

Massachusetts Highway Department, Ten Park Plaza, Boston, MA 02116-3973



Guide Sign Policy for Secondary State Highways

2005 Edition

Revised September 2005

1. PURPOSE

The Massachusetts Highway Department (MassHighway) has standardized a guide sign system for use on all secondary state highways, and other roads and streets (except for expressways and freeways) within Massachusetts. The purpose of this Policy is to outline the current standards and guidelines for the design and application of these guide signs (designated D6-, D8-, and G- series).

MassHighway adheres to the principles and standards established in the Federal Manual on Uniform Traffic Control Devices (MUTCD – 2003 Edition). The design and application of D6, D8, and G- series signs are based on these principles and standards.

2. APPLICATION

Guide signs are essential to direct vehicle operators along secondary state highways and other roads and streets to inform them of intersecting routes, to direct them to cities, towns, villages, or other important destinations, and generally to give such information as will help them along their way in the most simple and direct manner possible.

MassHighway standard guide signs are normally to be used as follows:

- D6 - Major movement at intersection
- D8 - Minor movement at intersection
- G - For advance and entry to Interstate and other controlled-access highways•

- *Note: “G” signs are designated “GF” on those metric projects presently under design or construction. However, all new design and construction should use the “G” designation.*

D6, D8, and G series guide signs are intended to be used in place of certain route assemblies and destination signs described in Chapter 2D, Sections 2D.29, 2D.30, 2D.33, and 2D.34; and Chapter 2E, Section 2E.49; of the 2003 MUTCD. The purpose of D6, D8, and G signs is to display the cardinal direction (i.e. NORTH), route sign, destinations, and ‘action’ messages (or directional arrow) all on a single panel, similar to the guide signs used on the mainline roadways of expressways and freeways. *

** Note that the development and application of D6, D8, and G guide signs does not explicitly prohibit the use of MUTCD standard route assemblies and destination signs within Massachusetts. MassHighway recognizes that these MUTCD standard signs may be an useful alternative to D6, D8, or G signs, particularly within urban and residential areas where spacing, sight distance, width, or right of way restrictions exist. However, as providing D6, D8 and G signs is MassHighway’s standard practice for secondary guide signing, designers should make every reasonable attempt to incorporate these treatments before considering other options, regardless if other options are permitted by the MUTCD.*

D6 and D8 guide signs should be used at intersections between non limited-access numbered routes, and at the ends of exit ramps from limited-access highways where a single ramp intersects with both directions of the secondary route, road, or street.

G guide signs should be used at, and in advance of, entrance ramps to Interstate and other controlled-access highways. However, if G signs cannot be used at such locations due to spacing, sight distance, width, or right of way restrictions, the use of D6 and D8 signs is an acceptable alternative.

Where the aforementioned spacing, width, or right-of way restrictions exist, a ‘point of turn’ D6 sign top-mounted on a single post may have legend on both sides (“printed both sides”, or PBS) as an alternative to providing multiple signs. However, designers should attempt to incorporate standard D6 and D8 placements before reverting to use of PBS panels.

D8 signs ‘top-mounted’ on 4 inch (100mm) tubular posts may be PBS where appropriate. However, no other D8 signs (regardless of mounting), no D6 signs mounted on twin P5 square tube posts, nor any G signs, shall be PBS panels.

3. MATERIALS/RETROREFLECTIVITY

D6 and D8 panels shall be fabricated from Type 'A' (flat) aluminum, 0.25 inch (6.35mm) thickness for “top-mounted” signs and 0.080 inch (2.03mm) thickness (where possible) for D6 and D8 signs mounted on twin P5 square tube posts.

G panels shall be fabricated from Type 'B' (extruded) aluminum.

Sign legends, symbols and route shields, arrows and borders shall be fabricated from either High Intensity (Type III or IV) or Super High Intensity (Type VII, VIII, IX, or X) retroreflective sheeting. The color of legends, arrows, and borders shall be ‘silver white’. The colors of symbols and route shields shall conform to applicable MassHighway and/or MUTCD standards.

Sign backgrounds shall be fabricated from either High Intensity (Type III or IV) or Super High Intensity (Type VII, VIII, IX, or X) retroreflective sheeting. Normally, the color of sign backgrounds shall be green. However, a blue background may be used if the sign contains ‘services’ information (i.e. ‘State Police’, ‘Gas-Food’), or a brown background may be used if the sign contains ‘recreational’ information (i.e. ‘XX State Forest’).

All panel and sheeting materials used shall be in conformance with Section 828 of the MassHighway *Standard Specifications for Highways and Bridges* and any applicable *Supplemental Specifications* and/or any project *Special Provisions*.

4. SIGN DIMENSIONS

“Top-mounted” D6 and D8 series signs are designed to fit a standard post and bracket combination. Because of this, panel sizes are intentionally limited to a choice of pre-set dimensions. With rare exceptions, D6 and D8 signs should be fabricated to one of these standard panel sizes.

Like other extruded aluminum guide signs, G series signs are sized to accommodate the specific legend on the panel. To optimize fabrication of the extruded aluminum blanks, the width and height of G signs should be sized to the nearest 6 inch (152.4mm) increment.

Typical panel dimensions (English units):

<u>Sign</u>	<u>Standard (inches)</u>	<u>Other (inches)</u>
D6	60 x 60	60 x 66 • or 60 x 48
D8	48 x 42	48 x 36, 48 x 30, 60 x 36, 60 x 24
G	varies (in 6 inch increments)	varies (in 6 inch increments)

• 66 inch dimension can be either panel height or width, depending on legend

Typical panel dimensions (metric units):

<u>Sign</u>	<u>Standard (mm)</u>	<u>Other (mm)</u>
D6	1500 x 1500	1500 x 1650 • or 1500 x 1200
D8	1200 x 1050	1200 x 900, 1200 x 750, 1500 x 900, 1500 x 600
G/GF	varies (in 152.4 mm increments)	varies (in 152.4 mm increments)

• 1650mm dimension can be either panel height or width, depending on legend

For top-mounted D6 signs, a minimum clearance of 6 inches (150mm) shall be provided from the bottom of the sign panel to the lowest legend or symbol. This is necessary to accommodate the mounting bracket without obscuring the sign message.

The border on D6 and D8 signs shall be 0.75 inch (19mm) wide, with a 3 inch (75mm) radius.

The border on G signs shall be 1.75 inches (45mm) wide, with a 9 inch (225mm) radius.

Borders on D6, D8, or G signs **shall not** be inset from the panel edge.

Typical D6, D8, and G sign panel layouts are provided in the back of this Policy.

5. LETTER HEIGHTS & SYMBOL, ROUTE SIGN, AND ARROW SIZES

Standard letter, numeral, and symbol sizes (English units):

<u>Sign</u>	<u>Legend (inch)</u>	<u>Numeral (inch)</u>	<u>Arrow (inch)</u>	<u>Route Signs (Interstate, U.S., State) (inch)</u>
D6	6 C**	9D	8	18 x 18 for 2 digits 24 x 18 for 3 digits
D8	6 C**	9D	8	18 x 18 for 2 digits 24 x 18 for 3 digits
G	13.33/10 Em	18D	Type A	36 x 36 for 2 digits 45 x 36 for 3 digits

*** For destinations over 10 characters on D6 and D8 signs, use either 5 inch Series 'C' (preferred method) or 6 inch Series 'B' instead of 6 inch Series 'C'.*

Standard letter, numeral, and symbol sizes (metric units):

<u>Sign</u>	<u>Legend (mm)</u>	<u>Numeral (mm)</u>	<u>Arrow (mm)</u>	<u>Route Signs (Interstate, U.S., State) (mm)</u>
D6	150 C**	225D	200	450 x 450 for 2 digits 600 x 450 for 3 digits
D8	150 C**	225D	200	450 x 450 for 2 digits 600 x 450 for 3 digits
G/GF	330/250 Em	450D	Type A	900 x 900 for 2 digits 1125 x 900 for 3 digits

*** For destinations over 10 characters on D6 and D8 signs, use either 125mm Series 'C' (preferred method) or 150mm Series 'B' instead of 150mm Series 'C'.*

The first letter of a cardinal direction word (i.e. NORTH) shall be 7 inches (175 mm) for a 6 inch (150 mm) letter height (D6 and D8 signs) and 15 inches (375 mm) for a 12 inch (300 mm) letter height (G signs).

For D6 and D8 signs, all destination names, cardinal directions, and ‘action’ legends for shall be in uppercase letters.

For G series signs, destination names should be in uppercase and lowercase letters, however, all cardinal direction and ‘action’ legends shall be in uppercase letters. All letter styles and spacings shall conform to the Federal Highway Administration’s current *Standard Alphabets for Highway Signs and Pavement Markings*.

6. DIRECTIONAL ARROWS

Horizontal arrows shall be placed beneath all destination legends.

Vertical arrows shall be placed on the side of the sign closest to the flow of traffic (i.e. display the arrow on the left if traffic passes to the left of the sign).

Slanted arrows for left turns shall be placed to the left of the destination legends. Slanted arrows for right turns shall be placed to the right of the destination legends.

Neither vertical nor slanted arrows shall be placed beneath the destination legends.

7. DESTINATION LEGENDS

On D6 and G signs, a maximum of three lines of ‘principal legend’ (route numbers or route signs, street names, and destinations) are permitted. On D8 signs, a maximum of two lines of ‘principal legend’ are permitted. @

@ For design purposes, any cardinal direction/route shield combinations are considered to be a single line of ‘principal legend’, regardless of the number of route signs on the sign or the orientation of the cardinal direction legend to the route sign. Note that ‘trailblazer’ legends for non-intersecting numbered routes are considered to be route information, not destinations.

When a sign has two destination legends, the closer destination shall be displayed above the further destination.

Destinations on signs at entrances to Interstate routes shall conform to MUTCD ‘control city’ requirements. On sign panels with two destinations, only one ‘control city’ is

required, but if only one is used, it shall be the further destination on the sign. In cases where two or more numbered routes overlap on the same road, except as noted below, signs should normally display all route signs, and one destination for each numbered route where possible. #

On signs for the entrance ramps along the Route I-95/S.R. 128 overlap between Canton and Peabody, only the I-95 route sign and destinations shall be displayed.

Route signs shall be used for all intersecting numbered routes on signs, and should be used for “trailblazer” information as well. However, on D6 and D8 signs, text (i.e. ‘To Route 202’) may be used for ‘trailblazer’ information to conserve space where necessary.

Advance guide signs and the guide signs at the intersection or entrance ramp shall display the same destinations. However, for D6 and D8 signs at the end of ramps from controlled-access highway exits, an additional destination, matching a destination provided on a supplemental guide sign on the limited-access highway, may be used on the signs.

Where applicable, at least one destination displayed on an approach to an intersection or entrance ramp shall be identical to at least one destination displayed on the opposite approach.

8. DISTANCES & ‘ACTION’ LEGENDS

Distances to destinations **shall not be displayed** on any D6, D8, or G sign panels.

The use of distances to indicate the next intersection (i.e. EXIT ½ MILE, EXIT 1 MILE, 600 FEET, etc.) is not expressly prohibited, but should be avoided if possible. Examples of acceptable alternative legends for advance signing are KEEP RIGHT, 2ND RIGHT, NEXT LEFT, or the use of a vertical arrow to indicate ‘ahead’.

Where used, distances in ‘action’ legends shall be stated in English units (feet or miles). **Metric distances shall not be used for “action legends” on any signs.**

9. LOCATION OF SIGNS

Advance D6 and D8 guide signs should be placed a minimum distance of 400 feet (120 meters) from the intersection. Advance G guide signs should be placed a minimum distance of 600 feet (150 meters) from the entrance ramp. However, the actual placement of signs will depend on field conditions, particularly in urban and residential areas.

Where applicable, a junction assembly should be placed a minimum of 100 feet (30 meters), but normally not more than 150 feet (45 meters), before the advance D6, D8, or G sign assembly.

In most cases, point-of-turn D6 signs should be placed as close to the near right-hand corner of the intersection as possible. If this is not practical, then D6 signs can be placed on the far right-hand corner, or on the opposite side of a “T” intersection. Point of turn G signs can be placed either on the right side of the roadway immediately prior to the entrance ramp, or within the entrance ramp gore if sufficient width exists.

D6 or G signs should not be placed on either the left-hand corner of the intersection or within raised medians or channelizing islands unless absolutely necessary. As always, engineering judgment should be used to determine the best possible locations for signs.

10. VERTICAL & LATERAL CLEARANCE

Vertical and lateral clearances for signs shall conform to the requirements of Chapter 2A, Sections 2A.16, 2A.18, and 2A.19 of the 2003 MUTCD, and the *MassHighway Standard Drawings for Signs and Supports* (for English projects) or *Construction and Traffic Standard Details* (for metric projects).

11. INSTALLATION

All supports shall be of the breakaway type. Breakaway supports and related hardware shall conform to the requirements of NCHRP 350. When updating existing signs, any concrete or other non-breakaway supports must be replaced with new breakaway supports.

For a D6/D8 sign assembly, a 5 inch (125mm) tubular round steel post shall be used.

For G guide signs, twin steel ‘W -beam’ posts, designed to accommodate a 90 mph (145km/h) design wind speed, shall be used. No G signs, regardless of size, shall be mounted on P5 posts (either telescopic or “U-channel” type)

Stand-alone D6 or D8 panels that are 20 square feet (1.8 square meters) or under in area may be mounted on two 2.25 inch x 2.25 inch (57mm X 57mm) telescopic square tube P-5 supports. Stand-alone D8 panels may also be ‘top-mounted’ on a 4 inch (100mm) tubular round steel post. In no case shall any stand-alone D8 or D8 panels, regardless of size, be mounted on “U-channel” type P5 posts.

Support installations shall conform to the *MassHighway Standard Drawings for Signs and Supports* (for English projects) or *Construction and Traffic Standard Details* (for metric projects) and applicable AASHTO standards.

12. QUESTIONS/CONCERNS/COMMENTS

MassHighway welcomes constructive feedback and suggestions, especially from designers, sign fabricators, and contractors, regarding this Policy. Specific questions, comments, or suggestions should be directed to:

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