

**Chapter Eighteen**  
**HIGHWAY SIGNING**

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## Chapter Eighteen

# HIGHWAY SIGNING

The majority of the information required for the selection, design and placement of highway signs on Montana highways is presented in the FHWA Manual on Uniform Traffic Control Devices (MUTCD), the MDT Detailed Drawings and the MDT Signs and Signing Materials Catalog. The intent of this chapter is not to reiterate the information presented in these sources but, rather, to supplement these references and, where necessary, to provide the user with additional guidance.

### 18.1 GENERAL

Signs should only be used where they are warranted by the MUTCD, the Department's criteria, crash history or field studies. Signs should provide information for special regulations, for hazards that are not self-evident and for highway routes, directions, destinations and points-of-interest. In general, all highway signing should:

1. be capable of fulfilling an important need,
2. command attention,
3. convey a clear and simple meaning,
4. command the respect of road users,
5. be located to give adequate time for response, and
6. be sanctioned by law if they control or regulate traffic.

#### 18.1.1 MUTCD Context

Throughout the MUTCD, the words "shall," "should," "may," "standard," "guidance," "option" and "support" are used to indicate the appropriate application of traffic control devices. Section 2.3 defines these qualifying words.

#### 18.1.2 Adherence to Design Criteria

Chapter Eighteen presents the design criteria for the application of highway signing on individual projects. In general, the designer is responsible for making every reasonable effort to meet these criteria. However, recognizing that this will not always be practical, the following sections discuss the Department's procedures for identifying, justifying and processing exceptions to the governing highway signing design criteria.

### 18.1.2.1 Design Exceptions

The designer must seek an internal MDT design exception when the proposed highway signing design criteria does not meet the following:

1. standard conditions in the MUTCD;
2. guidance conditions in the MUTCD;
3. MDT Detailed Drawings; and
4. MDT Policies from the Division Administrator or Director, including:
  - a. Sign Reflectorization,
  - b. Campground Signing,
  - c. Signing for Units of Higher Education,
  - d. Hospital Signing,
  - e. Museum Signing,
  - f. Signing for Parking Restrictions,
  - g. Ski Area Signing,
  - h. Hot Springs Signing,
  - i. General Service Signing,
  - j. Visitor Information Signing,
  - k. Signing for Limited Access Highways,
  - l. Recreation and Scenic Signing,
  - m. Signing for Historical Sites and Historical Monuments, and
  - n. Signing for US Forest Service.

### 18.1.2.2 Documentation

The type and detail of documentation needed to justify a design exception will vary on a case-by-case basis. The following is a list of potential items which may need to be documented for a specific design exception:

1. crash data;
2. environmental impacts;
3. right-of-way impacts;
4. construction costs; and
5. serviceability impacts (e.g., traffic level-of-service).

### 18.1.2.3 Procedure

The following procedure will be used to process an identified design exception:

1. Project Engineer. The Project Engineer will assemble the package for the design exception request. This package will be submitted to the Traffic Engineer.
2. Traffic Engineer. The Traffic Engineer will review the design exception package and, if in agreement, will sign the request. In rare cases where the Traffic Engineer believes necessary, the design exception request may be submitted to the Traffic and Safety Bureau Chief.

### **18.1.3 Sign Review Committee**

The Department, through the Districts and the Central Office, receives numerous requests from individuals, private groups, civic groups and various governmental bodies, including the Department itself, for highway signing not specifically covered in the Manual on Uniform Traffic Control Devices. The Sign Review Committee was formed to address these signing requests and to function as a centralized review group. The Sign Review Committee is responsible for reviewing and approving all special informational signing requests that are not covered by established Department Policy.

The Sign Review Committee generally meets once a month. Additional meetings or meeting cancellations are at the discretion of the Chairperson. Members of the Sign Review Committee include:

1. Preconstruction Engineer, Engineering Division - Chairperson;
2. Traffic Engineer - Secretary;
3. Highway Engineer;
4. Maintenance Administrator, or designee;
5. Director's Office designee; and
6. Right-of-Way designee for outdoor advertising.

### **18.1.4 References**

The following is a list of recommended publications for the selection, design, construction and installation of highway signs in Montana:

1. Manual on Uniform Traffic Control Devices, FHWA;
2. Standard Highway Signs, FHWA;
3. Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, AASHTO;
4. Standard Specifications for Road and Bridge Construction, MDT;

5. Detailed Drawings, MDT;
6. MDT Sign Catalog, MDT;
7. Traffic Engineering Handbook, Institute of Transportation Engineers;
8. Chapter Six "Roadside Safety", MDT Traffic Engineering Manual, MDT;
9. Chapter Fourteen "Roadside Safety," MDT Road Design Manual, MDT;
10. Manual of Steel Construction, American Institute of Steel Construction;
11. Updated Minimum Retroreflectivity Levels for Traffic Signs, Report No. FHWA-RD-03-081, FHWA; and
12. Highway Design Handbook for Older Drivers and Pedestrians, Report No. FHWA-RD-01-103, FHWA.

### **18.1.5 Sign Legends**

#### **18.1.5.1 Sign Legends**

This Manual has been prepared in dual units of measurements (i.e., US Customary and metric). However, sign legends should be presented in US Customary units only. As a guide, Figure 18.1A illustrates the relationship between the US Customary and the metric speed limits.

#### **18.1.5.2 Symbology**

Where the MUTCD allows the sign legend to be presented as either words or symbols, the Department's practice is to use the symbol legend. Symbol designs should be uniform to facilitate immediate recognition. The designer is referred to the FHWA publication Standard Highway Signs, the MDT Detailed Drawings and the MDT Sign Catalog for the type and application of standard symbol legends.

#### **18.1.5.3 Word Legends**

Word legends should be as brief as practical and abbreviations should be kept to a minimum. Guide signs should be restricted to three destinations and three lines of directional copy. Do not show phone numbers greater than 4 characters or Internet addresses on any sign, supplemental plaque, sign panel (including logo panels on



US CUSTOMARY (mph)	METRIC (km/h)	
	Direct Mathematical Conversion	Adopted Metric Speed Limit
20	32	30
25	40	40
30	48	50
35	56	60
40	64	70
45	72	70
50	80	80
55	89	90
60	97	100
65	105	110
70	113	110

### RELATIONSHIP BETWEEN US CUSTOMARY AND METRIC SPEED LIMITS

Figure 18.1A

specific service signs) or changeable message signs, unless the sign is expressly for pedestrians, bicycles and drivers of motor vehicles in a stopped condition. See the MUTCD for additional information. Word and letter spacing for highway signing is specified in the FHWA publication Standard Highway Signs.

#### 18.1.5.4 Lettering

Normally, sign lettering should be applied as rounded, capital letters. Capital and lower case letters are typically used for destinations on guide signs where the letter size is 10 in (250 mm) or larger. The “E” modified series lettering as presented in the FHWA Standard Highway Signs is typically used for word and letter spacing.

Use of the Series B alphabet is restricted to street name signs, parking signs and other similar signs where limited breadth and stroke widths are required for design purposes.

The cardinal direction marker carrying the legend EAST, WEST, NORTH and SOUTH is intended to be mounted directly above a route marker to indicate the general direction

of the entire route. To improve the readability, the height of the first letter of the cardinal direction words shall be 10 percent larger, rounded up to the next 1 in (25 mm) increment in accordance with the FHWA publications Standard Highway Signs and the MUTCD.

### **18.1.6 Applications**

In general, the application and placement of highway signs should follow the criteria presented in this Chapter, the MDT Detailed Drawings and the MUTCD. The use of experimental signing is acceptable, provided its approval is in accordance with Federal and State criteria. Figure 18.1B provides general guidance for the application of various sign types. Sections 18.2, 18.3, 18.4, 18.5 and 18.6 and the reference list in Section 18.1.4 provide the designer with additional guidance and supplementary information for the application of highway signing in Montana. Changeable and variable message signing may be considered on a case-by-case basis for applications such as safety-related messages, incident management and regulatory messages.

### **18.1.7 Sign Priority**

Highway signs should be erected only where they are warranted. Overloading motorists with too much information may hinder a driver's response time and impair safety. Therefore, low-priority, non-essential signs may need to be removed, replaced or relocated where sign overloading is a problem. The following presents a list of the recommended priority for highway signs:

1. regulatory signs (e.g., speed limit, stop signs, turn prohibitions);
2. warning signs (e.g., curve sign, cross road sign, narrow bridge sign);
3. guide signs (e.g., destination signs);
4. emergency service signs (e.g., hospital, telephone);
5. motorist service signs (e.g., fuel, food, camping);
6. public transportation signs (e.g., park and ride, bus stops);
7. traffic generator signs (e.g., museums, ball parks, historic buildings); and
8. general information signs (e.g., county lines, city limits).

Within this priority list, the sign bearing the most important message should be retained at the expense of removing lower priority signs.

Sign Type	Intended Use	Typical Uses
Regulatory	To inform users of traffic laws and regulations which apply at definite locations and at specific times.	<ul style="list-style-type: none"> <li>• Intersection control</li> <li>• Designating legal right-of-way</li> <li>• Speed limits</li> <li>• Turning movement control</li> <li>• Pedestrian control</li> <li>• Exclusions and prohibitions</li> <li>• Parking control and limits</li> <li>• Regulations for maintenance and construction areas</li> </ul>
Warning	To warn traffic of unusual or potentially hazardous condition(s) on or adjacent to a street or highway.	<ul style="list-style-type: none"> <li>• Horizontal alignment</li> <li>• School areas</li> <li>• Crossings and entrances to streets, highways and Interstates</li> <li>• Intersections</li> <li>• Road construction and maintenance</li> </ul>
Guide	To provide simple and specific information to aid motorists in reaching their destination.	<ul style="list-style-type: none"> <li>• Route markings</li> <li>• Destination</li> <li>• Information</li> <li>• General services</li> <li>• Park and recreational signing</li> </ul>

## GENERAL GUIDELINES FOR THE APPLICATION OF HIGHWAY SIGNS

**Figure 18.1B**

### 18.1.8 Sign Size

The various sign sizes available to the designer are prescribed in the MUTCD, the MDT Sign Catalog and the FHWA Standard Highway Signs. The use of the smaller sign sizes will depend on the particular application. The larger sign sizes are required on Interstates and 4-lane facilities.

### **18.1.9 Reflectorization**

For the purpose of this section, the term “night visibility” is defined as providing the driver with a sign that is the same shape, color and message at night as would exist during the daylight hours. The following sections discuss the Department policy for reflectorization.

#### **18.1.9.1 General**

To meet the MUTCD night visibility requirements, the Department uses reflectorized sign sheeting material that has a smooth, sealed outer surface. Illumination should only be considered as an option when the results of an engineering investigation concludes that reflectorization alone will not meet the MUTCD night visibility requirements. For additional information, see the MUTCD and the FHWA Report No. FHWA-RD-03-081, Updated Retroreflectivity Levels for Traffic Signs.

#### **18.1.9.2 Sheeting Materials — General Traffic Control Devices**

For general traffic control devices, the designer should provide the following sheeting materials:

1. Regulatory/Warning Signs. For the portion of a regulatory or warning sign requiring reflective materials, use high-intensity sheeting (AASHTO Type III).
2. Guide Signs. The reflective material for night visibility of guide signs should meet the following.
  - a. Legends and Borders. For guide sign legends and borders, use high-intensity sheeting (AASHTO Type III).
  - b. Non-Green Backgrounds. For all background colors, except green, use high-intensity sheeting (AASHTO Type III).
  - c. Green Backgrounds. For green background signs, use engineering grade sheeting (AASHTO Type I) over the background.
3. Overhead Signs. All signs mounted overhead will require high-intensity sheeting for those portions requiring reflective material for night visibility.
4. Environmental Considerations. If, as the result of an engineering investigation, environmental conditions are such that the standard reflective sheeting normally required is considered ineffective, a sheeting of higher retroreflectivity or

illumination may be used. A primary example of this type interference would be excessive background lighting or excess competition with adjacent commercial signs.

### **18.1.9.3 Sheeting Materials — Construction and Maintenance Zone Traffic Control Devices**

The following addresses those traffic control devices requiring night visibility through construction and maintenance zones:

1. Signs. Construction and maintenance zone signs requiring reflectorization should use engineering grade sheeting (AASHTO Type III). Life expectancy of these signs is typically less than that for general traffic control devices and, therefore, lower grade sheeting is considered to be acceptable. However, if as the result of an engineering investigation, environmental conditions are such that the standard reflective sheeting normally required is considered ineffective, a sheeting of higher retroreflectivity or illumination may be used. These conditions may include signs placed overhead, placed laterally a significant distance from the edge of the traveled way and where there is substantial competition with background lighting and/or commercial signs.
2. Other Devices. Reflective sheeting placed on object markers, barricades, drums, cones, flexible guide posts, etc., will require high-intensity sheeting (AASHTO Type III).

### **18.1.9.4 Minimum Retroreflectivity**

The minimum retroreflectivity tolerance values for a sign should meet the criteria presented in the MUTCD. The criteria presented in the FHWA-RD-03-081 publication will be used in the interim. When the functional life of the sign sheeting material (legend or background) reaches a point to where the level of retroreflectivity is below this criteria, the sign should be replaced.

### **18.1.10 Illumination**

Generally, new internal or external direct light sources should not be installed for the purpose of highway sign illumination. Illumination should only be considered after a lighting study indicates a need. Through recurring maintenance activities and highway construction projects, existing highway sign illumination should be replaced with signs having the appropriate reflectorized sheeting.

### 18.1.11 Sign Placement

The MUTCD and the MDT Detailed Drawings provide the Department's criteria for the placement of highway signs next to and/or over the roadway. These sources also provide criteria for the minimum allowable sign mounting heights.

Warning signs are normally placed in advance of the condition to which they call attention. Regulatory signs are placed where their mandate or prohibition applies or begins. Guide signs are placed at varying locations to inform drivers of their route of travel, destination and points-of-interest.

The uniform position of highway signing, although desirable, is not always practical to achieve because the highway alignment often dictates the most advantageous position for the sign. When determining sign locations, the designer should review the following guidelines:

1. Special Locations. Normally, signs should be placed on the right side of the roadway. Under certain circumstances, however, signs may be placed on channelizing islands, overhead structures or on the left side of the roadway along sharp, right-hand curves.
2. Double-Indicated Signs. Double-indicated signs (i.e., on both sides of the traveled way) may be considered for additional emphasis where it is anticipated that a single sign may not provide adequate warning and where roadway geometry (e.g., multiple lanes, parked vehicles) may obscure the sign's visibility.
3. Geometric Design. Sign placement and roadway geometric design should be coordinated as early as practical during the project planning and design stages. If a roadway design does not permit adequate sign placement, the geometric design may need to be revised accordingly.
4. Overhead Lane Control. Where lane control is desired, place signs directly over the affected lane. For additional information, see Section 18.1.13.
5. Nighttime Visibility. Locate signs to optimize their nighttime visibility; however, they should be reflectorized to show the same shape and color both day and night.
6. Field Conditions. Adherence to the criteria presented in the MUTCD and the MDT Detailed Drawings is not always practical; sign placement may need to be adjusted to meet actual field conditions. The following presents a list of several placement problem areas that should be avoided:

- a. at short sags in the roadway,
  - b. beyond the crest of a vertical curve,
  - c. where a sign would be obscured by parked cars,
  - d. where a sign would create an obstruction for pedestrians or bicyclists,
  - e. where a sign would interfere with the driver's visibility to hazardous locations or objects,
  - f. where the sign's visibility would be impaired due to existing overhead illumination,
  - g. where a sign is vulnerable to being covered by roadside splatter or snow from plowing operations, and/or
  - h. areas too close to trees or where there is other foliage that could cover the sign face.
7. Longitudinal Placement. In some cases, signs can be shifted longitudinally without compromising their intended purpose. This may improve their visibility, avoid blocking other signs, enhance safety or enhance traffic operations (e.g., by providing more distance between signs in a series).
  8. Sign Groups. Signs should generally be erected individually on separate posts or mountings. However, it may be appropriate to group the signs (e.g., route markings) with consideration for wind loading and breakaway criteria.
  9. Lateral Clearance. The MDT Detailed Drawings provide criteria for the lateral clearance of roadway signing. In addition, the designer should review Section 18.1.12.

#### **18.1.12 Roadside Safety**

Chapter Fourteen of the MDT Road Design Manual presents the Department's criteria for clear zones, roadside barriers, impact attenuators and other roadside safety criteria. Chapter Six in the MDT Traffic Engineering Manual presents break-away and/or yield design criteria. These criteria are also applicable to roadside signs. In addition, the designer should consider the following guidelines:

1. Ground-Mounted Sign Supports. In general, make all supports for ground-mounted signs breakaway or yielding (e.g., slipbase), except those behind

protective barriers. However, breakaway devices will be required behind all cable rail systems. New sign supports placed behind protective barriers should have adequate lateral clearance to provide for the dynamic deflection of the barrier and should be located beyond the barrier's length-of-need; see Chapter Fourteen of the MDT Road Design Manual.

2. Overhead Sign Supports. All overhead signs will use non-breakaway supports. Within the clear zone, these structures must be protected with roadside barrier or, where applicable, with an impact attenuator. See Chapter Fourteen of the MDT Road Design Manual for additional information on the design and layout of impact attenuators.
3. Ground-Mounted Panel Signs. Large signs (i.e., those over 50 ft<sup>2</sup> (5.0 m<sup>2</sup>) that are on slipbase breakaway supports should not be placed in areas where the opportunity exists for them to be struck above the normal point of vehicular bumper impact. Normal bumper height is 20 in (500 mm).
4. Roadside Appurtenances. Do not locate large breakaway sign supports in or near the flow line of ditches. If these supports are placed on a backslope, offset them at least 3 ft (1.0 m) from the toe of the backslope.

### 18.1.13 Overhead Signs

The following provides the designer with several guidelines for the application of overhead signing:

1. Lane Control. Consider using overhead signs where the message is applicable to a specific lane. If the sign is placed over the lane, lane use can be made significantly more effective, especially in areas where channelization does not meet the driver's expectations and where additional guidance is required for unfamiliar drivers. If overhead signing is required, the Department's preferred practice is to locate overhead signing in advance of the intersection. Lane control signing may be located on the signal mast arm where warranted by sight conditions.
2. Driver Unfamiliarity. Overhead sign panels may be considered in areas where there is a high volume of tourist traffic.
3. Visibility. Use overhead signs where traffic or roadway conditions are such that an overhead mounting is necessary for adequate visibility (e.g., vertical or horizontal curves, closely spaced interchanges, two or more through lanes in one direction). In addition, consider the visual acuity of elderly drivers.



4. Divergent Roadways. Place overhead signs in advance of and/or at, a divergence from a heavily traveled roadway (e.g., at a ramp exit where the roadway becomes wider).
5. Exits. The application of overhead sign panels should be considered where non-uniform exit maneuvers exists (e.g., left-hand or multi-lane exit ramps).
6. Interchanges/Intersections. Use overhead signs at complex interchanges where driver confusion is exhibited, where interchanges are closely spaced, at Interstate-to-Interstate interchanges and/or where there are lane drops on the exit ramp or mainline within the interchange. Overhead signs also should be considered on the approach to intersections of two major arterial streets.
7. Trucks. Signs may be mounted overhead where there is a significant number of large trucks.
8. Limited R/W. Use overhead signs where there is limited space for signs on the roadside (e.g., where right-of-way is narrow).
9. Roadside Development. Erect overhead signs at locations where roadside development seriously detracts from the effectiveness of roadside signs (e.g., brightly lighted areas).
10. Uniformity. Signs should be mounted overhead for consistency with other signs on a given section of highway.

#### **18.1.14 Vertical Clearance**

New installations of overhead signs will require a minimum vertical clearance of 17 ft – 6 in (5.35 m) above the roadway and shoulders. This includes an additional 6 in (150 mm) clearance for a future pavement surface overlay. The vertical clearance for new installations should not exceed 18 ft (5.50 m). Existing overhead signs may have a vertical clearance of 17 ft (5.20 m).

Signs may be placed on overhead bridge structures provided that the vertical clearance of the sign exceeds that of the overhead structure by at least 6 in (150 mm).

On the approach to bridges or other structures that have a vertical clearance not meeting the criteria in Chapter Twenty-Six, the use of low-clearance warning signs should be considered. Section 18.3.4 discusses the application of low-clearance warning signs.

**18.1.15 Work Zone Signing**

The design and application of work zone signing is the responsibility of the MDT Construction Engineering Services Bureau.

**18.1.16 Variable Message Signing**

The designer should consider using variable message signing at the following locations:

1. School Zones. School zones may use a variable speed limit sign to indicate changes in the posted speed limit for particular times-of-day and days-of-week when school is in session.
2. Weigh Stations. A weigh station may use variable message signing to indicate whether or not the facility is open or closed.
3. Other Locations. The need for variable message signing will be determined on a case-by-case basis.

**18.1.17 Sign Inventory**

The Department has established a computerized sign inventory database system that is used to:

1. aid in design work,
2. verify sign locations,
3. aid in analyzing high-crash locations,
4. facilitate the scheduling of maintenance activities, and
5. generate cost estimates for sign replacement.

To serve these needs, the database will be continuously updated. A sign inventory/update form SMS will be used to scan the information into the database system. The information gathered will be from the result of routine maintenance activities and construction projects. The Department has established the following set of procedures for the purpose of updating the sign inventory system:

1. When a sign is installed or replaced through routine maintenance, the Maintenance individual performing the activity will complete the SMS Form. This Form will contain the following information:
  - a. route number;
  - b. section;

- c. reference post;
- d. division (area);
- e. route type;
- f. direction;
- g. lanes;
- h. background color;
- i. legend color;
- j. sign size;
- k. mounting height;
- l. installation date;
- m. position;
- n. orientation;
- o. shape;
- p. condition;
- q. reflectivity;
- r. lateral offset;
- s. post type;
- t. symbol;
- u. post quantity;
- v. substrate material;
- w. inspection date; and
- x. comments (MUTCD number, legend).

Send these updated forms to the Maintenance Division Support Services Section as the signs are installed.

2. When signs are installed or replaced through construction projects, the Traffic Engineering Section will complete the SMS Form.
3. All compiled information will be in the database with view access through PCs.
4. Maintenance Division Support Services Section and Traffic Engineering Section have the capability of modifying the information in the sign inventory database.

#### **18.1.18 Statewide Sign Changes**

Where a group or individual is proposing a statewide sign (e.g., Adopt-a-Highway, Welcome to Montana, Buckle-Up), they are required to justify the request in writing. The proposed sign request will be forwarded to the Sign Review Committee for approval. If approved by the Sign Review Committee, the Department will implement the change in accordance with its policies and procedures. The proposed statewide sign should meet the following basic requirements:

1. the sign should be in conformance with Montana statutes,
2. the sign should meet the criteria and objectives set forth in the MUTCD,
3. the sign should fulfill a need,
4. command attention,
5. convey a clear and simple meaning,
6. command the respect of road users, and
7. give adequate time for proper response.

#### **18.1.19 State Line Sign Sequence**

The standard sequence of signs upon entering the State is as follows:

1. WELCOME TO MONTANA,
2. BUCKLE UP — IT'S THE LAW (*symbol*),
3. SPEED LIMIT,
4. ROUTE MARKER ASSEMBLY
5. MILEAGE GUIDE, and
6. ROAD INFORMATION.

#### **18.1.20 Computer Software**

There are many computer software programs available to the designer that may be used in the design of highway signing including sign layouts, legends, quantities, etc. The designer should be aware that not all software packages are applicable to Montana. Therefore, the user should first contact the Signing Unit of the Traffic Engineering Section to determine which programs and versions are acceptable for use on MDT projects.

#### **18.1.21 Roundabouts**

Experience has shown that roundabouts require special attention with respect to signing. Motorists unfamiliar with the roundabout will require considerable more navigational information than with typical intersections. Proper signing will improve driver confidence and performance in navigating through the roundabout. For guidance on providing signing in at roundabouts, see the MUTCD.

## 18.2 REGULATORY SIGNS

### 18.2.1 Stop/Yield Signs

In addition to the criteria in the MUTCD, review the following guidelines to determine the appropriate application of STOP signs along State facilities:

1. County/City Facilities. Use a STOP sign on the approach of a county/city facility where it intersects with a State facility.
2. Major Traffic Generators. Where a private facility or service road provides access to a major traffic generator (e.g., neighborhood or regional mall, office complex), provide a STOP sign on the minor approach of the intersection.
3. Multi-Way Stops. The MUTCD presents the warrants for multi-way stops. However, multi-way stops should not be used unless the traffic volumes for each approach leg of the intersection are approximately equal. A traffic signal is the preferred traffic control device for intersections with heavy volumes of traffic.
4. Railroad Grade Crossings. The STOP or YIELD sign may be used at railroad/highway grade crossings at railroads that have two or more trains per day and are without an automatic traffic control device. Also, include a STOP AHEAD or YIELD AHEAD advance warning sign.
5. Intersections Near Railroad Grade Crossings. Where a facility crosses over an at-grade railroad crossing just prior to a stop or yield condition, review the vehicular storage requirements to ensure that there is sufficient space available. Where conflicts exist, install a DO NOT STOP ON TRACKS sign.
6. Sight Distance. The designer needs to ensure that sufficient sight distance is available to the STOP sign to allow the driver to bring the vehicle safely to a stop. If sufficient sight distance is unavailable, then a STOP AHEAD warning sign may be required.

Where an existing STOP or YIELD sign installation requires engineering evaluation, these evaluation procedures can be found in Chapter Forty-three or by contacting the Special Studies Engineer.

### 18.2.2 Special Speed Limit Signs

The installation of special SPEED LIMIT signs must be approved by the Montana Transportation Commission. The speed limit is established from a speed study that is conducted by the Traffic Investigations Unit; see Chapter Forty. Coordinate with the

Traffic Investigations Unit for verification of approved speed limits or where legal issues of existing SPEED LIMIT signs are in question.

The application of SPEED LIMIT signs within school zones is discussed in Chapter Forty-two.

### **18.2.3 No Left Turn Signs**

Where NO LEFT TURN signs are required, place one sign over the roadway or in the far left-hand corner of the intersection and one in the near right-hand corner of the intersection.

### **18.2.4 Authorized Vehicles Only Signs**

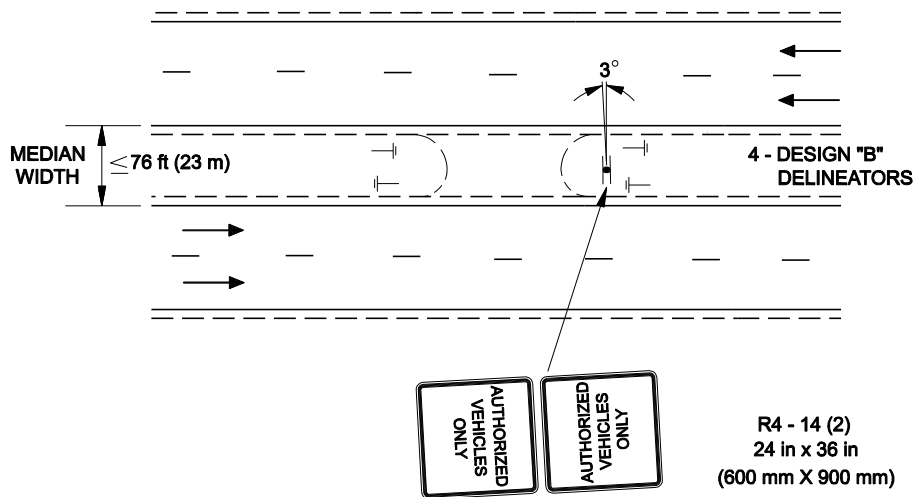
The AUTHORIZED VEHICLES ONLY sign should be placed in accordance with the following guidelines:

1. Median Widths  $\leq$  76 ft (23 m). For median widths of 76 ft (23 m) or less, mount the sign back-to-back and place it at the centerline of the median on the side of the median crossover away from the nearest interchange. Figure 18.2A illustrates this typical application.
2. Median Widths  $>$  76 ft (23 m). For median widths greater than 76 ft (23 m), install individual signs on both sides of the median crossover as shown in the MDT Detailed Drawings.
3. Median Guardrails. For openings through median guardrails, place the sign post in line with guardrail posts.

### **18.2.5 Lane-Use Control Signs at Intersections**

In addition to the MUTCD criteria, the designer should consider using overhead lane-use control signs where:

1. the number of lanes at a major signalized intersection exceeds the number of lanes on the street approaching the intersection;
2. there is an abnormal traffic pattern for an intersection approach (e.g., drop of a through lane); and/or
3. there is a possibility of confusion at the intersection or unusual conditions.



### TYPICAL APPLICATION OF MEDIAN U-TURN SIGNING

Figure 18.2A

#### 18.2.6 Two-Way Left-Turn Only Signs

Ground-mounted TWO-WAY LEFT-TURN ONLY signs should be provided on the right-hand side of a two-way, left-turn lane facility at the following locations:

1. at the beginning and end of a two-way, left-turn lane;
2. every 1000 ft (300 m) in urban areas;
3. every 0.5 mile (1.0 km) for approximately 2 miles (3 km) from the urban limit; and
4. every 1 mile (1.5 km) in rural areas.

#### 18.2.7 Do Not Pass Signs

The application of DO NOT PASS signing that is used to supplement no-passing zone pavement markings is determined on a case-by-case basis. The designer should review the MUTCD for additional guidance.

The application of NO PASSING ZONE pennant signing is appropriate only on those routes or segments of routes listed in Figure 18.2B.

<b>Route #</b>	<b>Description</b>
US 2	Idaho Line to Glacier County Line
US 2	Flathead County Line to Jct. US 89
US 12	Jct. I-90 to Elliston (RP 23.8)
US 12	Idaho Line to Jct. US 93
US 20	Idaho Line to West Yellowstone City Limits
US 89	Jct. US 12 to Cascade County Line
US 89	Jct. MT 200 to Jct. I-15
US 89	Meagher County Line to Great Falls City Limits
US 93	Jct. I-90 to Canada Line
US 93	Idaho Line to Missoula City Limits
US 191	West Yellowstone City Limits to Bozeman City Limits
MT 35	Jct. US 93 to Kalispell City Limits
MT 41	Twin Bridges City Limits to Jct. MT 55
MT 41	Dillon City Limits to Twin Bridges City Limits
MT 55	Jct. MT 41 to Whitehall City Limits
MT 82	Jct. US 93 to Jct. MT 35
MT 83	Jct. MT 200 to Jct. MT 35
MT 85	US 191 to Jct. I-90
MT 200	Idaho Line to Jct. US 93
MT 200	Jct. I-90 to Lewis & Clark County Line
MT 200	Jct. MT 141 to Jct. US 89

### **ROUTES WITH NO PASSING ZONE PENNANTS**

**Figure 18.2B**

#### **18.2.8 Parking Restriction Signing**

Parking restriction signing should be considered within cities, towns and other densely developed areas on State-maintained facilities where it is determined through an engineering study that parking will unduly interfere with the free movement of traffic or create a dangerous traffic condition. In these situations, the Department will request the



local government to adopt a Memorandum of Understanding consenting to the proposed parking restrictions and to enforce the prohibition of parking by ordinance or other appropriate means.

Signing for parking regulation will be installed by either the local government or the Department in accordance with the current regulations and specifications as promulgated by the latest edition of the MUTCD. In either case, all signing along State-maintained facilities must be approved by the Department.



## 18.3 WARNING SIGNS

Warning signs are used where it is deemed necessary to warn drivers of existing or potentially hazardous conditions on or adjacent to a highway or street. Warning signs must be located in advance of the conditions to which they apply. The use of warning signs should be kept to a minimum. Overuse of warning signs at obvious hazardous locations tends to cause non-compliance for all signs. The following sections provide additional guidance for the placement of warning signs.

### 18.3.1 Placement of Advance Warning Signs

Figure 18.3A provides the suggested minimum distances for the preliminary placement of advance warning signs. The final location of warning signs will be determined during the field check in conjunction with MDT or local agency personnel. The distances in Figure 18.3A are based on two conditions which are defined in the MUTCD as follows:

1. Condition A. A high driver judgment condition that requires the driver to use extra time in making and executing a decision because of a complex driving maneuver (e.g., speed reduction, lane changing in heavy traffic).
2. Condition B. A condition in which the driver will likely be required to decelerate to a stopped condition or to an advisory speed for the condition.

If these distances cannot be met, then other measures should be considered to attract the motorist's attention to the sign (e.g., flashing beacons, distance plates).

For those warning signs typically used by the Department, Figure 18.3B indicates which of the two conditions that will most likely apply. The following examples illustrate how to use Figures 18.3A and 18.3B.

Posted or 85th-Percentile Speed (mph)	Advance Placement Distance (ft) ①							
	Condition A: Speed reduction and lane changing in heavy traffic. ②	Condition B: Deceleration to the listed advisory speed (mph) for the condition. ④						
		0③	10	20	30	40	50	60
20	225	⑤	⑤	---	---	---	---	---
25	325	⑤	⑤	⑤	---	---	---	---
30	450	⑤	⑤	⑤	---	---	---	---
35	550	⑤	⑤	⑤	⑤	---	---	---
40	650	125	⑤	⑤	⑤	---	---	---
45	750	175	125	⑤	⑤	⑤	---	---
50	850	250	200	150	100	⑤	---	---
55	950	325	275	225	175	100	⑤	---
60	1100	400	350	300	250	175	⑤	---
65	1200	475	425	400	350	275	175	⑤
70	1250	550	525	500	425	350	200	150

## Notes:

1. The distances shown above are presented in feet and are for level roadway conditions. Corrections should be made for grades. Also, the distances are adjusted for a sign legibility distance of 175 ft for Condition A. The distances for Condition B have been adjusted for a sign legibility distance of 250 ft, which is appropriate for an alignment warning symbol sign.
2. Typical conditions are locations where the road user must use extra time to adjust speed and change lanes in heavy traffic because of a complex driving situation. Typical signs are Merge and Right Lane Ends. The distances are determined by providing the driver a PIEV time of 14.0 to 14.5 seconds for vehicle maneuvers minus the legibility distance of 175 ft for the appropriate sign.
3. Typical Condition is the warning of a potential stop situation. Typical signs are Stop Ahead, Yield Ahead, Signal Ahead and Intersection Warning Signs. The distances are based on the stopping sight distance providing a PIEV time of 2.5 seconds and a deceleration rate of 11.2 ft/s<sup>2</sup> minus the sign legibility distance of 175 ft.
4. Typical conditions are locations where the road use must decrease speed to maneuver through the warned condition. Typical signs are Turn, Curve, Reverse Turn or Reverse Curve. The distance is determined by providing a 2.5 second PIEV time, a vehicle deceleration rate of 10 ft/s<sup>2</sup>, minus the sign distance of 250 ft.
5. No suggested distances are provided for these speeds, as the placement location is dependent on site conditions and other signing to provide an adequate advance warning for the driver.
6. See Figure 18.3B to determine which conditions should be used for the warning signs used by the Department.

**SUGGESTED MINIMUM DISTANCES FOR PLACEMENT OF  
ADVANCE WARNING SIGNS  
(US Customary)**

**Figure 18.3A**

Posted or 85th-Percentile Speed (km/h)	Advance Placement Distance (m) ①										
	Condition A: Speed reduction and lane changing in heavy traffic. ②	Condition B: Deceleration to the listed advisory speed (km/h) for the condition. ④									
		0③	10	20	30	40	50	60	70	80	90
30	60	⑤	⑤	⑤	---	---	---	---	---	---	---
40	100	⑤	⑤	⑤	⑤	---	---	---	---	---	---
50	150	⑤	⑤	⑤	⑤	⑤	---	---	---	---	---
60	180	30	⑤	⑤	⑤	⑤	⑤	---	---	---	---
70	220	50	40	30	⑤	⑤	⑤	⑤	---	---	---
80	260	80	60	55	50	40	30	⑤	⑤	---	---
90	310	110	90	80	70	60	40	⑤	⑤	⑤	---
100	350	130	120	115	110	100	90	70	60	40	⑤
110	380	170	160	150	140	130	120	110	90	70	50

## Notes:

1. The distances shown above are presented in meters and are for level roadway conditions. Corrections should be made for grades. Also, the distances are adjusted for a sign legibility distance of 50 m for Condition A. The distances for Condition B have been adjusted for a sign legibility distance of 75 m, which is appropriate for an alignment warning symbol sign.
2. Typical conditions are locations where the road user must use extra time to adjust speed and change lanes in heavy traffic because of a complex driving situation. Typical signs are Merge and Right Lane Ends. The distances are determined by providing the driver a PIEV time of 14.0 to 14.5 seconds for vehicle maneuvers minus the legibility distance of 50 m for the appropriate sign.
3. Typical Condition is the warning of a potential stop situation. Typical signs are Stop Ahead, Yield Ahead, Signal Ahead and Intersection Warning Signs. The distances are based on the stopping sight distance providing a PIEV time of 2.5 seconds and a deceleration rate of  $3.4 \text{ m/s}^2$  minus the sign legibility distance of 50 m.
4. Typical conditions are locations where the road user must decrease speed to maneuver through the warned condition. Typical signs are Turn, Curve, Reverse Turn or Reverse Curve. The distance is determined by providing a 2.5 second PIEV time, a vehicle deceleration rate of  $3 \text{ m/s}^2$ , minus the sign distance of 75 m.
5. No suggested distances are provided for these speeds, as the placement location is dependent on site conditions and other signing to provide an adequate advance warning for the driver.
6. See Figure 18.3B to determine which conditions should be used for the warning signs used by the Department.

**SUGGESTED MINIMUM DISTANCES FOR PLACEMENT OF  
ADVANCE WARNING SIGNS  
(Metric)**

**Figure 18.3A**

Condition A	Condition B	
	(Stop Condition)	(Advisory Speed Condition)
W4-1	W2-2	W1-1
W4-2	W2-3	W1-2
W5-1	W2-4	W1-3
W5-2a	W2-5	W1-4
W5-3	W3-1a	W1-5
W7-4a	W3-2a	W1-5a
W9-1	W3-3	W6-1
W9-2	W10-1	W6-2
W12-1	W10-4	W6-3
W12-2	W10-5	W7-1
	W11-1	W7-4
	W11-2	W8-1
	W11-3	W8-2
	W11-4	W8-3a
	W11-5	W8-4
	W11-6	W8-5
	W11-7	W8-7
	W11-8	W8-8
	W11-9	W8-10
	W11-10	W8-10a
	W11-15	W8-10b
	W14-1	W8-11
	W14-2	W8-11a
	W15-1	W11-4a
		W13-1
		W13-2
		W13-3

*Notes:*

1. *This Figure only lists those warning signs typically used by the Department.*
2. *See Section 18.3.1 for definitions of each condition when determining conditions for other warning signs.*

**CONDITIONS FOR PLACEMENT OF ADVANCE WARNING SIGNS**

**Figure 18.3B**

\*\*\*\*\*

### **Example 18.3.1**

- Given: Stop-controlled intersection  
50 mph Posted Speed (on stop-controlled leg)
- Problem: Where to place a STOP AHEAD sign (W3-1a)
- Solution: From Figure 18.3B, it is determined that the STOP AHEAD sign is a Condition B (stop condition) category (i.e., the driver must stop). From Figure 18.3A, the set-back distance from the STOP sign should be 250 ft.
- If the sign cannot be adequately placed at a location of approximately 250 ft, then other measures may be required to provide additional emphasis to the warning sign.

### **Example 18.3.2**

- Given: A 30 mph horizontal curve  
50 mph Posted Speed
- Problem: Where to place a TURN sign (W1-1)
- Solution: From Figure 18.3B, it is determined that the TURN sign is a Condition B (advisory speed condition) category (i.e., the driver must slow down from 50 mph to 30 mph). From Figure 18.3A, the minimum set-back distance from the horizontal curve PC is shown to be 100 ft.
- In addition, an advisory speed plate indicating that the maximum recommended speed of the curve is 30 mph should be used.

\*\*\*\*\*

## **18.3.2 Turn/Curve Signs**

The application of horizontal alignment signs (e.g., TURN, CURVE) should conform to the criteria presented in Figure 18.3C. The decision to use either an advance TURN or an advance CURVE warning sign is dependent upon many factors including posted

Number of Alignment Changes	Advisory Speed	
	≤ 30 mph (≤ 50 km/h)	> 30 mph (> 50 km/h)
1	TURN (W1-1)①	CURVE (W1-2)①
2②	REVERSE TURN③ (W1-3)	REVERSE CURVE③ (W1-4)
3 or more②	WINDING ROAD③ (W1-5)	

## Notes:

1. *Engineering judgment should be used to determine whether the TURN or CURVE signs should be used.*
2. *Alignment changes are in opposite directions and are separated by a tangent distance of 600 ft (180 m) or less.*
3. *A RIGHT REVERSE TURN (W1-3R), RIGHT REVERSE CURVE (W1-4R), or RIGHT WINDING ROAD (W1-5R) sign is used if the first change in alignment is to the right; a LEFT REVERSE TURN (W1-3L), LEFT REVERSE CURVE (W1-4L), or LEFT WINDING ROAD (W1-5L) sign is used if the first change in alignment is to the left.*

## HORIZONTAL ALIGNMENT SIGN USAGE

Figure 18.3C

speed, alignment, crash history, etc. It would be impractical and uneconomical to place an advance warning sign at every horizontal curve. Before using an advance TURN or CURVE warning sign, the designer should consider the following:

1. **Speed Determinations.** In determining whether or not to place an alignment warning sign and/or advisory speed plate, the designer first needs to determine the recommended speed of curve. If the curve radius and superelevation are known (e.g., from construction plans), then Figure 18.3D can be used to determine the recommended speed of curve. If the radius of the curve is unknown, then a field study is usually warranted. These studies are typically done using a ball-bank indicator.

The ball-bank indicator test involves driving a test vehicle around a curve at various speeds and reading a curved level to determine an appropriate speed for the curve. The maximum recommended speed of curve is the vehicular speed at



- which the 12° reading occurs, which is equivalent to a 0.21 ft/s<sup>2</sup> (64 mm/s<sup>2</sup>) reading on an accelerometer. Test runs should be conducted in both directions.
2. Highway Alignment. The designer should review the overall highway alignment to determine if warning signs are warranted. Unexpected curves after long tangent sections are likely candidates for the placement of an advance warning sign. Conversely, each curve on winding highways may not warrant the use of individual advance warning signs because the driver will be expecting the turn. Under all circumstances, CURVE signs should be considered where the vertical alignment obstructs the driver's vision of the horizontal curvature.
  3. Posted Speeds. Relative to the posted speed or, in the absence of a posted speed limit, the facility's overall design speed, the designer should consider the following guidelines:
    - a. Highways with a posted or a statutory speed limit of less than 30 mph (50 km/h) generally will not warrant a CURVE sign.
    - b. A TURN or CURVE sign should be considered where the maximum recommended speed of curve is found to be less than or equal to the posted speed or the design speed.
  4. Crash History. The crash history should be reviewed to determine if there is a disproportionate number of run-off-the-road crashes that can be attributed to the horizontal curve. High-crash locations will most likely warrant advance warning signs, advisory speed plates and/or chevrons.
  5. Urban. Urban areas will typically not warrant the use of advance TURN or CURVE warning signs because vehicular speeds tend to be lower and there is greater driver familiarity and awareness.
  6. Public Reaction. Local residents generally have some indication of how drivers are reacting to the horizontal curve. If there are no complaints relative to near misses or crashes, the curve will probably not warrant the need for signing. Frequent complaints usually warrant further investigation.
  7. TURN Versus CURVE Sign. If it is determined that an advance alignment warning sign is warranted, the MUTCD recommends that a TURN sign be used if the curve's maximum recommended speed is 30 mph (50 km/h) or less and that a CURVE sign be used if the curve's maximum recommended speed is greater than 30 mph (50 km/h); see Figure 18.3C.

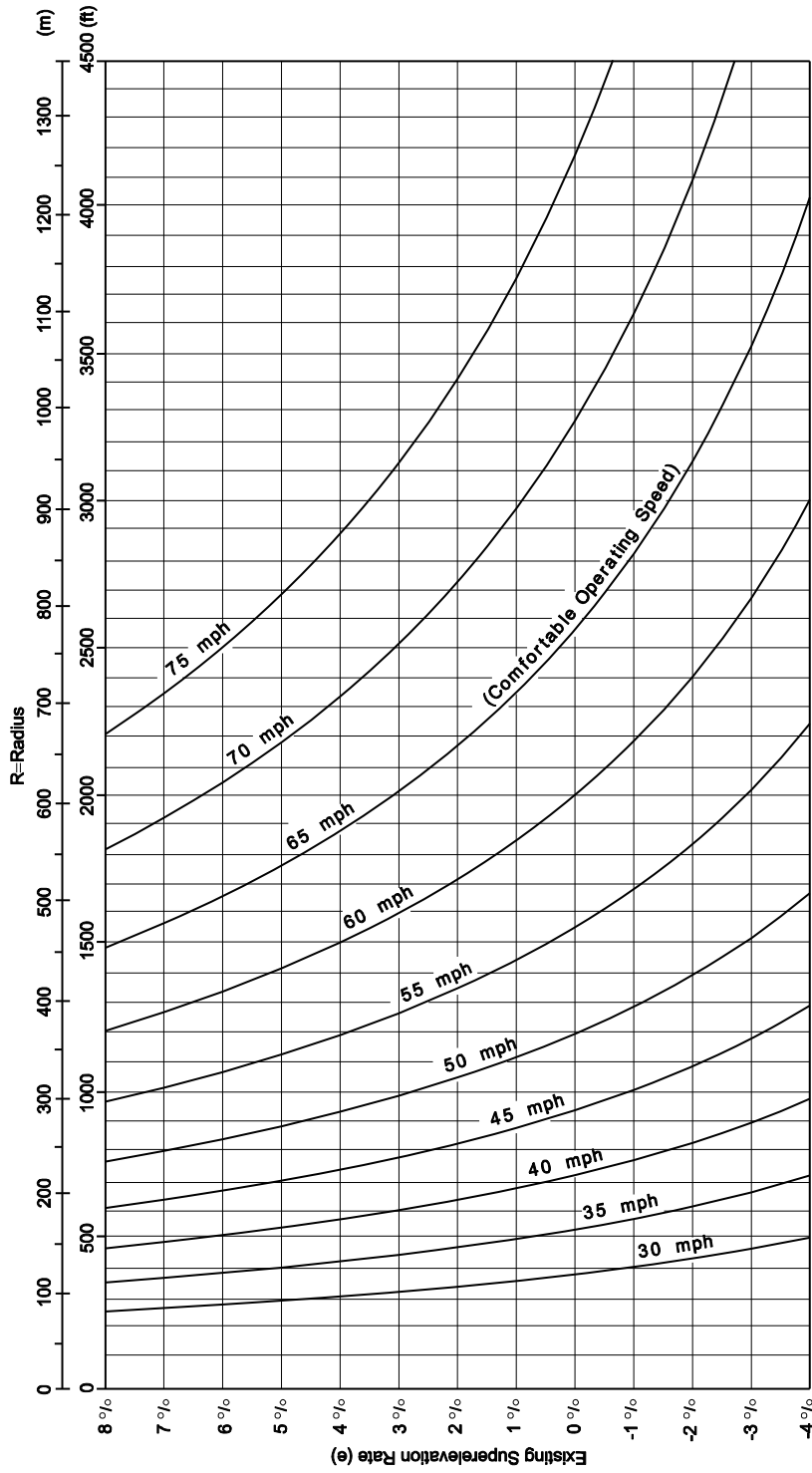


Figure derived from the following:

1. Use AASHTO Method 2 for the distribution of superelevation and side friction.
2. Assume design speed and use  $f_{max}$  for selected design speed in all cases.
3. Assume different values of "e" and calculate values for "R" on graph for each speed.

$$R = \frac{V^2}{15(e + f_{max})}, \text{ where } V = \text{mph and } R = \text{ft (US Customary)}$$

$$R = \frac{V^2}{127(e + f_{max})}, \text{ where } V = \text{km/h and } R = \text{m (Metric)}$$

**RECOMMENDED SPEED OF CURVE  
(Signing Purposes Only)**

Figure 18.3D

8. Advisory Speed Plates. Advisory speed plates should be considered in conjunction with advance TURN and CURVE warning signs where the reduction in speed is 15 mph (20 km/h) or greater. The advisory speed plate legend should reflect the recommended speed of the curve.
9. Combination Curves. A combination curve consists of two or more successive curves. They may be connected with or without short tangent sections, and they may be in the same or in opposite directions. If either of the curves requires a TURN or CURVE sign, a combination TURN or CURVE sign should be used (e.g., REVERSE CURVE sign). For three or more successive curves, the winding road sign should be used. If an advisory speed plate is appropriate, the lowest recommended speed of all the curves should be used on the plate; see Figure 18.3C.
10. Flashers. The use of flashing beacons in conjunction with advanced TURN or CURVE warning signs will be determined on a case-by-case basis. The designer should consider the use of flashers at locations that present a driver, especially an unfamiliar driver, with unexpected or unusual conditions.
11. Hairpin Curve/Loop Signs. If the change in horizontal alignment is 135° or more, the HAIRPIN CURVE (W1-11) sign should be considered. If the change in horizontal alignment is approximately 270° (e.g., a cloverleaf interchange ramp), the 270° LOOP (W1-15) sign should be considered. If either of these signs are used, ensure chevron signs are properly placed as required by the MUTCD.

### **18.3.3 Narrow Bridge Signs**

The NARROW BRIDGE sign should be used in advance of a bridge or culvert:

1. having a clear two-way roadway width of 16 ft to 18 ft (4.8 m to 5.4 m),
2. having a width that constricts or encroaches on the approaching traveled way, and/or
3. where it is determined to be necessary based on a traffic engineering investigation.

The use of the NARROW BRIDGE sign is also applicable to bridges and culverts that have a span length less than 20 ft (6 m). Object markers, delineators and pavement markings as discussed in Chapter Nineteen should be provided for additional guidance.

#### **18.3.4 Low Clearance Signs**

In addition to the MUTCD, the following are the Department's criteria for the application of LOW CLEARANCE signs:

1. Interstate Facilities. LOW CLEARANCE warning signs should be installed along Interstate facilities in advance of and at any structure that has a vertical clearance of 16 ft (4.9 m) or less.
2. Non-Interstate Facilities. Along non-Interstate facilities, LOW CLEARANCE warning signs should be installed in advance of and at any structure with a vertical clearance of 15 ft (4.6 m) or less.
3. Railroad Structures. LOW CLEARANCE warning signs may be mounted directly on railroad structures with the approval of the railroad. The LOW CLEARANCE warning sign placed at the structure location should be a ground-mounted sign directly in front of the column or abutment of the structure.
4. Existing Signs. Structures that already have guide signs mounted on them should have the clearance sign mounted to the left of the existing signing.
5. Vertical Curves. Care should be taken when determining minimum vertical clearances on underpasses that have sharp sag vertical curves. The clearances should be measured along a minimum 50 ft (15 m) chord. Approximately 3 in (75 mm) should be subtracted from the measured height for a factor of safety.
6. Signs on Structures. Where LOW CLEARANCE signs are placed on structures, the use of a rectangular panel or diamond sign will be determined on a case-by-case basis.
7. Second Advance Warning Sign. If the vertical clearance under a structure is below the legal limit, a second advance warning sign should be considered at a location before the structure that is sufficient for a driver to take an alternative route. See the MUTCD for the application of supplemental distance plaques used in these situations.

#### **18.3.5 Advisory Exit/Ramp Speed Signs**

Advisory exit speed signs should be used at all exit ramp gores where the ramp design speed is 10 mph (15 km/h) or more below the mainline design speed. Where the condition requires the driver to make a speed adjustment on the freeway, the EXIT sign should be used. Where speed adjustment is required on the ramp, the RAMP sign should be used. Each sign should be placed in advance of the speed restriction at a

distance using Condition B (advisory speed condition) in Figure 18.3A. Where a ramp exhibits geometric restrictions (e.g., compound curves, limited sight distance), the designer should consult with the Geometrics Unit to review the problem.

### **18.3.6 Snowmobile Crossing Signs**

Signs advising motorists of snowmobile crossings are not allowed on State-maintained highways. However, the Department of Fish, Wildlife and Parks (DFWP) may place signs in the highway right-of-way, as long as they are not visible to highway motorists, that warn snowmobile operators of dangers or directing them to stop before crossing the highway. These signs are not to interfere with motorists, existing signs or other traffic control devices placed by MDT. The DFWP will be responsible for placing and maintaining these signs.

### **18.3.7 School Crossing Signs**

The School Crosswalk Warning Assembly (S1-1 with Diagonal Arrow) should be used at established crossings used by students going to and from school, including those crossing at signalized locations. It should be noted that at crossings controlled by stop signs, the School Crosswalk Warning Assembly (S1-1 with Diagonal Arrow) should be omitted. The School Crosswalk Warning Assembly (S1-1 with Diagonal Arrow) should be placed at the crosswalk, or as close to it as practical. Section 19.5.3 illustrates the typical application of the School Crosswalk Warning Assembly (S1-1 with Diagonal Arrow) and School Advance Warning Assembly (S1-1 with Supplemental Plaque). The School Advance Warning Assembly (S1-1 with Supplemental Plaque) shall be used in advance of the School Crosswalk Warning Assembly (S1-1 with Diagonal Arrow). These signs should be implemented uniformly with a fluorescent yellow-green background sign face color.

### **18.3.8 Watch For Ice On Bridge Signs**

The WATCH FOR ICE ON BRIDGE sign should only be erected at bridges that meet the following:

1. the bridge structure is located entirely or partially within a horizontal curve;
2. the structure is 150 ft (45 m) or greater in length; and/or
3. engineering judgment indicates a need based on crash studies or observation of hazard potential (e.g., shaded structures that have consistent icing conditions, steep grades).

The designer should contact the Division Maintenance Supervisor for information pertaining to a structure's icing history or lack thereof.

All WATCH FOR ICE ON BRIDGE signs should be hinged to allow seasonal closure. These signs should be closed after a significant danger of frost is past in the spring and be reopened in the late fall when the reoccurrence of icy weather dictates.

Typical distance for placement of these signs is 700 ft prior to the structure.

## 18.4 GUIDE SIGNS

The MUTCD provides the Department's criteria for the design and placement of guide signs. In addition, the following sections provide supplemental information relative to guide signs.

### 18.4.1 Destination Signs

Destination signs present advance information to motorists approaching a point of decision. These signs are typically used in advance of highway junctions, exit ramps, city streets and roadways leading to special points of interest. The following presents the Department's guidelines for the application of destination signs:

1. Two-Mile (Three-Kilometer) Advance Guide Sign. This guide sign should be used in advance of major interchanges. Major interchanges are interchanges of Interstate highways or other major highways such as principal urban arterials and major rural routes with heavy traffic volumes or traffic volumes with a disproportionately high number of unfamiliar drivers. This advanced guide sign is typically erected at a point approximately 2 miles (3 km) before the exit gore. The sign's legend will have no more than two destination points together with the 2 miles (3 km) distance.
2. One-Mile (Two-Kilometer) Advance Guide Sign. This guide sign should be erected at a point approximately 1 mile (2 km) in advance of all major and intermediate interchanges. For minor interchanges, the sign should be located 0.5 to 1 mile (1 km to 2 km) from the exit gore. The sign's legend should present the same destination points as the preceding two-mile (three-kilometer) advance guide sign, together with the appropriate distance to the approaching interchange. If field conditions do not permit the physical location of the sign at the desired point, the sign's legend should reflect the actual distance from the exit gore with the distance legend rounded to the nearest 0.25 mile.
3. Exit Direction Sign. The exit direction sign should be erected a short distance in advance of the beginning of the exit ramp taper that leads to the destination that previously has been shown on the advance guide signs.
4. Supplemental Guide Signs. At locations where there are more than two major destinations served by the interchange, it is permissible to erect a supplemental destination sign between the two-mile (three-kilometer) advance guide sign and the exit direction sign. This supplemental sign is limited to a maximum of two destinations. Supplemental guide signs should not be erected indiscriminately.

5. Ramp Terminals. The distance to towns should be considered on the destination guide sign at the ramp terminal, particularly at those locations where the town or site is not visible from the ramp terminal.
6. Non-Interstate Facilities. Destination guide signs on non-Interstate facilities should be erected in advance of highway junctions and points where the main highway intersects county roads, city streets that serve a city's central business district or other points of interest.
7. Major Four-Way Junctions. Typically, at major four-way junctions, it will be necessary to show three possible destinations — the destination ahead, the destination to the left and the destination to the right. The destination ahead should not be shown where the sign legend indicates a destination that obviously directs traffic off of the through highway.
8. Three-Way Junctions. On destination guide signs at three-way junctions of the "T" or "Y" type, only two destinations should be shown.
9. Intersections. At intersections with roads or streets serving a city's central business district or other points of interest, only one destination should be shown on the destination guide sign. In cases where there are multiple streets leading to the central business district, the designer should select the one street that provides the best service to the motoring public.

## **18.4.2 Distance Signs**

Distance signs are used to inform a motorist that the proper route has been taken to reach a destination and to present the travel distance to that particular point.

### **18.4.2.1 Interstate Facilities**

Distance signs along Interstate facilities are located a short distance beyond the interchange area. Up to three destinations may be shown on these signs. Destination points should be arranged on the distance sign as follows:

1. Top Line. The top line of the sign's legend should identify the name of and distance to the next interchange.
2. Middle Line. The middle line of the sign's legend should contain the name of and distance to the next regional control point along the route. Figure 18.4A provides



National Control Points	Regional Control Points
<b>I-90</b>	
Coeur d'Alene Missoula Butte Billings Sheridan	Hardin Bozeman Livingston
<b>I-94</b>	
Billings Bismarck	Miles City Glendive
<b>I-15</b>	
Idaho Falls Butte Helena Great Falls	Dillon Shelby Lethbridge

**NATIONAL AND REGIONAL CONTROL POINTS  
FOR MONTANA INTERSTATES**

**Figure 18.4A**

a list of the regional control points for use on distance signs along Montana's Interstate system. Regional control points are the intermediate points within the State boundaries that are located between national control points.

3. Bottom Line. The bottom line should identify the name of and distance to the next national control point. Figure 18.4A provides a list of the national control points for use on distance signs along Montana's Interstate system. National control points are those points that have national significance to the through traveler.

If the next interchange is a regional control point, then only two destinations should be identified on the distance sign. If the next interchange is a national control point, then only that destination needs to be shown.

### **18.4.2.2 Non-Interstate Facilities**

Distance signs on non-Interstate facilities are located a short distance beyond a highway junction or the city limits as confirmation to the motorist that the proper route has been taken to reach that particular destination. Distance signs also should be located at 15 miles (25 km) intervals along rural sections of highway. Three destinations should be shown on these signs. Destination points should be arranged on the distance sign as follows:

1. Top Line. The top line should identify the next community that has a population of 100 or more or the name of a place if it has geographical significance.
2. Middle Line. The middle line should contain the name of and distance to the next local control point. Figure 18.4B provides a list of local control points for use on destination signs along Montana highways. Local control points are the intermediate points within the State boundaries that are located between regional control points.
3. Bottom Line. The bottom line should identify the next regional control point along the route. This should be the destination for the greater portion of the through traffic. Figure 18.4B provides a list of regional control points for use on destination signs along Montana highways. Regional control points are those points that have significance to regional traffic.

### **18.4.3 Route Signing**

#### **18.4.3.1 Interstate Business Routes**

Where a community is by-passed with an Interstate facility, the US or Montana highway route number sign should remain on the Interstate. For a community to qualify for an Interstate business route, it is necessary that the city have a population of 2500 or more and be served by at least two interchanges so that a loop route through the city may be established. Only one Interstate route will be established in any city, and this route should serve the motorist by the most direct route between the central business district and the Interstate facility. The actual route will be confirmed by the local government(s).

#### **18.4.3.2 Unimproved All-Weather Routes**

Montana highway route number signs for unimproved all-weather road facilities should be erected if a facility connects:

Regional Control Points	Local Control Points	Regional Control Points	Local Control Points
<b>US 2</b>		<b>US 93</b>	
Libby Kalispell W. Glacier E. Glacier Shelby Havre Glasgow Williston, ND	Columbia Falls Browning JCT. US 89 Cut Bank Chester JCT. US 87 Chinook JCT. MT 66 Malta Wolf Point JCT. MT 13 Culbertson	Missoula Kalispell	Salmon, Idaho JCT. MT 43 Hamilton JCT. US 12 JCT. I-90 JCT. MT 200 Polson JCT. MT 28 JCT. MT 40 Whitefish Eureka JCT. MT 37
<b>US 12</b>		<b>US 191</b>	
Lewiston, Idaho Missoula Helena Forsyth Miles City	Lolo Townsend JCT. US 89 South White Sulphur Springs JCT. US 89 North JCT. US 191 South Harlowtown JCT. US 191 North JCT. MT 3 JCT. US 87 South Roundup Baker Bowman, S.D.	West Yellowstone Bozeman Big Timber Lewiston Malta	JCT. MT 287 JCT. US 12 Harlowtown JCT. US 12 JCT. US 87 JCT. MT 19 JCT. MT 66
<b>US 87</b>		<b>US 212</b>	
Billings Great Falls Havre	Roundup JCT. MT 200 Lewiston JCT. US 191 JCT. US 89 Fort Benton	Yellowstone Nat'l Park Laurel Billings	Red Lodge JCT. US 310 JCT. I-90 - Westbound Broadus Belle Fourche, SD
<b>US 89</b>		<b>US 310</b>	
Yellowstone Nat'l Park Livingston Great Falls Glacier Nat'l Park	JCT. I-90 - Southbound JCT. US 12 - West White Sulphur Springs JCT. US 12 - East JCT. I-15 - Southbound Choteau JCT. US 2 Browning Waterton Lakes, Canada	Laurel Lovell, WY	JCT. US 212 Bridger
<b>US 20</b>		<b>US 287</b>	
Yellowstone Nat'l Park Idaho Falls, ID	JCT. US 191/US 287 West Yellowstone	Helena Yellowstone Nat'l Park	Choteau Augusta JCT. MT 200 Townsend JCT. I-90 JCT. MT 2 Ennis JCT. US 191 West Yellowstone

**REGIONAL AND LOCAL CONTROL POINTS FOR MONTANA HIGHWAYS**

**Figure 18.4B**

1. an Interstate facility and an arterial highway,
2. two arterial highways,
3. an improved collector roadway and an arterial highway or Interstate facility, or
4. an arterial highway leading to a recreational area or designated community.

#### **18.4.3.3 Signing for Loop Routes**

Signing for a loop route will be determined on a case-by-case basis.

#### **18.4.3.4 Signing for Recreation Routes**

Signing for recreation routes will be determined on a case-by-case basis. The sign legend RECREATION ROAD should be supplemented with the sign legend LOOP ROAD where the roadway connects a city or town at two different points on the same Interstate facility.

#### **18.4.4 Signing for Limited Access Highways**

Install RESTRICTED ACCESS signs on all rural non-Interstate highways that have been declared limited access by the Montana Transportation Commission. These signs are not required on the Interstate highway system or, at the discretion of the District Administrator, in urban areas. These signs are used to define the right-of-way boundary of limited-access facilities.

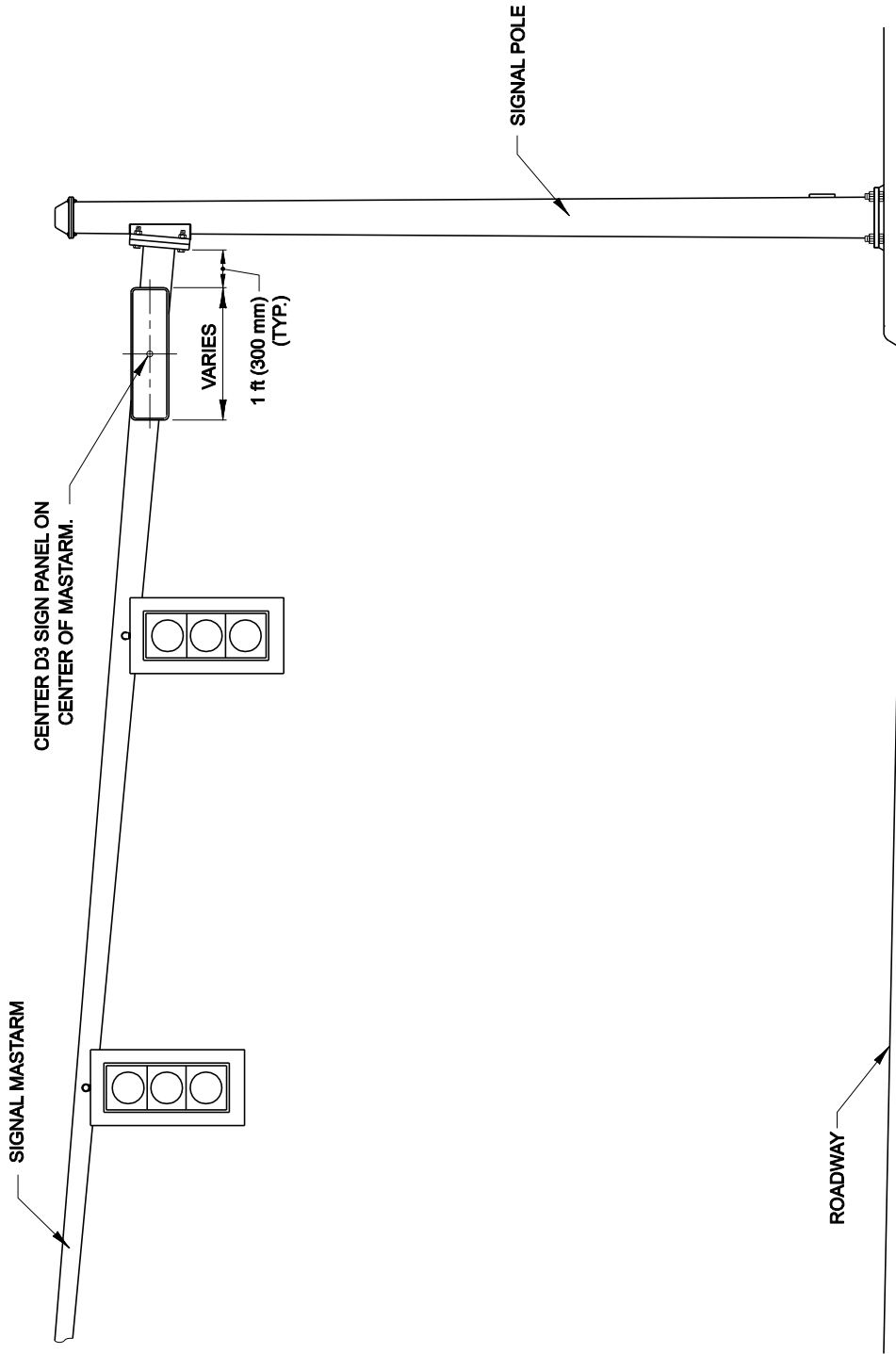
These black-on-white, reflective sheeting Type I, signs will be installed on both sides of the limited access highway. They should be placed just inside the right-of-way line, parallel to the centerline and facing the highway. At each end of the limited access section, the signing will start with a sign placed on each side of the highway. The signs along each side should be placed at 0.5 mile (1 km) intervals. The spacing on one side should be staggered from the spacing on the other side to provide a sign every 0.25 mile (0.5 km). The signs will be mounted on steel delineator posts so that the bottom of the sign will be 3 ft (1 m) above the ground.

Install LEAVING and ENTERING CONTROLLED ACCESS signs at points at which drivers enter or leave a controlled access facility.

#### **18.4.5 Street Name Signing**

Street name signs should be considered at all at-grade intersections. When considering street name signs, the designer should review the following guidelines:

1. Ground-Mounted Signs. Ground-mounted street signs should meet the following:
  - a. **Size.** The maximum width of the sign should not exceed 42 in (1050 mm). This may require stacking the legend, using more extensive abbreviations, reducing the spacing between letters (up to a 30% maximum reduction), etc.
  - b. **Legend.** Use a 6 in (150 mm) letter size for major legends and 4 in (100 mm) for abbreviations on normal width streets. Wider streets may require a larger size.
  - c. **Placement.** Normal width streets should use street name signs only on one side, preferably in ascending order of the stations, on top of the STOP or YIELD sign. Place two line signing back to back on the post. Do not use double face signing with mounting brackets. It is unimportant as to which street sign should be on top. In general, follow local practice.
  - d. **Multi-lane Streets.** Multi-lane streets should have the signs placed on both sides of the roadway to provide guidance for both directions of travel.
2. Overhead Street Signs. Where the intersection is signalized, mount the D-3 street sign horizontally on the mast arm as shown in Figure 18.4C. In addition, the designer should consider the following:
  - a. **Size.** The width of the sign should not exceed 78 in (1950 mm) because the minimum signal head spacing is 84 in (2100 mm).
  - b. **Legend.** Use a 8 in (200 mm) letter size for the major legends and 6 in (150 mm) for abbreviations.
  - c. **Placement.** Overhead street signs should be placed within 12 in (300 mm) of the signal pole to avoid over stressing the mast arm through excessive windloading on the sign face; see Figure 18.4C.
3. Numerical Legends. As a general guidance, spell out numerical street names that are ten and under (e.g., Sixth St., Tenth Ave.). For numerical street names greater than ten, use the numerical designator (e.g., 13TH St., 32ND AVE.).



Note: Mount D-3 street sign level horizontally on the mast arm as shown. Include the mounting hardware in the unit bid price for the sign.

**TYPICAL OVERHEAD STREET NAME SIGN MOUNTING ON SIGNED MAST ARM**

**Figure 18.4C**

4. Abbreviations. Avoid using extensive abbreviations for the actual street name. However, unusually long street names may require the use of abbreviations to obtain a reasonable sign size. In these cases, attempt to retain the essence of the street name. This may be accomplished by deleting some or most of the vowels of the name.
5. Multiple Street Names. At intersections where two streets of different names meet left and right, it is preferable to include both street names and an arrow indicating the direction from which the street approaches on the sign. Stack the legends with the left street name above the right.
6. Advance Street Name Signs. Advance street name signs are used to identify an upcoming intersection. They provide road users with advance information to identify the name(s) of the next intersecting road to prepare for crossing traffic and to facilitate timely deceleration and/or lane changing in preparation for a turn. These signs are generally applicable in rural areas and prior to intersections with exclusive turn lanes.

#### **18.4.6 Weigh Station Signing**

Weigh stations that are provided along Montana highway facilities will require the appropriate guide and regulatory signing. Figure 18.4D illustrates the Department's typical application of signing for permanent weigh stations. Figure 18.4E illustrates the signing for portable weigh stations.

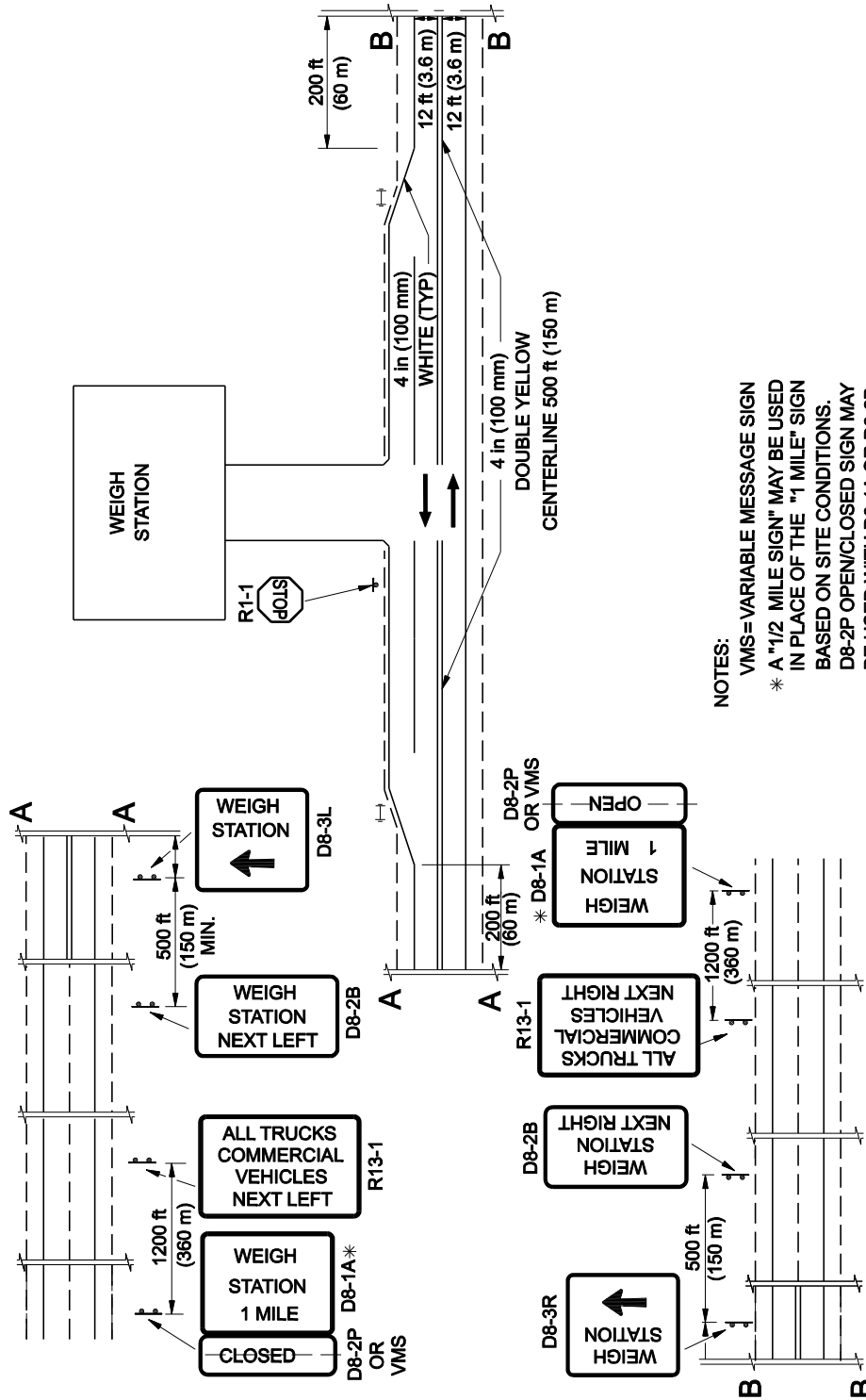
Variable message signing should be considered for those weigh stations that are not operated on a continual basis. The variable message sign should be located on the first advance guide sign.

#### **18.4.7 Signing for Small Communities**

For a small community to qualify for directional guide signing, it must have a post office.

#### **18.4.8 Signing for Chain-Up Areas**

Signing placement and sequence for chain-up areas will be determined on a case-by-case basis.

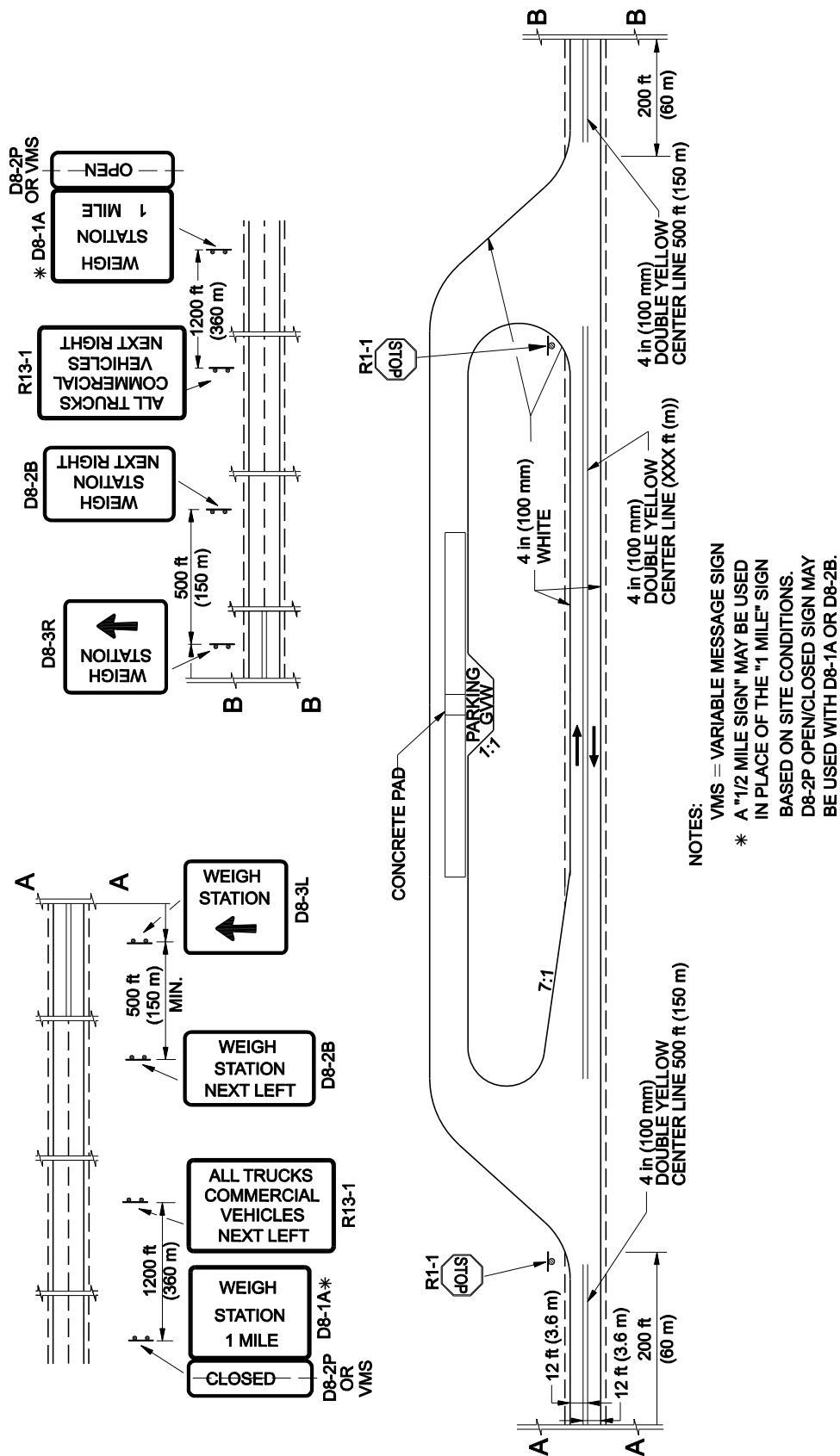


NOTES:  
 VMS= VARIABLE MESSAGE SIGN  
 \* A "1/2 MILE SIGN" MAY BE USED IN PLACE OF THE "1 MILE" SIGN BASED ON SITE CONDITIONS.  
 D8-2P OPEN/CLOSED SIGN MAY BE USED WITH D8-1A OR D8-2B.

TYPICAL PERMANENT WEIGH STATION SIGNING

Figure 18.4D





TYPICAL PORTABLE WEIGH STATION SIGNING  
(Type A)

Figure 18.4E

**18.4.9 Signing for Rivers/Streams**

For a river or stream to qualify for signing, it must be a viable waterway with a flow of at least 5 ft<sup>3</sup>/s (0.14 m<sup>3</sup>/s), 50% of the year. Streams and rivers should be signed according to those listed in the MDT Headwaters Limits Listing.

**18.4.10 Signing for Mountain Ranges**

Sign each prominent mountain range that is visible to an occupant of a vehicle traveling on the National Highway System or a State Primary highway.

## 18.5 GENERAL SERVICE SIGNING

### 18.5.1 Service Signing

At specific points along a road facility, service signing is typically used to inform the motorist of the availability of general and specific services (e.g., gas, food, lodging, phone, camping, hospital). This Section presents specific warrants and guidelines for the application of service signing on Interstate and non-Interstate facilities. Section 18.7 presents the Department's criteria for LOGO signing. If TODS or LOGO signs are installed, the service signs (e.g., FOOD, GAS, LODGING) at the interchange will be removed by the Department.

#### 18.5.1.1 Interstate Facilities

The following presents the Department's guidelines for the application of service signing along Interstate facilities:

1. "Vicinity of the Interchange". "Vicinity of the interchange" should be interpreted to mean a distance from the interchange of not more than 1 mile (1.5 km) from the ramp terminal.
2. "Adjacent By-Passed Community". "Adjacent by-passed community" should be interpreted as a community that is located within 1 mile (1.5 km) of the Interstate facility that does not require excessive travel to and from the interchange.
3. Rural Facilities. Along rural Interstate facilities, a sign indicating the availability of services (e.g., PHONE, LODGING, FOOD, CAMPING, GAS, HOSPITAL, NEXT RIGHT) will be installed where the services are located in the "vicinity of the interchange" or in an "adjacent by-passed community" which is served from the interchange.
4. Urban Facilities. Service signs will be installed in advance of the first Interstate interchange serving an urban area. A service sign with the proper legend combination will be installed beneath the (*Community*) NEXT TWO EXITS sign.
5. Gas. Gas signing should be provided for a conventional gasoline station that is open at least 16 hours per day, seven days per week. See MUTCD for additional guidance.
6. Food. Food signing should be provided for an eating establishment serving two meals a day and licensed by the Montana Department of Public Health and Human Services. The establishment should be open at least six days a week. See MUTCD for additional guidance.

7. Lodging. Lodging signing should be provided where five or more units with bath facilities are available. The establishment must be licensed by the Montana Department of Public Health and Human Services. See MUTCD for additional guidance.
8. Phone. Phone signing should be provided where a public phone booth is available.
9. Hospital. Hospital signing should be provided on the fastest and most direct route from the Interstate. Where all routes are equal, give preference to the first interchange because it will be the one normally taken in an emergency situation. Coordinate the hospital signing with Emergency Medical Services. See Section 18.5.2 for additional criteria.
10. Camping. Camping signing should be provided for a campground that has six or more camping spaces available. The campground must be located within 3 miles (5 km) from the interchange (15 miles (25 km) under special conditions). Campgrounds must be approved by the local health officer and have modern sanitary facilities with potable drinking water to qualify for the camping sign. See Section 18.5.5 for additional criteria.
11. Next Services. Where the distance to the next interchange with available services is 10 miles (16 km) or more, the NEXT SERVICES - XX MILES sign may be mounted as a separate panel under the exit direction sign.
12. No Services. At interchanges where no services are available, the NO SERVICES sign should be erected along the interstate prior to the ramp. This is the preferred option; however, erecting the NO SERVICES sign along the ramp or at the ramp-crossroad intersection, below the guide sign pointing to the community or road may also be considered. This sign will typically have a white legend and border on a blue background.
13. Service Qualifications. The District will determine if the subject service is in the "immediate vicinity of the interchange" or in an "adjacent by-passed community." The District Administrator will also determine whether or not the service is available and if the service is approved by the Montana Board of Public Health and Human Services or the local public health officer.
14. Seasonal Services. Where available services are seasonal, the District Office will remove or cover the appropriate legends on the service signing for periods of non-service. If the services are spasmodic, the appropriate legends will be removed.
15. Number of Available Services. Where three or less services are available, a service sign will be installed below the advance guide sign on approach to the

interchange. Where more than three services are available, a separate service sign will be installed between the advance guide sign and exit direction sign for the interchange. This sign will be approximately 144 in by 66 in (3600 mm by 1650 mm) with the appropriate services named and the action message, NEXT RIGHT.

16. Supplemental Direction Signing. Supplemental direction signing should be provided at those interchanges signed for services where the services are not visible from the interchange. It may be desirable to sign the distance to the services where the services are located in a by-passed community and the distance to the services is more than 1 mile (1.5 km).
17. Airport Signing. Airport signing may be erected on Interstate facilities to indicate the direction to an airport. Airport signing should be erected in advance of the interchange of the road that leads to the airport. Use a white legend and border on a green background. MDT practice is to use the symbol on airport signing.

#### **18.5.1.2 Non-Interstate Facilities**

Service signing along non-Interstate facilities is desirable where services are infrequent and are found only on an intersecting highway or crossroad. The following presents the Department's guidelines for the application of service signing along non-Interstate facilities:

1. Urban Areas. Service signing (e.g., GAS, FOOD, LODGING, PHONE) will not be allowed in urban areas or other areas where roadside commercial signing is permitted by State statute or where on-premise signing is visible.
2. Intersections. Service signs may be erected at highway intersections where the corresponding service is not located at or clearly visible from the intersection and where the service is not located more than 2 miles (3 km) from the intersection. These signs will have a white legend of the symbol type on a reflectorized blue background and will be mounted at the intersection beneath the existing ENTERING "COMMUNITY" directional sign wherever practical.
3. Gas. Gas signing should be provided for a conventional service station that is open at least 12 hours a day, six days a week and offers vehicular services (e.g., gas, diesel fuel, oil, water, rest room facilities, potable drinking water, telephone).
4. Food. Food signing should be provided for an eating establishment that serves two meals a day and is licensed by the Montana Department of Public Health

and Human Services. The establishment should be open at least six days a week and have a telephone.

5. Lodging. Lodging signing should be provided where six or more units are available. The establishment must be licensed by the Montana Department of Public Health and Human Services and have a telephone.
6. Phone. Phone signing should be provided where a public phone booth is available seven days a week.
7. Hospital and Emergency Medical Services. Hospital and emergency medical services signing may be erected along State highways that are routed through cities. These signs should be erected just in advance of the most direct street exit from the State highway that proceeds to the hospital. Any additional signing required within the city will be the responsibility of the city or local authority. Use a blue reflectorized background with white reflectorized legend, arrow and border. See Section 18.5.2 for additional criteria.
8. Airport. Airport signing may be erected on non-Interstate facilities to indicate the direction to an airport. Airport signing should be erected in advance of the intersection of the road that leads to the airport. Use a white legend and border on a green background. MDT practice is to use the symbol on airport signing.

### **18.5.2 Hospital and Emergency Medical Services Signing**

Hospital and Emergency Medical Services (EMS) signing that conforms to the MUTCD will be provided by the Department along all State-maintained highways for medical facilities that meet the following criteria:

1. the medical service is available seven days a week,
2. the medical service is available 24 hours a day, and
3. the hospital/EMS facility is licensed by the State of Montana to provide medical services.

The following presents the Department's guidelines for the application of the HOSPITAL and EMERGENCY MEDICAL SERVICES signs:

1. Sign Assembly. The HOSPITAL and EMERGENCY MEDICAL SERVICES signs will have a blue reflectorized background with a white reflectorized legend, arrow and border. The sign assembly will consist of an "H" symbol panel with the "HOSPITAL" word and arrow panels beneath the symbol for hospitals. The sign

assembly for EMS will consist of a panel with the legend “EMERGENCY MEDICAL SERVICES” and an arrow.

2. Interstate Facilities. Hospital and EMS signing should be provided on the fastest and most direct route from the Interstate. Where all routes are equal, give preference to the first interchange because it will be the one normally taken in an emergency situation.
3. State-Maintained, Non-Interstate Facilities. Hospital and EMS signing may be erected along State-maintained facilities that are routed through cities. These signs should be erected at points of direction change and just in advance of the most direct street exit from the State facility that proceeds to the hospital. Any additional signing required within the city will be the responsibility of the city or local authority. If practical, signing should direct the traveling public to the emergency entrance of the hospital.
4. Cities/Towns. Signing should be located at the city or town limits of those cities or towns having qualifying medical facilities. In cases where more than one medical facility is available, hospital and EMS signing will be erected for the nearest facility on a route-by-route basis.
5. Rural Locations. In situations where a qualifying hospital or EMS facility is located in a rural area, signing may be provided at the intersection of the State-maintained route and the route to the medical facility. Trailblazing to the medical facility from the State-maintained route will be the responsibility of local authorities.

### **18.5.3 Post Office Signing**

Post office signs are considered non-essential signing and should only be considered in larger cities (e.g., Great Falls, Billings) where a post office location is not readily apparent or at locations where there is a demonstrated difficulty being experienced by the general public in locating the facility. Post office signs will have a white symbol on a blue background.

### **18.5.4 Signing for Units of Higher Education**

Informational signing should be provided for qualified units of higher education on State-maintained facilities. The signing will provide the official name of the educational unit or its abbreviation. Supplemental directional signing also may be provided at interchange ramps.

Sign legends on Interstate facilities will read as, for example: "CARROLL COLLEGE NEXT RIGHT." Additional wording is not allowed on Interstate signing. Sign legends on other State-maintained facilities should not include the words: "HOME OF" but may, if necessary, include the name of the nearest major intersection to the institution. No more than four highway signs of any type should be erected for any individual educational unit.

To qualify for informational signing, the educational unit shall be designated as a Montana University System Unit or have been assigned by law to be supervised and coordinated by the Board of Regents of Higher Education as provided in Article X, Section 9 of the 1972 Constitution of Montana. Private units of higher education may qualify for informational signing if their curriculum offers two- or four-year certificates or degrees comparable with those given by the units of the Montana University System with an annual enrollment of at least 500 students. The following is a list of the institutions that are eligible for signing:

1. Montana State University - Bozeman,
2. Montana State University - Billings,
3. Montana State University - Northern,
4. The University of Montana - Missoula,
5. Montana Tech of the University of Montana,
6. MSU - Billings College of Technology,
7. Division of Technology (*within Montana Tech of the University of Montana*),
8. MSU College of Technology - Great Falls,
9. Helena College of Technology of the University of Montana,
10. College of Technology (*within the University of Montana*),
11. Western Montana College of the University of Montana,
12. Miles Community College,
13. Dawson Community College,
14. Flathead Valley Community College,
15. Carroll College,
16. University of Great Falls, and
17. Rocky Mountain College.

### **18.5.5 Campground Signing**

#### **18.5.5.1 Signing for Public Campgrounds**

Signing for public campgrounds is permitted along State-maintained facilities. The following are the Department's guidelines relative to public campground signing:



1. Distance. To qualify for signing, the public campground must be located a distance not more than 10 miles (15 km) (15 miles (25 km) under special circumstances) along an all-weather road from an interchange or intersection.
2. Camping Sites. The campground must have a minimum of six camping spaces available with adequate vehicle parking.
3. Sanitary Facilities. The campground must have sanitary facilities (i.e., flush, chemical or tank-type toilets). Adequate garbage and trash storage receptacles must be provided. An adequate collection and disposal program must be maintained. The campground must have potable drinking water, preferably under pressure. All of the above items must be approved by the local sanitation authority and/or the Montana Department of Public Health and Human Services.
4. Other Agencies. Other governmental agencies (e.g., Department of Fish, Wildlife and Parks; Forest Service; Bureau of Land Management) may provide signing for campgrounds constructed by those agencies. However, approval and a permit is required by the Department. When these campgrounds are not open (i.e., winter or other off periods), the camping signs should be covered or removed by the owner of the signs.
5. Recreation Signs. Where appropriate, camping signs on State-maintained facilities should be placed on existing recreation signs that were erected by the Department of Fish, Wildlife and Parks; Forest Service; Bureau of Land Management or other public agencies. Where camping signs are erected with existing Department guide or information signs, the agency owning the campground will coordinate with the local District Office to cover or remove the camping signs during periods of the facility's closure.
6. Interchanges. On Interstate interchanges, camping signs should be provided at ramp terminals to indicate the direction and distance to the campground. Where there are several campgrounds located in the vicinity of the interchange, the distance may be eliminated from the sign to prevent confusion.
7. Specifications. All camping signs will have reflectorized white symbols and border on a blue or brown reflectorized background.
8. Number of Signs. Normally, one sign is installed in each direction on the mainline. For Interstates, one additional sign is installed on each exit ramp.
9. Application form. Use MDT Application Form M-167, which can be obtained from the District Offices.

### 18.5.5.2 Signing for Private Campgrounds

Signing for private campgrounds is permitted on all State-maintained facilities, including Interstates. The following are the Department's guidelines relative to private campground signing:

1. Distance. To qualify for signing, the private campground must be located at a distance not to exceed 10 miles (15 km) from the interchange of intersection, via an all-weather road.
2. Camping Sites. The campground must have a minimum of six spaces available for camping with suitable parking.
3. Sanitary Facilities. The campground must be licensed for private operation and be approved by the local sanitation authority and/or Department of Public Health and Human Services. The Montana Department of Public Health and Human Services will notify the Department if a campground fails to be maintained in an approved manner. The campground must have an adequate supply of potable drinking water, preferably under pressure, and have modern sanitary facilities (i.e., either flush, chemical or tank-type toilets). Both must be approved by the local sanitation authority and/or Department of Public Health and Human Services.
4. Trailblazing Signs. The campground owner will have the responsibility for erecting the necessary trailblazing signs from the interchange or intersection where the Department has provided directional signing. These trailblazing signs must be located off of the highway right-of-way.
5. Application Requirement. The campground owner will make application (Form M-167) at the local District Office for camping signs to be installed at the public highway interchange or intersection. The owner will provide the current Montana Department of Public Health and Human Services license number, the name of the campground and license name and address. It will be the responsibility of the respective Field Maintenance Chief to ensure that these qualifications and criteria for the campground signs are met.
6. Interstate Signs. Reflectorized, white on blue, separate camping signs should be added to the present service signs on Interstate highways so that they may be removed or covered by the Department for campgrounds that operate on a seasonal basis. Two weeks advance notice should be given by the owner to the local District Office for season openings or closings.

- 
7. Interchanges. On the Interstate interchange, campground signs should be provided at ramp terminals to indicate the direction to the campground.
  8. Specifications. All camping signs shall have reflectorized white symbols and border on a reflectorized blue or brown background.
  9. Number of Signs. Normally, one sign is installed in each direction on the mainline. For Interstates, one additional sign is installed on each exit ramp.



## 18.6 VISITOR INFORMATION SIGNING

### 18.6.1 Signing for Visitor Information Centers

All guide signs for visitor information centers, both legend and location, will be in conformance with the MUTCD and the Department's criteria for service signing. The sign will have a legend of the symbol type "?" that may be supplemented by an attached educational plaque carrying the legend "VISITOR INFORMATION." The name of the agency, community, group or enterprise should not appear in the legend of any highway information sign. To qualify for signing, a visitor information center must meet the following conditions:

1. Type of Facility. The center must be a structure or facility, staffed or unstaffed, established for the purpose of providing visitor information services to the motoring public. It should range from a small kiosk or booth that is on or adjacent to the highway right-of-way to a more significant staffed building where visitor information is a sole or major reason for its operation (e.g., local Chamber of Commerce).
2. Commercial Activities. The center must not carry out commercial enterprise, provide vending machines or provide overnight camping.
3. Safety. To preserve traffic safety, the center must adhere to the Department's design and traffic control criteria, be in good repair and not create a traffic hazard. The center should be located a suitable distance from the highway to provide a minimum buffer. The site must have sufficient width to provide for the necessary maneuvers and parking space and provide an open driving lane at all times.
4. Operation Hours. The center must provide continuous operation for at least eight hours a day, seven days a week.
5. Parking. The center must provide adequate off-street parking to handle the anticipated demand and include off-street parking for large recreational vehicles and travel trailers.
6. Maintenance. The center must have adequate garbage collection and snow removal services.

The Department reserves the right to remove a center's signing if it does not meet these criteria or if the developer/operator does not comply with documented maintenance or change requests. All the costs associated with a center's signing will be borne by the developer/operator.

Service signing for visitor information centers may be erected upon request at intersections of State-maintained facilities, where the service is not located at or clearly visible from the intersection and where the service is not located more than 1 mile (1.5 km) from the intersection.

Visitor information signs only should be placed at an intersecting roadway that leads directly to the center and at the center itself if an on-premise sign is not visible. Trailblazing signs should not be placed along the intersecting roadway or along roadways not maintained by the Department. If the intersecting roadway leading to the center requires trailblazing, informational signs should not be placed at the intersection until the local authority having jurisdiction has completed the affective placement of the trailblazing signs. The Department reserves the right to refuse to install informational signs or remove existing signs if trailblazing is found to be substandard or confusing.

If the center is operated on a seasonal basis, signs should be removed or covered during the off season. It is the responsibility of the developer/operator to notify the Department of the existence of seasonal operation.

### **18.6.2 Signing for Points of Interest**

Signing for points of interest will consist of a sign panel with the non-descriptive words "POINT OF INTEREST." This sign may be mounted with a directional arrow that should be placed at the interchange or intersection of the main road facility that leads to the point of interest. In order for a development to qualify for point-of-interest sign, it must meet the following criteria:

1. Type of Facility. The development must have an element of uniqueness (e.g., rest area, historic point) and should have a minimum combination of the following features:
  - a. fishing,
  - b. boating,
  - c. hunting,
  - d. camping,
  - e. swimming,
  - f. horseback riding,
  - g. skiing,
  - h. snowmobile riding,
  - i. wildlife watching,
  - j. mineral displays,
  - k. botanical displays,

- l. historical exhibits, and/or
  - m. natural phenomenon or natural wonder.
2. Tourists. The development must generate a significant number of unfamiliar motorists.
3. Parking. The development must have adequate off-street parking and the ability to accommodate large recreational vehicles, trailers and tour buses.
4. Sanitary Facilities. The development must meet the Montana Department of Public Health Human Services, be approved by the local health officer and have modern sanitary facilities with potable drinking water.

### **18.6.3 Museum Signing**

Museum signing is considered non-essential signing for the traveling public. Museum signing should only be erected for museum facilities that are totally owned and operated by the State or Federal government or can be identified as non-commercial, non-profit private facilities. Placement of museum signing should not interfere with essential highway signing.

The museum sign assembly consists of an “M” symbol panel with a supplemental word panel with the name of the museum or the word “MUSEUM.” A directional panel should be erected below the “MUSEUM” panel and should consist of the appropriate arrow or word message (e.g., RIGHT TWO BLOCKS). The “M” symbol sign will be white on brown on a minimum 24 in by 24 in (600 mm by 600 mm) panel. The MUSEUM panel and directional panel will be white on brown with a minimum size of 24 in by 6 in (600 mm by 150 mm) and a maximum size of 36 in by 15 in (900 mm by 375 mm).

### **18.6.4 Signing for Recreation and Scenic Areas**

#### **18.6.4.1 Interstate Facilities**

Signing for recreation and scenic areas may be provided along the Montana Interstate system. The following are the Department’s guidelines relative to signing for recreation and scenic areas on Interstate facilities:

1. Interchange Signing. Signing for recreation areas should be provided for those facilities that are adjacent to Interstate interchanges. The recreation area may be the major destination; therefore, it may appear on the advanced guide and the exit direction signs. However, where two principal destinations that are more important than the recreation area served by the same interchange and the

recreation area is a destination with a significant volume of traffic, a supplemental sign may be installed.

2. Specifications. A service sign underneath the principal guide sign may be used. This service sign will have reflectorized white letters on a blue reflectorized background and should carry a legend of the recreational area activities (e.g., camping, boating, fishing, no boating, picnicking, ski area). A service sign mounted below a guide sign is restricted to no more than four services. Guide signing for recreational areas on the interchange crossroad will be reflectorized brown background with reflectorized white letters and border.

#### **18.6.4.2 Non-Interstate Facilities**

Signing for recreation and scenic areas may be provided along State-maintained highways. The following presents the Department's guidelines for recreation and scenic area signing for State-maintained facilities:

1. Specifications. Where a public park or recreation area is a destination for a significant volume of traffic, special signs may be erected at the intersection that provides access to the park or recreational area. The special signs may have a trapezoidal shape with reflectorized white letters and border on a reflectorized brown background. A special recreational symbol may be used on the face of permitted signs (e.g., Department of Fish, Wildlife and Parks' bear, the Forest Service's logo).
2. Monetary Responsibilities. Where the larger recreational or scenic areas are considered major destinations, the owning agency is responsible to pay for all signing. The owning agency may design, fabricate and erect its own signs according to existing MDT policy; or the design, fabrication and erection of signs may be accomplished by the Department at an agreed price with the owning agency. Any combination of design, fabrication or erection between the agencies is acceptable. In any case, the signing and placement must be approved by the Department prior to installation.
3. Auxiliary Signs. Activities signing such as camping, picnicking (when camping is not listed), boating (fishing where boating is not applicable), and ski area may be placed below the main guide sign. These service signs will have a white legend on a brown background.
4. Inter-Agency Coordination. There will be a cooperative effort between the Forest Service; Department of Fish, Wildlife and Parks; Bureau of Land Management or other public agencies and the Department with regard to recreational signing



from State-maintained facilities. The Department is responsible for approval of all highway signs placed within the highway right-of-way.

5. Sign Confusion. Where there is a confusion of signs (e.g., where several public agencies have facilities in a recreational area), the Department will act as an arbitrator and properly sign an area in advance of the intersection. The public agencies involved are expected to participate with the Department in the cost of such signing.

### **18.6.5 Signing for Historic Sites and Historical Monuments**

When signing requests for historic sites are transmitted to the Department, they will be submitted to the Sign Review Committee for action. The Sign Review Committee will consult with the Montana Historical Society as to the historic significance of the site in question. The text of the sign will also be considered and the final wording will be approved by the Historical Society and the Department.

Historical monuments are administered by the Department of Fish, Wildlife and Parks. Requests that are received by the Department concerning the erection of historical monuments will be forwarded to the Department of Fish, Wildlife and Parks.

On the Interstate mainline, the designer should provide destination and supplemental guide signing that includes both the name of the historic site and an appropriate action message. On interchange ramps, directional signing that includes the distance to the site should be provided. Where a historical monument or historic site is located within an Interstate rest area, specific signing should not be provided.

Directional signing on State-maintained, non-Interstate facilities should be provided at the roadway that provides the most direct access to the site. Any other signing will be installed by the organization or agency responsible for developing the historic site.

Historic site signs shall be reflectorized white on reflectorized brown, except where the site name is incorporated in signs listing other primary destinations. On non-Interstate facilities, advance signs and directional signs will be trapezoidal in shape as illustrated in the MUTCD.

### **18.6.6 Ski Area Signing**

Ski areas are eligible for recreational guide signing. All ski area signing will have a white legend on a brown background. The legend will consist of the words "SKI AREA" or the skier symbol and a directional arrow only. Additional signs may be requested by

the ski area and will be considered on a case-by-case basis for ski areas served by a State-maintained highway.

The signing should be placed at the intersection of the ski area access road and the State-maintained route nearest the ski area. If necessary, additional guide signs may be placed at the appropriate Interstate interchange to provide direction to the nearest State-maintained facility.

Ski area signs should not be placed to interfere with existing traffic control signing.

### **18.6.7 Signing for Hot Springs**

Guide signs for commercially developed hot springs establishments are considered to be non-essential signs. Where these signs are erected, they should not interfere with essential signs. To qualify for directional signing from a State-maintained highway, hot springs establishments must meet the following requirements:

1. Licensing. The hot springs must be a part of a facility qualified for and under license by the Montana Department of Public Health and Human Services as required by State law for public bathing and/or swimming pools.
2. Operational Hours. The hot springs facility must maintain consistent hours of operation either on a year-around or seasonal basis. Facilities open seasonally should notify the appropriate District Maintenance Office at least two weeks in advance of the opening or closing dates so that the sign may be changed or covered accordingly.
3. Access Location. The facility will be eligible for signing if the access road leading from the hot springs ties directly to the State-maintained highway with no intervening routes. Directional signing should be provided at the intersection of the access road and the State-maintained highway. Any other signing outside of the highway right-of-way will be the responsibility of the applicant.

With consideration to the above requirements, the final determination of all requests for hot springs signing will be made by the Sign Review Committee.

Due to the number of hot springs that appear as place names on the official Montana State Highway Map, all hot springs facility names may be used in the sign legend. Hot springs signs will have a white legend on a brown background.

### **18.6.8 Golf Course Signing**

Golf course signs are permitted on the highway right-of-way; however, they are considered non-essential signs. No more than two signs will be permitted for each golf course and should be located at the most direct point-of-access available from the highway. The sign legend should be the symbol for a golf course with a directional arrow.

Under the direction of the Department, a city or county may erect golf course signing at its own expense on a permitted basis.

### **18.6.9 Signing for the US Forest Service**

Specific signing requirements for the US Forest Service are accommodated through a Memorandum of Understanding with the Forest Service and the Department. This Section summarizes relevant excerpts from this Memorandum. However, this Section may be supplemented with additional agreements between the MDT and Forest Service which further defines respective authorities and responsibilities for signing.

The following provisions will apply to all highways under the jurisdiction of the Department, regardless of the land status that the highway crosses. All traffic control devices will conform to the provisions of the MUTCD, AASHTO and FHWA guidelines and regulations.

The Department will:

1. Appoint the District Engineering Service Supervisor, or a designated representative, for each District as the person responsible for the coordination of these provisions.
2. Include provisions in the plans for relocating and resetting existing Forest Service signs that are impacted or affected by a construction project. This work will be performed at no cost to the Forest Service.
3. Ensure that all signs meet current criteria, including reflectivity, breakaway and placement requirements. Any existing signs that are upgraded to this criteria will be installed at the expense of the Department.
4. Install and maintain, in conformance with Federal and MDT requirements, all signs within the right-of-way limits on the National Highway System. Where warranted by the interest and importance of the area, the Department may erect appropriate guide signs indicating the availability of facilities on National Forest System lands.

5. Make the final decision on all signs for all State and US numbered highways.
6. Install and maintain all necessary traffic control (regulatory and warning), guide, information, route designation and other traffic signing within the right-of-way of the highway. This will include all guide signs to Forest Service roads maintained at a level 4 or 5 maintenance level as defined in the Forest Service directives system.
7. Replace any Forest Service signs that are damaged or destroyed during MDT activities (e.g., brushing or snow plowing). The Forest Service will provide sign specifications to facilitate replacement.

The Forest Service will:

1. Appoint a sign coordinator for each Forest Area responsible for these provisions.
2. Inform the MDT of any new Forest Service signs that need to be included in road contract plans including all the necessary drawings, specifications and instructions for installation. The Forest Service will pay for the fabrication and installation of all new signs, posts, breakaway devices and hardware.
3. Coordinate and consult with the appropriate Maintenance Chief for the planning, installation and maintenance of all signs located within the highway right-of-way that are the responsibility of the Forest Service. The Forest Service is authorized, with written concurrence of the MDT, to erect and maintain signs within the right-of-way.
4. Ensure that all warning, regulatory and guide signs comply with the MUTCD, AASHTO and FHWA guidelines and regulations.

#### **18.6.10 Signing for Other Government Agencies**

Government agencies (e.g., US Bureau of Land Management; Montana Fish, Wildlife and Parks; US Bureau of Wildlife and Fisheries; US Park Service) have provided areas of public interest and recreation that the motoring public may desire to visit. To direct the public to these parks, campgrounds, historic points, wildlife refuges, etc., guide and information signing may be provided.

Such signing must be in conformance with the MUTCD and Department criteria. These guide and information signs are generally rectangular in shape. The principal legend of these signs should be in letters of at least 4 in (100 mm) in height. Roadside parks, historic points, scenic turnouts, fishing access turnoffs and other minor facilities should

be marked with a trapezoidal shaped sign of approximately 36 in by 18 in by 30 in (900 mm by 450 mm by 750 mm). All signs directing the motorist will be reflectorized.

Signs with an area of 10 ft<sup>2</sup> (0.9 m<sup>2</sup>) or less should be mounted at least 10 ft (3 m) from the edge of the shoulder. Signs larger than 10 ft<sup>2</sup> (0.9 m<sup>2</sup>) should be mounted at least 20 ft (6 m) from the edge of the shoulder. All signs should be mounted at least 5 ft (1.5 m) above the level of the shoulder in rural areas and at least 7 ft (2.1 m) above the curb or shoulder in urban areas.

Generally, all sign posts will be of a breakaway design unless the sign is located where there is little or no hazard of out-of-control vehicles colliding with the sign. Wood posts or poles with a maximum cross-sectional dimension of 6 in (150 mm) or greater will be bored for a breakaway slip plane near the ground line. For further information concerning breakaway designs, see the MDT Detailed Drawings.

The signing of these facilities from the Interstate system must be in conformance with the Manual on Highway Signing and Pavement Markings for the Interstate Highways. Such signing should be erected only after the usual interchange sign requirements have been satisfied. The facility must be also of general interest to a significant percentage of the traveling public. Signs for recreational facilities falling within the control of access limits will be furnished, erected and maintained by the Department.

The signing of facilities from non-Interstate facilities must be in conformance with the MUTCD and the Department criteria. The owning agency of the facility will reimburse the Department for the installation of signs at an agreed price. The Department will furnish, erect and maintain these signs as long as the park or recreational facility is being operated. Major maintenance or replacements will be at the cost of the agency owning the facility.

The Department requires an encroachment permit for all signs owned by other governmental agencies. It will be the responsibility of the various agencies to apply for encroachment permits for signs now located on the State highway right-of-way.



**18.7 MOTORIST INFORMATION SIGN PROGRAM**

For information on the Department's motorist information sign program, see the applicable sections of the Montana Codes Annotated, the Administrative Rules of Montana, and the Department's LOGO and TODS signing policy. For further information on Montana's motorist information sign program, the designer should contact the motorist information sign program coordinator in the Helena Central Office.





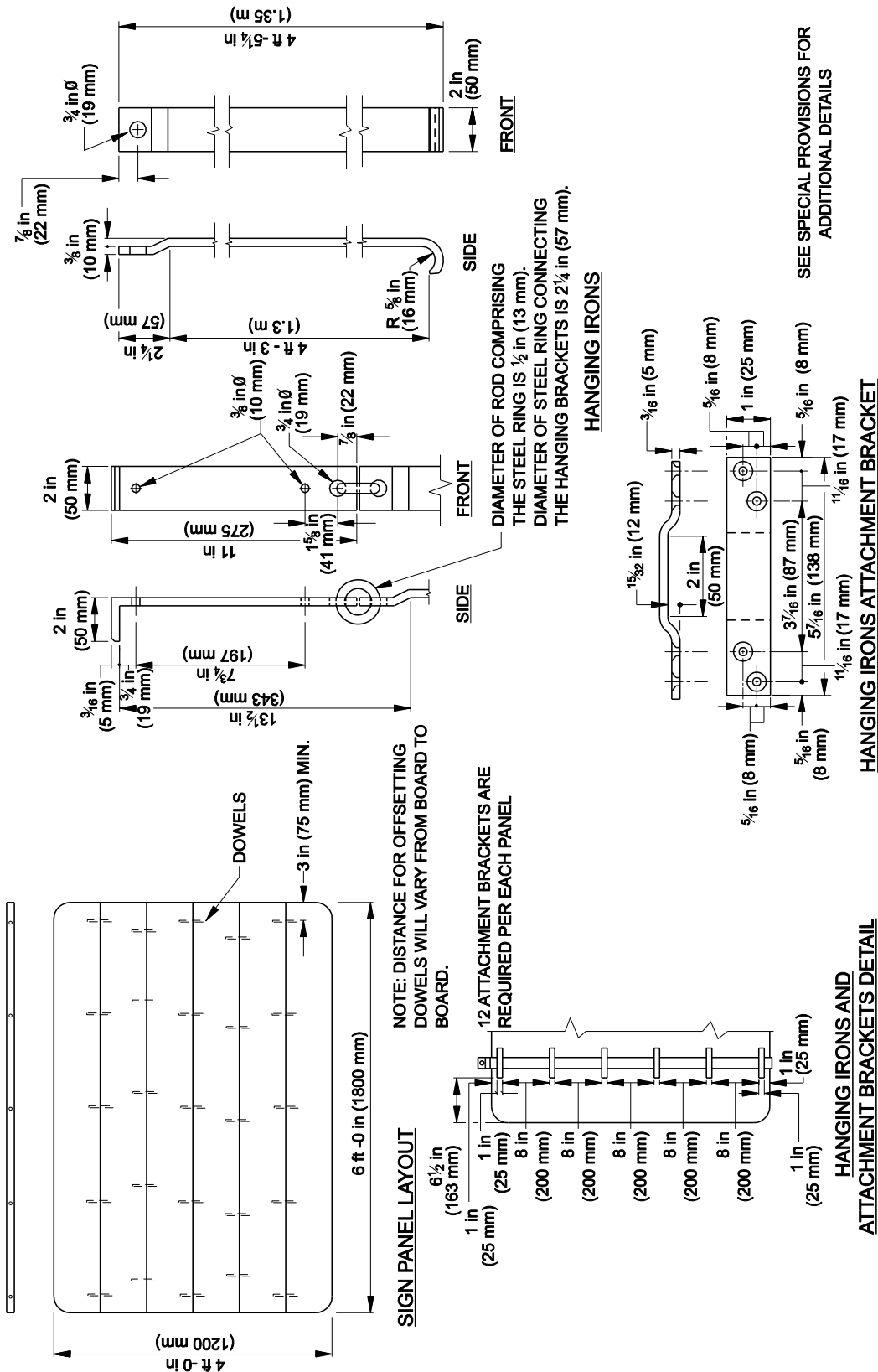
## 18.8 MISCELLANEOUS SIGN DETAILS

To assist the designer in developing highway signing plans, this section provides several miscellaneous sign details. Although these sign details present a major portion of the information required, the designer may need to make adjustments to match field conditions for each individual project. Figure 18.8A provides a list of the sign details illustrated in this Section.

<b>SIGN DETAIL</b>	<b>FIGURE NUMBER</b>
Historical Marker Detail	Figure 18.8B
Concrete Barrier Sign Mounting Detail	Figure 18.8C
Overhead Cantilever Structure	Figure 18.8D
Sign Clamp for Horizontal Mast Arm	Figure 18.8E
Overhead School Crossing Mounting	Figure 18.8F
Flashing Beacon and Sign Mounting Detail	Figure 18.8G
Multiple Chevron Sign Barricade	Figure 18.8H

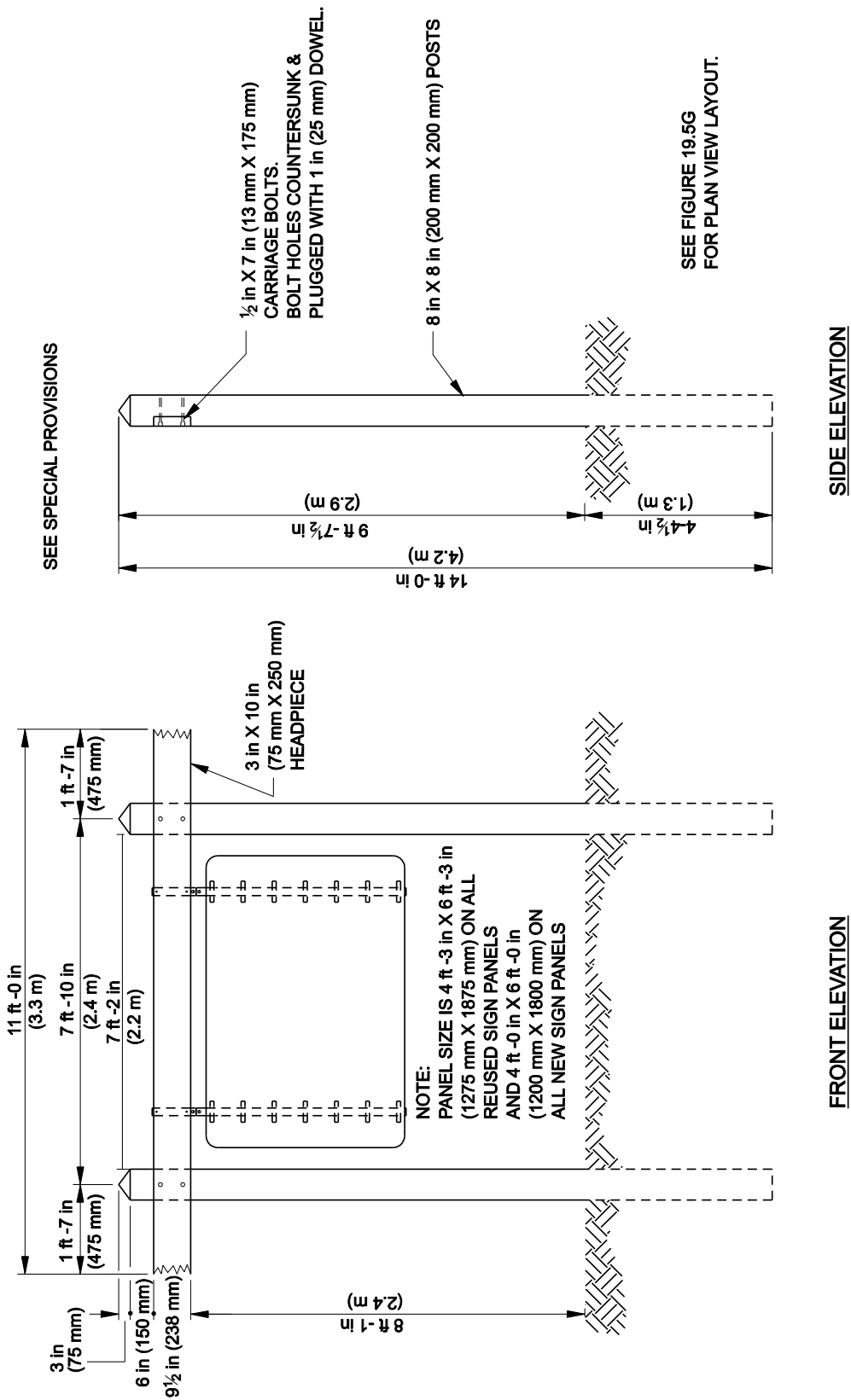
### **SIGN DETAIL SUMMARY**

**Figure 18.8A**



HISTORICAL MARKER DETAIL

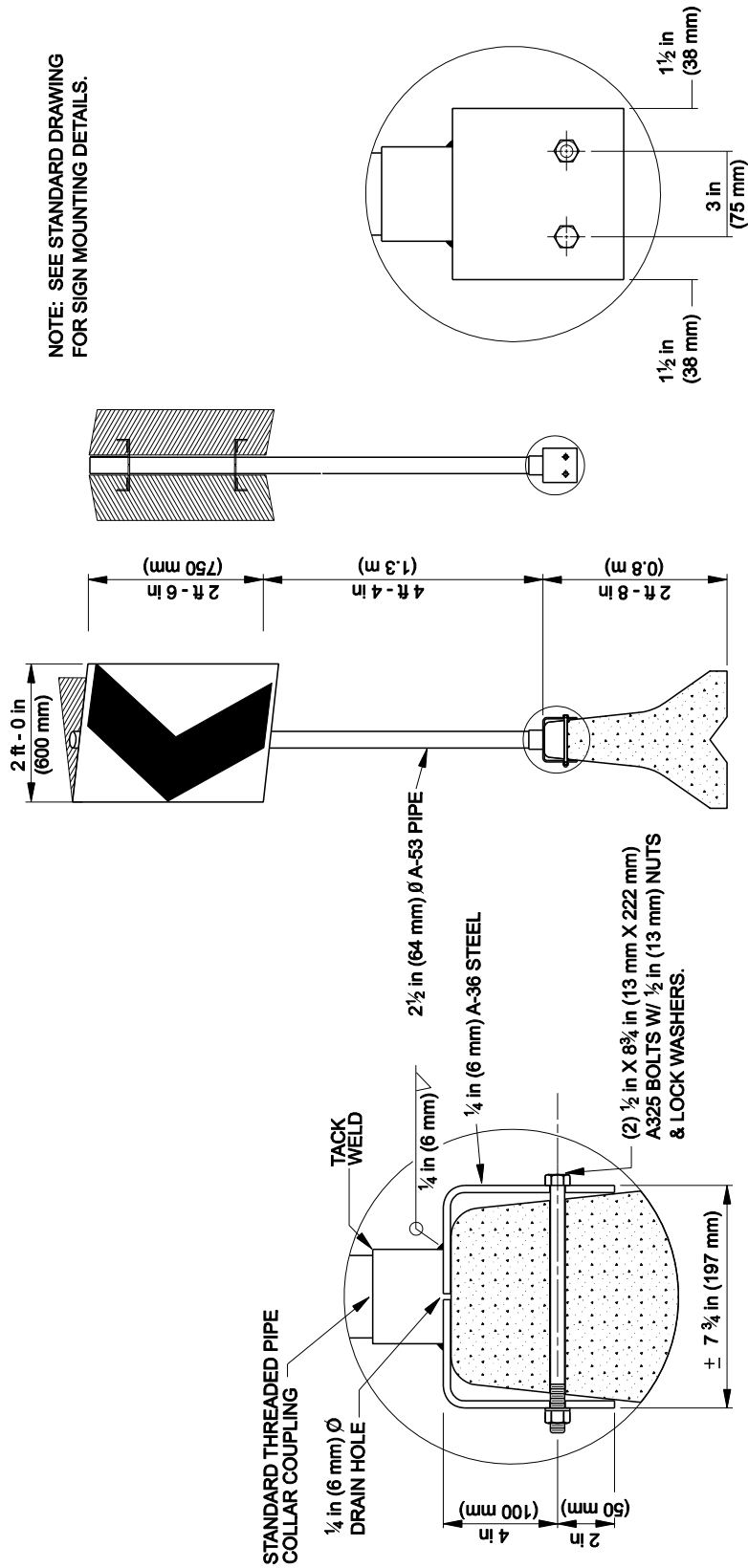
Figure 18.8B



**HISTORICAL MARKER DETAIL**

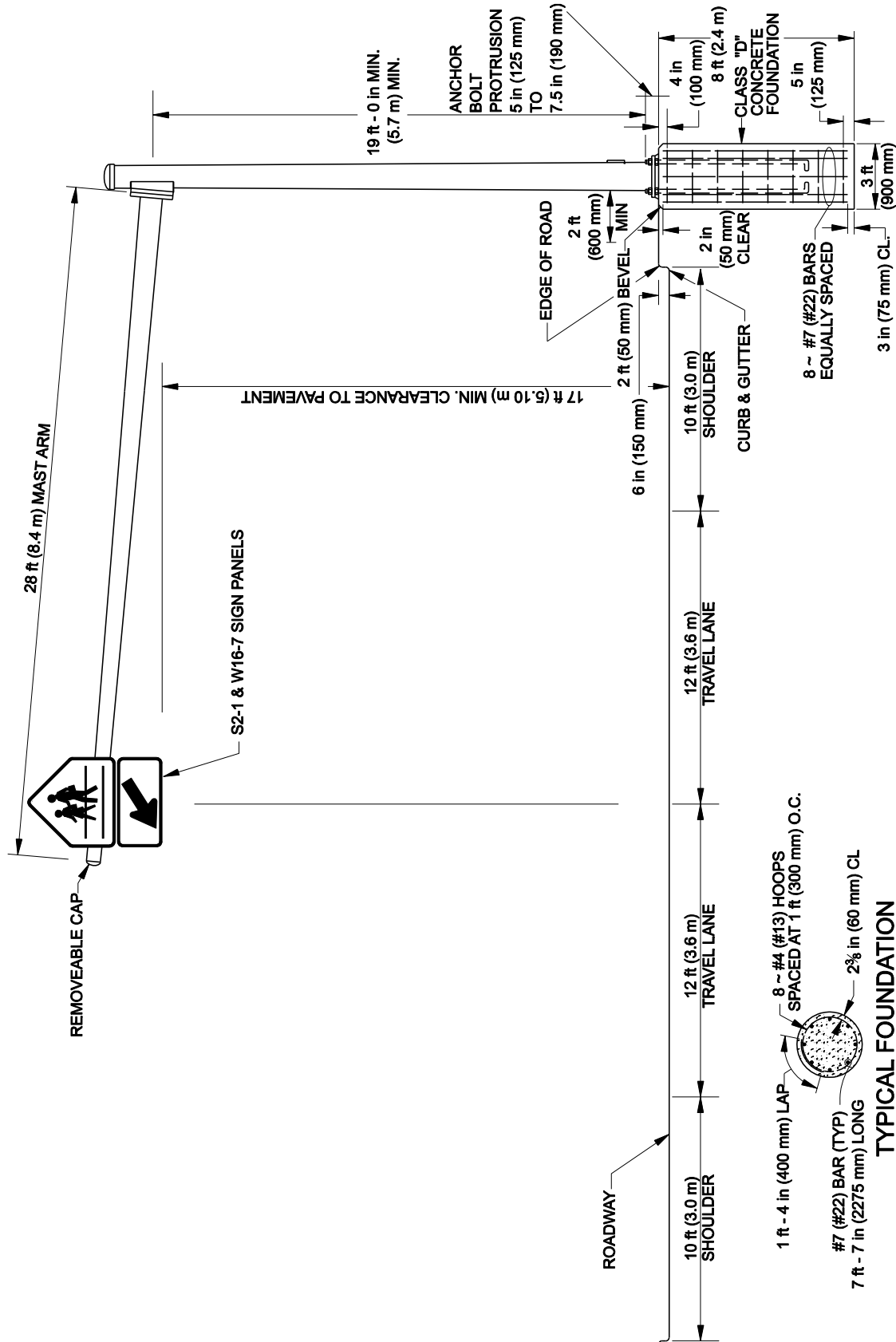
**Figure 18.8B**

(Continued)



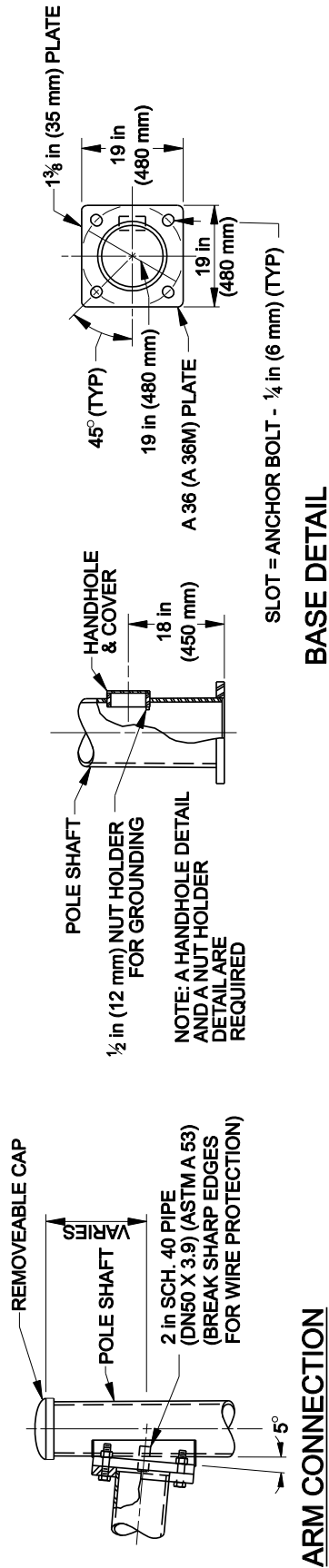
CONCRETE BARRIER SIGN MOUNTING DETAIL

Figure 18.8C



OVERHEAD CANTILEVER STRUCTURE

Figure 18.8D

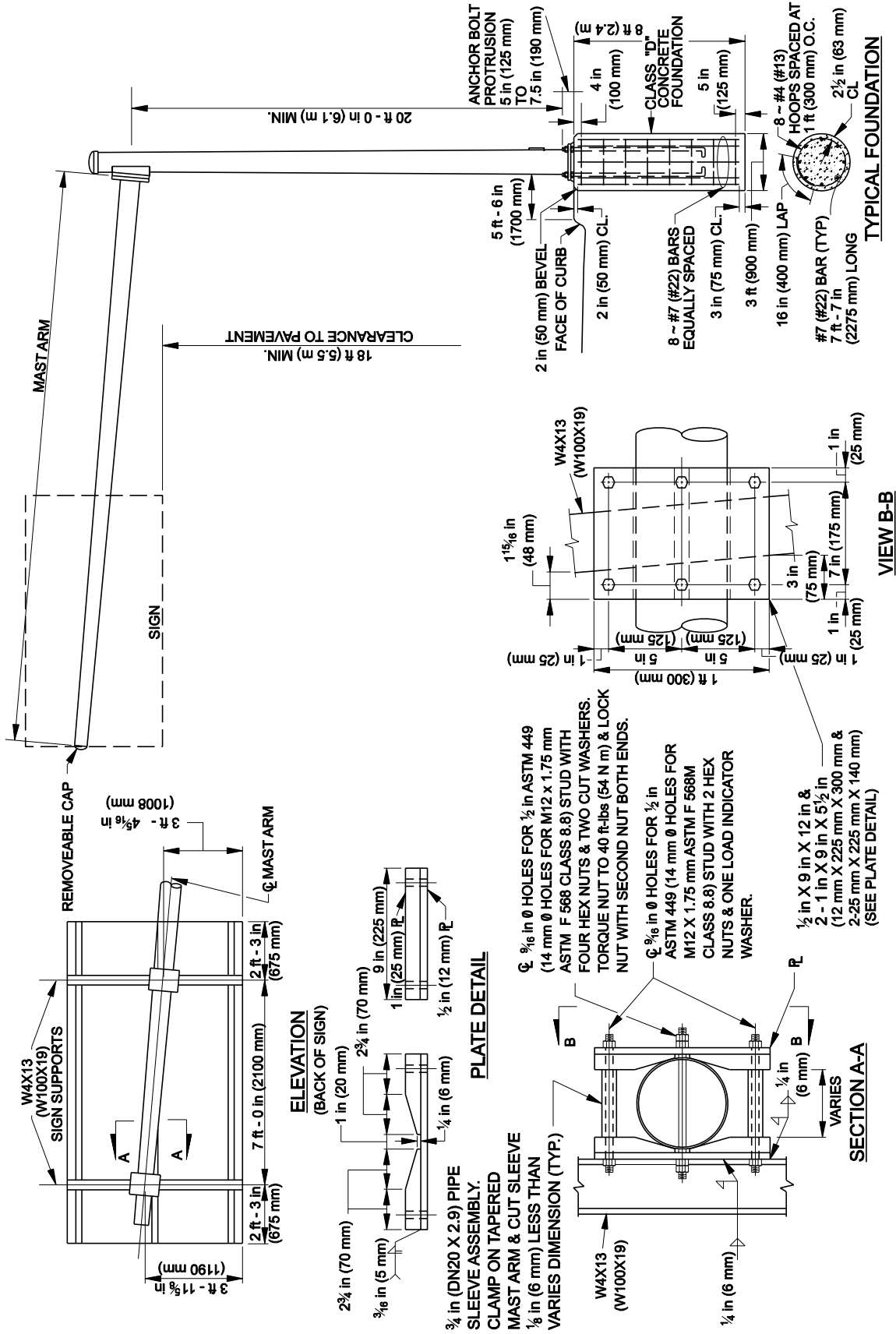


Notes:

1. Mount all signs level horizontally on the mast arm as shown and centered over the appropriate travel lane.
2. Include mounting hardware in the unit bid price for signs.
3. Design and furnish all mounting brackets and overhead cantilever structure-signal for placement of signs.
4. Provide shop drawings according to the MDT Standard Specifications.
5. Design and inspect the structure in accordance with the current AASHTO Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, including the fatigue requirements in Section 11 and any amendments thereto.
6. Design wind velocity 90 mph (145 km/h).
7. Design Area = Area with respect to maximum wind load wind is perpendicular to structure, as shown.
8. Design Weight = Dead load.
9. Supply anchor bolts A449 or equal, top end shall be galvanized and threaded 1 ft (300 mm) minimum.
10. Welding procedures, symbols, base metal specifications and grades must be called out prior to fabrication or approval.
11. Galvanize poles and arms in accordance with ASTM A123.
12. Galvanize all accessories in accordance to ASTM A153.

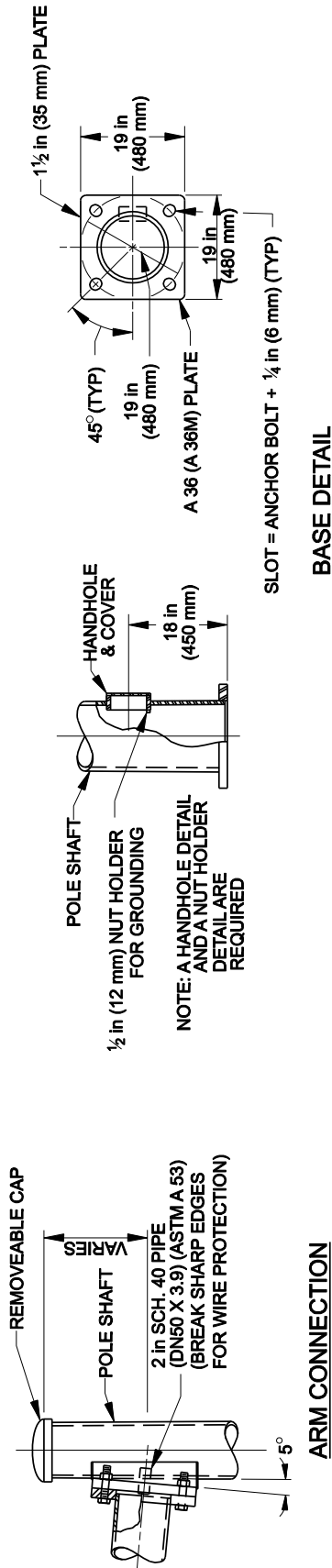
**OVERHEAD CANTILEVER STRUCTURE**

Figure 18.8D  
(Continued)



SIGN CLAMP FOR HORIZONTAL MAST ARM

Figure 18.8E



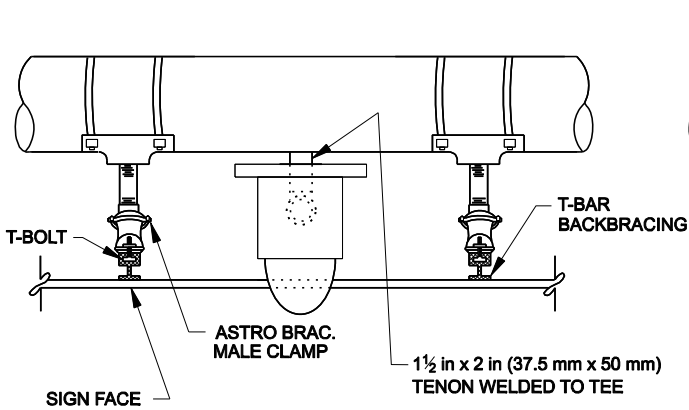
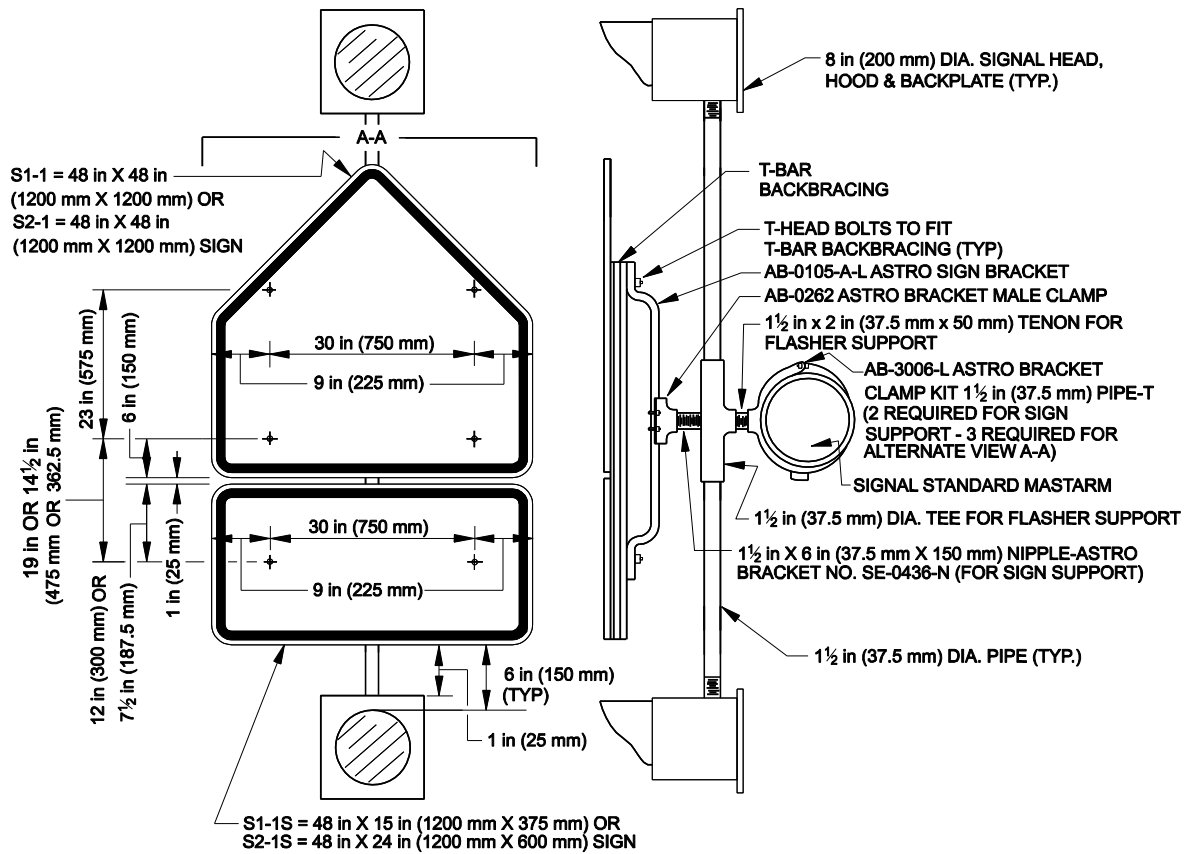
Notes:

1. Mount all signs level horizontally on the mast arm as shown and centered over the appropriate travel lane.
2. Include mounting hardware in the unit bid price for signs.
3. Design and furnish all mounting brackets and overhead cantilever structure-signal for placement of signs.
4. Provide shop drawings according to the MDI Standard Specifications.
5. Design and inspect the structure in accordance with the current AASHTO Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, including the fatigue requirements in Section 11 and any amendments thereto.
6. Design wind velocity 90 mph (145 km/h).
7. Design Area = Area with respect to maximum wind load wind is perpendicular to structure, as shown.
8. Design Weight = Dead load.
9. Supply anchor bolts A449 or equal, top end shall be galvanized and threaded 1 ft (300 mm) minimum.
10. Welding procedures, symbols, base metal specifications and grades must be called out prior to fabrication or approval.
11. Galvanize poles and arms in accordance with ASTM A123.
12. Galvanize all accessories in accordance to ASTM A153.

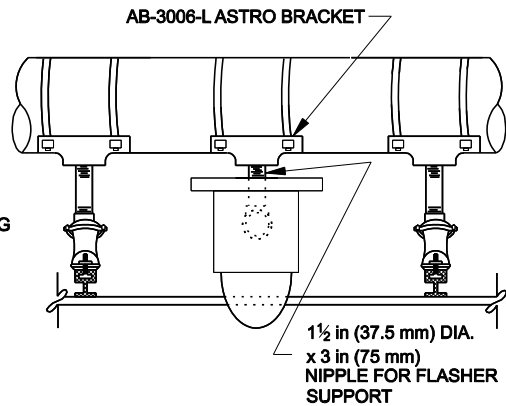
**SIGN CLAMP FOR HORIZONTAL MAST ARM**

**Figure 18.8E**  
(Continued)





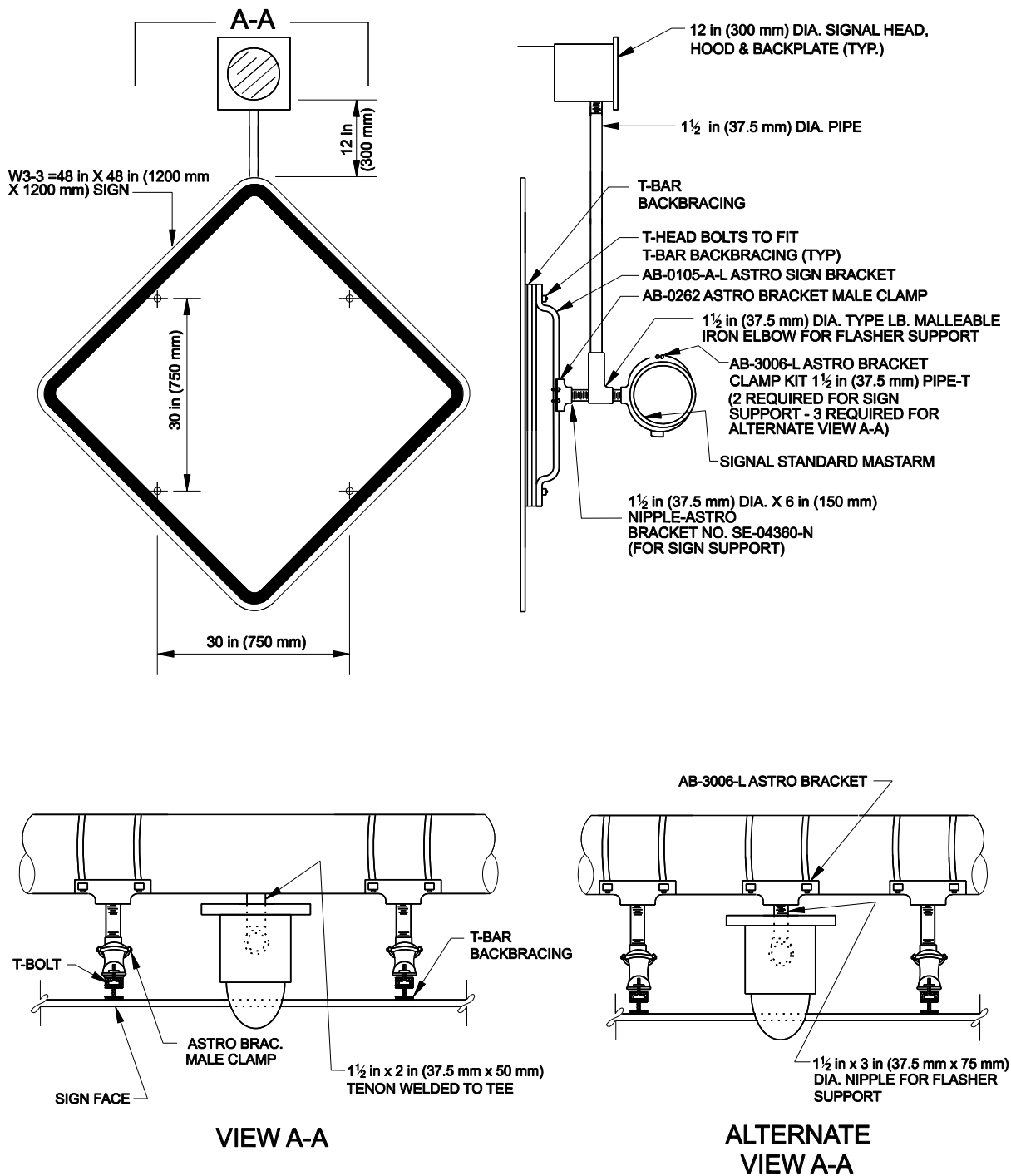
VIEW A-A



ALTERNATE VIEW A-A

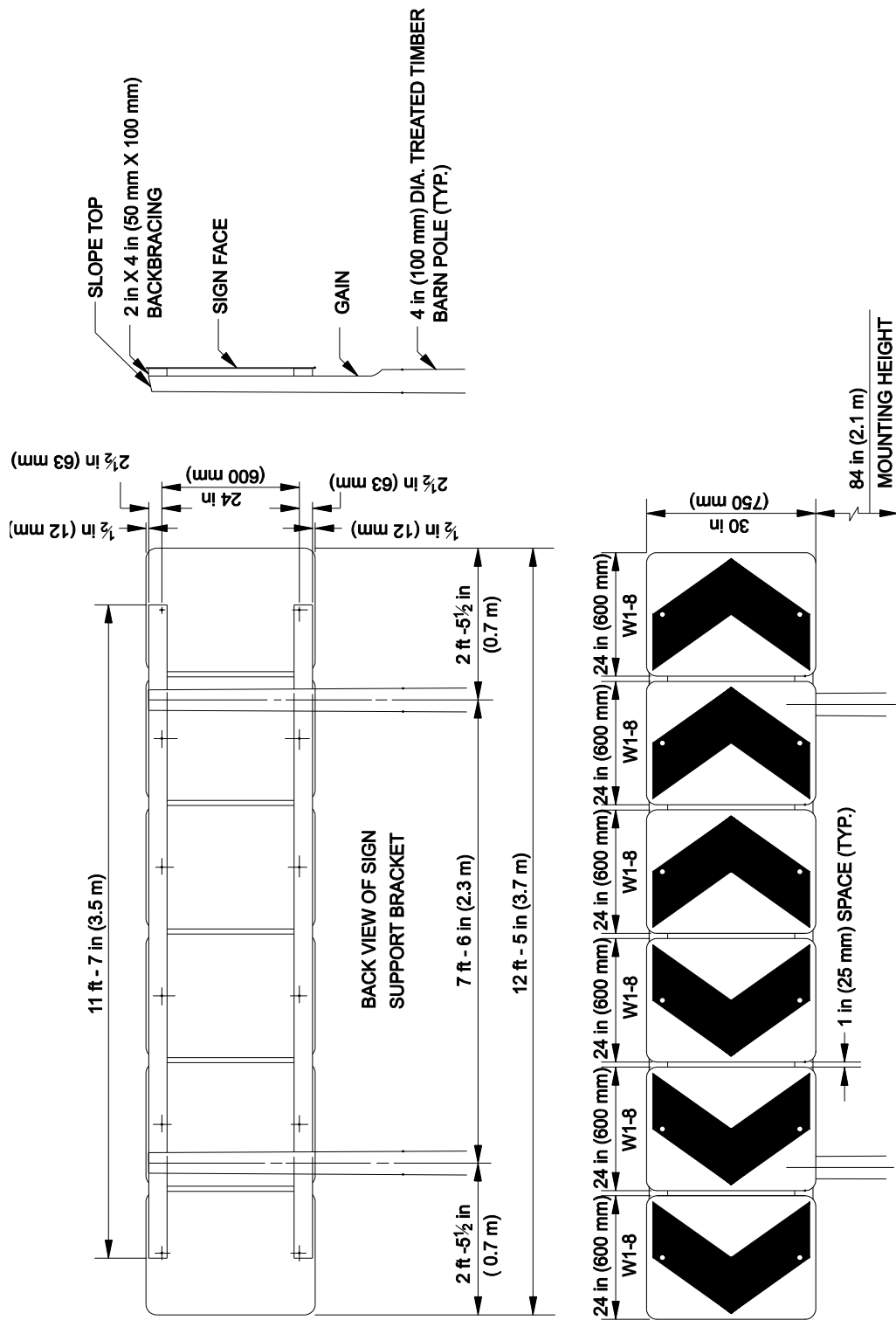
OVERHEAD SCHOOL CROSSING MOUNTING

Figure 18.8F



FLASHING BEACON AND SIGN MOUNTING DETAIL

Figure 18.8G



Notes:

1. Pole lengths are determined in the field to comply with mounting heights and embedment depths.
2. Placement of chevron sign barricade should be 20 ft (6 m) from edge of the traveled way.

**MULTIPLE CHEVRON SIGN BARRICADE**

**Figure 18.8H**



## **18.9 STRUCTURAL DESIGN**

The following sections present the Department's guidelines and procedures for the design of cantilever and overhead sign structures and ground-mounted sign support systems.

### **18.9.1 Cantilever and Overhead Sign Structures**

For projects that specify a contractor to perform the design of a cantilever or overhead sign structure and its foundation footing, the designer should note the following:

1. The designer should request soil borings from the District Office, giving the locations (i.e., station and offset) of the proposed foundations of the structure.
2. The District Office will provide the designer with the soil boring logs and retain the soil samples.
3. The designer should include the boring logs with the plans and specifications and detail only the required vertical and lateral clearances, sign dimensions, wind loading and a static loading which includes a margin for future modification (e.g., additional or larger signs, more signal heads). It is recommended that the Geotechnical Section review the specifications for these structures. These specifications should indicate that the boring logs provide the base line and that the contractor has the opportunity to perform additional soil analyses. Foundation details, structure member sizes or attachment details should not be shown on the plans.
4. In conjunction with the manufacturer, the contractor will perform the structural and foundation design and submit the design calculations and shop drawings, stamped and signed by a Professional Engineer registered in the State of Montana, to the Department's Project Manager. The Project Manager will forward this information to the Bridge Bureau.

### **18.9.2 Ground-Mounted Sign Supports**

This Section presents the Department's guidelines and procedures for the selection and design of ground-mounted sign supports for all signing on State-maintained highways. Supplemental information on post type, mounting height and foundation depth for regulatory, warning and school crossing signing are presented in the MDT Detailed Drawings. The design of ground-mounted sign supports is based on the following factors:

1. post type,
2. wind loading,
3. sign area, and
4. the height to the center of sign.

The designer is responsible for determining the appropriate sign type, sign size and the number and type of sign posts required to support the sign assembly. The selection of the sign post type will depend on the required strength, the area available for installation, the facility service life, the post type used for adjacent signing and, to a lesser degree, the location of the road facility (i.e., urban or rural area). Figure 18.9A provides the designer with the Department's guidelines for sign post type selection.

Unless field conditions warrant otherwise, the wind loading used for design purposes will be 90 mph (145 km/h). For wind areas exceeding 90 mph (145 km/h), the designer may need to increase the post strength.

Once the sign assembly, post type and wind loading have been established, the designer should determine the total sign area and the height to the center of the sign area. Figures 18.9C through 18.9Q then should be used to determine the appropriate post size and embedment. These figures are post size selection charts and may be used for signs with either single or multiple posts. Figure 18.9B summarizes the post size selection charts available to the designer.

Sign Post Type	Urban Facility	Rural Facility
Wood		X
Pipe	X	X
Structural Steel	X	X
Square Tubular	X	X

*Notes:*

1. *Normal breakaway requirements are not applicable behind guardrail; however, the guardrail deflection distance should be checked against the proposed post location. See Chapter Fourteen of the MDT Road Design Manual regarding roadside safety. Breakaway devices will be required behind cable rail.*
2. *See Size Selection Charts (i.e., Figure 18.9C through Figure 18.9I) for determining appropriate sign support.*

### GUIDELINES FOR SIGN POST TYPE SELECTION

**Figure 18.9A**

Post Size Selection Chart	Figure Number
Treated Timber Poles	Figure 18.9C
Treated Timber Posts	Figure 18.9D
Class Poles	Figure 18.9E
Pipe	Figure 18.9F
Structural Steel S Shapes	Figure 18.9G
Structural Steel W Shapes	Figure 18.9H
Telespar Signpost	Figure 18.9I

### SUMMARY OF POST SIZE SECTION CHARTS

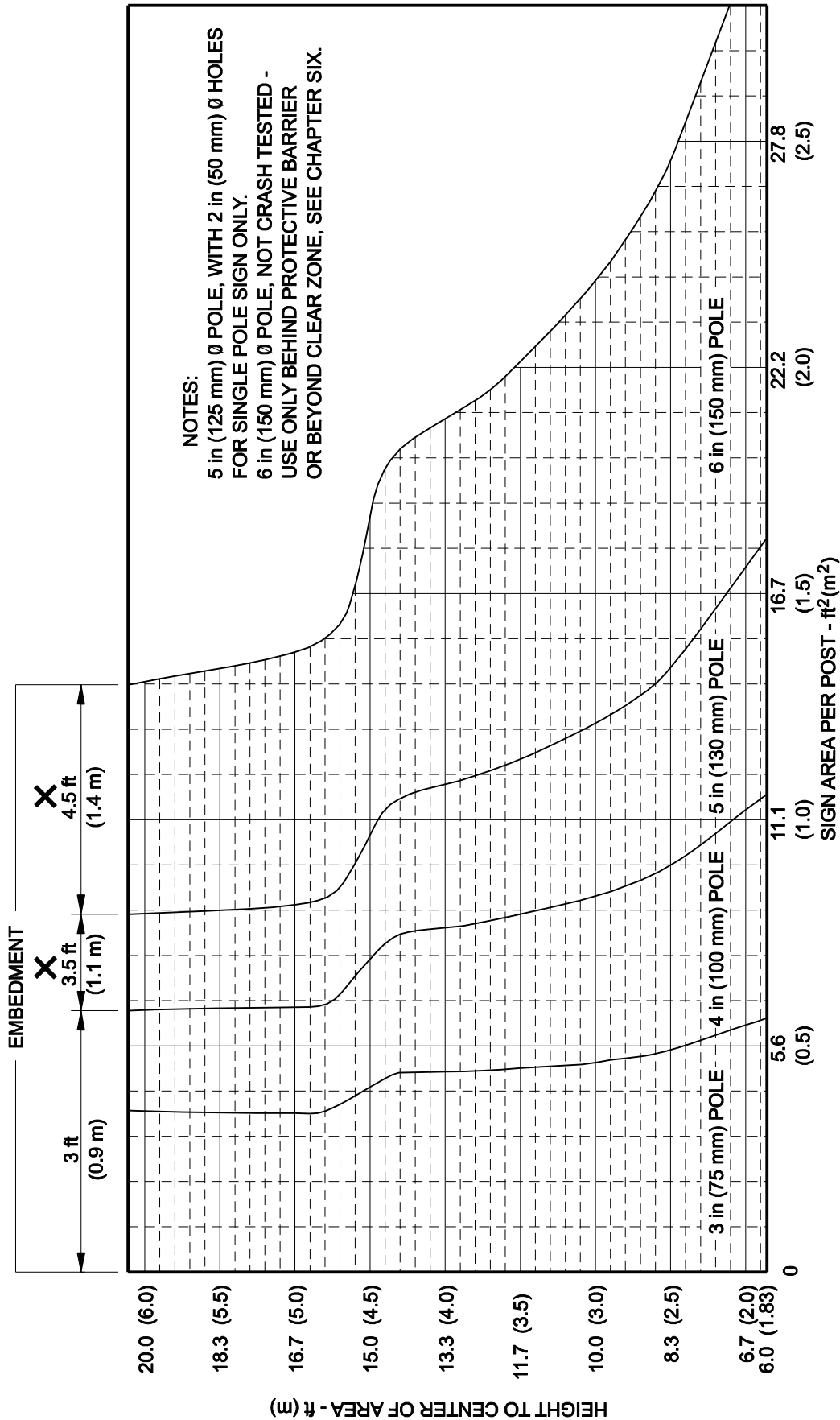
#### Figure 18.9B

#### 18.9.3 Breakaway Posts

Highway signs along facilities where the speed limit exceeds 40 mph (70 km/h) and where the sign is unprotected by guardrail or another barrier type, except cable rail, will have breakaway posts meeting the following criteria:

1. Wood Poles. Wood poles that have a diameter of 5 in (125 mm) up to 10 in (200 mm) will have a slotted breakaway design. The 4 in (100 mm) pole does not require a slotted design.
2. Round Pipe Posts. A breakaway design will be used for round pipe posts that have a diameter of 3 in (75 mm) or greater.
3. Tubular Steel Posts. A breakaway design will be used for square tubular steel posts that have a diameter of 2 in (51 mm) or greater.
4. Steel Posts. All W and S section steel posts will use frangible Type A or Type B breakaway devices with fuse plates.

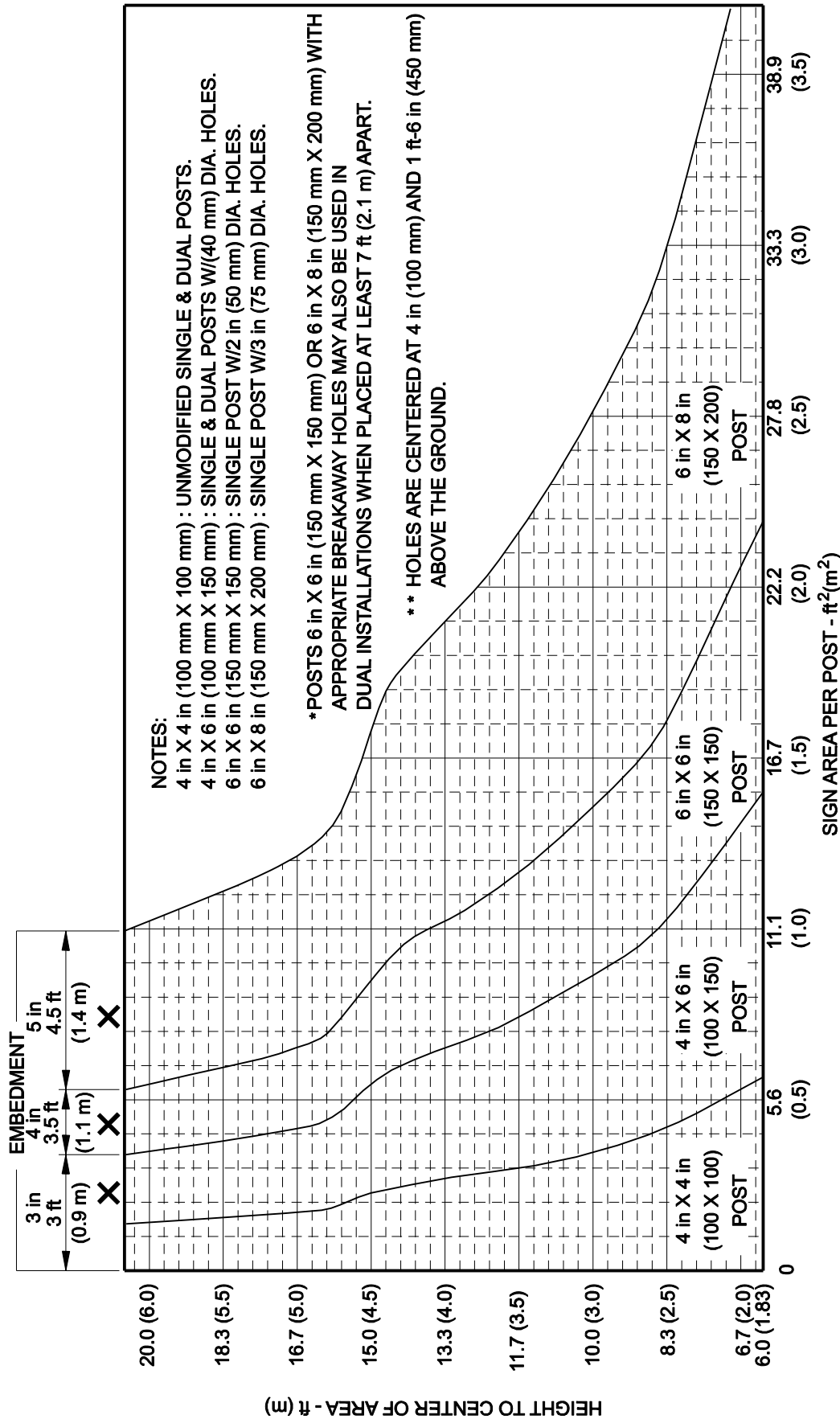
Details of breakaway designs are contained in the MDT Detailed Drawings.



**SIZE SELECTION CHART FOR SINGLE OR MULTIPLE POSTS**  
 (Treated Timber Poles)

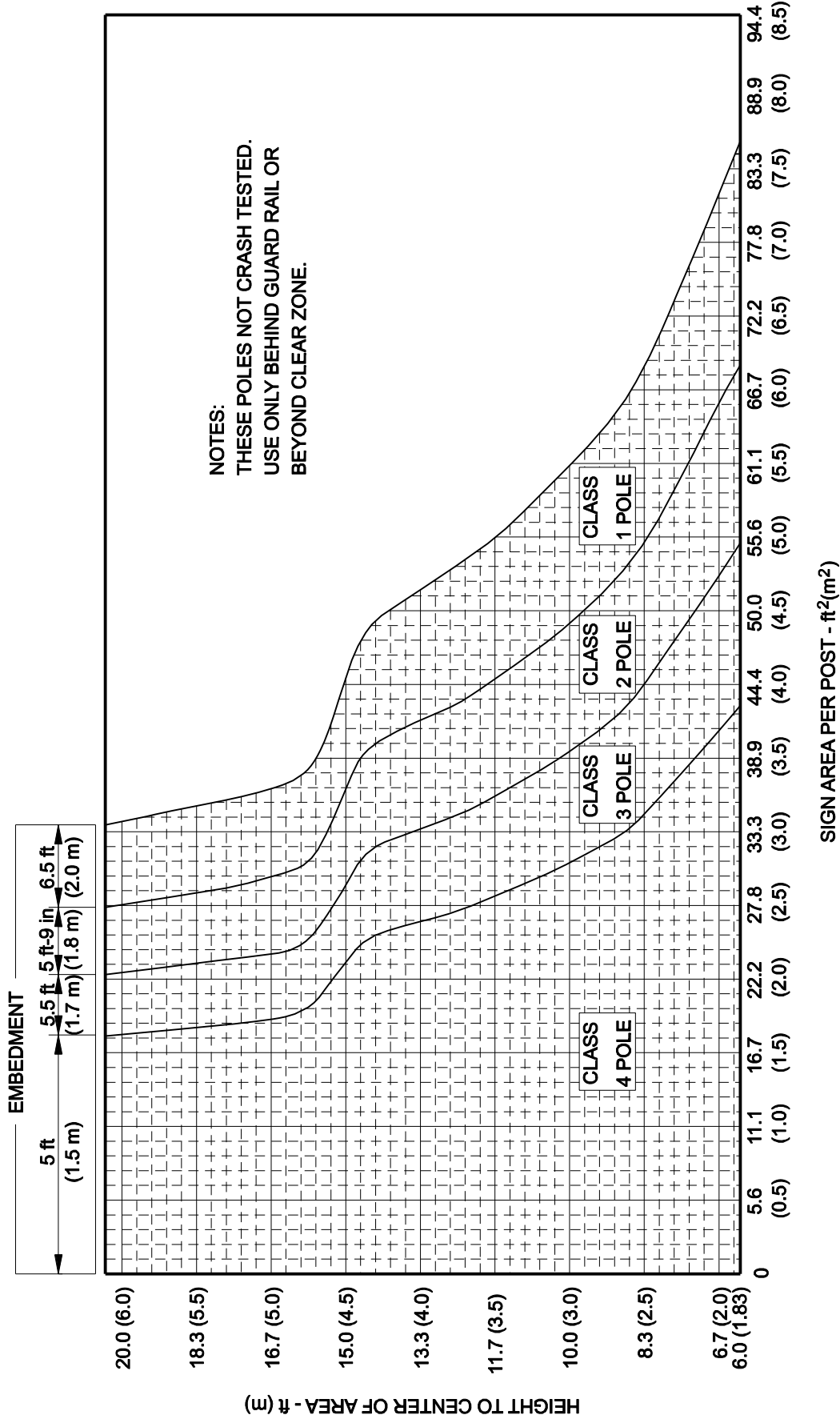
Figure 18.9C





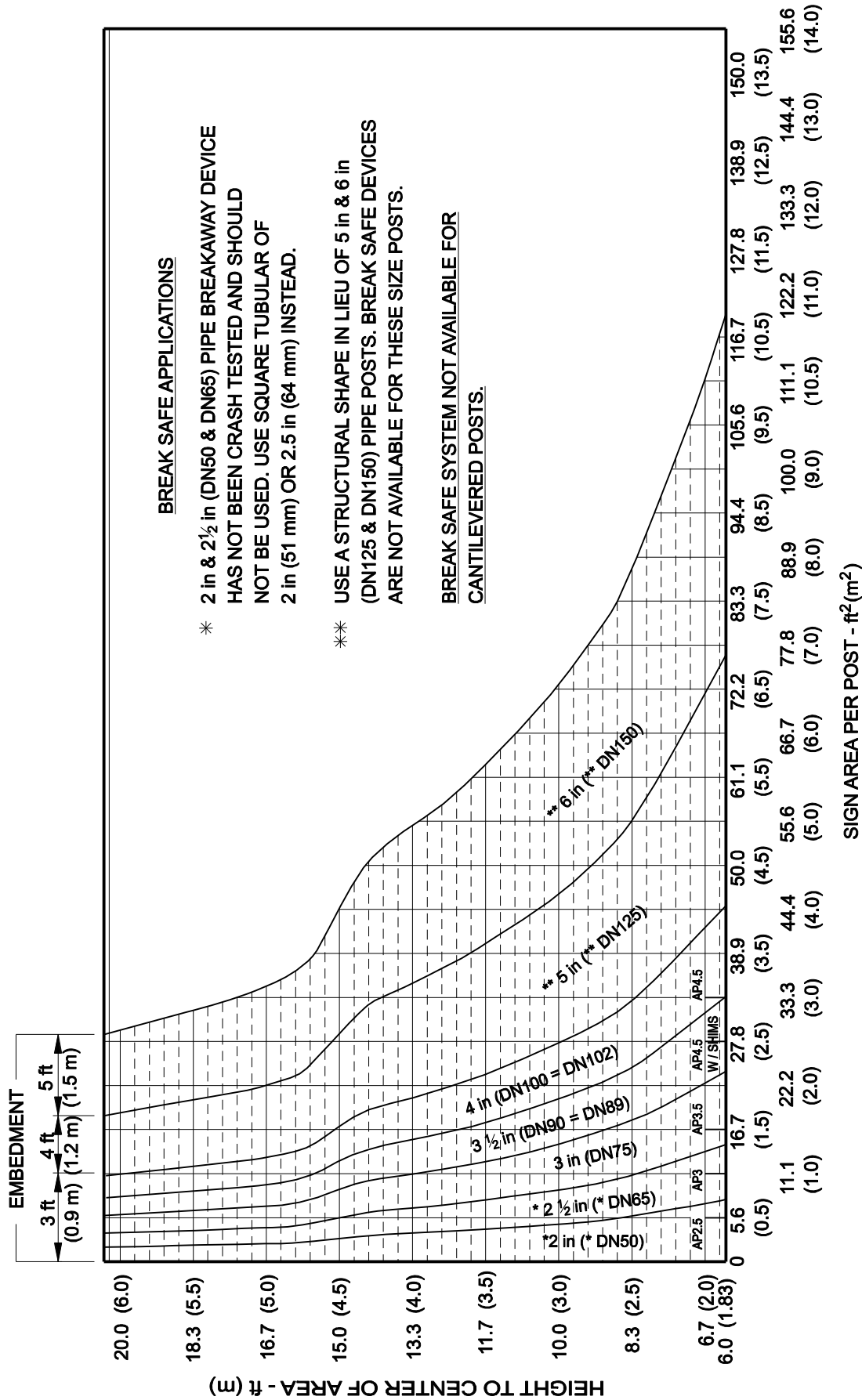
**SIZE SELECTION CHART FOR SINGLE OR MULTIPLE POSTS**  
(Treated Timber Posts)

Figure 18.9D



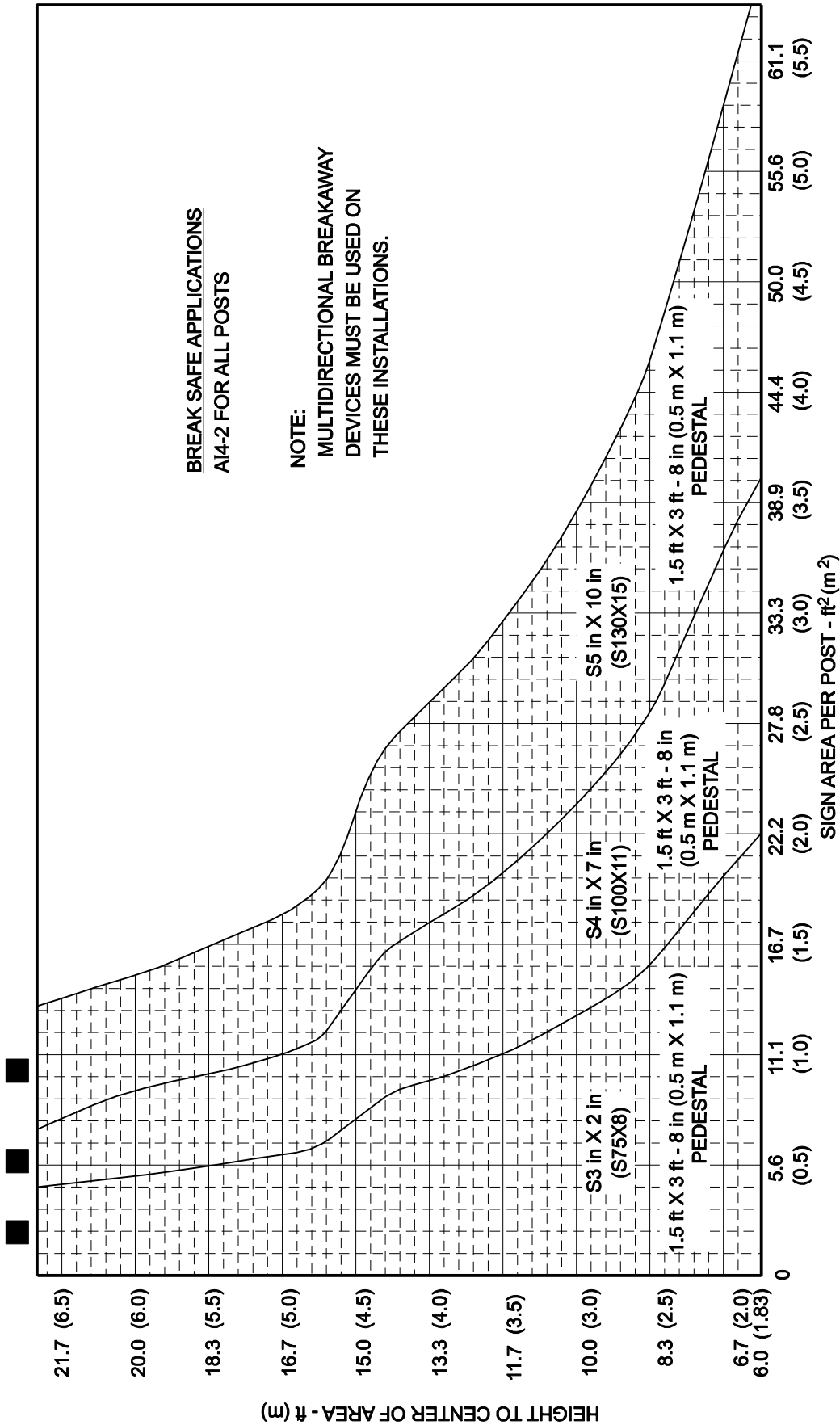
**SIZE SELECTION CHART FOR SINGLE OR MULTIPLE POSTS  
 (Class Poles)**

**Figure 18.9E**



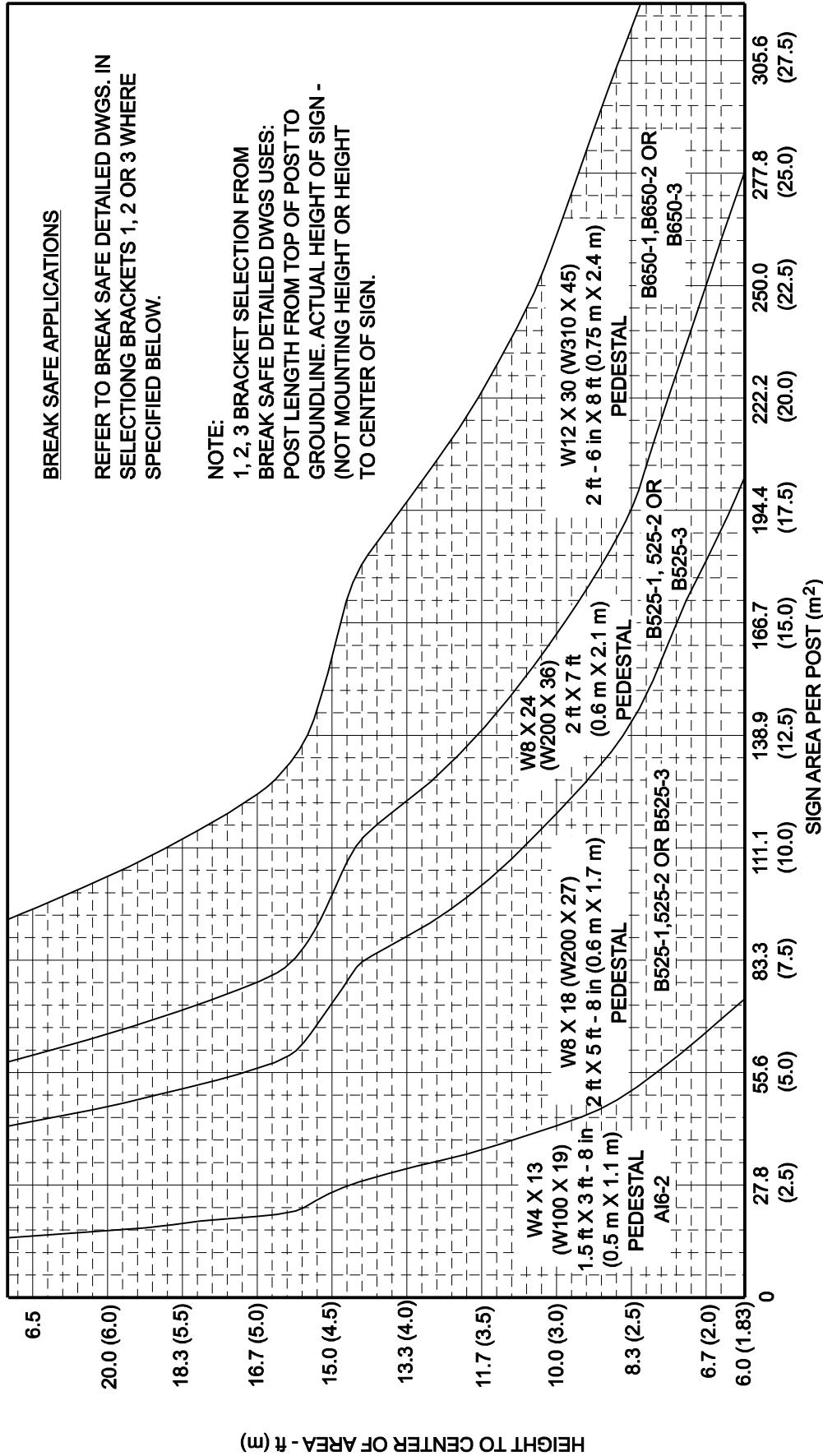
SIZE SELECTION CHART FOR SINGLE OR MULTIPLE POSTS (Pipe)

Figure 18.9F



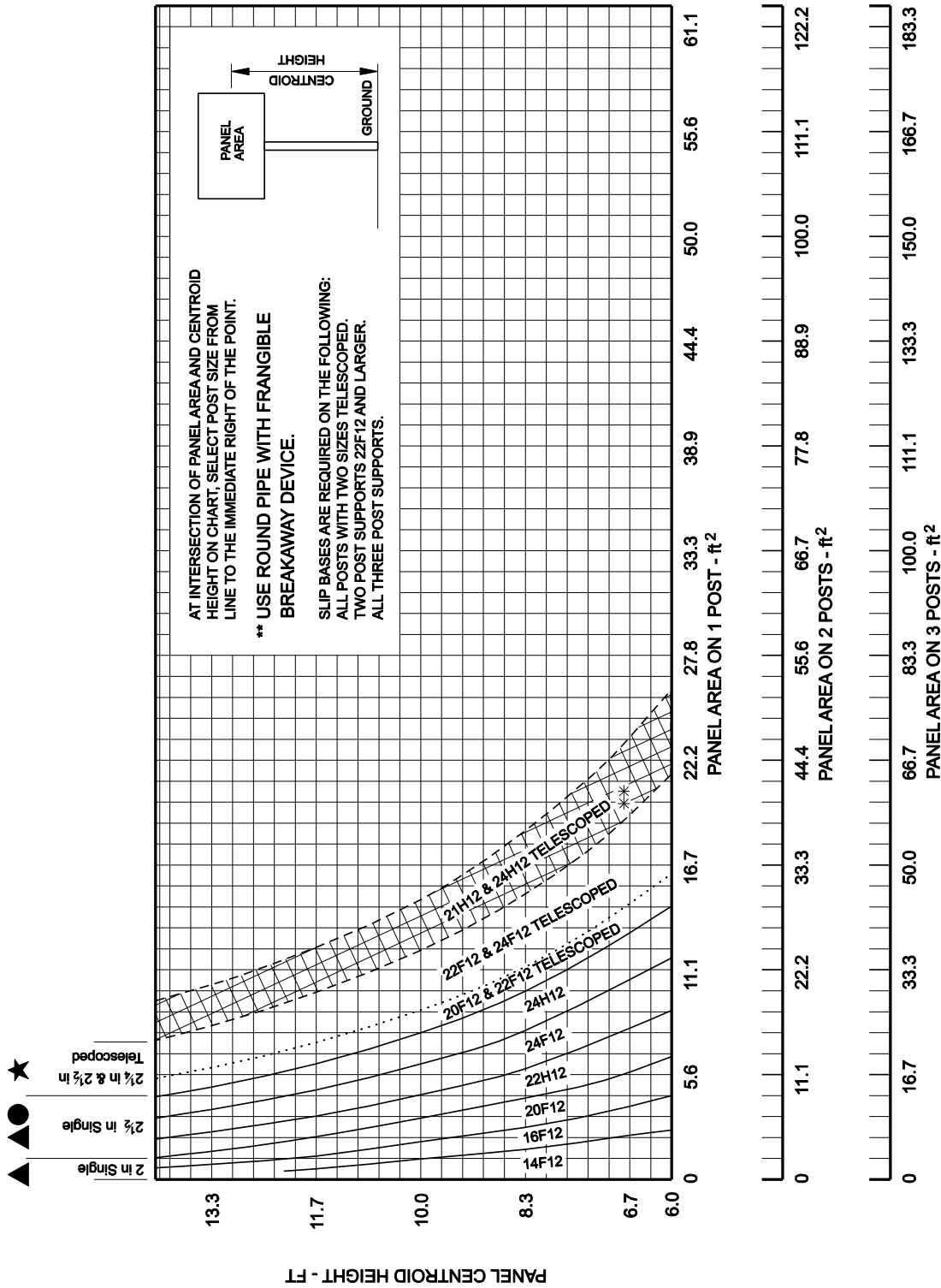
**SIZE SELECTION CHART FOR SINGLE OR MULTIPLE POSTS  
(Structural Steel S Shapes)**

Figure 18.9G



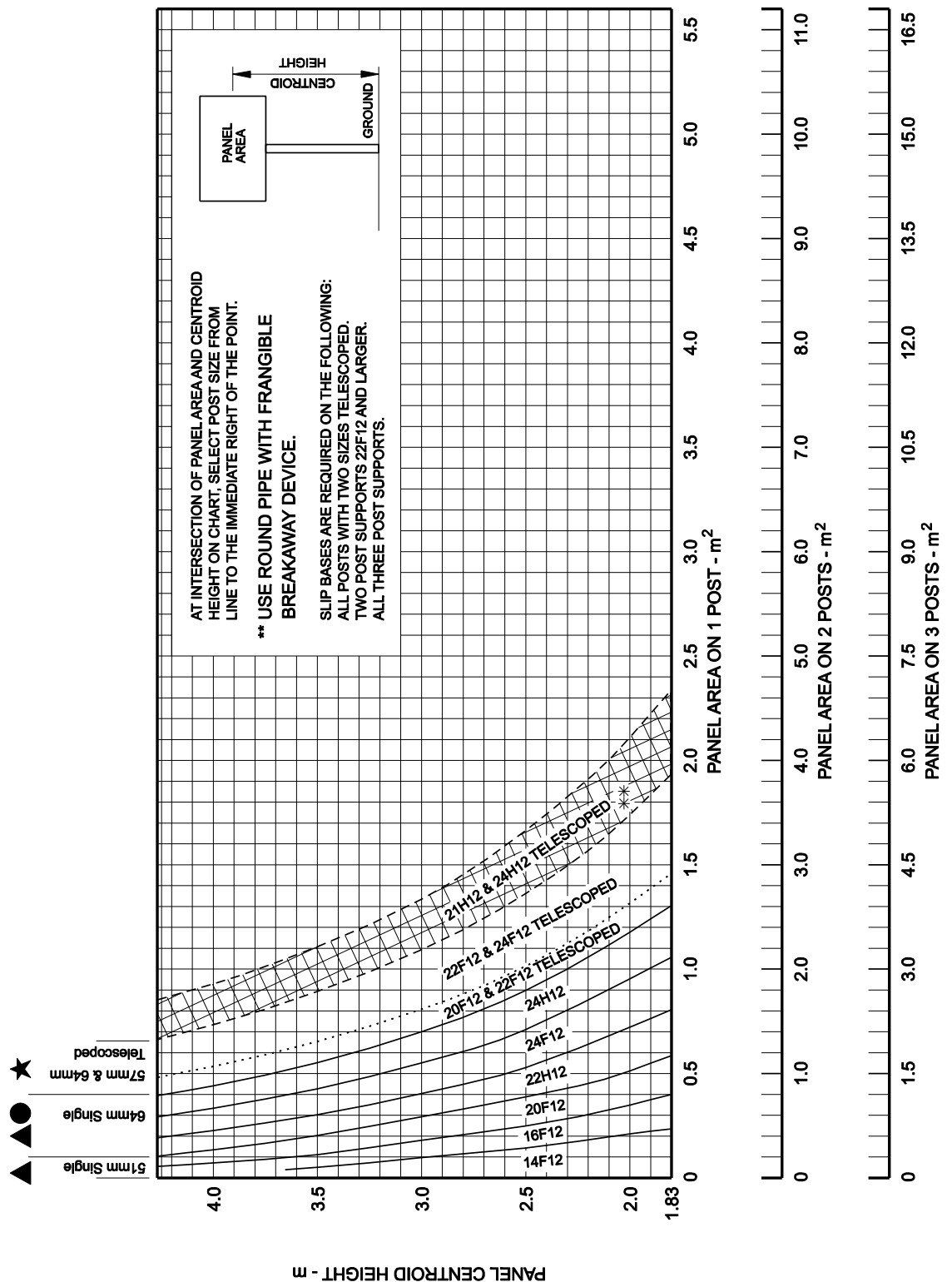
**SIZE SELECTION CHART FOR SINGLE OR MULTIPLE POSTS**  
 (Structural Steel W Shapes)

Figure 18.9H



**SIZE SELECTION CHART FOR SINGLE OR MULTIPLE POSTS  
(Telespar Signpost)  
(US Customary)**

**Figure 18.9I**



**SIZE SELECTION CHART FOR SINGLE OR MULTIPLE POSTS**  
 (Telespar Signpost)  
 (Metric)

Figure 18.9I

