PART 5. TRAFFIC CONTROL DEVICES FOR LOW VOLUME ROADS
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PART 5. TRAFFIC CONTROL DEVICES FOR LOW VOLUME ROADS
Chapter 5A. General

5A.1 Function

Standard

A low-volume road shall be defined for this Part of the Manual as follows:

A. A low-volume road shall be a facility lying outside of built-up areas of cities, towns, and communities, and it shall have a traffic volume of less than 400 AADT.
B. A low-volume road shall not be a freeway, an expressway, an interchange ramp, a freeway service road, a road on a designated State highway system, or a residential street in a neighborhood. In terms of highway classification, it shall be a variation of a conventional road or a special purpose road as defined in Section 1A.13.
C. A low-volume road shall be classified as either paved or unpaved.

Support

Low-volume roads typically include agricultural, recreational, resource management and development such as mining and logging and grazing, and local roads in rural areas.

Guidance

The needs of unfamiliar road users for occasional, recreational, and commercial transportation purposes should be considered.

Support

At some locations on low-volume roads, the use of traffic control devices might be needed to provide the road user limited, but essential, information regarding regulation, guidance, and warning.

Other Parts of this Manual contain provisions applicable to all low-volume roads; however, Part 5 specifically supplements and references the provisions for traffic control devices commonly used on low-volume roads.

5A.2 Application

Support

It is possible, in many cases, to provide essential information to road users on low-volume roads with a limited number of traffic control devices. The focus might be on devices that:

A. Warn of conditions not normally encountered,
B. Prohibit unsafe movements, or
C. Provide minimal destination guidance.

Standard

The provisions contained in Part 5 shall not prohibit the installation nor the full application of traffic control devices on a low-volume road where conditions justify their use.

Guidance

Additional traffic control devices and provisions contained in other Parts of the Manual should be considered for use on low-volume roads.

Support

Section 1A.9 contains information regarding the assistance that is available to jurisdictions that do not have engineers on their staffs who are trained and/or experienced in traffic control devices.

5A.3 Design

Standard

Traffic control devices for use on low-volume roads shall be designed in accordance with the provisions contained in Part 5, and where required, in other applicable Parts of this Manual.

The typical conventional road signs and minimum sizes for signs and plaques installed on low-volume roads shall be as shown in Table 5A-1. The Minimum sign sizes shall only be used on low-volume roads where posted or statutory speed limits is 30 mph or less.

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Guidance

Signs larger than the typical conventional road sizes should be used where engineering judgment indicates a need based on high vehicle operating speeds, driver expectancy, traffic operations, or roadway conditions.

Support

Signs and plaques larger than those shown in Table 5A-1 may be used (see Section 2A.11).

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Sign or Plaque	Sign Designation	Section	Sign Sizes		
			Typical	Minimum	Oversized
Stop	R1-1	5B.2	30 x 30	---	36 x 36
Yield	R1-2	5B.2	30 x 30 x 30	---	36 x 36 x 36
Speed Limit	R2-1	5B.3	24 x 30	18 x 24	36 x 48
Do Not Pass	R4-1	5B.4	24 x 30	---	36 x 48
Pass With Care	R4-2	5B.4	24 x 30	18 x 24	36 x 48
Keep Right	R4-7	5B.4	24 x 30	18 x 24	36 x 48
Do Not Enter	R5-1	5B.4	30 x 30	---	36 x 36
No Trucks	R5-2	5B.4	24 x 24	---	30 x 30
One Way	R6-2	5B.4	18 x 24	---	24 x 30
No Parking (symbol)	R8-3	5B.5	24 x 24	18 x 18	30 x 30
No Parking	R8-3a	5B.5	18 x 24	---	24 x 30
No Parking (plaque)	R8-3c,3dP	5B.5	24 x 18	18 x 12	30 x 24
Road Closed	R11-2M (old R11-2)	5B.4	48 x 30	---	---
Road Closed, Local Traffic Only	R11-3a	5B.4	60 x 30	---	---
Bridge out, Local Traffic Only	R11-3b	5B.4	60 x 30	---	---
Road Closed to Thru Traffic	R11-4	5B.4	60 x 30	---	---
Weight Limit	R12-1	5B.4	24 x 30	---	36 x 48
Grade Crossing (Crossbuck)	R15-1	5F.2	48 x 9	---	---
Number of Tracks (plaque)	R15-2P	5F.2	27 x 18	---	---
Horizontal Alignment	W1-1,2,3,4,5	5C.2	30 x 30	---	36 x 36
One-Direction Large Arrow	W1-6	5C.2	36 x 18	---	48 x 24
Two-Direction Large Arrow	W1-7	5C.2	36 x 18	---	48 x 24
Chevron Alignment	W1-8	5C.2	12 x 18	---	18 x 24
Intersection Warning	W2-1,2,3,4,5,6	5C.3	30 x 30	---	36 x 36
Stop Ahead	W3-1	5C.4	30 x 30	---	36 x 36
Yield Ahead	W3-2	5C.4	30 x 30	---	36 x 36
Be Prepared to Stop	W3-4	5G.5	36 x 36	---	48 x 48
Narrow Bridge	W5-2	5C.6	30 x 30	---	36 x 36
One Lane Bridge	W5-3	5C.6	30 x 30	---	36 x 36
Hill	W7-1	5C.7	30 x 30	---	36 x 36
XX% Grade (plaque)	W7-3P	5C.7	24 x 18	---	30 x 24
Next XX Miles (plaque)	W7-3aP	5C.9	24 x 18	---	30 x 24
Pavement Ends	W8-3	5C.8	30 x 30	---	36 x 36
Truck Crossing	W8-6	5C.9	30 x 30	---	36 x 36
Loose Gravel	W8-7	5G.5	30 x 30	---	36 x 36
Rough Road	W8-8	5G.5	30 x 30	---	36 x 36
Road May Flood	W8-18	5G.5	30 x 30	---	36 x 36
Grade Crossing Advance Warning	W10-1	5F.3	30 Dia.	---	36 Dia.
Grade Crossing Advance Warning	W10-2,3,4	5F.3	30 x 30	---	36 x 36
Trains May Exceed 80 mph	W10-8	5F.6	30 x 30	---	36 x 36
Storage Space (symbol)	W10-11	5F.6	30 x 30	---	36 x 36
Skewed Crossing	W10-12	5F.6	30 x 30	---	36 x 36
Entering/Crossing	W11 Series	5C.9	30 x 30	---	36 x 36
Advisory Speed (plaque)	W13-1P	5C.10	18 x 18	---	24 x 24
Dead End/No Outlet	W14-1,2	5C.11	30 x 30	---	36 x 36
Dead End/No Outlet	W14-1a,2a	5C.11	36 x 8	24 x 6	---

Table 5A-1 Sign and Plaque Sizes on Low Volume Roads (Sheet 1 of 2)

Sign or Plaque	Sign Designation	Section	Sign Sizes		
			Typical	Minimum	Oversized
No Passing Zone (pennant)	W14-3	5G.5	40 x 40 x 30	---	48 x 48 x 36
Supplemental Distance (plaque)	W16-2P	5C.9	24 x 18	18 x 12	30 x 24
Diagonal Arrow (plaque)	W16-7P	5C.9	24 x 12		30 x 18
Ahead (plaque)	W16-9P	5C.9	24 x 12	---	30 x 18
Road Work (with distance)	W20-1	5G.5	36 x 36	---	48 x 48
Road Closed (with distance)	W20-3	5G.5	36 x 36	---	48 x 48
One Lane Road (with distance)	W20-4	5G.5	36 x 36	---	48 x 48
Flagger	W20-7	5G.5	36 x 36	---	48 x 48
Workers	W21-1	5G.5	36 x 36	---	48 x 48
Fresh Oil	W21-2	5G.5	36 x 36	---	48 x 48
Road Machinery Ahead	W21-3	5G.5	30 x 30	---	48 x 48
Shoulder Work	W21-5	5G.5	36 x 36	---	48 x 48
Survey Crew	W21-6	5G.5	36 x 36	---	48 x 48
Utility Work (with distance)	W21-7	5G.5	36 x 36	---	48 x 48
Minimum Maintenance Road	W21-X8	5C.11.1	36 x 30	---	---

Notes: 1. Larger sizes may ne used when appropriate.
2. Dimensions are shown in inches and are shown as width x height.

Table 5A-1 Sign and Plaque Sizes on Low Volume Roads (Sheet 2 of 2)

Standard

All signs shall be retroreflective or illuminated to show the same shape and similar color both day and night, unless specifically stated otherwise in other applicable Parts of this Manual. The requirements for sign illumination shall not be considered to be satisfied by street, highway, or strobe lighting.

All markings shall be visible at night and shall be retroreflective unless ambient illumination provides adequate visability on the markings.

5A.4 Placement

Standard

Except as provided in the following Option, the traffic control devices used on low-volume roads shall be placed and positioned in accordance with the lateral, longitudinal, and vertical placement provisions contained in Part 2 and other applicable Sections of this Manual.

Guidance

The placement of warning signs should comply with the guidance contained in Section 2C.5 and other applicable Sections of this Manual.

Option

A lateral offset of not less than 2 feet from the roadway edge to the roadside edge of a sign may be used where roadside features such as terrain, shrubbery, and/or trees prevent lateral placement in accordance with Section 2A.19.

Standard

If located within a clear zone, post-mounted sign supports shall be yielding, breakaway, or shielded with a longitudinal barrier or crash cushion as required in Section 2A.19. This shall apply to all roads with a posted or statutory speed limit of 50 mph or higher.

PART 5. TRAFFIC CONTROL DEVICES FOR LOW VOLUME ROADS
Chapter 5B. Regulatory Signs

5B.1 Introduction

Support

The purpose of a regulatory sign is to inform highway users of traffic laws or regulations, and to indicate the applicability of legal requirements that would not otherwise be apparent.

The criteria provisions for regulatory signs are contained in Chapter 2B and in other Sections of this Manual. Criteria Provisions for regulatory signs that are specific to low-volume roads are contained in this Chapter.

5B.2 STOP and YIELD Signs (R1-1 and R1-2)

R1-1

R1-2

Guidance

STOP (R1-1) and YIELD (R1-2) signs should be considered for use on low-volume roads where engineering judgment or study, consistent with the provisions of Sections 2B.4 to 2B.10, indicates that either of the following conditions applies:

A. An intersection of a less-important road with a main road where application of the normal right-of-way rule might not be readily apparent.
B. An intersection that has restricted sight distance for the prevailing vehicle speeds.

5B.3 Speed Limit Signs (R2 Series)

R2-1

Standard

If used, Speed Limit (R2 series) signs shall display the speed limit established by law, ordinance, regulation, or as adopted by the authorized agency following an engineering study. The displayed speed limits shall be in multiples of 5 mph.

Speed limits shall be established in accordance with Section 2B.13.

Option

Speed limit signs may be used on low-volume roads that carry traffic from, onto, or adjacent to higher-volume roads that have posted speed limits.

5B.4 Traffic Movement and Prohibition Signs (R3, R4, R5, R6, R9, R10, R11, R12, R13, and R14 Series)

R4-1


R4-7

R5-1

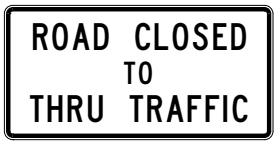

R5-2

R6-2

R12-2

R11-2M (old R11-2)

R11-3a



R11-4

Support

The regulatory signs in these series inform road users of required, permitted, or prohibited traffic movements involving turn, alignment, exclusion, and pedestrians.

Standard

If used, signs for traffic prohibitions or restrictions shall be placed in advance of the prohibition or restriction so that traffic can use an alternate route or turn around.

Guidance

Signs should be used on low-volume roads to indicate traffic prohibitions and restrictions such as road closures and weight restrictions.

Option

Signs for traffic prohibitions or restrictions may be used on a low-volume road near and at the intersections or the connections with a higher class of road, and where the regulatory message is essential for transition from the low-volume road to the higher-class facility or vice versa.

5B.5 Parking Signs (R8 Series)


R8-3

R8-3a

R8-3cP

R8-3dP

Option

Parking signs may be installed selectively on low-volume roads with due consideration of enforcement.

5B.6 Other Regulatory Signs

Standard

Other regulatory signs used on low-volume roads that are not discussed in Part 5 shall comply with the provisions contained in other Parts of this Manual.

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5C.1 Introduction

Support

The purpose of a warning sign is to provide advance warning to the road user of unexpected conditions on or adjacent to the roadway that might not be readily apparent.

The provisions for warning signs are contained in Chapter 2C and in other Sections of this Manual. Provisions for warning signs that are specific to low-volume roads are contained in this Chapter.

5C.2 Horizontal Alignment Signs (W1-1 through W1-8)


W1-1

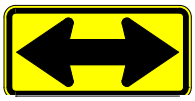

W1-2


W1-3


W1-4


W1-5


W1-6


W1-7


W1-8

Support

Horizontal Alignment signs (see Sections 2C.6 through 2C.12) include turn, curve, reverse turn, reverse curve, winding road, large arrow, and chevron alignment signs.

Option

Horizontal Alignment signs may be used where engineering judgment indicates a need to inform the road user of a change in the horizontal alignment of the roadway.

5C.3 Intersection Warning Signs (W2-1 through W2-6)


W2-1


W2-2


W2-3


W2-4


W2-5


W2-6

Support

Intersection signs include the crossroad, side road, T-symbol, Y-symbol, and circular intersection signs.

Option

Intersection signs may be used where engineering judgment indicates a need to inform the road user in advance of an intersection.

5C.4 Stop Ahead and Yield Ahead Signs (W3-1, W3-2)

W3-1

W3-2

Standard

A Stop Ahead (W3-1) sign shall be used where a STOP sign is not visible for a sufficient distance to permit the road user to bring the vehicle to a stop at the STOP sign.

A Yield Ahead (W3-2) sign shall be used where a YIELD sign is not visible for a sufficient distance to permit the road user to bring the vehicle to a stop, if necessary, at the YIELD sign.

5C.5 NARROW BRIDGE Sign (W5-2)

W5-2

Option

The NARROW BRIDGE (W5-2) sign may be used on an approach to a bridge or culvert that has a clear width less than that of the approach roadway.

5C.6 ONE LANE BRIDGE Sign (W5-3)

W5-3

Guidance

A ONE LANE BRIDGE (W5-3) sign should be used on low-volume, two-way roadways in advance of any bridge or culvert;

A. Having a clear roadway width of less than 16 feet; or

B. Having a clear roadway width of less than 18 feet when commercial vehicles constitute a high proportion of the traffic; or

C. Having a clear roadway width of 18 feet or less where the approach sight distance is limited on the approach to the structure.

Option

Roadway alignment and additional warning may be provided on the approach to a bridge or culvert by the use of object markers and/or delineators.

5C.7 Hill Sign (W7-1)

W7-1

Option

An engineering study of vehicles and road characteristics, such as percent grade and length of grade, may be conducted to determine hill signing requirements.

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5C.8 PAVEMENT ENDS Sign (W8-3)

W8-3

Option

A PAVEMENT ENDS (W8-3) sign may be used to warn road users where a paved surface changes to a gravel or earth road surface.

5C.9 Vehicular Traffic Warning and Non-Vehicular Warning Signs (W11 Series and W8-6)

W8-6

W11-1

W11-2

W11-3

W11-4

W11-5

W11-6

W11-8

W11-10

Guidance

Vehicular Traffic Warning signs should be used to alert road users to locations where frequent unexpected entries into the roadway by trucks, bicyclists, farm vehicles, fire trucks, and other vehicles might occur. Such signs should be used only at locations where the road user's sight distance is restricted or the condition, activity or entering traffic would be unexpected.

Option

Non-Vehicular Warning signs (see Section 2C-50) may be used to alert road users in advance of locations where unexpected entries into the roadway or shared use by pedestrians, large animals, or other crossing activities might occur.

W7-3aP

W16-2P

W16-9P

A W7-3aP, W16-2P, or W16-9P supplemental plaque, with the legend NEXT XX MILES, XX FEET, or AHEAD may be installed below a Vehicular Traffic Warning or Non-Vehicular Warning sign (see Sections 2C.49 and 2C.50) to inform road users that they are approaching a portion of the roadway or a point where crossing activity might occur.

Standard

When a Non-Vehicular Warning sign is placed at the location of the crossing point, a diagonal downward pointing arrow (W16-7P) plaque shall be mounted below the sign.

Guidance

If the activity is seasonal or temporary, the sign should be removed or covered when the crossing activity does not exist.

5C.10 Advisory Speed Plaque (W13-1P)

W13-1P

Option

An Advisory Speed (W13-1) plaque may be mounted below a warning sign when the condition requires a reduced speed.

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5C.11 DEAD END or NO OUTLET Signs (W14-1, W14-1a, W14-2, and W14-2a)

W14-1

W14-2

W14-1a

W14-2a

Option

The DEAD END (W14-1) and NO OUTLET (W14-2) signs and the DEAD END (W14-1a) and NO OUTLET (W14-2a) signs may be used to warn road users of a road that has no outlet or that terminates in a dead end or cul-de-sac.

Guidance

If used, these signs should be placed at a location that gives drivers of large commercial or recreational vehicles an opportunity to select a different route or turn around.

5C.11.1 MINIMUM MAINTENANCE ROAD Sign (W21-X8)

W21-X8

Support

The conditions and procedures for designating minimum maintenance roads are specified in Minnesota Statute 160.095, subd. 1.

By Statute, the designation of a minimum maintenance road is effective on the erection of MINIMUM MAINTENANCE ROAD signs.

Standard

The signs shall be posted at entry points to and at regular intervals along a minimum maintenance road.

5C.12 No Traffic Signs (W18-1)

This section has been removed from the Manual.

5C.13 Other Warning Signs

Standard

Other warning signs used on low-volume roads that are not discussed in Part 5, but are in this Manual, shall comply with the provisions contained in other Parts of this Manual. Warning signs that are not provided in this Manual shall comply with the provisions in Sections 2C.2 and 2C.3.

5C.14 Object Markers and Barricades

Support

The purpose of object markers is to mark obstructions located within or adjacent to the roadway, such as bridge abutments, drainage structures, and other physical objects.

Guidance

The end of a low-volume road should be marked with a Type 4 object marker in compliance with Section 2C.66. A

Option

Type 3 barricade may be used where engineering studies or judgment indicates a need for a more visible end-of-roadway treatment (see Section 3F.1).

Standard

Barricades used on low-volume roads shall comply with the provisions contained in Section 2B.67.

PART 5. TRAFFIC CONTROL DEVICES FOR LOW VOLUME ROADS
Chapter 5D. Guide Signs

5D.1 Introduction

Support

The purpose of a guide sign is to inform road users regarding positions, directions, destinations, and routes.

The provisions for guide signs, in general, are contained in Chapters 2D through 2N and in other Sections of this Manual. Provisions for guide signs that are specific to low-volume roads are contained in this Chapter.

Guidance

The familiarity of the road users with the road should be considered in determining the need for guide signs on low-volume roads.

Support

Low-volume roads generally do not require guide signs to the extent that they are needed on higher classes of roads. Because guide signs are typically only beneficial as a navigational aid for road users who are unfamiliar with a low-volume road, guide signs might not be needed on low-volume roads that serve only local traffic.

Guidance

If used, destination names should be as specific and descriptive as possible. Destinations such as campgrounds, ranger stations, recreational areas, and the like should be clearly indicated so that they are not interpreted to be communities or locations with road user services.

Option

Guide signs may be used at intersections to provide information for road users returning to a higher class of roads.

PART 5. TRAFFIC CONTROL DEVICES FOR LOW VOLUME ROADS
Chapter 5E. Markings

5E.1 Introduction

Support

The purpose of markings on highways is to provide guidance and information for road users regarding roadway conditions and restrictions.

The criteria provisions for markings, and delineators, and object markers, in general, are contained in Part 3 and in other Sections of this Manual. Criteria Provisions for markings that are specific to low-volume roads are contained in this Chapter.

5E.2 Center Line Markings

Standard

Where center line markings are installed, no-passing zone markings in compliance with Section 3B.2 shall also be installed.

Guidance

Center line markings should be used on paved low-volume roads consistent with the principles of this Manual and with the policies and practices of the road agency and on the basis of either an engineering study or the application of engineering judgment.

Option

Center line markings may be placed on highways with or without edge line markings.

5E.3 Edge Line Markings

Support

The purpose of edge line markings is to delineate the left-hand or right-hand edge of the roadway.

Guidance

Edge line markings should be considered for use on paved low-volume roads based on engineering judgment or an engineering study.

Option

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

Edge line markings may be placed on paved low-volume roads for roadway features such as horizontal curves, narrow bridges, pavement width transitions, curvilinear alignment, and at other locations based on engineering judgment or an engineering study.

5E.4 Delineators

Support

The purpose of delineators is to enhance driver safety where it is desirable to call attention to a changed or changing condition such as abrupt roadway narrowing or curvature.

Option

Delineators may be used on low-volume roads based on engineering judgment, such as for curves, T-intersections, and abrupt changes in the roadway width. In addition, they may be used to mark the location of driveways or other minor roads entering the low-volume road.

5E.5 Other Markings

Standard

Other markings, such as stop lines, crosswalks, pavement legends, channelizing devices, and islands, used on low-volume roads shall comply with the provisions contained in this Manual.

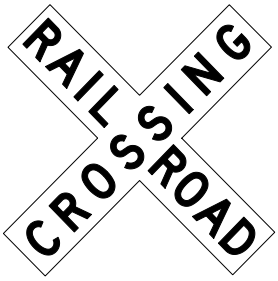
5F.1 Introduction

Support

The provisions for highway-rail grade crossing traffic control devices are contained in Part 8 and in other Sections of this Manual.

Traffic control for highway-rail grade crossings includes all signs, signals, markings, illumination, and other warning devices and their supports along roadways either approaching or at highway-rail grade crossings. The purpose of this traffic control is to promote a safer and more efficient operation of both rail and highway traffic at highway-rail grade crossings.

5F.2 Grade Crossing (Crossbuck) Sign and Number of Tracks Plaque (R15-1, R15-2P)



R15-1

R15-2P

Support

In most States, the Grade Crossing (Crossbuck) (R15-1) sign requires road users to yield the right-of-way to rail traffic at a highway-rail grade crossing.

Standard

The Crossbuck (R15-1) sign shall be used at all highwayrail grade crossings, except as otherwise provided in Section 8B.3. For all low-volume roads, Crossbucks signs shall be used on the right-hand side of each approach. If there are two or more tracks, the supplemental Number of Tracks (R15-2P) plaque shall display the number of tracks and shall be installed below the Crossbuck sign.

A strip of retroreflective white material not less than 50 mm (2 in) in width shall be used on the back of each blade of each Crossbuck sign for the length of each blade at all highway-rail grade crossings, except those where Crossbuck signs have been installed back-to-back.

A vertical strip of retroreflective white material, not less than 2 inches in width, shall be used on each support at passive highway-rail grade crossings for the full length of the front and back of the support from the Crossbuck sign or Number of Tracks plaque to within 2 feet above the ground, except on the side of those supports where a STOP (R1-1) or YIELD (R1-2) sign or flashing lights have been installed or on the back side of supports for Crossbuck signs installed on one way streets.

5F.3 Grade Crossing Advance Warning Signs (W10 Series)

W10-1

W10-2

W10-3

W10-4

Standard

Except as provided in the following Option, a Grade Crossing Advance Warning (W10-1) sign shall be used on all low-volume roads in advance of every highway-rail grade crossing.

Option

The Grade Crossing Advance Warning sign may be omitted for highway-rail grade crossings that are flagged by train crews.

The W10-2, W10-3, and W10-4 signs may be used on low-volume roads that run parallel to railroad tracks to warn road users making a turn that they will encounter a highway-rail grade crossing soon after making the turn.

5F.4 STOP and YIELD Signs (R1-1, R1-2)

R1-1

R1-2

Standard

The use and application at passive highway-rail grade crossings on low-volume roads of Crossbuck Assemblies with YIELD (R1-2) signs or STOP (R1-1) signs shall comply with the provisions of Section 8B.4.

W3-1

W3-2

Standard

At all highway-rail grade crossings where YIELD or STOP signs are installed, Yield Ahead (W3-2) or Stop Ahead (W3-1) signs shall also be installed if the criteria for their installation in Section 2C.36 is met.

5F.5 Pavement Markings

Guidance

Pavement markings at highway-rail grade crossings should be used on paved low-volume roads, particularly if they are already deployed at most other highway-rail grade crossings within the immediate vicinity, or when the roadway has center line markings.

5F.6 Other Traffic Control Devices

Standard

Other traffic control devices that are used at highway-rail grade crossings on low-volume roads, such as other signs, signals, and illumination that are not in this Chapter, shall comply with the provisions contained in Part 8 and other applicable Parts of this Manual.

PART 5. TRAFFIC CONTROL DEVICES FOR LOW VOLUME ROADS
Chapter 5G. Temporary Traffic Control Zones

5G.1 Introduction

Guidance

The safety of road users, including pedestrians and bicyclists, as well as personnel in work zones, should be an integral and high priority element of every project in the planning, design, maintenance, and construction phases.

Part 6 should be reviewed for additional criteria, specific details, and more complex temporary traffic control zone requirements.

The following principles should be applied to temporary traffic control zones:

A. Traffic movement should be disrupted as little as possible.
B. Road users should be guided in a clear and positive manner while approaching and within construction, maintenance, and utility work areas.
C. Routine inspection and maintenance of traffic control elements should be performed both day and night.
D. Both the contracting agency and the contractor should assign at least one person on each project to have day-to-day responsibility for assuring that the traffic control elements are operating effectively and that any needed operational changes are brought to the attention of their supervisors.

Traffic control in temporary traffic control zones should be designed on the assumption that road users will only reduce their speeds if they clearly perceive a need to do so, and then only in small increments of speed. Temporary traffic control zones should not present a surprise to the road user. Frequent and/or abrupt changes in geometrics and other features should be avoided. Transitions should be well delineated and long enough to accommodate driving conditions at the speeds vehicles are realistically expected to travel.

A temporary traffic control plan (see Section 6C.1) should be used for a temporary traffic control zone on a low-volume road to specify particular traffic control devices and features, or to reference typical drawings such as those contained in Part 6.

Support

Applications of speed reduction countermeasures and enforcement can be effective in reducing traffic speeds in temporary traffic control zones.

5G.2 Applications

Guidance

Planned work phasing and sequencing should be the basis for the use of traffic control devices for temporary traffic control zones. Part 6 should be consulted for specific traffic control requirements and examples where construction or maintenance work is planned.

Support

Maintenance activities might not require extensive temporary traffic control if the traffic volumes and speeds are low.

Option

The traffic applications shown in Part 6, Section 6K - Minnesota Temporary Traffic Control Field Manual, especially the Low-Volume area are among those that may be used on low-volume roads.

Support

Traffic can regulate itself when traffic volumes are low and the length of the work space is short, thus enabling drivers to readily see the roadway beyond the work space. If the drivers cannot see beyond the work space or traffic volumes do not allow passage thru the work space, then a flagger should be used.

Option

For low-volume roadways with speeds of 30 miles per hour or less, a minimum distance of 100 feet may be used for the advance placement distance and the distance between signs shown in the typical applications.

For temporary traffic control zones on low-volume roads that require flaggers, a single flagger may be adequate if the flagger is visible to approaching traffic from all appropriate directions.

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5G.3 Channelization Devices

Standard

Channelization devices for nighttime use shall have the same retroreflective requirements as specified for higher-volume roadways.

Option

To alert, guide and direct road users through temporary traffic control zones on low-volume roads, tapers may be used to move a road user out of the traffic lane and around the work space using the spacing of devices that is described in Section 6F.63.

5G.4 Markings

Guidance

Pavement markings should be considered for temporary traffic control zones on paved low-volume roads, especially roads that had existing pavement markings, or that have a surfaced detour or temporary roadway.

Option

Interim pavement markings may be omitted in a temporary traffic control zone if they are not needed based on the criteria for these markings in Section 6F.78.

5G.5 Other Traffic Control Devices

Standard

Other traffic control devices, such as other signs, signals, and illumination that are used on low volume roads in temporary traffic control zones, but are not described in Part 5, shall comply with the provisions contained in other Parts of this Manual.

Some of the signs that might be applicable in a temporary traffic control zone on a low-volume road are shown in Chapter 6F.

5H.1 Introduction

Support

The provisions for school traffic control devices are contained in Part 7 of this Manual.

Standard

The sizes of school signs and plaques on low-volume roads shall be in accordance with Section 7B.1 and Table 7B-1.

The safety of road users, including pedestrians and bicyclists, as well as personnel in work zones, should be an integral and high priority element of every project in the planning, design, maintenance, and construction phases.

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