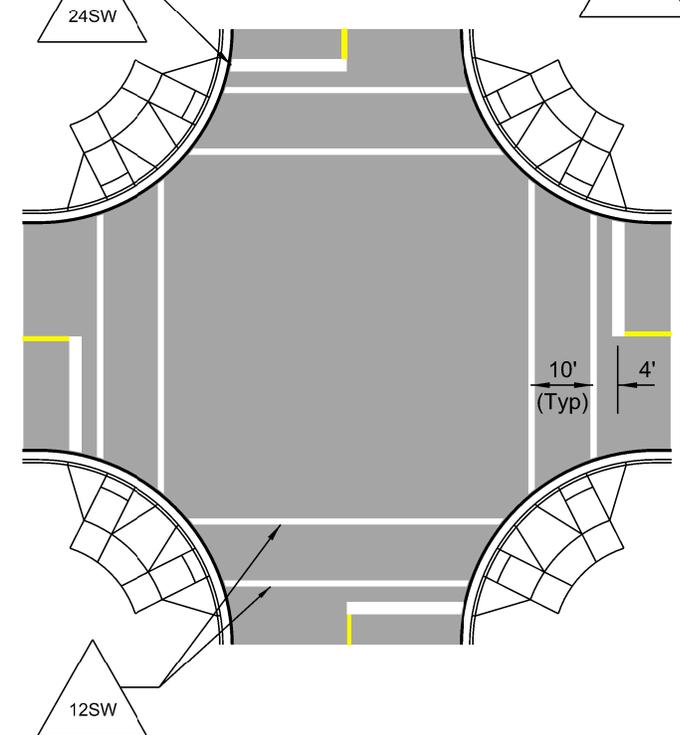
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NOT TO SCALE

35' RADIAL CURB RAMPS



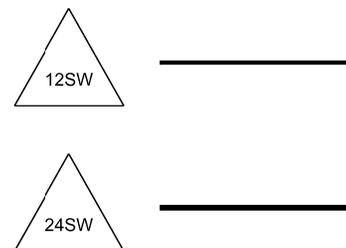
30' RADIAL CURB RAMPS



GENERAL NOTES:

1. Marked crosswalks shall be installed at signalized and All-Way stop controlled intersections as approved by the County Traffic Engineer or a designated representative.
2. For radial curb ramp details, see MCDOT Standard Details 2031-1 and 2031-2.
3. All pavement marking dimensions shall be from center of stripe to center of stripe.

LEGEND:



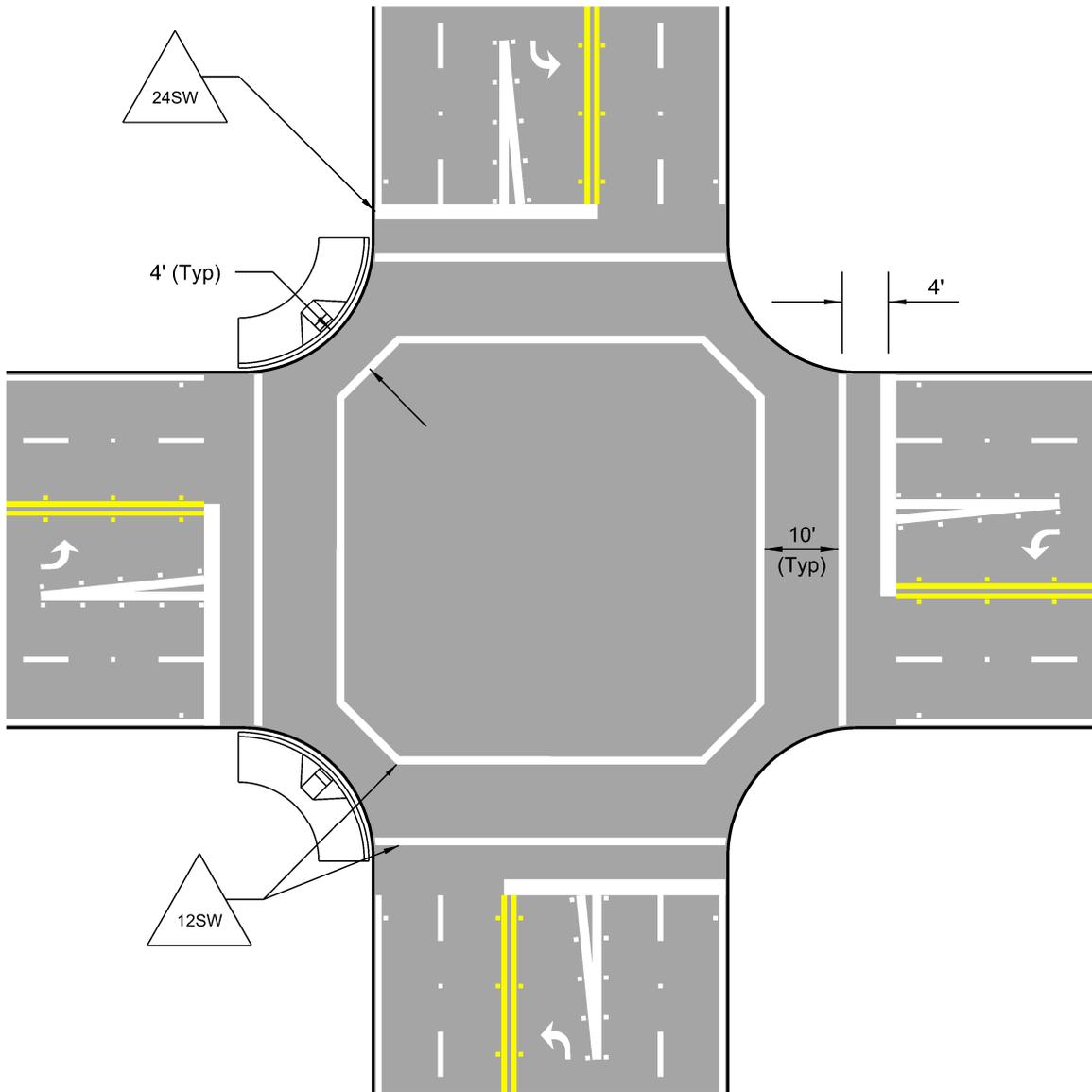
Dual Ramp Crosswalks and Stop Bars (New Construction)

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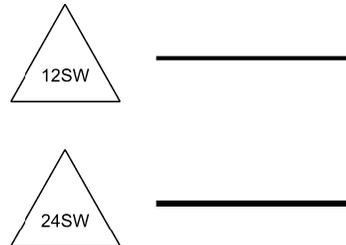
NOT TO SCALE



GENERAL NOTES:

1. Marked crosswalks shall be installed at signalized and All-Way stop intersections as approved by the County Traffic Engineer or a designated representative.
2. All new crosswalks shall be installed based on an engineering study.
3. All pavement marking dimensions shall be from center of stripe to center of stripe.

LEGEND:



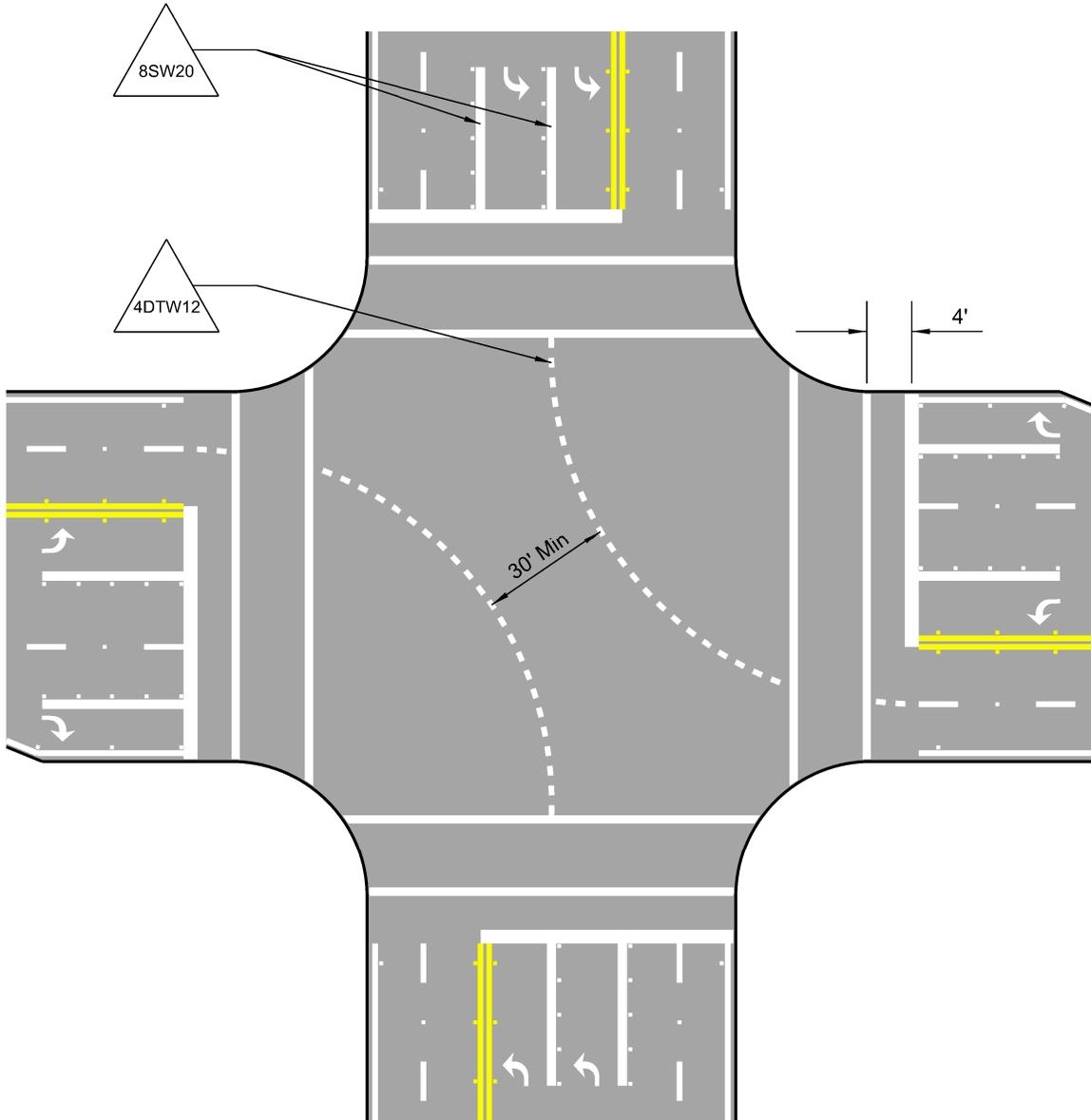
Retrofit Crosswalks and Stop Bars For Single Ramp Curb Returns

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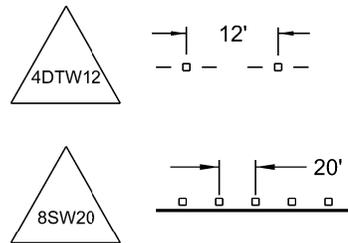
NOT TO SCALE



GENERAL NOTES:

1. Pavement marking extensions through an intersection shall be installed at all intersections with dual turn lanes.
2. Pavement marking extensions through an intersection without dual turn lanes may be installed as requested by the County Traffic Engineer or a designated representative.
3. Lane line extensions through the intersection shall be dotted white lines.
4. All pavement marking dimensions shall be from center of stripe to center of stripe.

LEGEND:

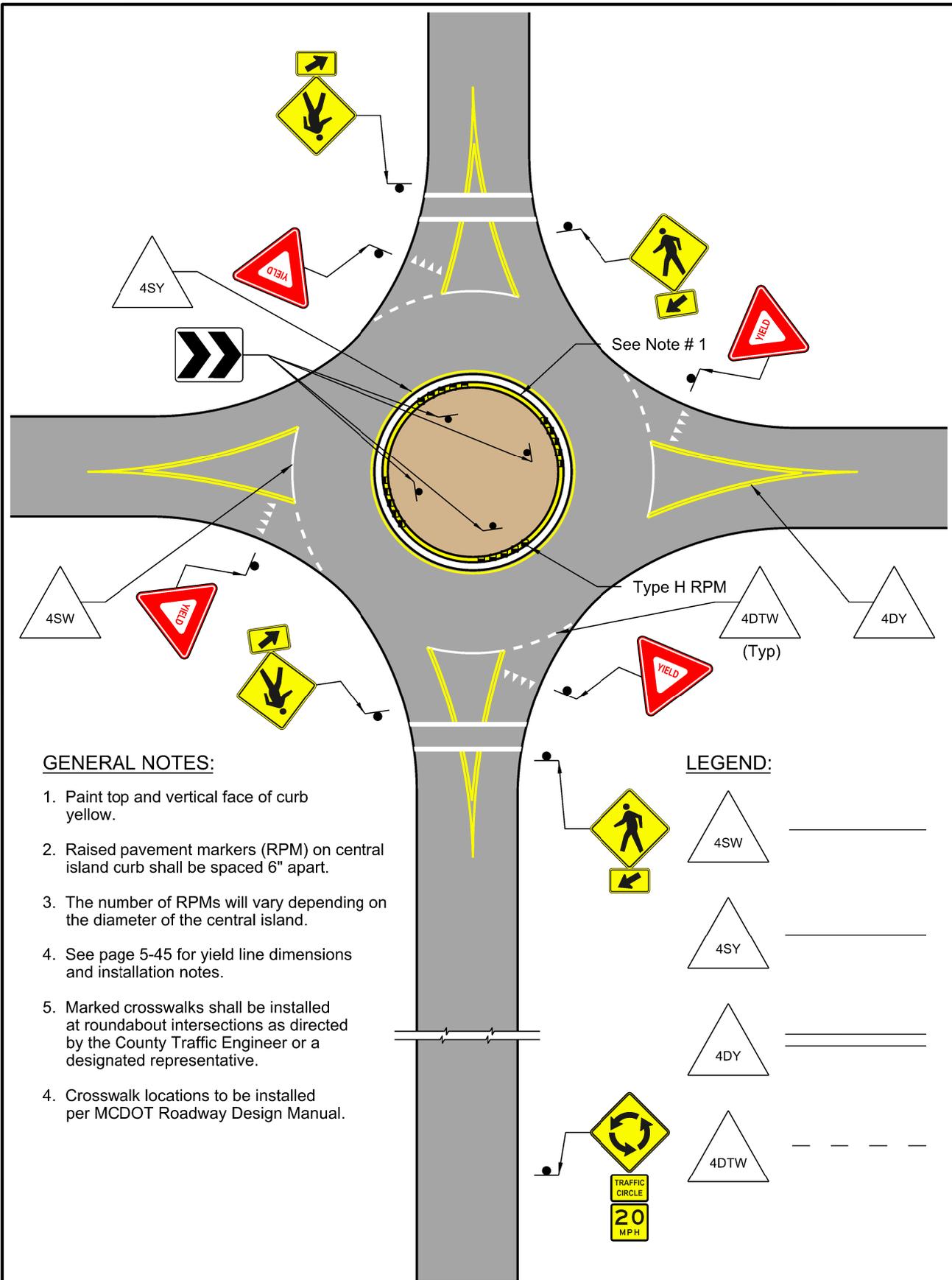


Pavement Marking Extensions Through Intersections

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GENERAL NOTES:

1. Paint top and vertical face of curb yellow.
2. Raised pavement markers (RPM) on central island curb shall be spaced 6" apart.
3. The number of RPMs will vary depending on the diameter of the central island.
4. See page 5-45 for yield line dimensions and installation notes.
5. Marked crosswalks shall be installed at roundabout intersections as directed by the County Traffic Engineer or a designated representative.
4. Crosswalk locations to be installed per MCDOT Roadway Design Manual.

LEGEND:

		=====
		- - - - -



**Roundabout
(Local)**

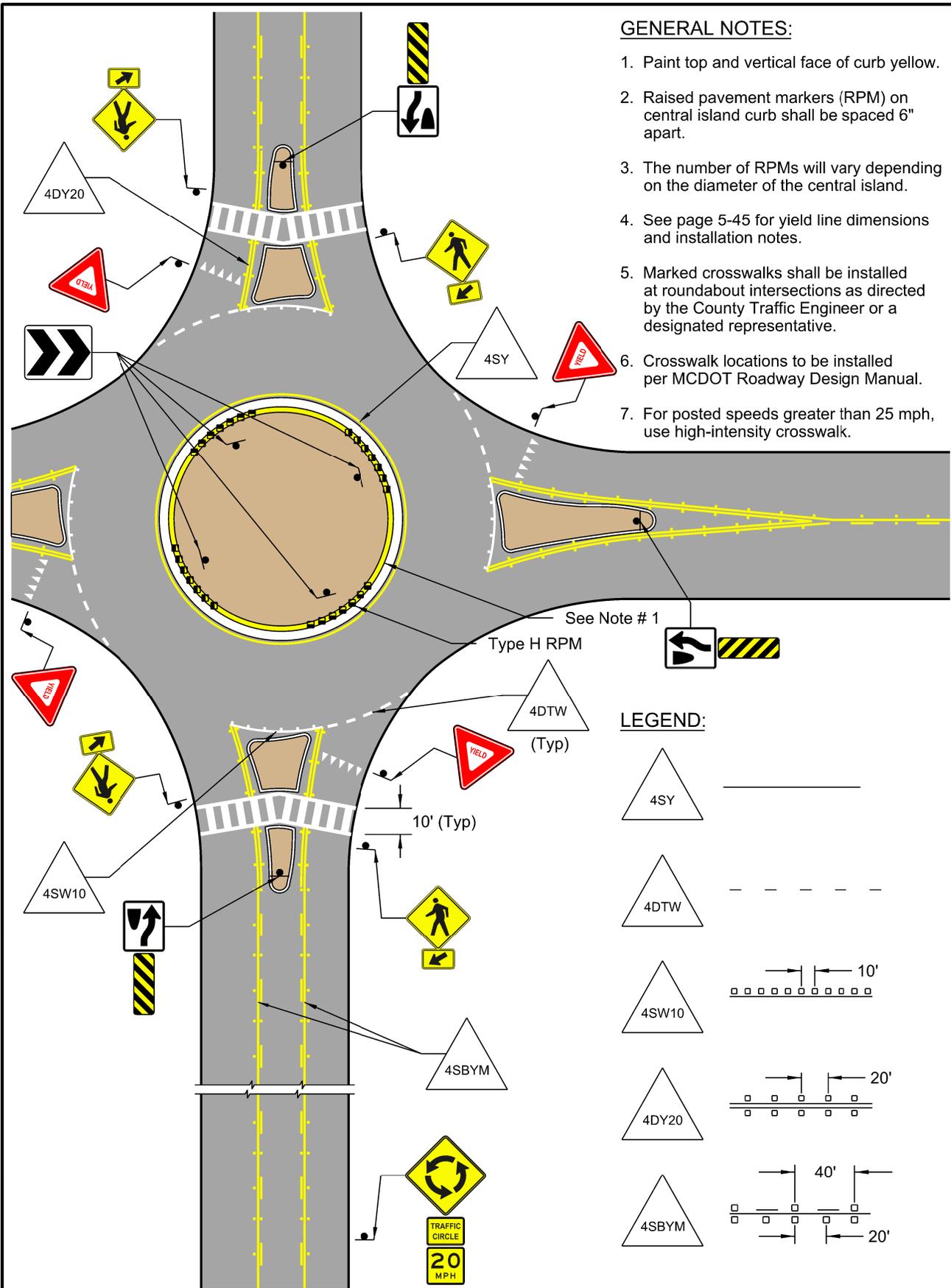
MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
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GENERAL NOTES:

1. Paint top and vertical face of curb yellow.
2. Raised pavement markers (RPM) on central island curb shall be spaced 6" apart.
3. The number of RPMs will vary depending on the diameter of the central island.
4. See page 5-45 for yield line dimensions and installation notes.
5. Marked crosswalks shall be installed at roundabout intersections as directed by the County Traffic Engineer or a designated representative.
6. Crosswalk locations to be installed per MCDOT Roadway Design Manual.
7. For posted speeds greater than 25 mph, use high-intensity crosswalk.



LEGEND:

- 4SY
- 4DTW
- 4SW10
- 4DY20
- 4SBYM



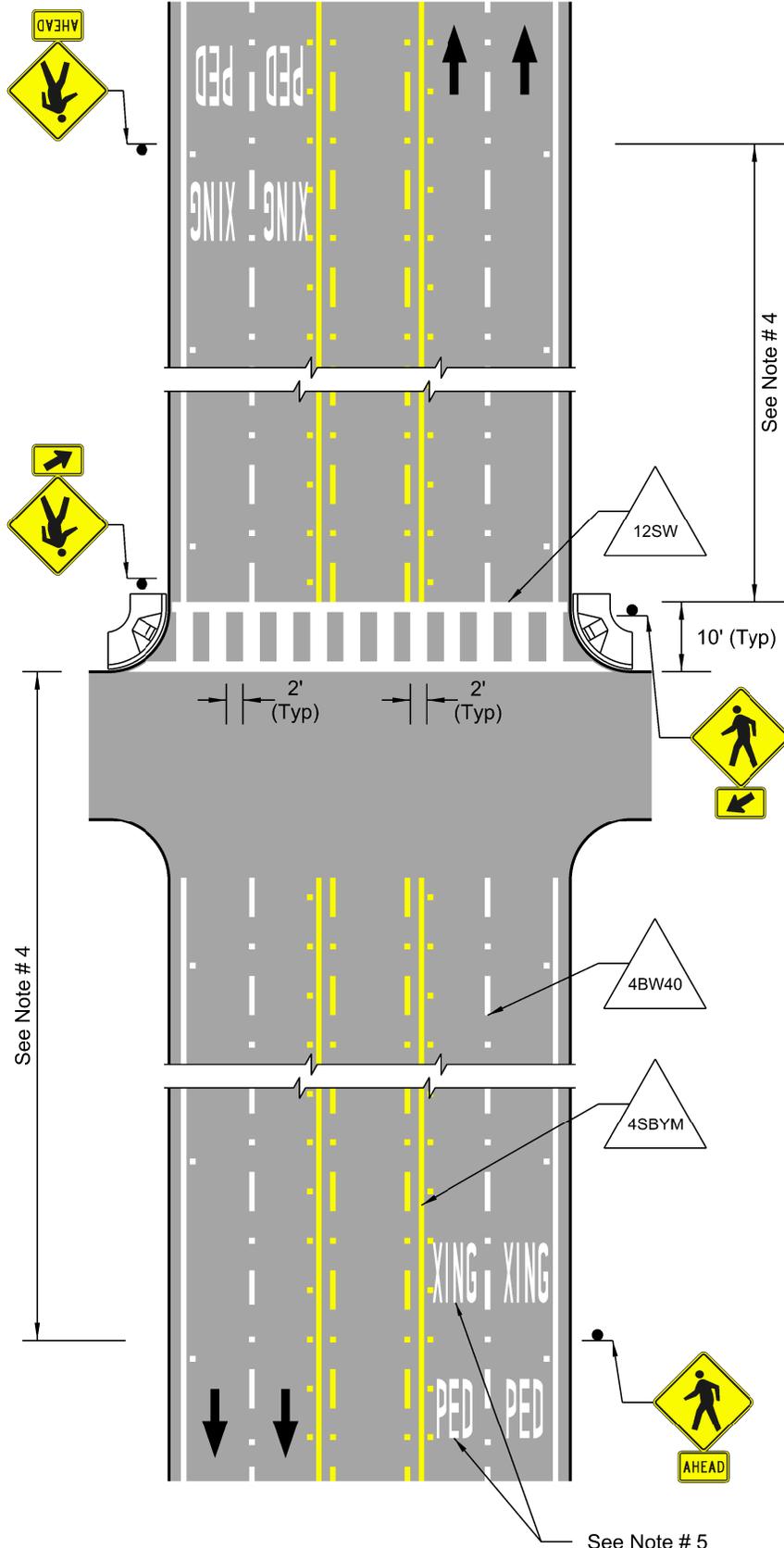
**Roundabout
(Collector)**

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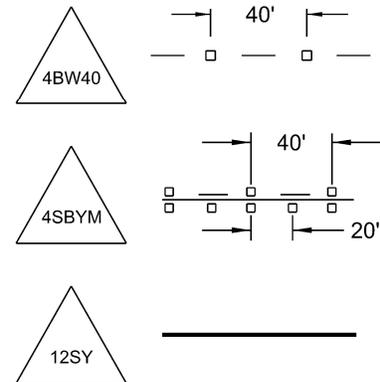
NOT TO SCALE



GENERAL NOTES:

1. All pavement marking shall be from center of stripe to center of stripe.
2. Crosswalks shall be installed only after a study is performed in accordance with MCDOT Traffic Policy/Procedure Guidelines.
3. For posted speeds greater than 25 mph, use high-intensity crosswalk.
4. See Stopping Sight Distance Table for sign locations.
5. See PED XING Marking details on pg. 5-36.

LEGEND:



Stopping Sight Distance Table (MUTCD Table 6E-1)

Speed MPH	DISTANCE
25	155 ft
30	200 ft
35	250 ft
40	305 ft
45	360 ft

See Note # 4

See Note # 4

See Note # 5



**Pedestrian Crossings
Collector / Arterial**

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TRANSPORTATION SYSTEMS MANAGEMENT DIVISION

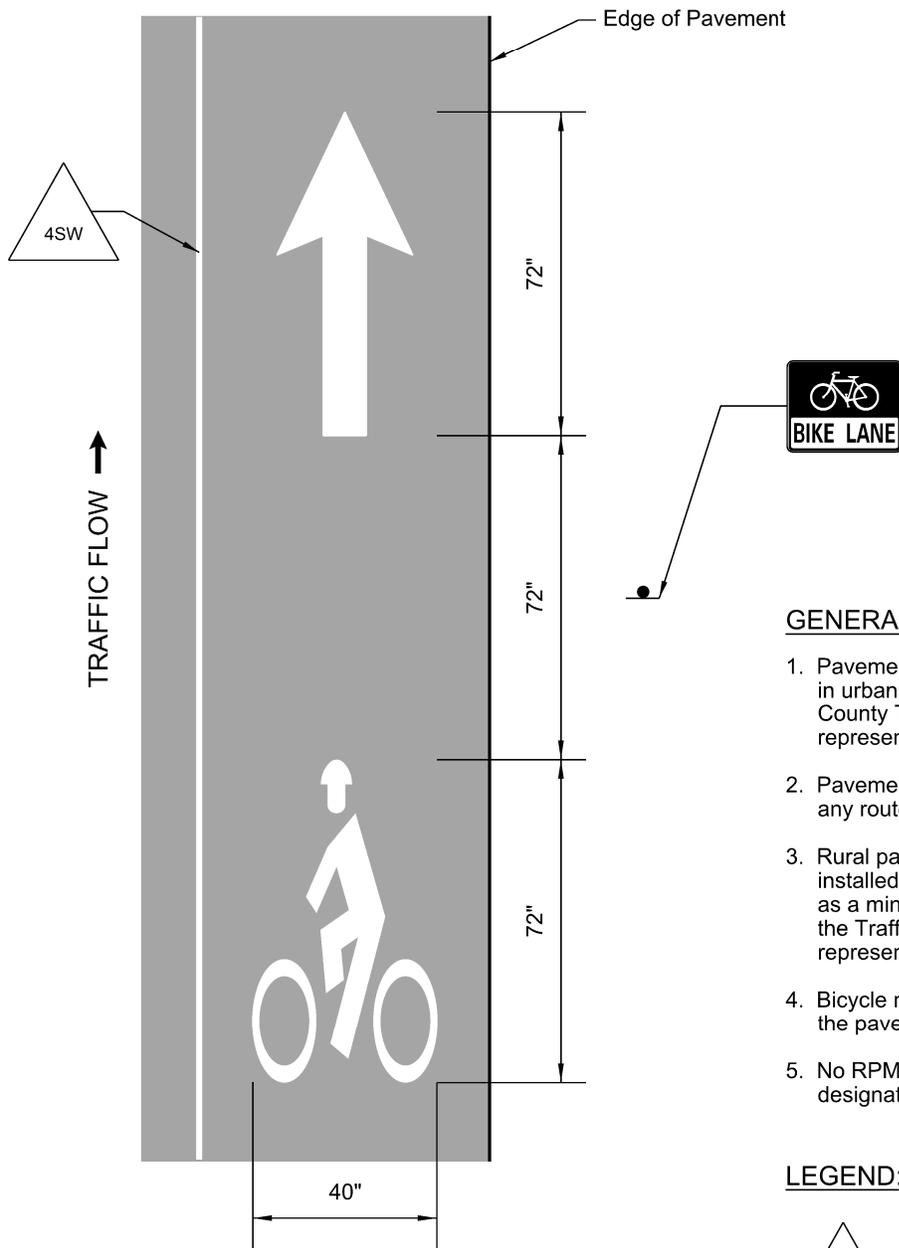
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5.3 Bike Lanes

Bike Lane Markings.....	5-26
Bike Lanes at Intersections.....	5-27
Mandatory Right Turn Only From Thru Lane with Bike Lane.....	5-28
Bike Lane Right Turn Only Lane.....	5-29
Bike Lane with Right Turn Lane.....	5-30

NOT TO SCALE



GENERAL NOTES:

1. Pavement markings shall be spaced in urban areas as determined by the County Traffic Engineer or a designated representative.
2. Pavement markings will be installed on any route with continuous markings.
3. Rural pavement markings shall be installed at all major intersections, as a minimum, or as determined by the Traffic Engineer or a designated representative.
4. Bicycle markings shall be centered in the pavement allotted for the lane.
5. No RPMs shall be installed on designated bike lanes.

LEGEND:



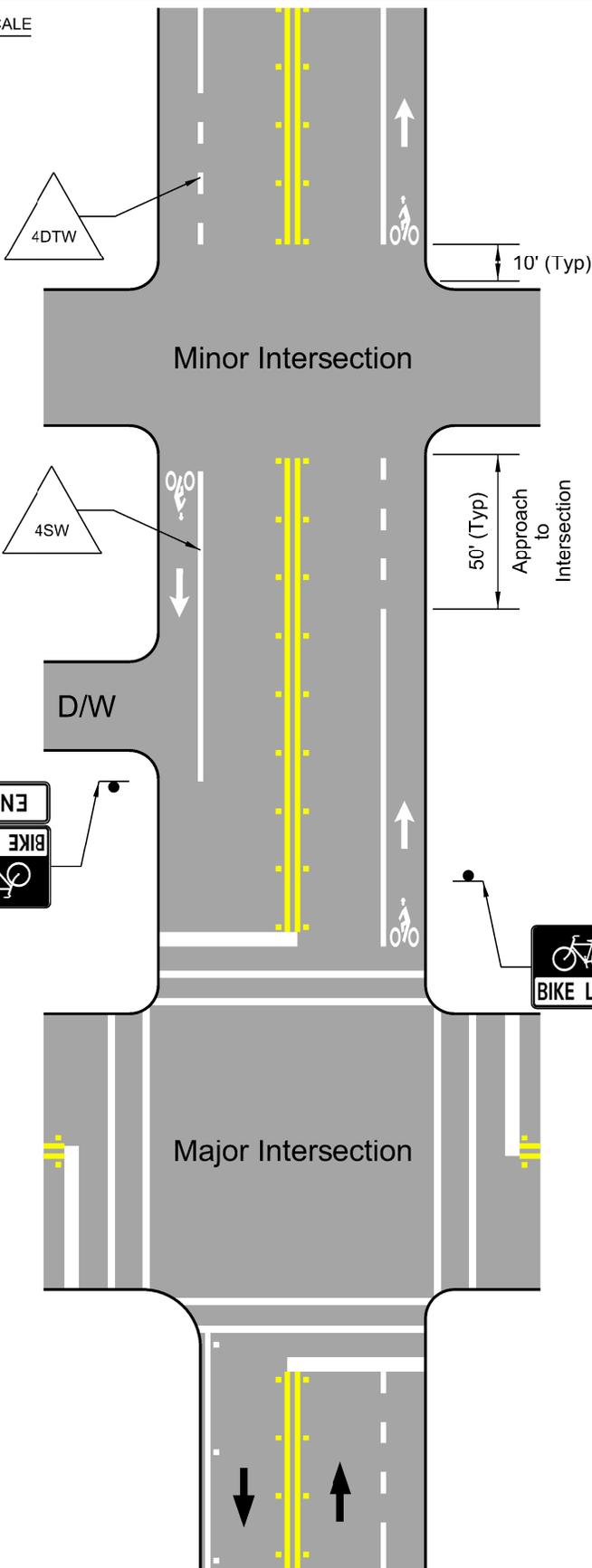
Bike Lane Markings

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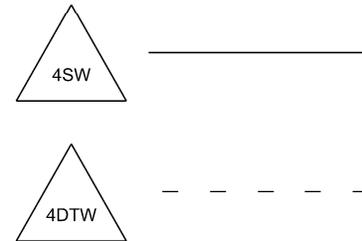
NOT TO SCALE



GENERAL NOTES:

1. Bicycle pavement markings shall be spaced in urban areas as determined by the Traffic Engineer or a designated representative.
2. For information on bicycle facility design reference the MCDOT Roadway Design Manual.
3. No RPMs shall be installed on designated bike lanes.

LEGEND:



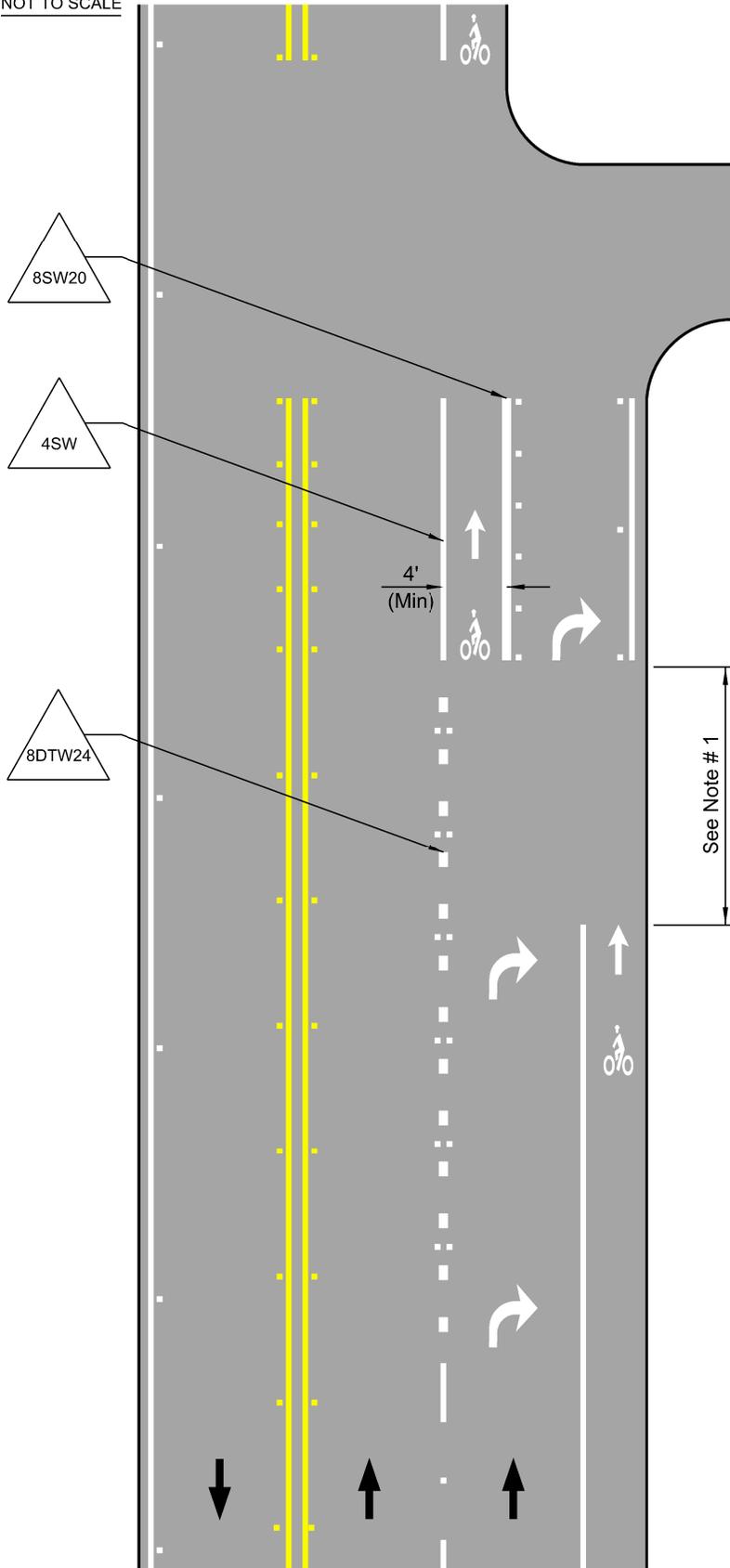
**Bike Lanes
at Intersections**

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
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DATE
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PAGE
5-27

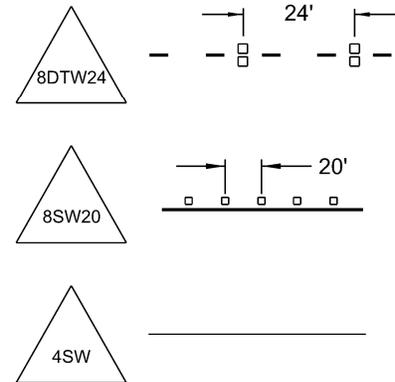
NOT TO SCALE



GENERAL NOTES:

1. 100' opening for posted speeds of 45 mph or less. 120' opening for posted speeds of 50 mph or greater.
2. See pg. 5-14 for details on Mandatory Right Turn Only from Thru Lane.

LEGEND:



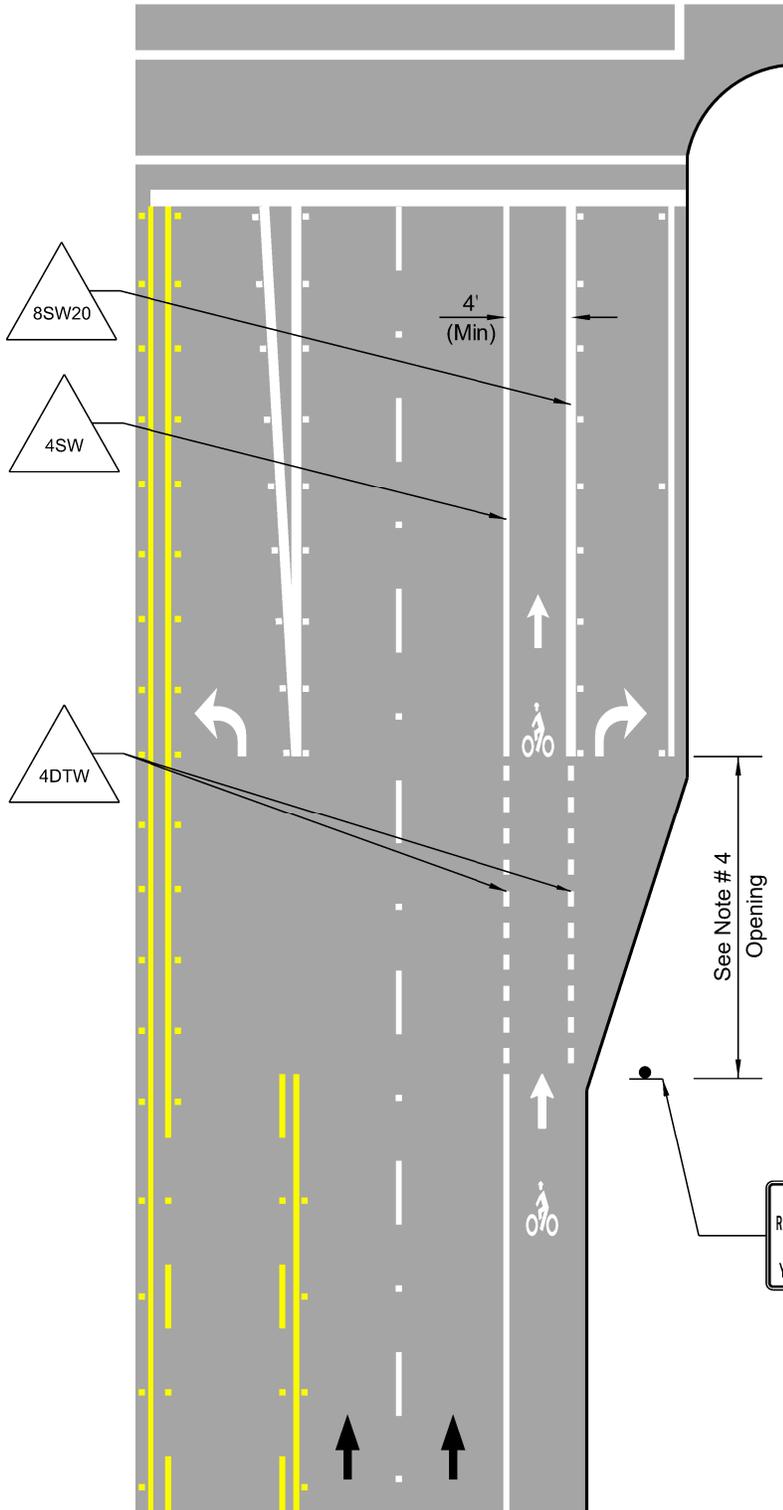
**Mandatory Right Turn Only
From Thru Lane with Bike Lane**

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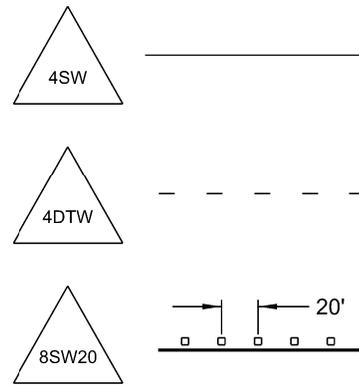
NOT TO SCALE



GENERAL NOTES:

- 1. All bicycle signs and pavement markings shall be reviewed and approved by the County Traffic Engineer or a designated representative prior to installation.
- 2. For information on bicycle facility design reference the MCDOT Roadway Design Manual.
- 3. 100' opening for posted speeds of 45 mph or less. 120' opening for posted speeds of 50 mph or greater.

LEGEND:



See Note # 4
Opening



**Bike Lane
Right Turn Only Lane**

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
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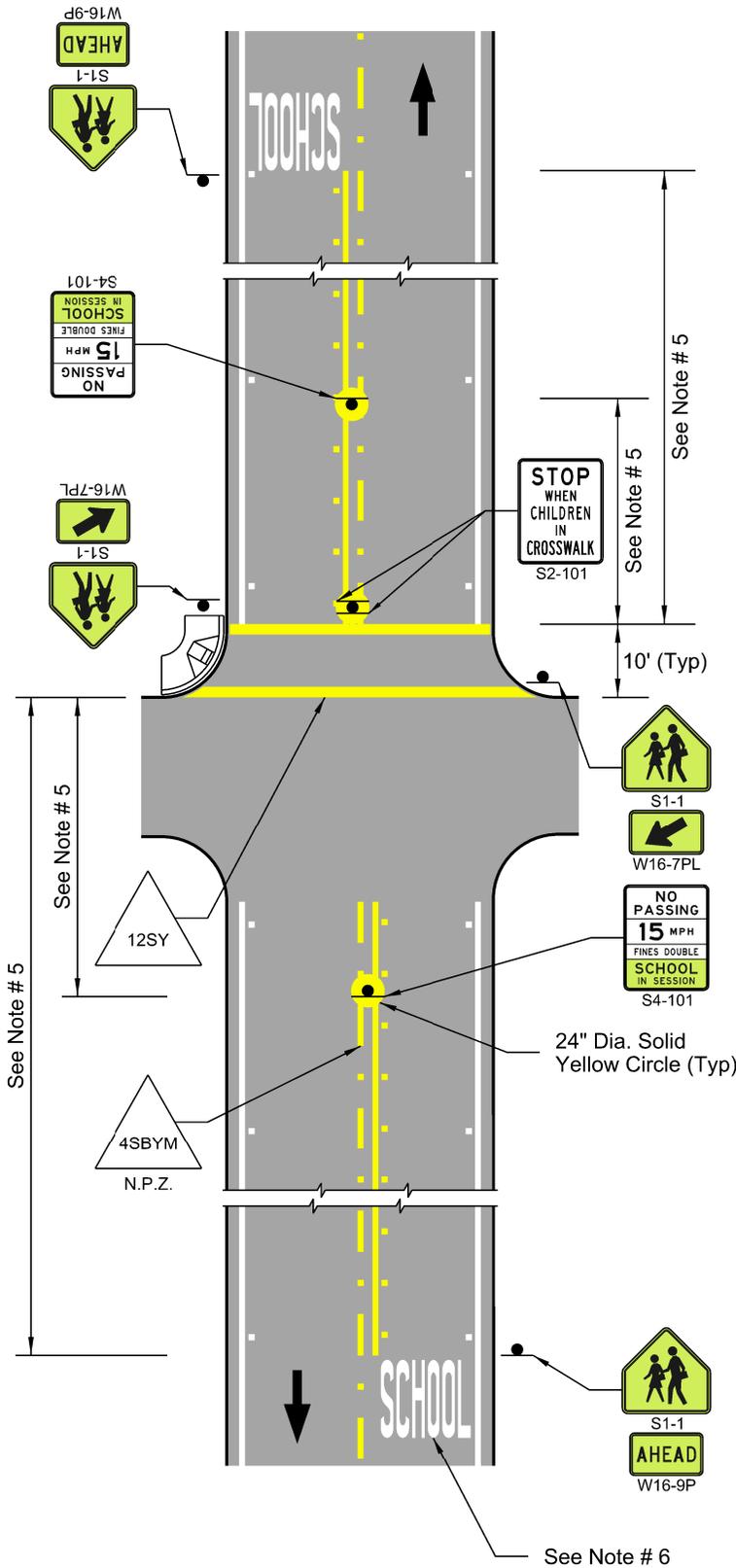
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5.4 School Crossings

School Crossings (Local).....	5-32
School Crossings (Collector/Arterial).....	5-33

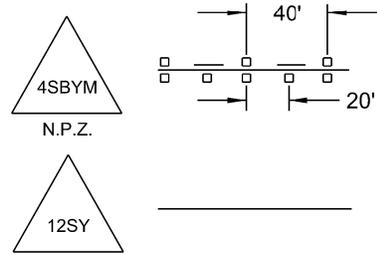
NOT TO SCALE



GENERAL NOTES:

1. All pavement marking will be from center of stripe to center of stripe.
2. Crosswalks shall be installed only after a study is performed in accordance with MCDOT Traffic Policy/Procedure Guidelines, and final approval is given by the County Board of Supervisors.
3. School crosswalks shall be striped with yellow paint.
4. For posted speeds greater than 25 mph, use high-intensity crosswalk.
5. See Locations for School Signing Table for sign locations.
6. See SCHOOL Marking Symbol on page 5-36.

LEGEND:



Locations for School Signing Table

Speed MPH	S1-1 W16-9P	S4-101
25	175 ft	100 ft
30	350 ft	170 ft
35	525 ft	235 ft
40	700 ft	300 ft



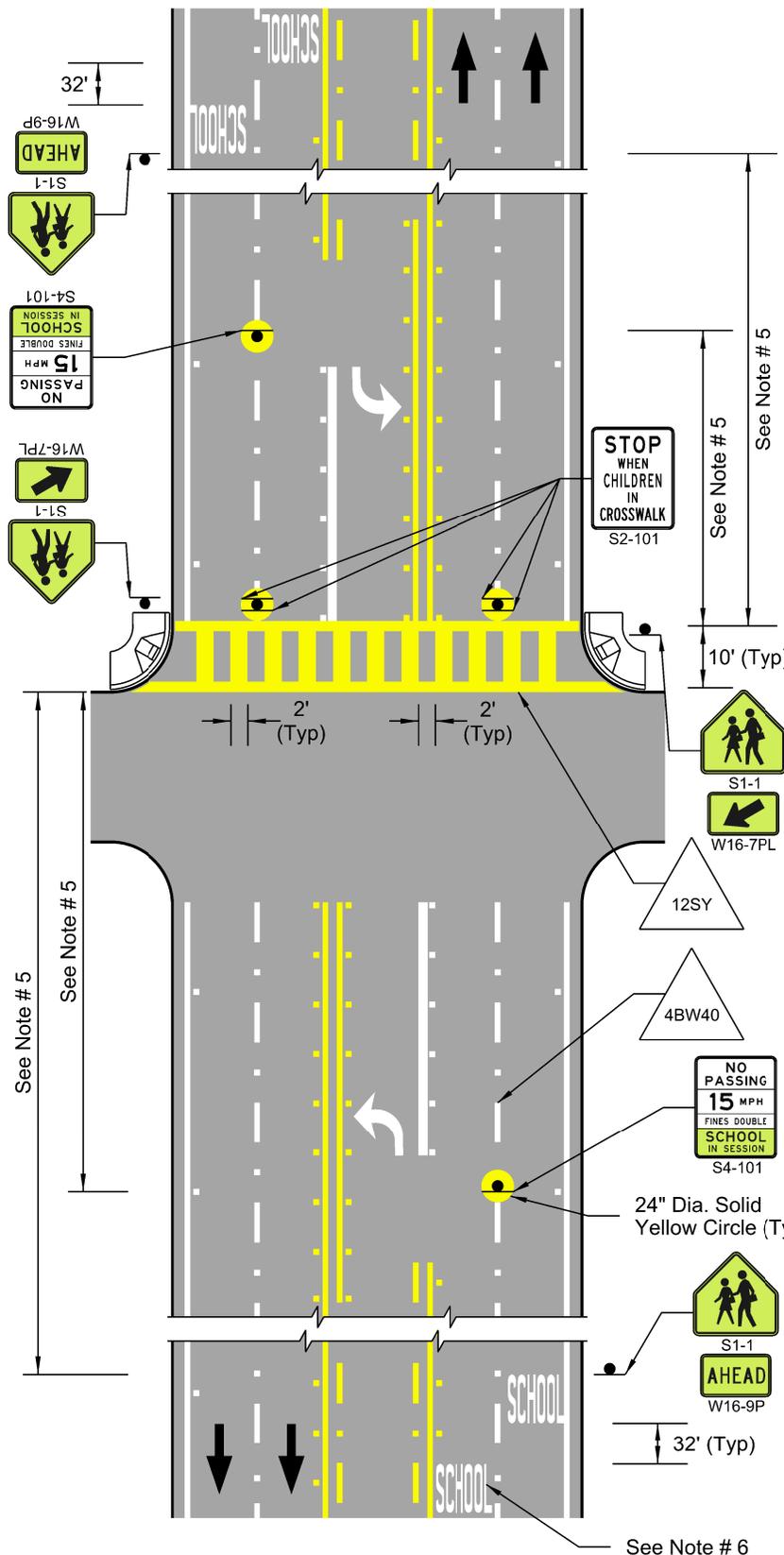
**School Crossings
Local**

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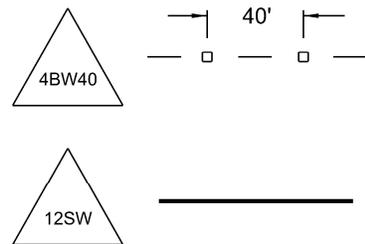
NOT TO SCALE



GENERAL NOTES:

1. All pavement marking will be from center of stripe to center of stripe.
2. Crosswalks shall be installed only after a study is performed in accordance with MCDOT Traffic Policy/Procedure Guidelines, and final approval is given by the County Board of Supervisors.
3. School crosswalks shall be striped with yellow paint.
4. For posted speeds greater than 25 mph, use high-intensity crosswalk.
5. See Locations for School Signing Table on page 5-32 for sign locations.
6. See SCHOOL Marking Symbol on page 5-36.

LEGEND:



See Note # 5

See Note # 5

See Note # 6



**School Crossings
Collector / Arterial**

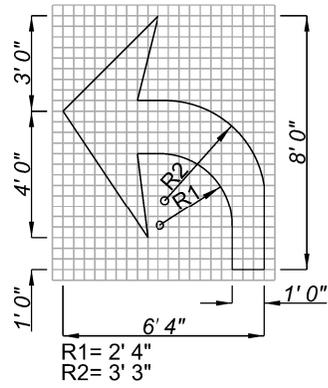
MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
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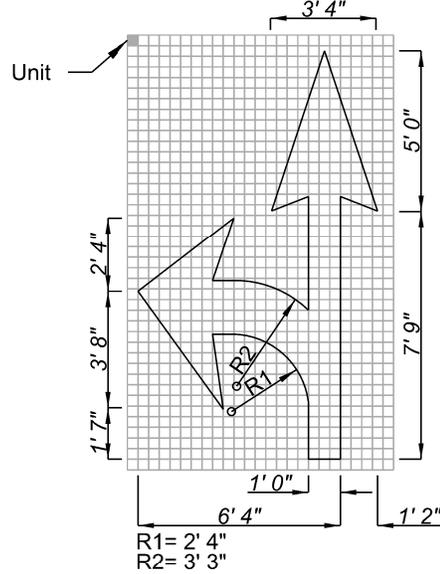
5.5 Symbols, Words, and Letters

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Standard Word Markings	5-36
Standard Letter Markings	5-37
Railroad Crossings (Without Gates/Lights)	5-38
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Type AB Raised Pavement Marker Rumble Strips	5-43
Typical Handicap Parking Space and Typical Parking Space.....	5-44
Yield Line Layouts	5-45

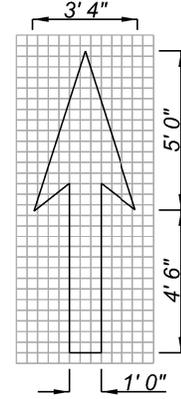
Turn Lane-Use Arrow



Turn and Through Lane-Use Arrow



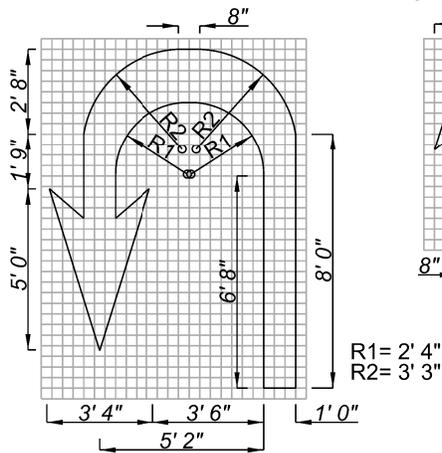
Through Lane-Use Arrow



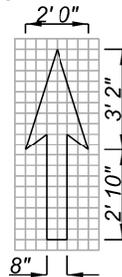
ARROW DETAILS

1 Unit = 4"
All Arrows
Shall Be White

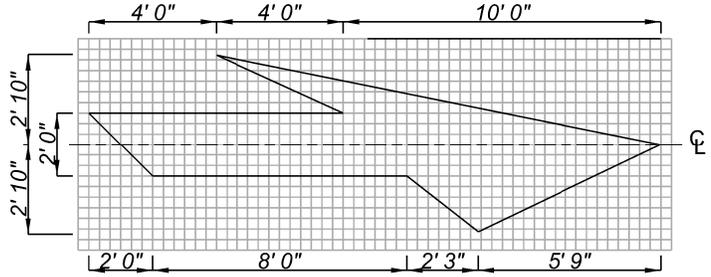
U-Turn Arrow



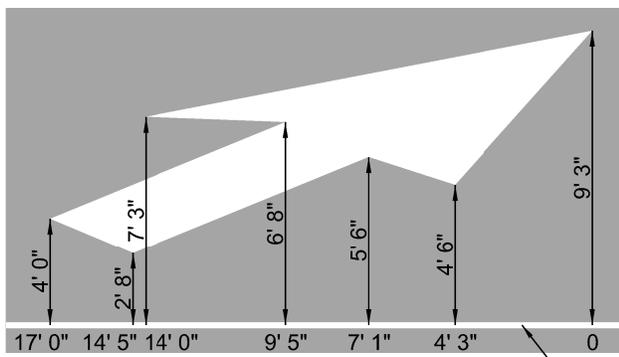
Bicycle Arrow



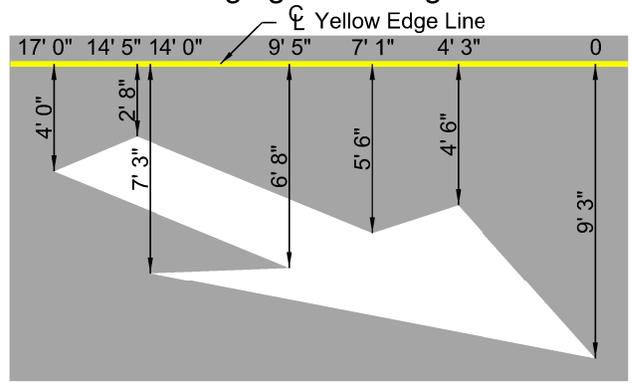
Lane-Reduction Arrow



Merging Right to Left



Merging Left to Right



Standard Arrows

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TRANSPORTATION SYSTEMS MANAGEMENT DIVISION

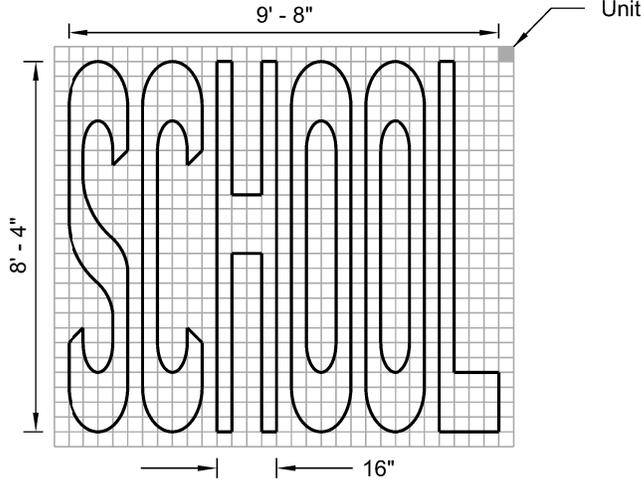
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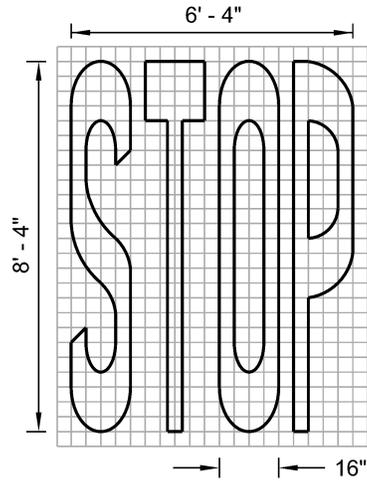
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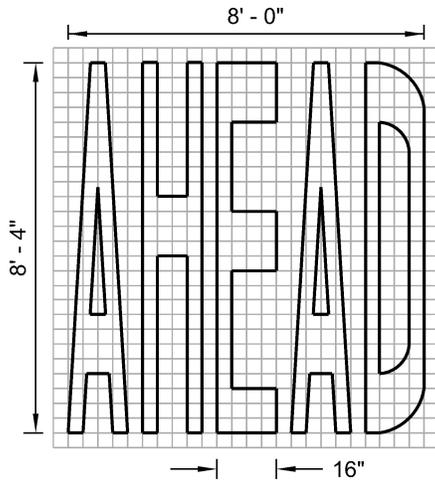
SCHOOL Marking



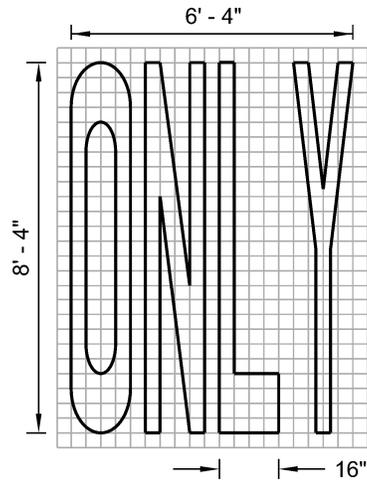
STOP Marking



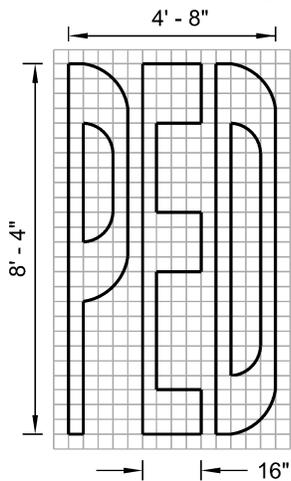
AHEAD Marking



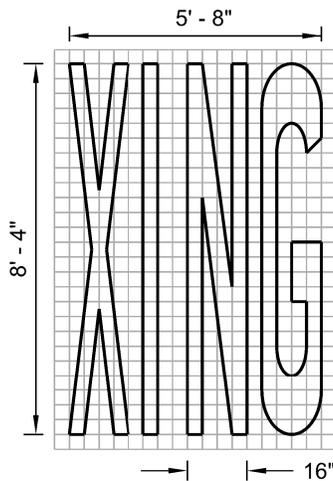
ONLY Marking



PED Marking



CROSSING (XING) Marking



WORD DETAILS

1 Unit = 4"
All Letters
Shall Be White

GENERAL NOTES:

1. Pavement word message markings consisting of more than one line of information shall be read in the direction of travel.
2. The longitudinal space between word message markings shall be four times the height of the letters (32' Typ).
3. Pavement word message markings shall be centered in the lane in which they are applied.



Standard Word Markings

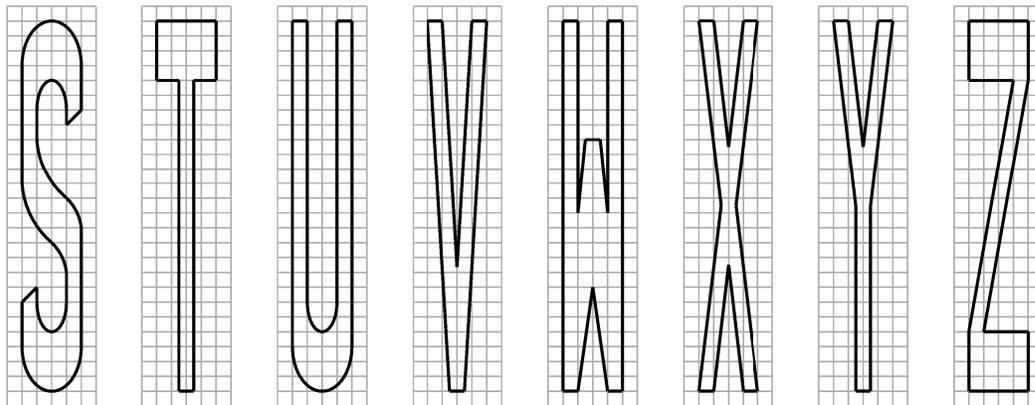
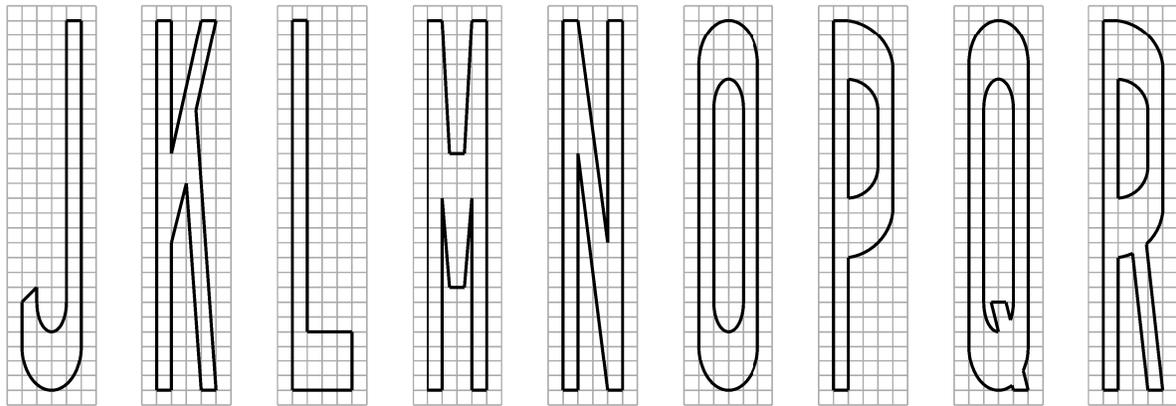
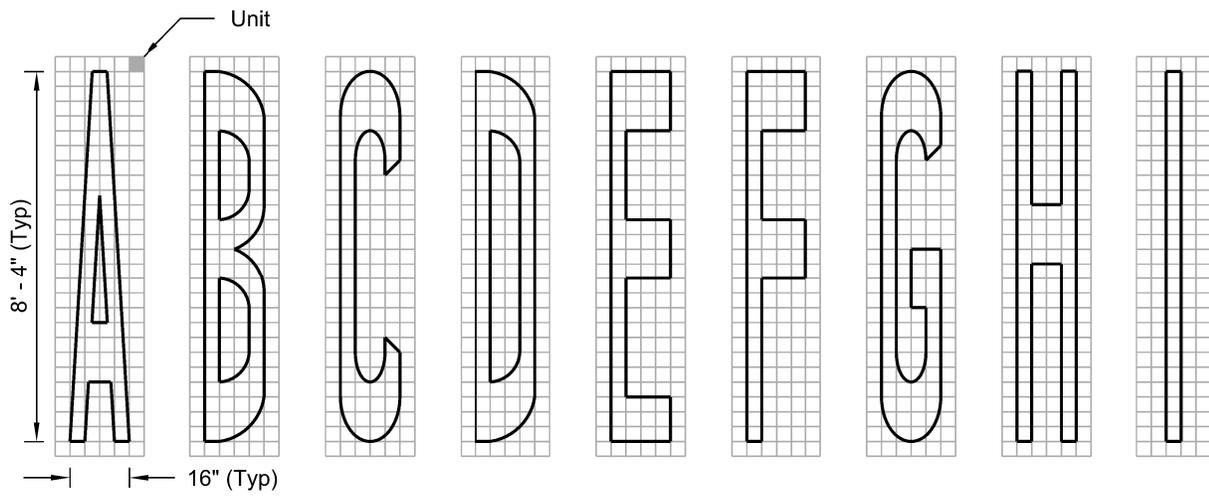
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LETTER DETAILS

1 Unit = 4"
 All Letters
 Shall Be White



Standard Letter Markings

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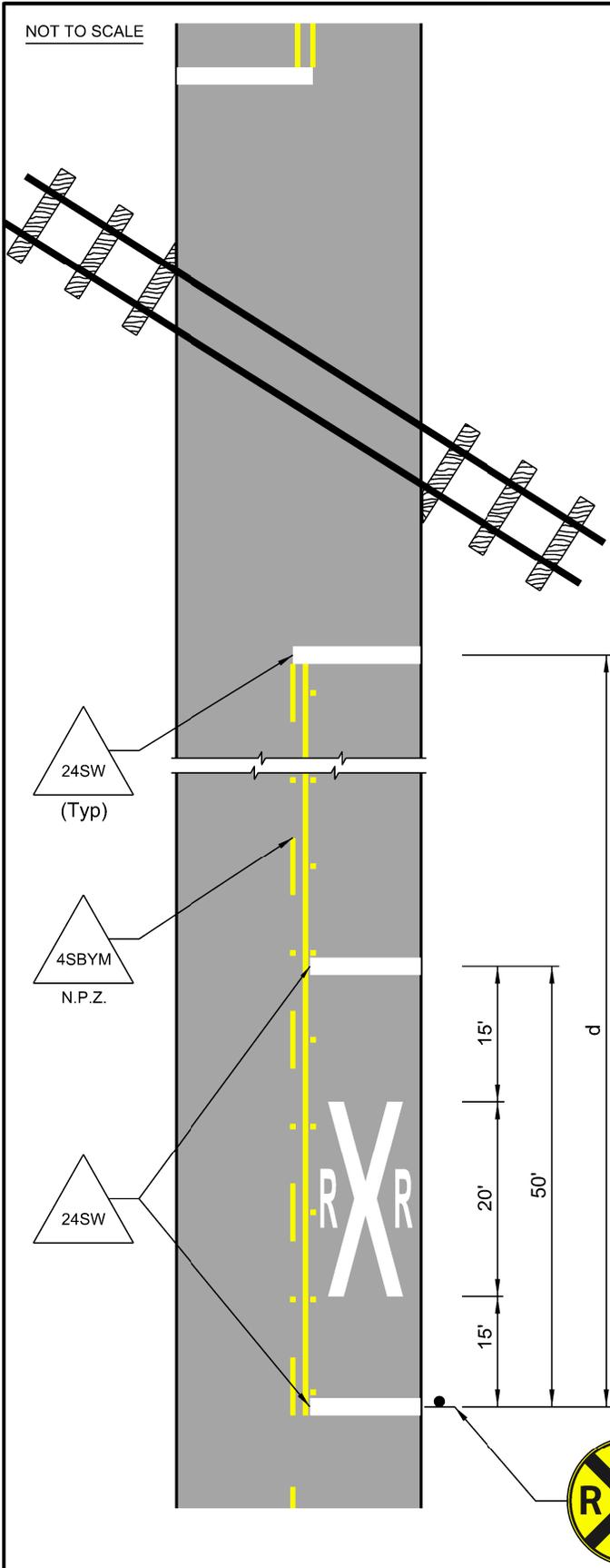
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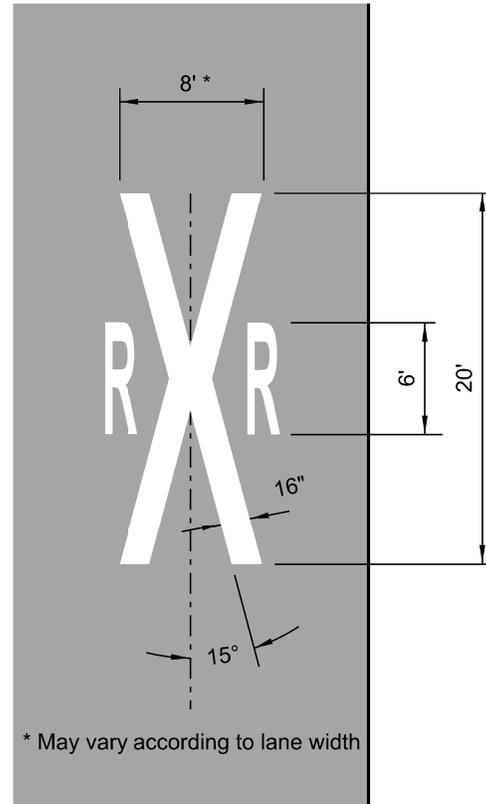
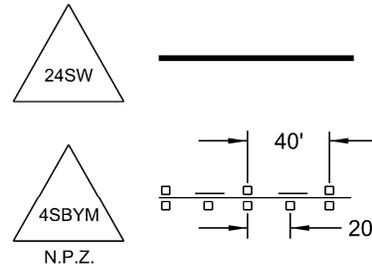
NOT TO SCALE



GENERAL NOTES:

1. All pavement marking dimensions shall be from center of stripe to center of stripe.
2. d = Advance warning sign distance (See MUTCD Table 2C-4 Condition A)
3. Stop lines shall be installed no closer than 15ft in advance of the nearest rail.

LEGEND:



DETAIL



**Railroad Crossings
(Without Gates / Lights)**

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
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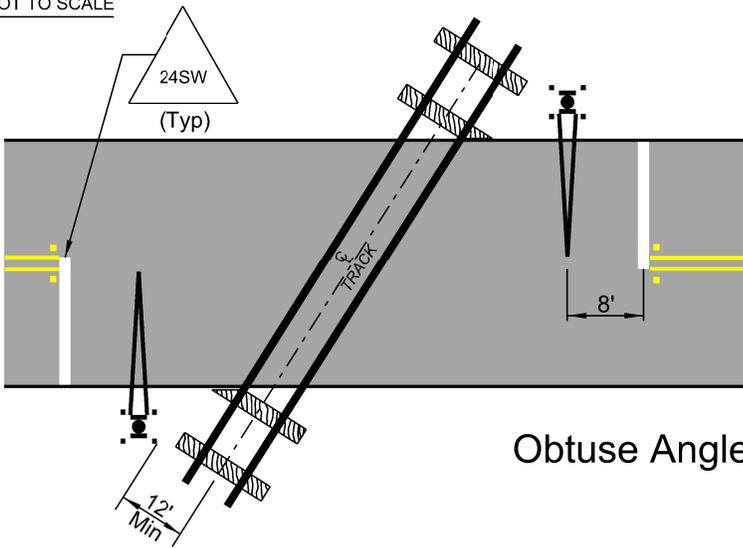
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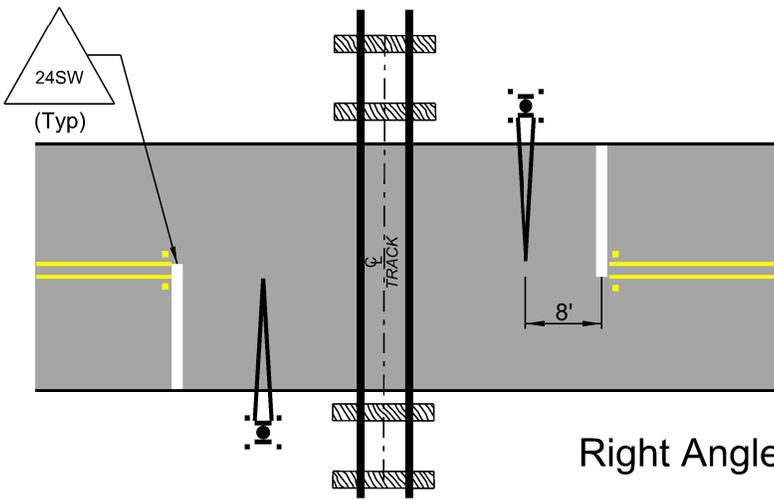
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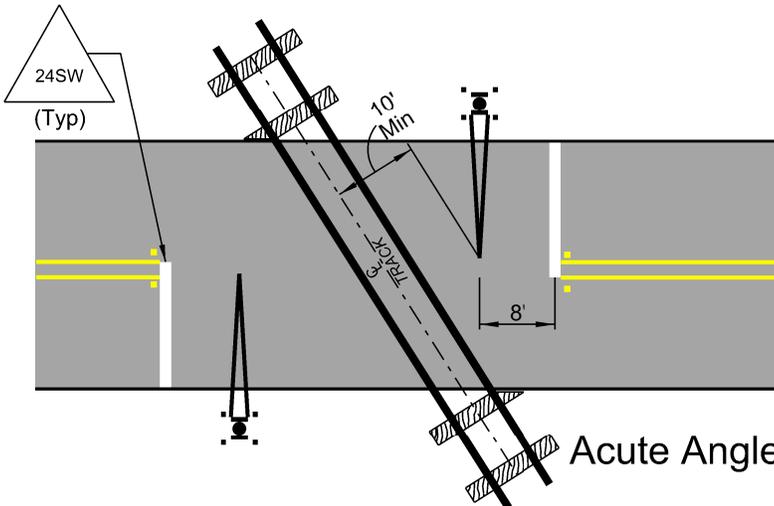
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Obtuse Angle



Right Angle

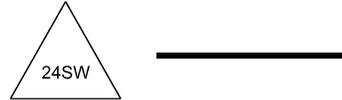


Acute Angle

GENERAL NOTES:

1. All pavement marking dimensions shall be from center of stripe to center of stripe.
2. Stop lines shall be installed 8ft in advance of the gate.

LEGEND:



**Railroad Crossings
(With Gates / Lights)**

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
TRANSPORTATION SYSTEMS MANAGEMENT DIVISION

DATE

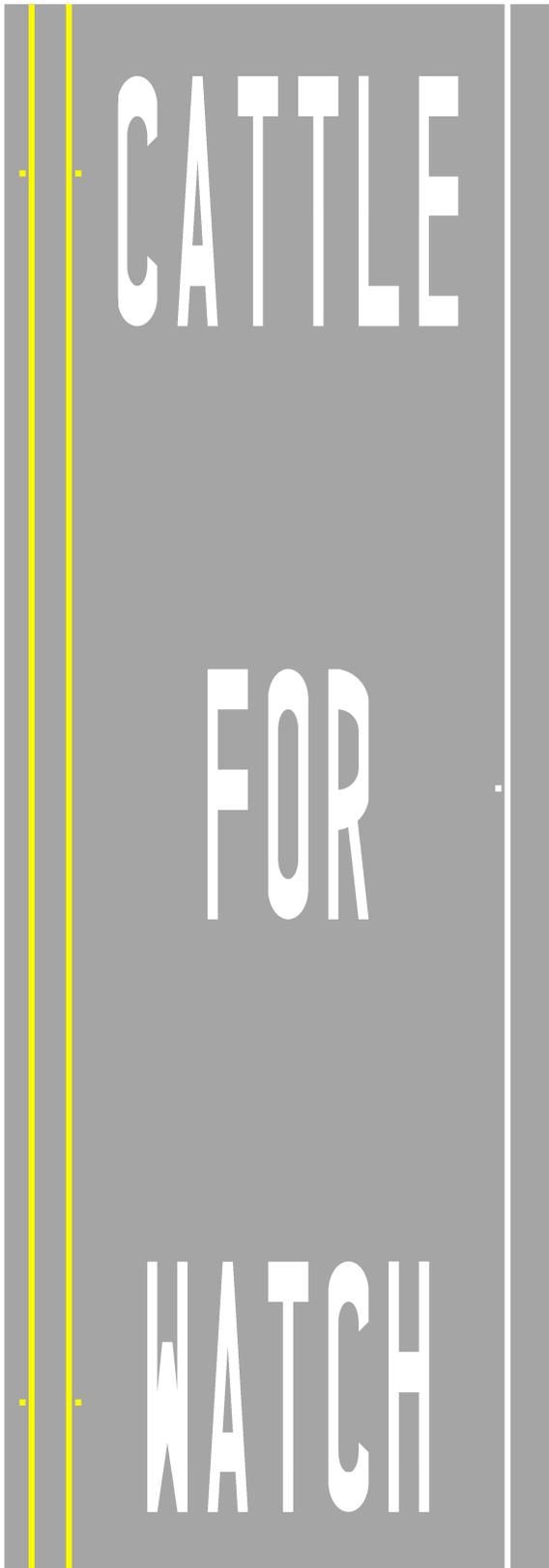
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NOT TO SCALE

TRAFFIC FLOW →



GENERAL NOTES:

1. Pavement word messages shall be installed as determined by the County Traffic Engineer or a designated representative.
2. For letter and word details, see Standard Word Markings, pg. 5-36 and Standard Letter Markings, pg. 5-37.
3. When used in conjunction with Transverse rumble strips, see Combination Word Pavement Markings with Transverse Rumble Strips, pg. 5-41.



Watch for Cattle Markings

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
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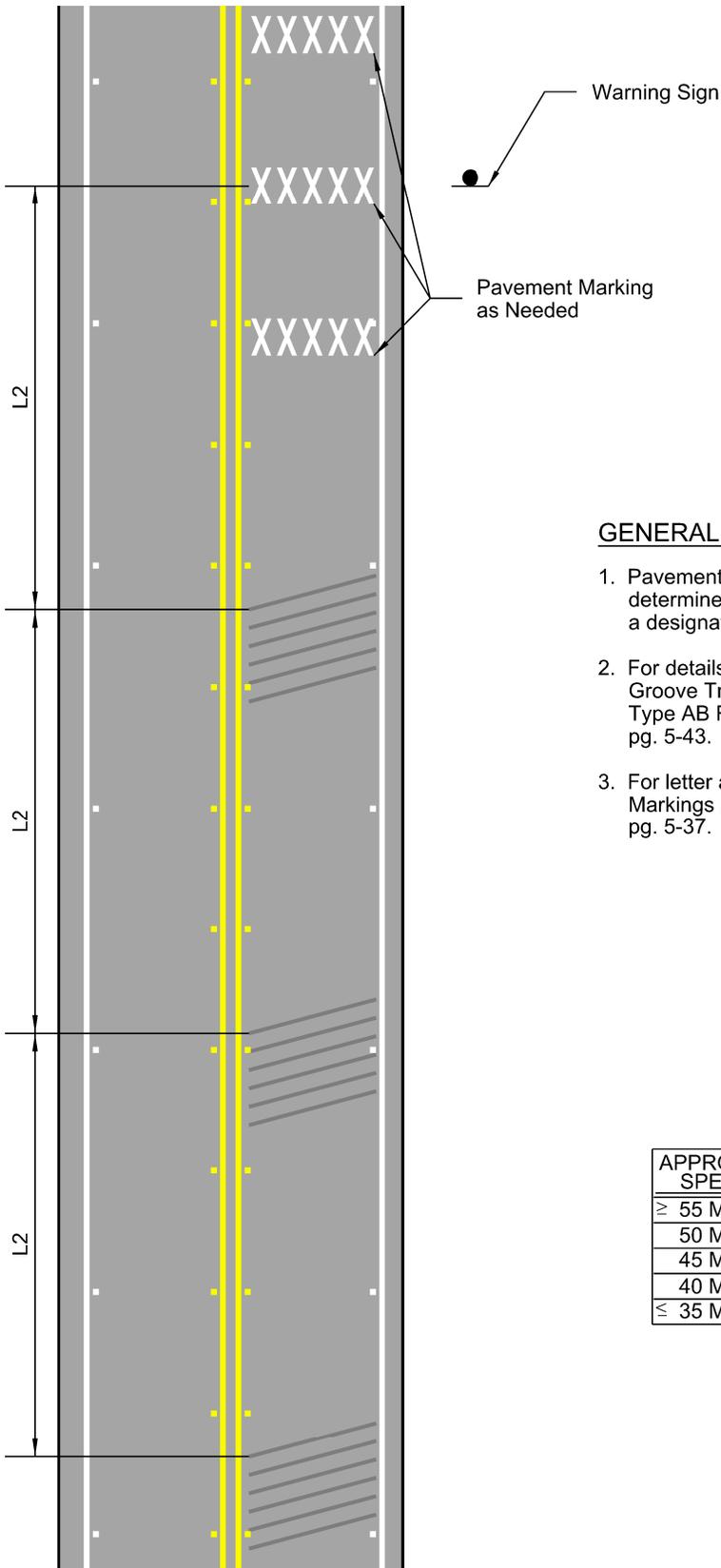
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NOT TO SCALE



GENERAL NOTES:

1. Pavement word messages to be installed as determined by the County Traffic Engineer or a designated representative.
2. For details on rumble strip installation, see Cut Groove Transverse Rumble Strip pg. 5-42 and Type AB Raised Pavement Marker Rumble Strip pg. 5-43.
3. For letter and word details, see Standard Word Markings pg. 5-36 and Standard Letter Markings pg. 5-37.

APPROACH SPEED	L2
≥ 55 MPH	200 ft
50 MPH	175 ft
45 MPH	150 ft
40 MPH	140 ft
≤ 35 MPH	125 ft



Combination Word Pavement Markings with Transverse Rumble Strips

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
TRANSPORTATION SYSTEMS MANAGEMENT DIVISION

DATE

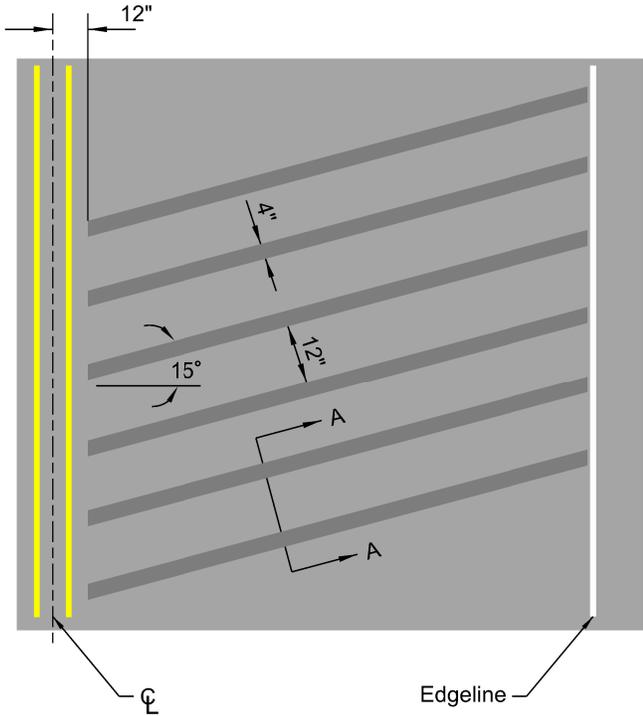
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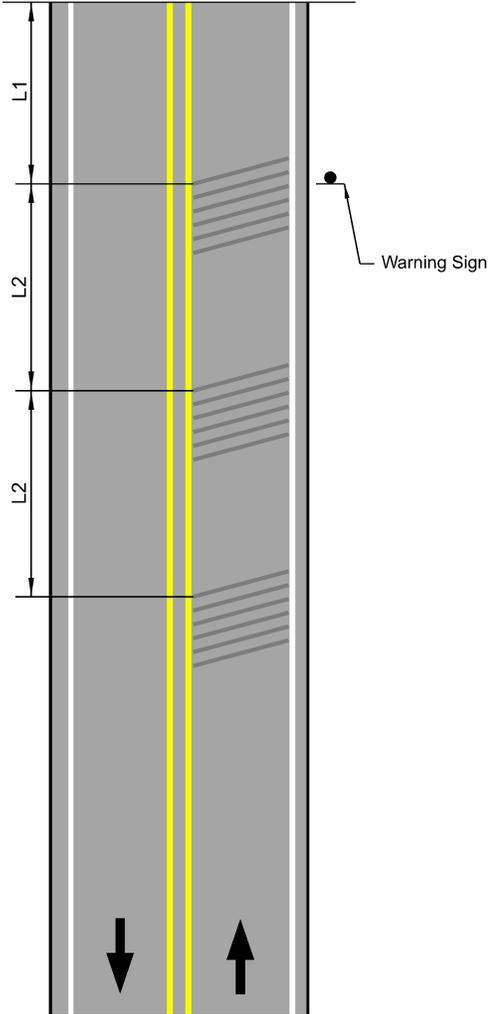
5-41

NOT TO SCALE

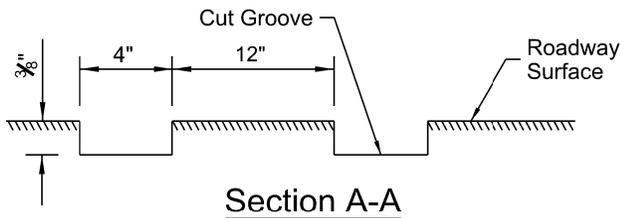
Cut Groove Transverse Rumble Strip



Location of Condition Requiring Rumble Strip Installation



Typical Installation



GENERAL NOTES:

- The L1 distance for all posted speeds will be determined based on a condition study to be completed by the County Traffic Engineer or a designated representative.

APPROACH SPEED	L1	L2
≥ 55 MPH	See Note 1	200 ft
50 MPH		175 ft
45 MPH		150 ft
40 MPH		140 ft
≤ 35 MPH		125 ft



Cut Groove Transverse Rumble Strips

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
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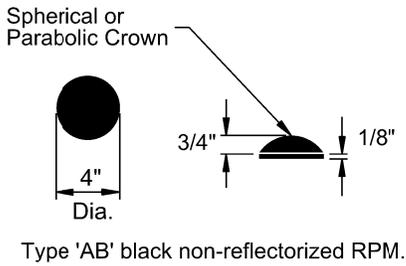
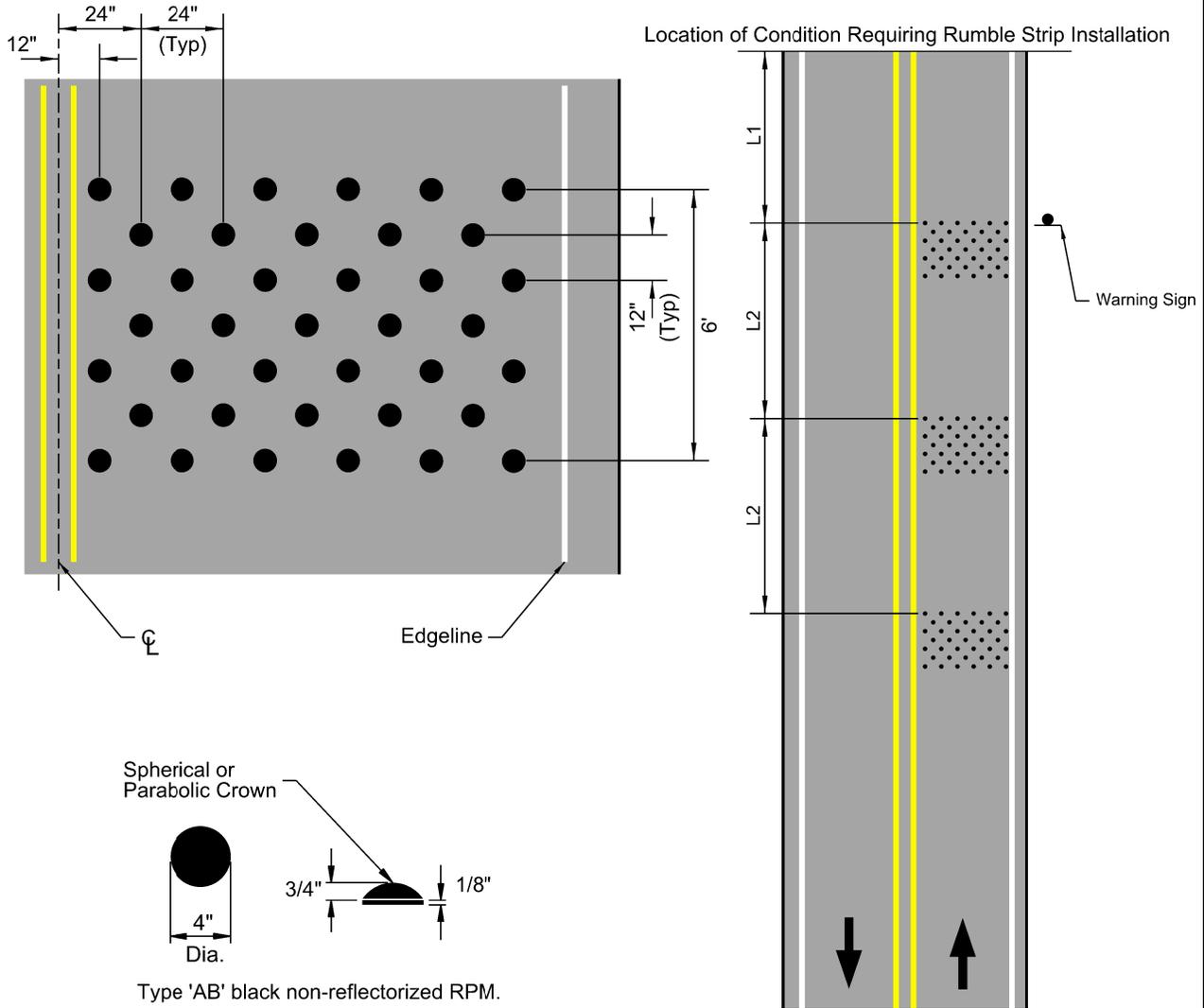
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Type AB Raised Pavement Marker Rumble Strip



GENERAL NOTES:

1. The L1 distance for all posted speeds will be determined based on a condition study to be completed by the County Traffic Engineer or a designated representative.

APPROACH SPEED	L1	L2
≥ 55 MPH	See Note 1	200 ft
50 MPH		175 ft
45 MPH		150 ft
40 MPH		140 ft
≤ 35 MPH		125 ft



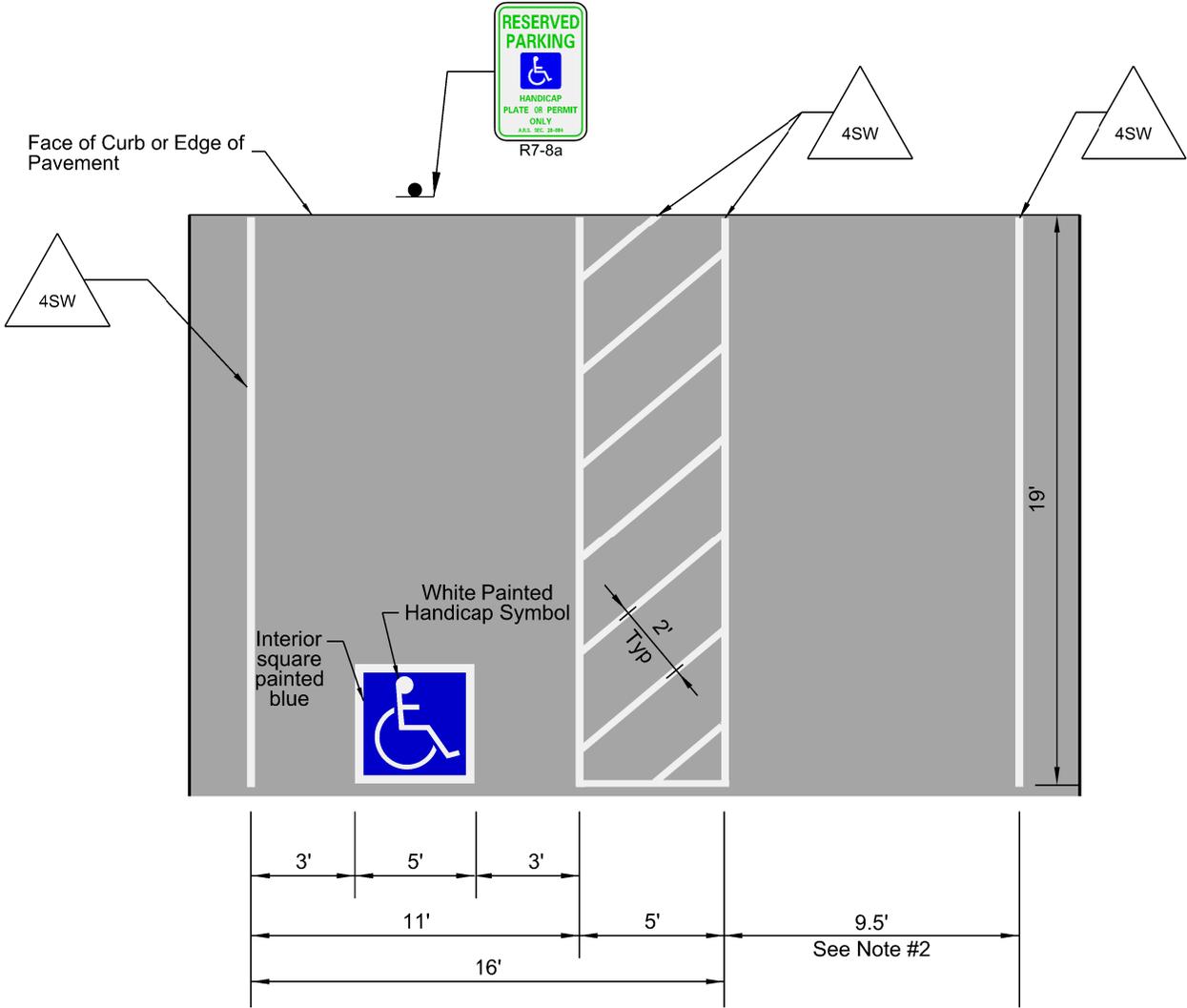
Type AB Raised Pavement Marker Rumble Strips

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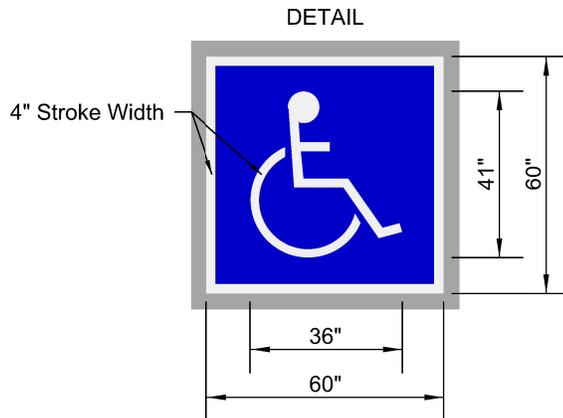
NOT TO SCALE



GENERAL NOTES:

1. All pavement marking will be from center of stripe to center of stripe.
2. Typical parking space width may vary.

LEGEND:



Typical Handicap Parking Space and Typical Parking Space

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
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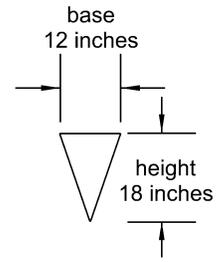
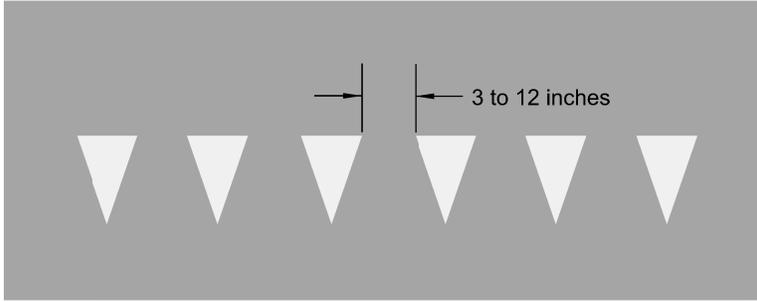
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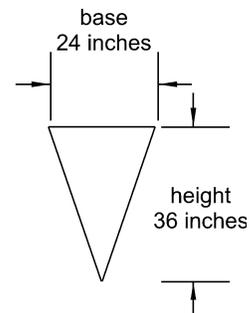
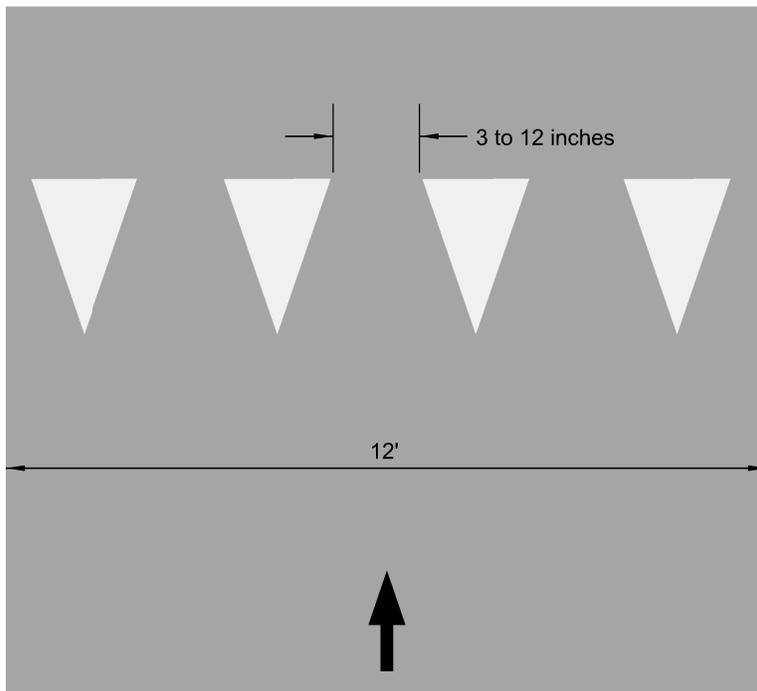
PAGE

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NOT TO SCALE



a. Minimum Dimensions



b. Maximum Dimensions

GENERAL NOTES:

1. Triangle height is equal to 1.5 times the base dimension.
2. Yield lines may be smaller than suggested when installed on much narrower, slow-speed facilities such as shared-use paths.
3. The yield line should be placed at the desired yielding point, but should be placed no more than 30 feet nor less than 4 feet from the nearest edge of the intersecting traveled way.



Yield Line Layouts

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DATE

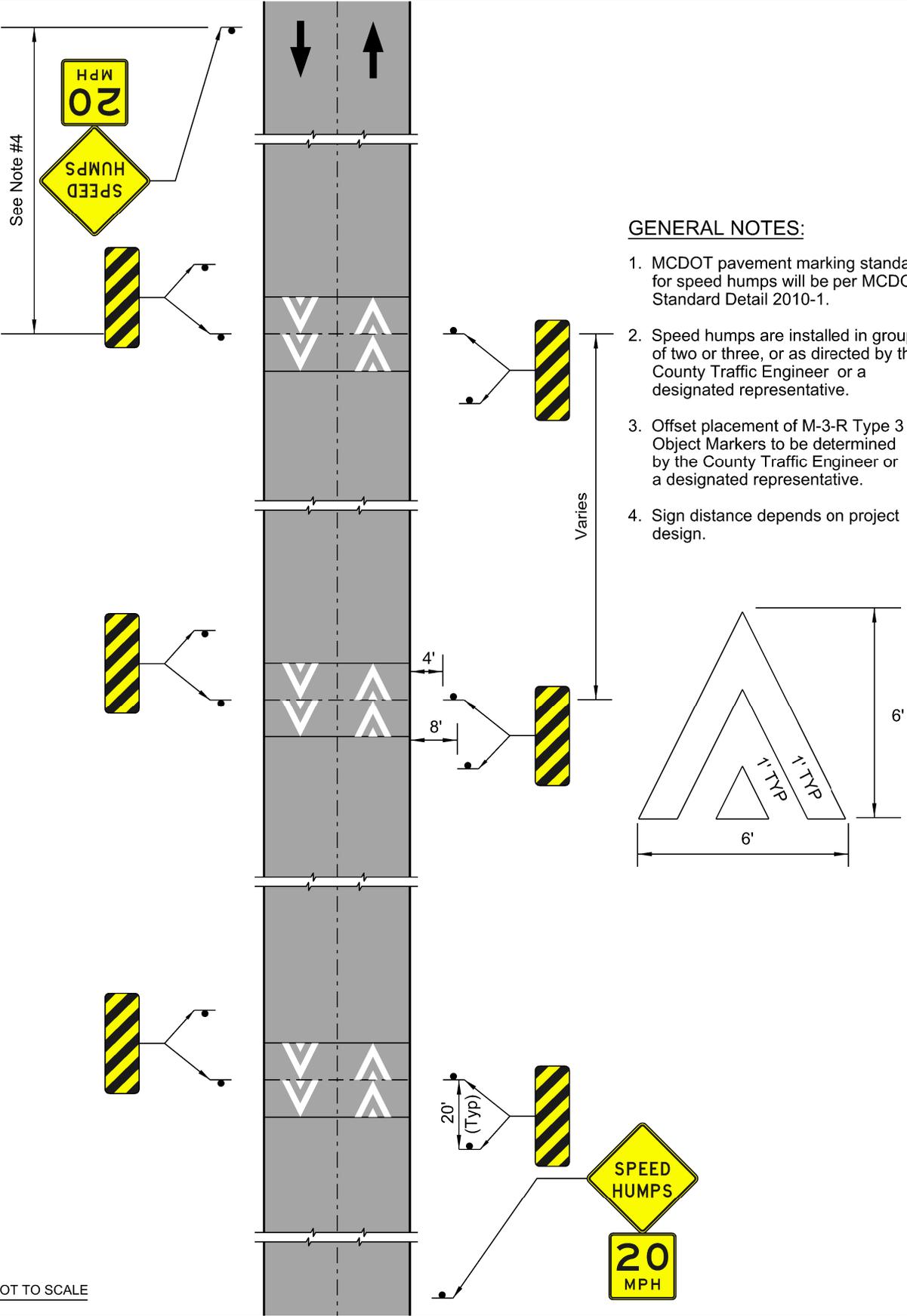
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5.6 Speed Humps, Curb Markings, and Markers

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Crosshatch Markings (Raised Medians and Islands)	5-53
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Raised Pavement Markers for Fire Hydrants	5-55



GENERAL NOTES:

1. MCDOT pavement marking standard for speed humps will be per MCDOT Standard Detail 2010-1.
2. Speed humps are installed in groups of two or three, or as directed by the County Traffic Engineer or a designated representative.
3. Offset placement of M-3-R Type 3 Object Markers to be determined by the County Traffic Engineer or a designated representative.
4. Sign distance depends on project design.

NOT TO SCALE

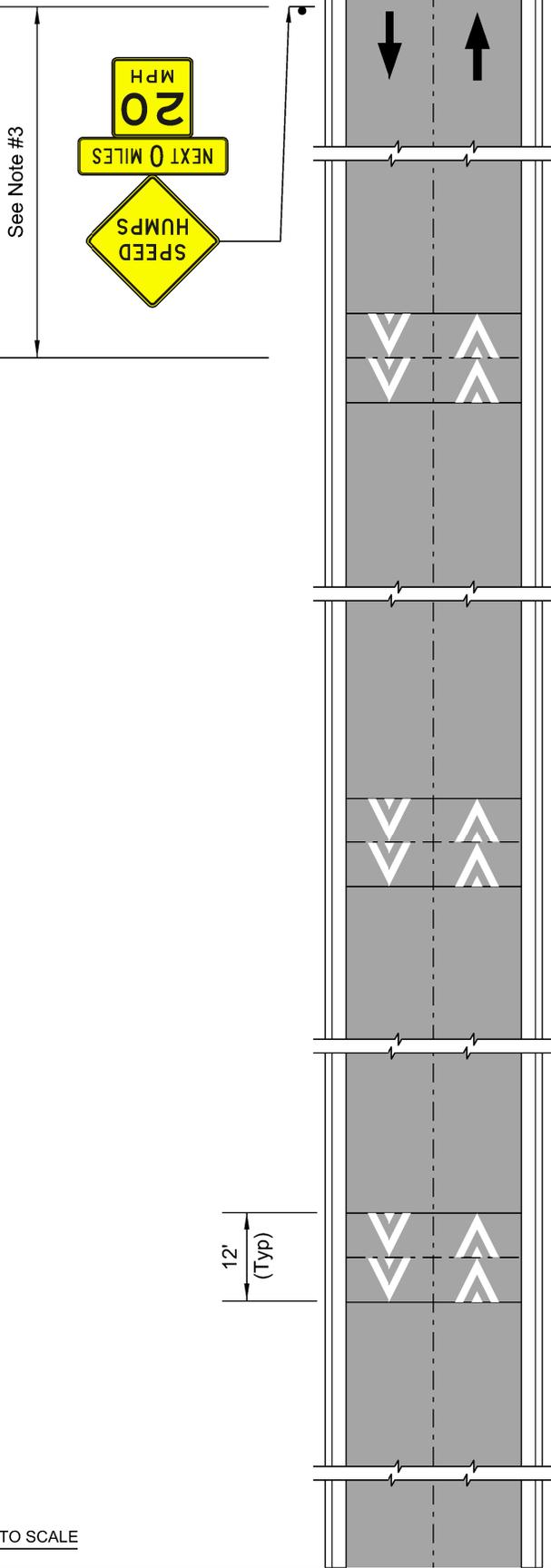


**Speed Humps
Without Curb and Gutter**

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
TRANSPORTATION SYSTEMS MANAGEMENT DIVISION

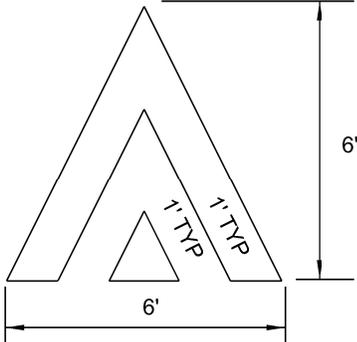
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GENERAL NOTES:

1. MCDOT pavement marking standard for speed humps will be per MCDOT Standard Detail 2010-2.
2. Speed humps are installed in groups of two or three, or as directed by the County Traffic Engineer or a designated representative.
3. Sign distance depends on project design.



NOT TO SCALE

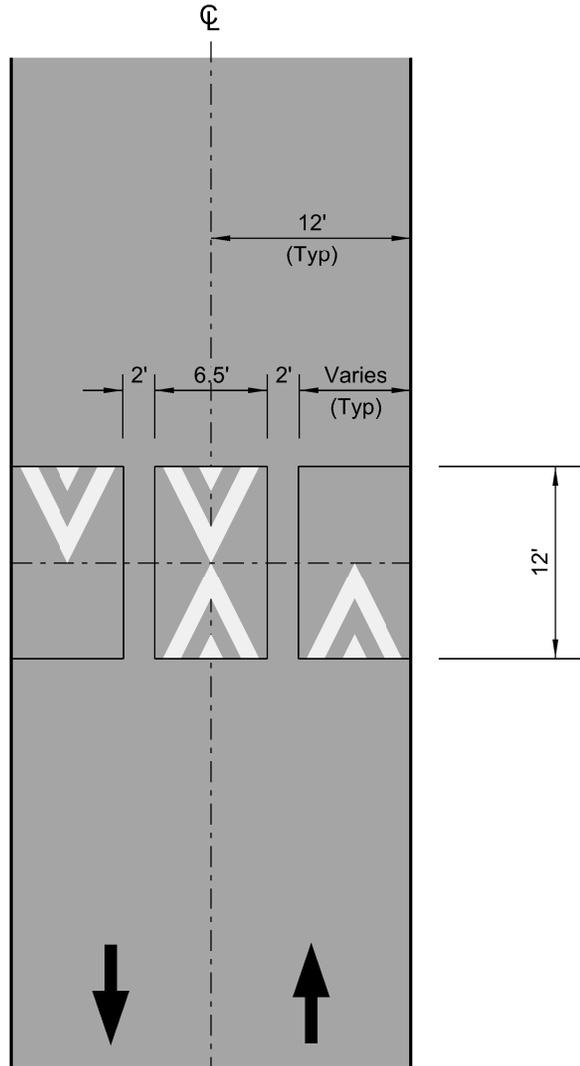


**Speed Humps
With Curb and Gutter**

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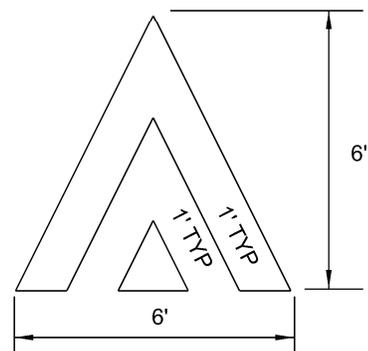
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NOT TO SCALE



GENERAL NOTES:

1. MCDOT pavement marking standard for speed cushions will be per MCDOT Standard Detail 2011.
2. Speed cushions are installed in groups of two or three, or as directed by the County Traffic Engineer or a designated representative.



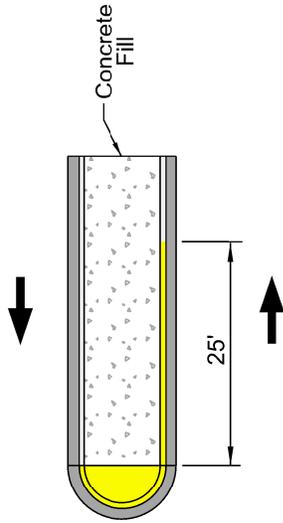
Residential Speed Cushion

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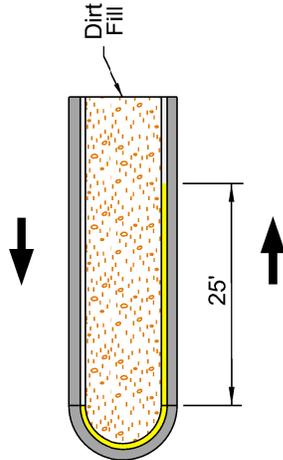
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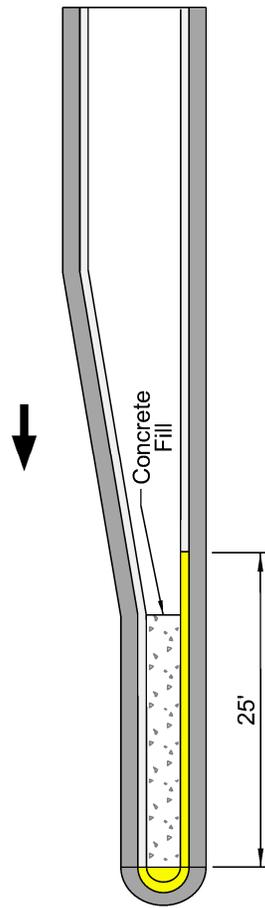
NOT TO SCALE



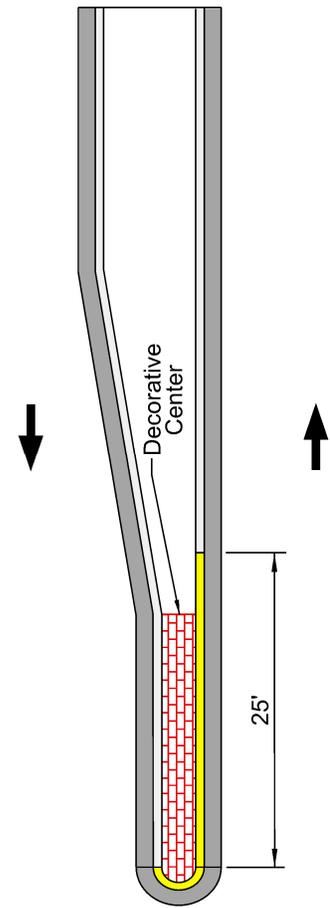
TYPE "A"



TYPE "B"



TYPE "C"



TYPE "D"

GENERAL NOTES:

1. Paint top and vertical face of curb yellow as indicated for type A, B, C, and D.

(For Medians 6 Feet And Under In Width)

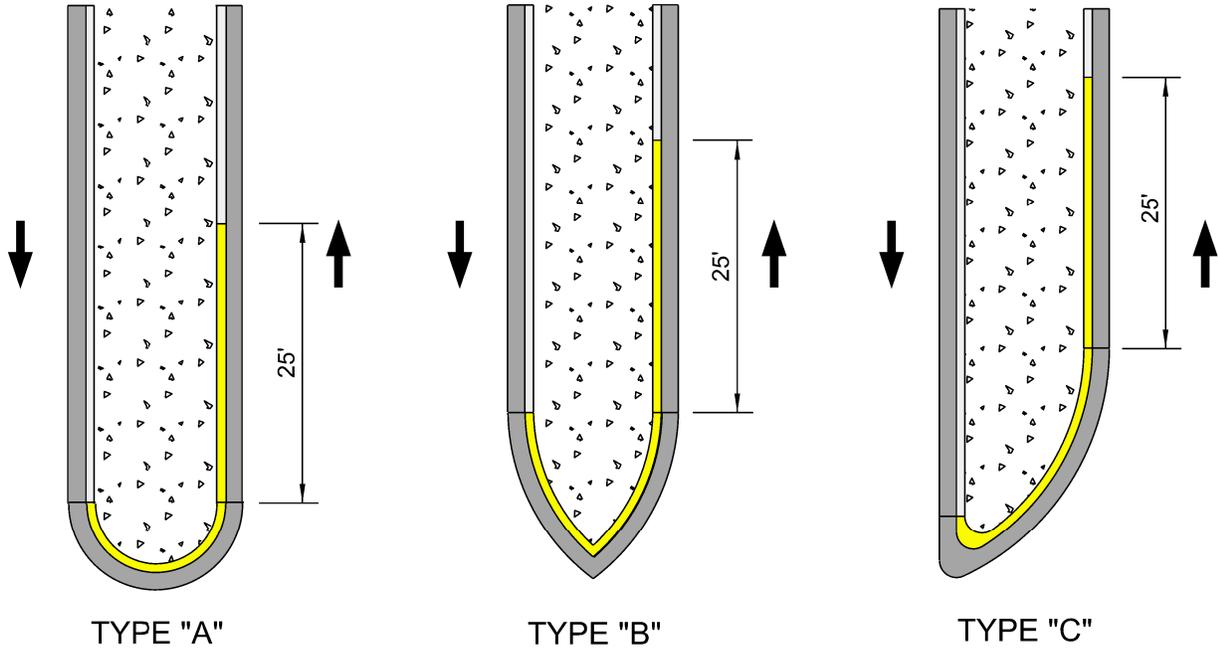


Curb Markings for Raised Medians

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GENERAL NOTES:

1. Paint top and vertical face of curb yellow as indicated for type A, B, and C.
2. For details on crosshatch markings at raised medians and islands, see pg. 5-53.

(For Medians Over 6 Feet In Width)

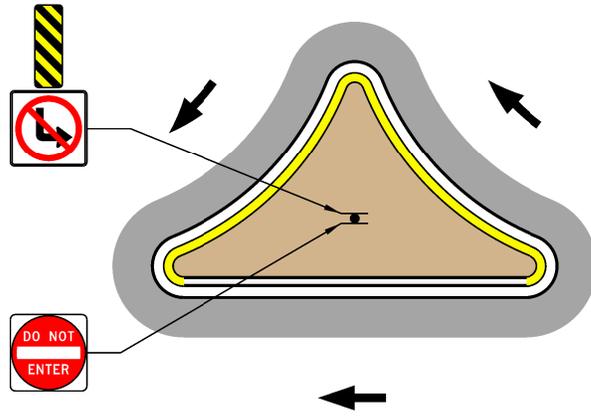


Curb Markings for Raised Medians

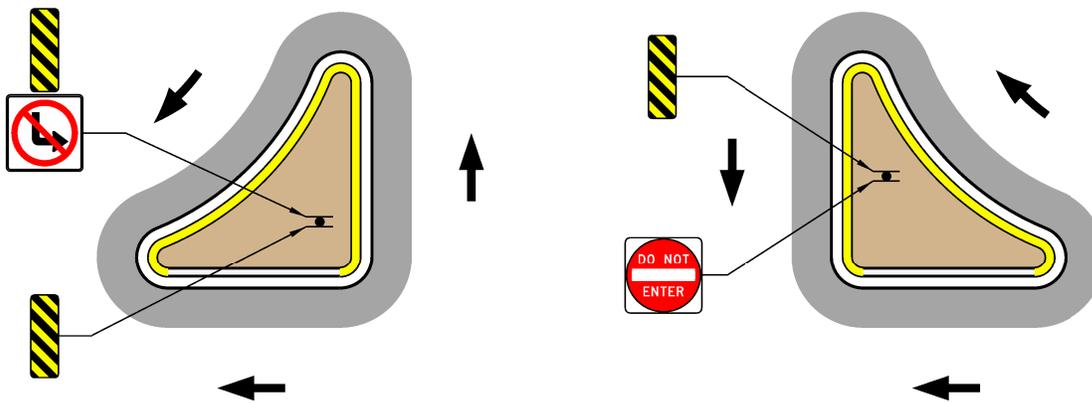
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TYPE "D"



TYPE "E"

TYPE "F"

GENERAL NOTES:

1. Paint top and vertical face of curb yellow as indicated for type D, E, and F.
2. For additional information on geometric design and placement, see the MCDOT Roadway Design Manual.



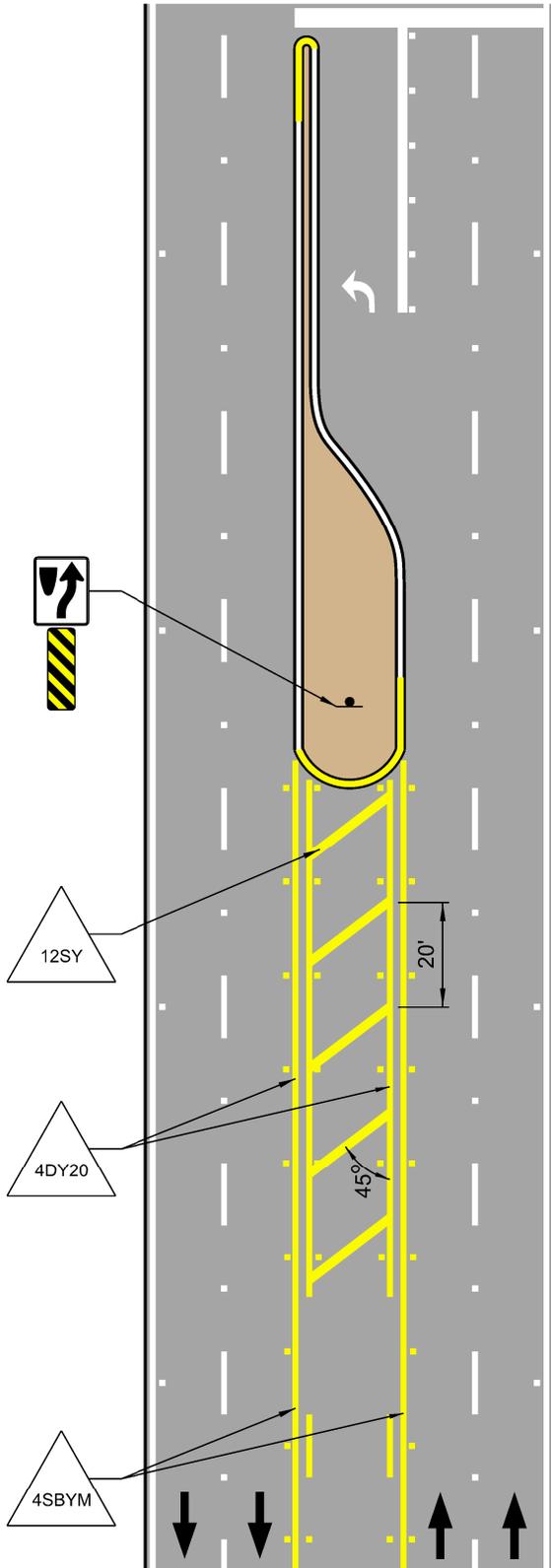
Islands for Limited Movement Access

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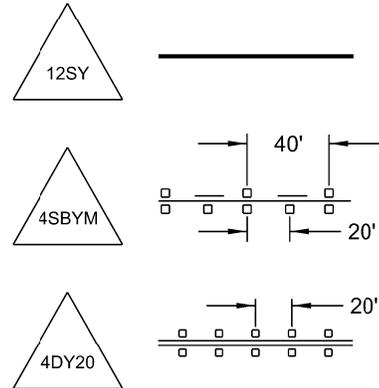
NOT TO SCALE



GENERAL NOTES:

1. Crosshatch markings shall be used to delineate the point at which a paved section of roadway becomes a raised median or island over 6 feet in width.
2. Crosshatch markings which separate opposing directions of traffic shall be yellow diagonal markings that slant away from traffic in the adjacent travel lanes.
3. For details on required curb markings for raised medians and islands, see pg 5-51.

LEGEND:

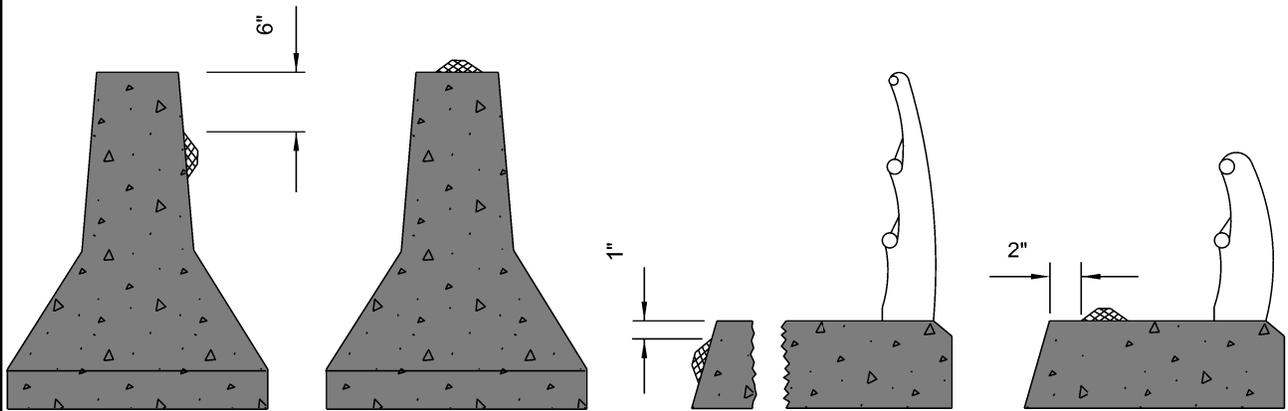


**Crosshatch Markings
(Raised Medians and Islands)**

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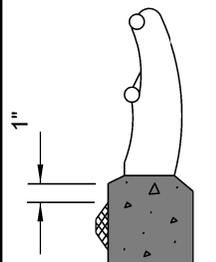


Typical Concrete Barrier Installation

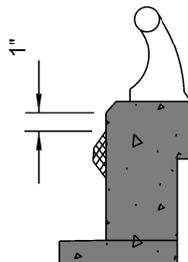
Concrete Barrier Installation on Curved Roadways

Sidewalk

Curb



Parapet with Double Rail



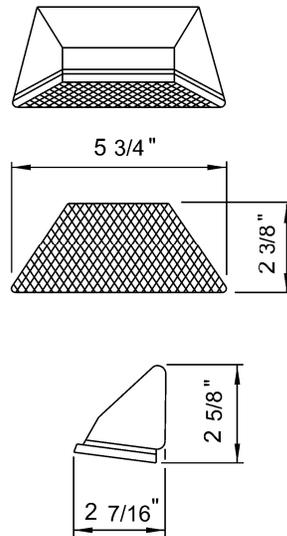
Parapet with Single Rail

SPACING TABLE FOR BARRIER & BRIDGE MARKERS	
TANGENT TO 5°	100 ft. (Apart)
5° TO 10° CURVE	75 ft. (Apart)
10° TO 20° CURVE	50 ft. (Apart)
OVER 20° CURVE	25 ft. (Apart)

GENERAL NOTES:

1. For horizontal spacing of markers see spacing chart. A minimum of three (3) markers shall be installed on each bridge and/or concrete barrier. A minimum of three (3) markers shall be continuously visible at all times.
2. The single faced WHITE marker shall be placed on the right side of all bridge and concrete barriers for one-way and two-way roadways.
3. The single faced YELLOW marker shall be placed on the left side of all bridge and concrete barriers for divided and one-way roadways.
4. The front edge of the marker shall be placed perpendicular to the edge of the roadway.
5. Concrete surfaces shall be wired brushed or sandblasted and treated as per the manufacturer's recommendations.
6. Installation of markers shall be done as per manufacturer's specifications.
7. Markers shall be mounted on the top of the concrete barriers only when the curvature of the roadway is so sharp that three (3) side mounted markers would not be continuously visible from the traffic lane(s). (e.g., left-hand curve on median side of roadway; right-hand curve on right side of roadway.) Where glare screen is installed, the typical side-mounted installation shall be utilized.
8. Prismatic reflectors shall be colorless or amber in color as required.

LEGEND:



PRISMATIC REFLECTOR



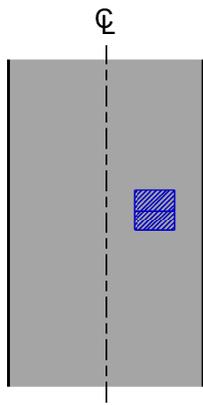
Bridge and Barrier Marking Placement

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TRANSPORTATION SYSTEMS MANAGEMENT DIVISION

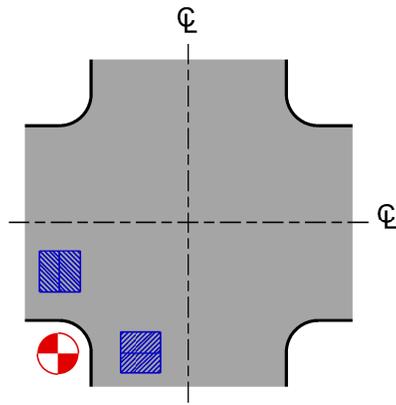
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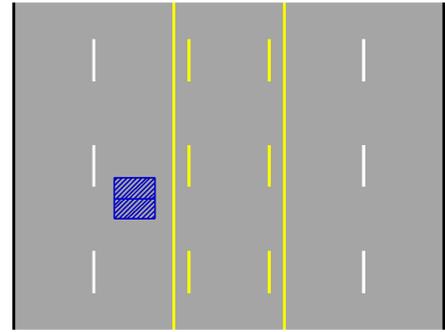
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Local Street

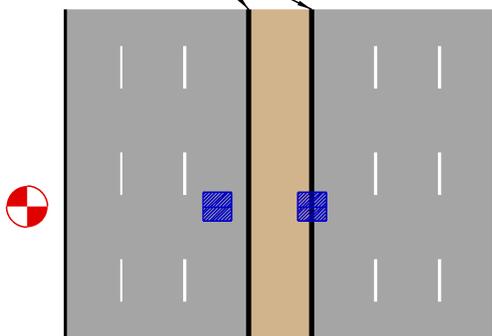


Local Cross Street Intersection

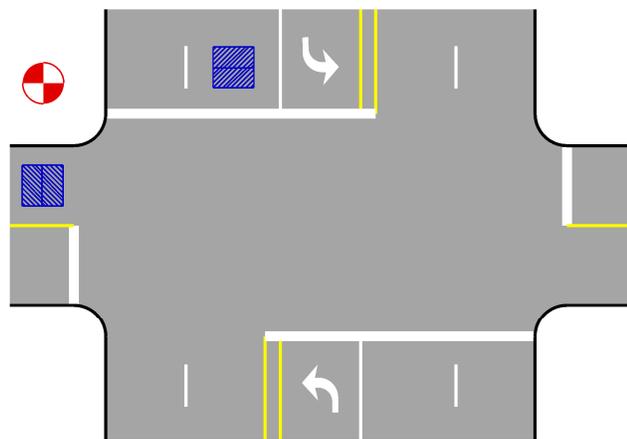


Multi-Lane Street with Two-Way Left Turn Lane

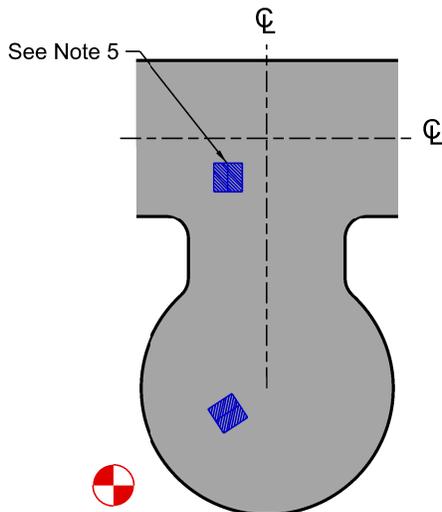
Median Curb



Multi-Lane Street with Raised Median



Four Lane Street with Turn Lane at Intersection



Cul-De-Sac

GENERAL NOTES:

1. Locate pavement marker in center of travel lane and align with hydrant.
2. For multiple lane roads locate pavement marker in left most through traffic lane.
3. Adjust marker location to be located outside of any delineated crosswalk area.
4. For hydrant located on far side of raised median, locate pavement marker on top of median curb aligned with hydrant.
5. Omit for cul-de-sac greater than 250' in length.
6. Fire hydrant pavement markers shall be 2-way retroreflective blue - Type BB RPMs.



Raised Pavement Markers for Fire Hydrants

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