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In Reply Refer to:
9130 (BC651) P

February 21, 2003

Instruction Memorandum No. BC-2003-027
Expires 09/30/04

To: All Washington Office and Field Office Officials
Attn: Sign Coordinators

From: Director, National Business Center

Subject: Chapter IV, Sign Guidebook, Interim Edition

Program Areas: All

Purpose: This Instruction Memorandum (IM) transmits Chapter IV of the Sign Guidebook, Interim Edition.

Policy/Action: Chapter IV of the Sign Guidebook contains guidance on sign design both for national conservation areas and national monuments and for administrative signs. Such items as design standards, shapes, colors, fonts, logos, and other design elements critical to the Bureau's Sign Program are contained in this chapter. The guidance provided in Chapter IV should be followed immediately when planning for new and replacement signs.

The guidelines contained in Chapter IV should be incorporated into the planning for and installation of all new and replacement signs. A Sign Guidebook complete with illustrations will eventually replace the interim edition. This product will be available both in paper and electronic format.

Timeframe: This IM is effective upon receipt.

Budget Impact: None

Background: The Sign Guidebook, October 2002, Interim Edition, minus Chapter IV, was distributed to State and Field Offices in October 2002. At that time, Chapter IV was withheld from the Guidebook because the Bureau's Executive Leadership Team (ELT) was considering changes to the Bureau's then-current NLCS and administrative signage. At its November meeting, the ELT approved these design changes, which have now been incorporated into Chapter IV.

Manual/Handbook Section Affected: Sign Guidebook, Interim Edition.

Coordination: Chapter IV of the Sign Guidebook was coordinated with field sign coordinators and recreation planners, as well others interested in the sign program, through a written review process.

Contact: For additional information on sign policies and standards, please contact Lee Campbell, National Sign Coordinator, at 303-236-9422.

Signed by:
Thomas F. Boyd
Director, National Business Center

Authenticated by
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Staff Assistant

1 Attachment
1 – Chapter IV, Sign Guidebook, Interim Edition (25 pp)

Distribution
ST-150, BLM Library

CHAPTER IV

DESIGN STANDARDS

This chapter contains the standards for sign design, shape, color, size, placement, and reflection.

A. GENERAL SIGN DESIGN STANDARDS

The design should be completed before the procurement process begins. After selecting the general sign message, use the following standards to determine the size and layout of all signs:

1. The truncated shape and the BLM emblem are mandatory for ***all*** identification and directional signs unless dictated by another jurisdictional agency (highway right-of-way, partner, etc.). The depth and length of the trapezoid can vary to match the design needs.

2. The preferred location for the BLM emblem on identity signs and directional signs is the upper-right corner of the sign. The BLM emblem however, may be placed on the left side of the sign if the situation warrants. When using signs that are mounted back-to-back, place the raised emblems to avoid a "Mickey Mouse" ears effect. The preferred location of the emblem on general purpose signs is also on the right side. The size of the BLM emblem shall be approximately one-third the depth of the sign.

3. Specially designated areas i.e., Visitor Centers, National Scenic Trails, Wild and Scenic Rivers, Scenic Byways, and other special sites approved by the State Director, may include a graphic mark. Marks are explained in NCA/NM Sections B and I. Other office administrative signs and portal signs on general areas will not have a mark.

4. Accessibility standards must be incorporated early in the process, particularly for signs that provide pedestrians with information.

5. Signing for law enforcement purposes must be coordinated with the appropriate personnel.

6. Some flexibility exists for regional diversity when designing sign bases and using substrates: these can be chosen for their compatibility with the surrounding landscape and area themes.

7. Native materials can be used in the sign base to create a unique look.

8. The location of a sign with respect to the amount of light and sun exposure, weather conditions, etc., will help determine the type of sign that is most suitable for that particular area.

B. NATIONAL CONSERVATION AREA (NCA) and NATIONAL MONUMENT (NM) DESIGN STANDARDS

1. NLCS units Portal signs are to have a landscape graphic unless an exception for the use of a mark is approved by the State Director. These are the only signs that are allowed to use the landscape graphic. The Landscape graphic shall be a panoramic band across the sign that depicts the area, drawn in a form reminiscent of the 1930's Works Progress Administration (WPA) posters.

2. Signs for individual sites within an NLCS unit shall use a mark. This mark shall be placed on the left side of the sign and be a WPA style illustration that depicts some important aspect of the site.

3. NLCS units that are jointly managed with a different agency are exempt from these standards. BLM offices, however, should work with their partners to incorporate as many of the standard design characteristics as possible.

4. San Serif fonts in both uppercase and lowercase must be used.

C. DESIGN CHARACTERISTICS

Signs should be designed to ensure that:

1. Features such as size, contrast, color, shape, composition, lighting, or reflectorization are combined to draw attention to the sign.

2. The shape, size, colors, and simplicity of the message combine to produce a clear meaning.

3. Legibility and size, combined with placement, allow adequate time for viewing and response.

D. SIGN SHAPES

1. BLM Sign Shapes

   a. The **INVERTED TRUNCATED TRIANGLE** is the standard shape for all Identification Signs and Guide Signs. The length and depth of the sign may vary to match the design needs.

   b. The **BLM EMBLEM** is triangular.

   c. The **RECTANGLE**, with the longer dimension vertical, is used for most Regulatory Signs and some Warning/Safety Signs.

   d. The **RECTANGLE**, with the longer dimension horizontal, is used for most informational signs.

2. Traffic Control Sign Shapes

   The Federal Highway Administration and each State's Department of Transportation have standardized shapes for specific purposes. See the MUTCD at www.mutcd.fhwa.dot.gov (Keyword: MUTCD) for more guidance.

   a. The **DIAMOND** is used for most warning signs.

   b. The **RECTANGLE**, with the longer dimension vertical, is used for most regulatory signs and some warning signs.

c. The **PENTAGON**, with its point up, is used ***only*** for SCHOOL and SCHOOL CROSSING signs**.**

d. The **PENNANT**, with the longer dimension horizontal, is used ***only*** for NO PASSING ZONE warning signs.

e. The **OCTAGON** is used ***only*** for STOP signs.

f. The **EQUILATERAL TRIANGLE**, with the point down, is used ***only*** for YIELD signs.

g. The **ROUND** shape is used for Railroad Advance warning signs and for Civil Defense Evacuation route signs.

E. COLORS

1. Standard colors for BLM signs equal the Pantone Color Matching System (PMS). Care should be taken to choose standard paints that can be matched to the PMS. If the paint chosen is not equivalent to a Pantone color, a visual or a computer-generated match should be made. Stains typically do not have Pantone color equivalents. A visual or computer-generated match will have to suffice.

2. The standard color for the background of most signs should be recreation brown with white lettering. The background color for all signs of the truncated shape must be recreation brown unless specifically approved by the National Sign Coordinator.

3. Special-purpose signs that rely heavily on illustrations rather than words to send the message (e.g., fire prevention signs) may use other colors.

4. Care should be exercised in selecting text and background colors. At least 70 percent contrast is recommended between text and background. Red and green should be used only minimally for text because of the distortion created when viewed by readers with color blindness. Restrict the use of red and green for critical information and borders.

5. Specific colors have been standardized by the Federal Highway Administration for certain traffic control purposes. These colors should not be used on other signs along roadways or close to traffic control signs, where they could cause viewer confusion between the non-traffic control signs and the traffic control signs. The principal colors and their uses are:

- RED - Stop or prohibition
3. BLACK - Regulation
- WHITE - Regulation
- ORANGE - Construction and maintenance warning
- YELLOW - General warnings
- BROWN - Recreational and cultural interest guidance
- GREEN - Indicated movements permitted, direction guidance
- BLUE - Motorist services

For further guidance, see the MUTCD at www.mutcd.fhwa.dot.gov (Keyword: MUTCD).

6. Color Guide

	Pantone Color
Green Ground	373U
Green Hills	376U
Green Border/Tree/Lettering	3435C
Blue Sky	297C
Blue Stream/Mtn.	292C
White Snow Cap	

One-color versions may also be used. If a one-color version is used, the logo may be used only in the positive form. It must not be reversed. If the logo is to be used against a dark background in which the logo border would be lost, the logo should be superimposed on a white triangle so the logo border is visible.

a. Logos

On signs with the BLM emblem, the Department of the Interior emblem is optional.

b. Agency Identification

The standard BLM emblem is the only symbol used to identify the agency. The BLM emblem may not be modified.

F. FONT

The standard fonts used on all directional, regulatory, and identification signs must be either News Gothic Bold or Sans Serif. Both uppercase and lowercase letters must be used (i.e., not all uppercase). The fonts used on informational signs may be varied but care should be taken to ensure readability by all users.

G. AGENCY NAME

The "Bureau of Land Management" and the "Department of the Interior" must be the same font size. "Department of the Interior" must be set in all upper case. "Bureau of Land Management" may be set in either all uppercase or upper/lowercase. The BLM name/emblem may be used on fire prevention, agency regulatory, or other signs, as appropriate. Signs that do not require the white banner may use the emblem rather than the written department and agency name.

H. PARTNER NAMES and LOGOS

Partner name(s) and logo(s) are permitted, as appropriate. The name/logo may not be larger than the logo of the BLM. If there are more than two partners, consider placing cooperators' logos across the bottom of the sign. If there are three or more partners, consider incorporating the logos

into the base. The location and size of the partner's logo should be commensurate with the relative importance of the partner.

I. AGENCY MARKS/LOGOS/SYMBOLS

On signs that are allowed to carry a mark, the mark must not be larger than the BLM emblem and the preferred location is on the left side of the text.

NCAs/NMs:

- The mark can be a slice of the landscape for NCA/NMs or some other graphic identifier.
- National Scenic and Historic Trails: the mark must be the established trail logo.
- Wild and Scenic Rivers/Designated Wilderness Areas: the mark must be the national logo.

The International Symbol System, adopted by the BLM, should be used to supplement the Bureau's National Sign Program (see Appendix 4). Symbols and text messages should be used together for all traffic signs designed to direct pedestrians.

J. ID NUMBERS

Identification numbers of any sort are not permitted on the face of any signs. Place ID numbers on the back of the sign.

K. REFLECTORIZATION

Road and motorized trail signs and other signs intended to be seen at night should reflect the same shape and color both day and night. Ensure that the letters and the background have different levels of reflectivity so that the message stands out both in daylight and with artificial lights. Identification and directional signs should be reflectorized for night visibility. Use engineering-grade reflective sheeting for most signs. High-intensity grade sheeting must be used for most traffic signs as specified in the MUTCD. High-intensity grade sheeting may also be used in unique situations where atmospheric conditions or other factors indicate a need for additional reflectivity.

L. FINISH

ADAAG/UFAS requires that signs have a no-glare finish. Many signs are naturally non-glare because of the materials used in their construction. However, some signs have extra protection against weathering with an added layer of plexiglass over changeable information, which may create glare. Eggshell or matte finishes can be used to reduce glare.

M. MESSAGE FORMULATION

In formulating the message, use standard (approved) word messages, where applicable. The use of symbols on signs is encouraged to supplement the English word message, provided they clearly convey the intended message. Consider the use of bilingual signs if your situation warrants.

Under normal driving conditions, there is little time between being close enough to read the sign and passing the sign. Consequently, messages must be short. They should be confined to the essentials (for example, destination or direction).

When composing a message, consider the following guidelines:

1. Use no more than four words per message or line, except where the proper name of a destination is more than four words long.

2. Use as few word lines as possible. A maximum of four lines of directions is allowed for guide signs; however, three is preferred.

3. Keep messages short by using certain commonly recognized abbreviations (e.g., "Rd" for "Road," "Mt" for "Mount," "Pt" for "Point," "St" for "Street," or "Hwy" for "Highway"). ***DO NOT*** abbreviate historic proper names (e.g., "Fontanelle" to "Font," "Vernal Drains" to "V.D.").

N. DETERMINATION OF LETTER SIZE

The letter size for signs is determined by the maximum vehicle speed that is allowed at that point of the road system. To be easily read, the sign should have sufficient color contrast between letters and background. The following speed rules pertain only to the sign's primary message:

1. Roads

   Please refer to Table 1.

2. Pedestrian and Trail Signs

   For pedestrian and trail signs, the guidelines include adjusting letter and space size to meet special conditions, such as composition, emphasis, etc. Sizes should never be less than those indicated in the charts for particular uses or speeds. As a rule, 1 inch of letter height can be read from a distance of 50 feet, 2 inches at 100 feet, and so on. The letter size for pedestrian signs is determined by location, volume, and type of visitors using the area, rather than by speed. See Figure 1.

   a. Short messages to be read from some distance: lowercase height and thickness of arrow shaft, 2-1/2 inches. If the sign is positioned over a pedestrian path, the height of the letters should be 3 inches minimum.

   b. Direction, distance, instructions, listings in moderate visitor-use areas where pedestrian traffic is channeled by walks, etc.: letter size 3/4 inch to 1 inch.

   c. Plaques, markers, and object identification: capital height, 1-1/2 inches; lowercase height and thickness of arrow shaft, 1 inch; and recreation symbol; 8 inches.

   d. Description sign texts: capital height, 1 inch; lowercase height and thickness of arrow shaft, 5/8 inch; recreation symbol, 6 inches. The letter size for a sign's secondary message should be two-thirds the height of the primary message.

O. DETERMINATION OF LINE SPACING AND SIGN SIZE

Line spacing should be 75 percent of uppercase letter size. The emblem should be proportional to the message. See Figure 2.

P. RULES FOR CAPITALIZATION

1. Identification signs should use both uppercase and lowercase letters, not all uppercase (e.g., “Aspen Grove Campground”).

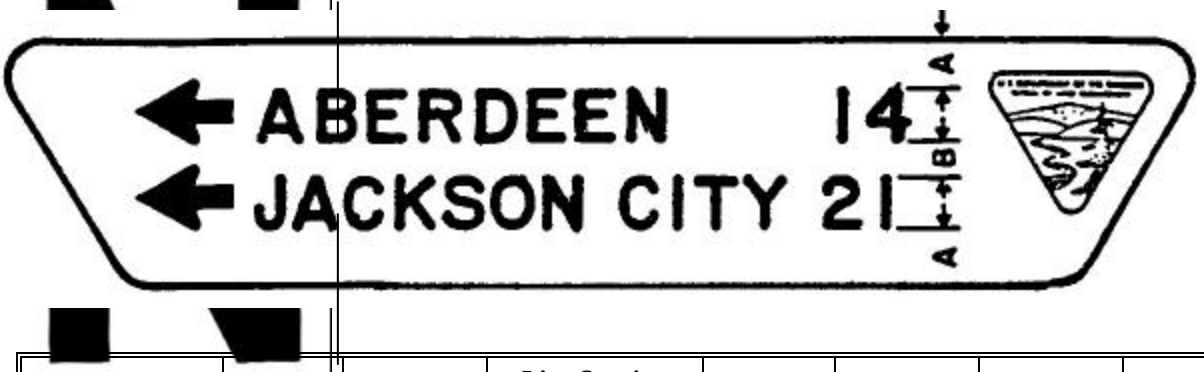
2. Traffic Control signs must follow MUTCD standards

3. Informational signs should use both uppercase and lowercase letters.

4. Directional signs should use uppercase letters, except to abbreviate miles (i.e., mi).

5. Regulatory/warning signs should use both uppercase and lowercase unless specifically dictated by another authority.

Table 1



Speed Limits	Letter Size	Lines of Message	Line Spacing		Depth of Sign *	Emblem Size	Corner Radii	Rec Symbol
			A	B				
Stop and Read	1	1	1¼	-	3½	2¾	¾	3
Sto	1		1	1	5	2¾	1	3
Sto	1		1	1	7	4 or 5	1	3
	1½		1	-	3½	2¾	¾	3
	1½		1	1	6	4	1	3
	½		1½	1-1½	9½-10	8	1	3
			2	-	5-6	4	1	4
			1 d	1¼	8	5	1	4
			1½	1		8	2	
25 t			2	-		5	1	
25 t	3		2	2		8	2	
25 t	3		2½	2		10	2¼	
35 t	4		3	-		6	1	
35 t	4		2¾	2		0	2½	
35 to 45 mph	4	3	3	2			3	
45 to 60 mph	5	1	3	-			1	
45 to 60 mph	5	2	3	3			2½	
45 to 60 mph	5	3	3	3			3	
over 55 mph	6	1	3	-			2	
over 55 mph	6	2	3	3		16	3	
over 55	6	3	3	3		18		

* All dimensions are in inches. Sign depth is a top to botto nent.

Series D Federal Highway Administration letters must be us signs with speed limit eries C, E, and F should be used for road signs with speed limits mph.

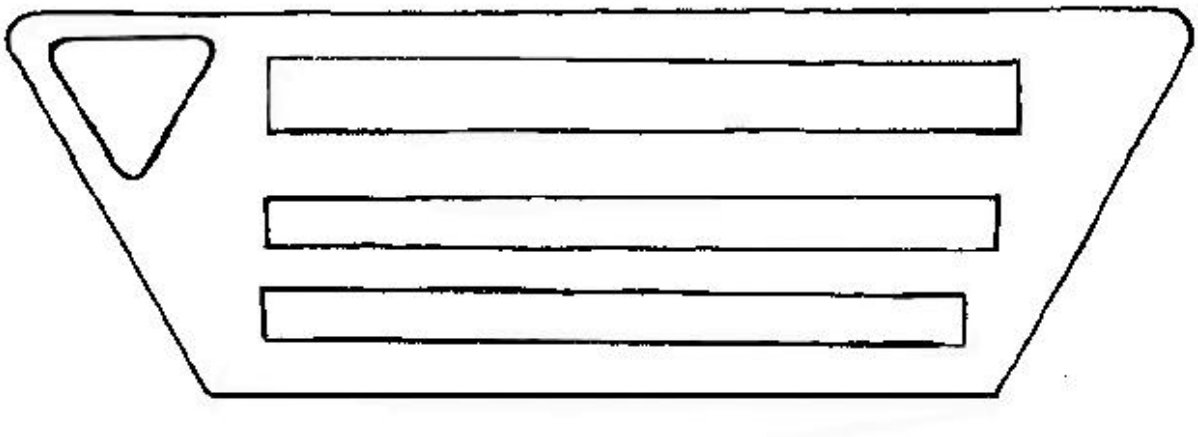
Figure 1
Determining the Size of Signs

1½

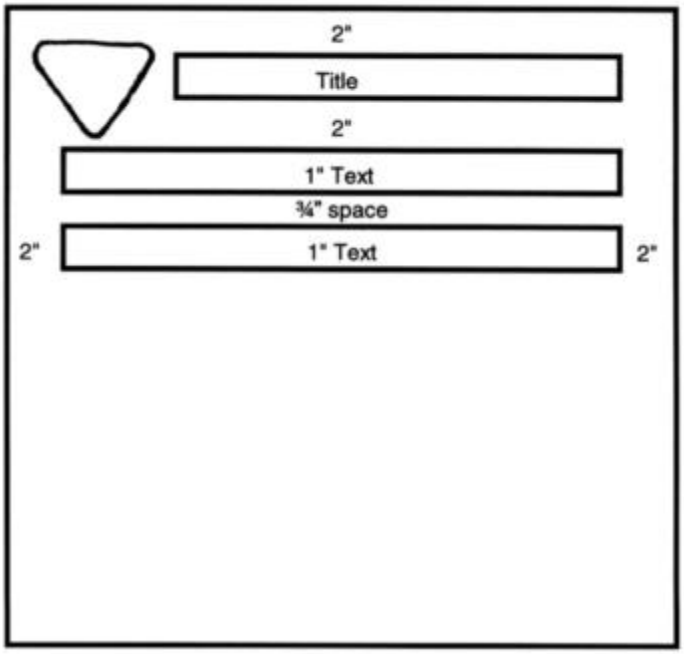
The average width of letters is ¾ of the total height. This is also true with the spaces between words.

The space between letters is about the same as the stroke of the letters.

Figure 2 Determination of Line Spacing and Sign Size



Line spacing should be 75% of the letter size.
Emblem size should be no less than 30% of overall height of sign.



On informational signs, the text should be easy to read and the emblem of a size that fits in the open space.

Q. ARROWS

Arrows are normally used to point in three directions: straight up, straight left, and straight right. In certain circumstances an up-pointing arrow 45 degrees off vertical can be used. Arrows should ***NEVER*** point down.

Arrows are to be positioned either to the right or left of the message or symbol so that the arrow is pointing away from the message or symbol rather than back at it. On trail signs for pedestrians that contain long listings of directions, the arrow may be placed above or below the message for greater clarity. If, at certain locations, a narrow sign is preferred and the position of an arrow to the right or left of the message requires an excessively wide sign, the arrow may be placed below the message.

Arrows should be proportional to the text size as shown in Figures 3 and 4.

R. SPACING GUIDE

1. Minimum Vertical Spacing (refer to Figure 2)

   a. Between the top edge of a sign and a symbol, arrow, or message, allow space equal to 1-1/2 times the primary lowercase letter height above the message, or one-third the symbol height above the symbol, whichever creates the greater total sign height.

   b. Between the baseline of first line and top of second line of the primary message, allow space equal to 75 percent of the primary uppercase letter height.

   c. For signs with both a primary and secondary message, allow space equal to one primary uppercase letter height between the baseline of the primary message and the top line of the secondary message.

   d. Between the baseline of a secondary message and the top line of the second line and each succeeding line, allow space equal to 75 percent of the secondary uppercase letter height. On information signs, the text should be easy to read. The emblem can be any size that will fit in the open space.

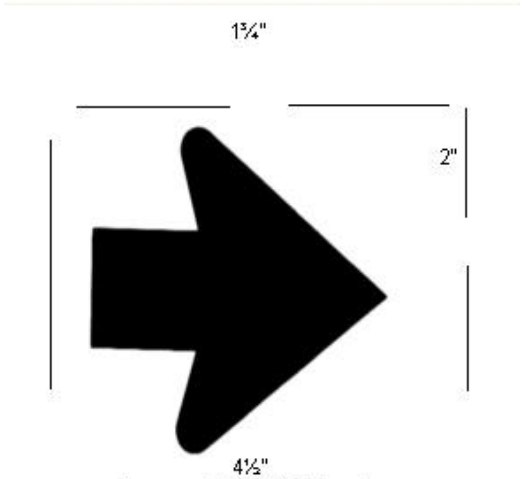
   e. Between the bottom edge of the top symbol and top edge of lower symbol, allow space equal to one primary lowercase letter height or one-third of the symbol height, whichever is greater.

   f. Between the bottom edge of the lowest symbol or message, allow space equal to 1-1/2 times the primary lowercase letter height below the message or one-third of the symbol height below the symbol, whichever creates the greater total sign height.

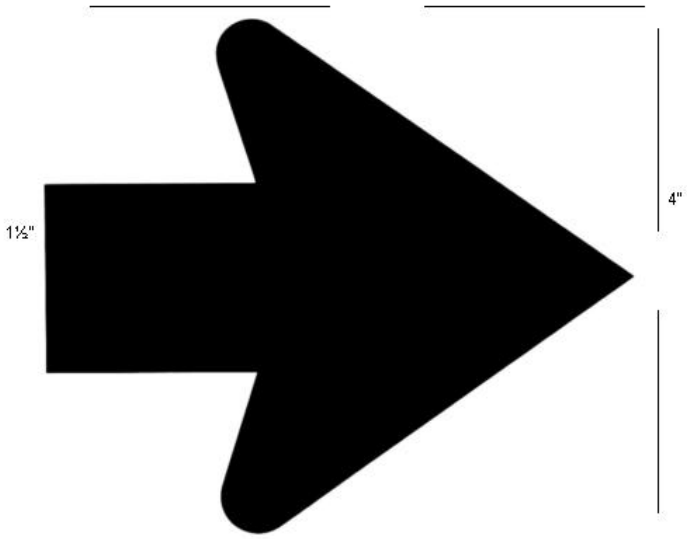
   g. Signs with a symbol or arrow to the left or right of the message should have the message centered vertically on the symbol or arrow.

   h. In a two-line message, the arrow should be vertically centered between the two.

Figure 3

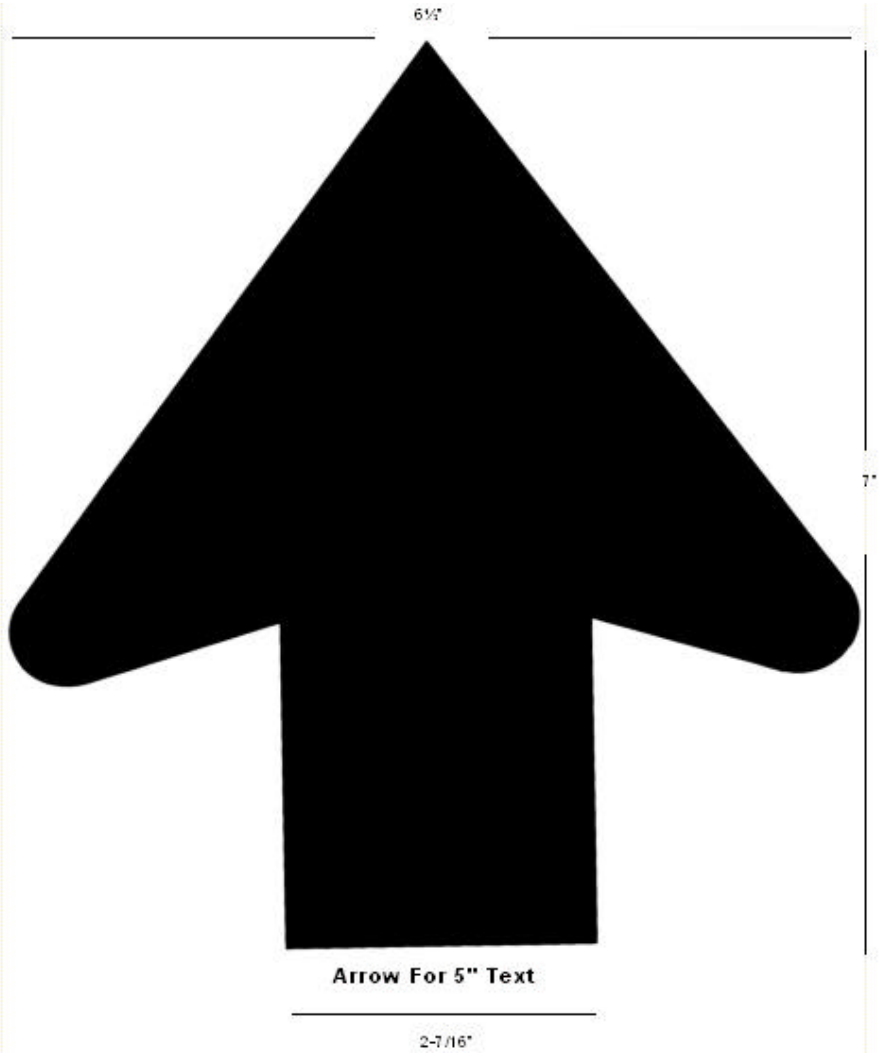


Arrow For 1" Text



Arrow For 3" Text

Figure 4



S. SIGN MATERIALS

Signs and posters may be manufactured from a variety of materials, including wood, stone, metal, plastic, fiberglass, and cardboard. These materials are called "substrates." The "message" is applied to the substrate by a variety of methods, including painting, printing (either by applying cut letters, digital printers, or silk screening), engraving, routing, and sandblasting. Other materials commonly used in the manufacturing process include reflective sheeting, paint, stain, and vinyl film.

As a general rule, the softer or more porous a substrate material is, the better the paint will penetrate the surface to create a solid bond. The harder or more slick the material, the more likely the paint will dry on the surface. Softer substrates are more likely to be damaged by vandals. Harder substrates are more likely to resist gouging and destruction of the substrate, but the paint is more easily chipped away. Decals and pressed-on vinyls will adhere better to harder, less porous surfaces.

When selecting the substrate material, consideration should be given to the environment in which the sign will be located. If the sign will be placed in a desert environment with little to no natural wood source present, consider using metal, plastic, or stone products. If the sign will be located in a wooded or forested environment, consider using plywood or wood products. The surrounding natural environment will provide the best indication of which materials are suitable, hardy, and able to withstand the local weather patterns for a longer life.

The following are some commonly used sign substrates identified by the National Sign Center.

1. High-Density Overlay (HDO) Plywood

   Marine-quality 3/4-inch and 1-inch plywood with both sides covered with a high density, slick material (the overlay) to which adhesives cling quite strongly. Plywood is commonly used as the substrate for pressed-on materials such as reflective vinyl. This substrate is the most commonly used wood substrate because it weathers well. The cost is moderate.

2. Medium-Density Overlay (MDO) Plywood

   Marine-quality 3/4-inch plywood with one side covered with a smooth but more porous overlay than HDO. The porosity of the overlay allows the paint to bond with the substrate better than HDO. This substrate material may be routed and is used less often than HDO. The cost is moderate.

3. Plastics

Sign design involves a variety of plastics.

   a. Polyethylene and polypropylene (Sintra) are fairly common materials that are suitable for most routine sign applications. They are soft materials that have sufficient rigidity to stand up as small signs, but not so rigid that they are easily broken. They come in basic colors and take paint (silk screening) well. Generally, they weather well; however, their softness makes them easy prey to vandals wielding sharp or pointed instruments. Initial and replacement costs are low.

b. Calendared vinyl is a compressed foam plastic material. It is lightweight and ideal for temporary or interior signs.

c. Acrylic or Plexiglas is a hard, rigid material that withstands abrasion, but it does break easily. It is often used as a clear protective covering over another sign.

d. Polycarbonite, or Lexan, is similar to acrylic panel but is softer, with a greater flex. Because of the softness, the sign has a tendency to be marred by dust and blowing sand.

4. Aluminum

A proven substrate for both small and large signs. The message can either be silk screened directly onto painted aluminum or applied to a vinyl overlay. Aluminum is used by some transportation departments for large highway signs. When used for large signs, it requires reinforcement with an appropriate support system. This material is easily and significantly damaged by bullets and other forms of vandalism. However, it has excellent weather resistance. Initial and replacement costs are moderate.

5. Aluminum-Clad Plastic

Similar in character to aluminum signs. The plastic core adds strength; this substrait is highly durable and lightweight, making it ideal for Kiosk panels or other signs mounted with a backing. The cost of this product is moderate.

6. Aluminum-Clad Plywood

Similar in character to aluminum signs. Plywood backing adds support to the aluminum to provide stability/rigidity for larger size signs. Initial and replacement costs are moderate to high.

7. Synthetic Textiles

A fibrous, paper-like material that has good short-term resistance to inclement weather and animal damage. It is flexible and lightweight. This substrate is a good choice for temporary signs.

8. High-Density Foamboard

May be routed or sand blasted and is generally used for interior signs. When covered with an impervious material, it can be used outdoors. Foamboard can be formed to replicate rock, metal, or other materials to make unique looking signs at a fraction of the cost.

9. Routed Wood

Routed redwood signs have been used extensively in the past. Since redwood is in short supply, is expensive, and requires high maintenance, it is no longer recommended as the standard. Routed wood (fir, pine, cedar, etc.) may be appropriate in backcountry pedestrian settings. Costs for initial and replacement fabrication and maintenance are high.

10. Cardboard

A paper product that degrades quickly in inclement weather. Cardboard takes paint (silk screening) well, depending on the slickness of the surface, and is easily nailed or stapled. It is used primarily for seasonal posters and indoor uses.

11. Fiberglass/Epoxy Resins

Fiberglass and epoxy resins that are combined make a strong but flexible substrate. Used most often in a thin, vertical format, it may also be used for smaller signs. Its hard, impervious surface is best used as a substrate for decals, although silk screening is also possible. These resins are very resistant to impact and weather. Initial costs are high.

12. Porcelain Enamel on Steel

Highly resistant to scratches, impacts, and weathering. Most often used on interpretive signs, it offers an appealing appearance, but at high initial and replacement costs. It lends itself well to the use of graphics. While very expensive, it has a life expectancy of 20 years or more.

13. Fiberglass Embedment

Consists of, a paper image that is embedded in a fiberglass/epoxy resin panel. Preparation of the initial paper image is costly. However, the second, third, and subsequent copies may be quickly and inexpensively created at the same time as the original and stored for later embedment at relatively low cost to replace a damaged or stolen original. The fiberglass resists scratching and impact and weathers very well; however, it is expensive.

14. Metal

Engraved or acid-etched metals such as aluminum and stainless steel. Such signs have a long service life and are generally good or very good in resisting weather, but they are only fair or poor in their resistance to scratching or impact. Metal has limited application due to contrast requirements for accessibility. Initial and replacement costs are medium to high.

T. PERMITS AND CLEARANCES

Appropriate clearances such as cultural, Endangered Species Act (ESA), etc., or National Environmental Policy Act (NEPA) documentation may be required. Prior to the BLM installing any sign, the appropriate jurisdictional agency must grant its permission. This may include the State Department of Transportation if the sign will be placed along a State highway, or the county road and bridge department if the sign will be installed along a county road. Permission to install a sign will generally be granted with an encroachment permit issued by the managing agency.

U. SUPPORT SYSTEMS

Normally, signs should be individually erected on separate posts or mountings. There are exceptions when one sign supplements another or when route markers and directional signs must be grouped. Signs should be located so they do not obscure each other and are not hidden by other objects. Signs should not be attached to natural features such as trees. It is also inappropriate to mount signs on telephone poles or fence posts. Signs may be mounted on dams, buildings, or other structures.

1. Sign Posts

   Breakaway-type mounting posts must be used when a sign is placed within the right-of-way of a road. Refer to MUTCD for breakaway mounting details and specifications. Signs should be attached to posts in a manner that does not interfere with the legibility of the message on the sign.

   a. Posts are used to hold signs in a proper and permanent position and to resist swaying in the wind. Generally, wood or metal posts are used. If posts are set in concrete, the footings should be flush with the ground level.

   b. All hardware used to affix signs to either wood or metal posts should be aluminum or galvanized metal.

   c. After a sign is installed, the ends of the bolts should be snipped off and the threads upset or fractured to prevent removal of the hardware by vandals or thieves. Vandal-resistant hardware is also available from a variety of suppliers.

   d. The number and size of posts per sign should be proportional to the size of the sign. A single post should be used for signs up to 36 inches in length. Two posts are recommended for signs ranging in size from 37 inches to 72 inches. Three posts are recommended for signs 73 inches to 96 inches. For signs larger than 96 inches, a professional architect or engineer should be consulted for designing the sign base and identifying the appropriate mounting details to ensure structural stability.

2. Bases

Signs and interpretive materials may have bases that support the design character of the area. Large administrative/portal/entry signs should be mounted on bases that match the size and mass of the sign, and they should complement the surrounding landscape. Bases are normally located outside the roadside recovery area, usually at least 30 feet from the edge of the roadway travel surface, or outside the highway right-of-way. Signs located within the highway right-of-way must conform to Federal Highway Standards as described in the MUTCD. See Figure 5 for a typical entrance sign installation and a properly sized sign base. Unique sign base designs should be approved by the State Sign Coordinator. Guidelines for pedestrian-level signing related to the base height and angle have been established by the UFAS and ADAAG (see Appendix 1).

Some basic kinds of bases include the following:

a. Stone

This base may be formed using either a single large stone or a grouping of boulders to form the support system.

b. Masonry

A masonry base uses bricks, block, cobbles, or stones mortared together. A masonry base may consist of a solid brick pier, wall-type construction, or a veneer applied to a concrete foundation. Many possibilities exist to vary the patterns and colors.

c. Wood

This type of base may incorporate logs or timbers as the support system. Wood framing and/or siding may be used as well. As with the other options, many varieties of wood exist to create a distinctive design.

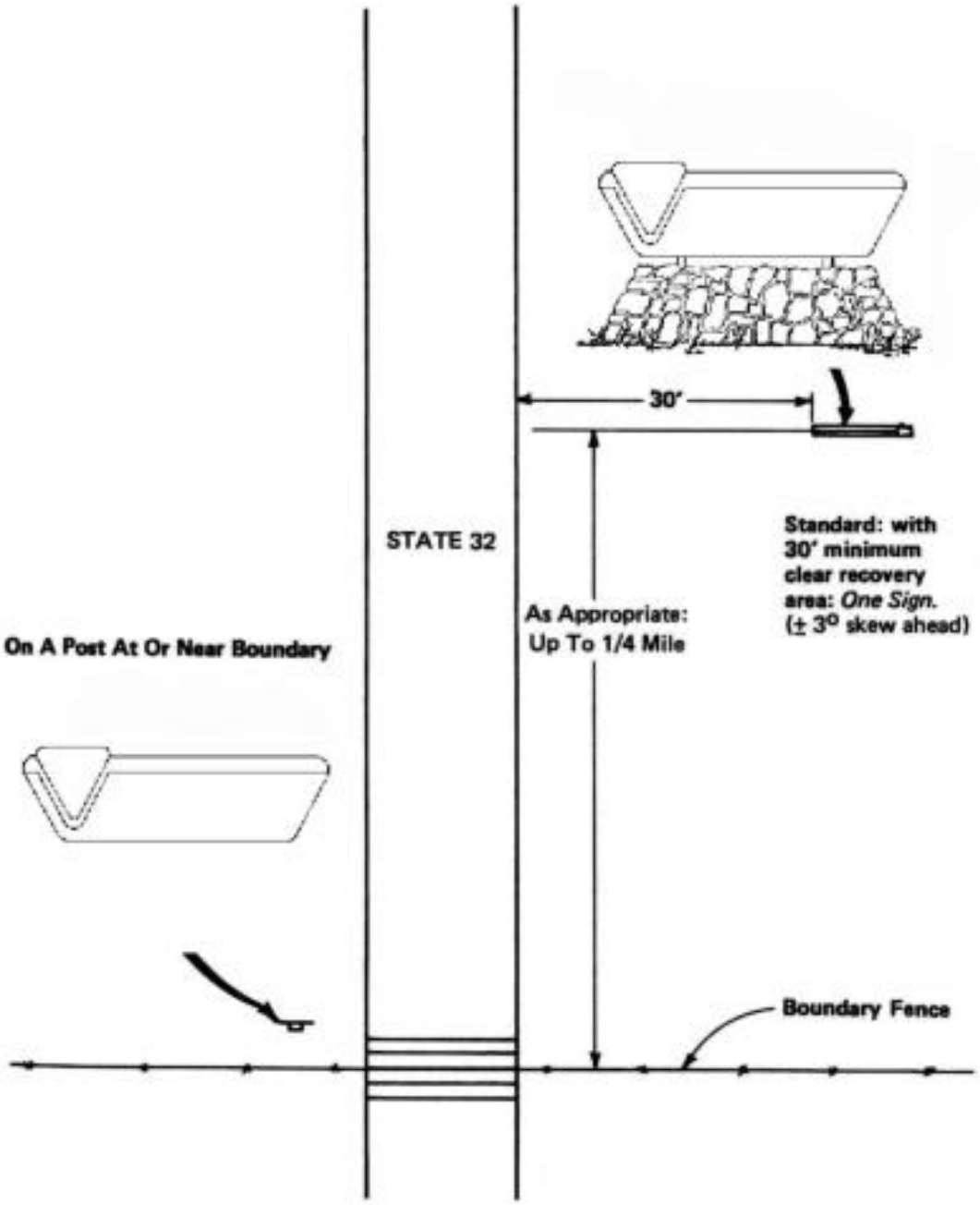
d. Metal

Various types of metal, including galvanized or steel, aluminum, iron, bronze, etc., may be formed or welded to develop an artistic and unique design for the sign base.

e. Found Objects

Many times objects found on site may be used to create a sign base or support system. Old mining cars or equipment, boats, farm implements, or other found objects may be used to incorporate the originality of the area into the sign design. Prior to using found objects, consult a local cultural resource specialist to ensure found objects do not need to be preserved as historical or archaeological properties.

Figure 5
Typical Sign Installation
and
Properly Sized Sign Base



3. Placement and Installation

Uniformity of placement and installation helps visitors see BLM signs and determine where the directed action is to take place. A landscape architect can help you select optimal locations so that your sign can best convey its intended message.

a. Placement

As a general rule, place signs on the right-hand side of the roadway as close to the standard locations as possible. Consider the following guidelines when selecting sign installation locations:

(1) Place signs where they provide adequate time for viewer response, considering such things as approach speed, road conditions, etc.

(2) Select locations that minimize viewing obstructions. Some common placement locations to be avoided, if possible, include:

(a) Dips in the roadway or trail.

(b) Just beyond the crest of a hill.

(c) Locations where the sign may interfere with the normal operation of the facility.

(d) Too close to trees or other foliage that could cover the face of the sign.

(3) Where the possibility exists that the sign may become a "photo opportunity," the sign location should be carefully chosen to ensure safe access.

(4) Place the sign within the viewer's "cone of vision."

(a) As speed increases, the driver's focus point increases. At 25 mph, the natural eye focus point lies 600 feet ahead of the car; at 45 mph, it lies 1,200 feet ahead.

(b) As speed increases, the driver's peripheral vision decreases. On low-speed roads, the signs can be set farther back from the right-of-way and still be visible and effective. At 25 mph, a driver's "cone of vision" is 90 degrees. At 45 mph, it narrows to 65 degrees, and at 60 mph, it is only 40 degrees.

(c) As speed increases, the driver's ability to focus on foreground detail decreases. At 40 mph, the closest point of clear vision lies

80 feet ahead of the car. At 60 mph, the driver can see clearly only detail that is within an area 110 to 1,400 feet in front of the car and within a 40-degree "cone of vision." See Figure 6 for a typical driver's visual perception responses.

(d) The location of all signs along roadways should comply with MUTCD standards. The following chart outlines the approximate distance required between signs and the distance required to provide advance warning on directional signs before intersections:

Speed limit	Distance between signs or from sign to intersection (in feet)
20	100
30	150
40	300
50	500
55	750

There are no standards for the location of pedestrian signs. Physical surroundings, however, play an important role. Pedestrian signs should be highly visible and not obstructed by the vegetation or physical features of the area.

Care should be taken to ensure that signs directed to one activity do not interfere with another activity, such as a sign along a roadway that might block traffic on an adjacent bicycle path. Visitor safety should always be considered when determining both the message and location of signs.

b. Height

The bottom of a sign should be a minimum of 5 feet above the level of the roadway. For pedestrian signs, headroom beneath the sign must be 80 inches minimum.

c. Lateral Clearance

(1) Traffic control devices on BLM roads

The distance from the edge of the roadway to the inner edge of the sign may range from 6 to 12 feet. The normal minimum is 6 feet. In cases where roadside topography precludes the 6-foot minimum, the inner edge of the sign should not be closer than 2 feet from the edge of a roadway with no shoulder and no closer than 2 feet from the outer edge of a shoulder. See Figure 7 for typical lateral clearances and heights.

(2) Non-Motorized Trails

Signs should be installed so that the nearest edge of the sign is at least 3 feet from the edge of the trail tread (to allow adequate clearance for pack stock).

(3) Winter-Use Trails

Signs should be mounted and placed so the nearest edge of the sign is a minimum of 2 feet and a maximum of 6 feet from the right edge of the trail tread. Place signs so they are protected from prevailing winds to keep a buildup of ice and snow from occurring. The signs should be placed so the bottom of the sign is a minimum of 40 inches above the average maximum snow level (so the sign will never be buried by the snow).

Figure 6
A Typical Driver's Visual Perception Responses

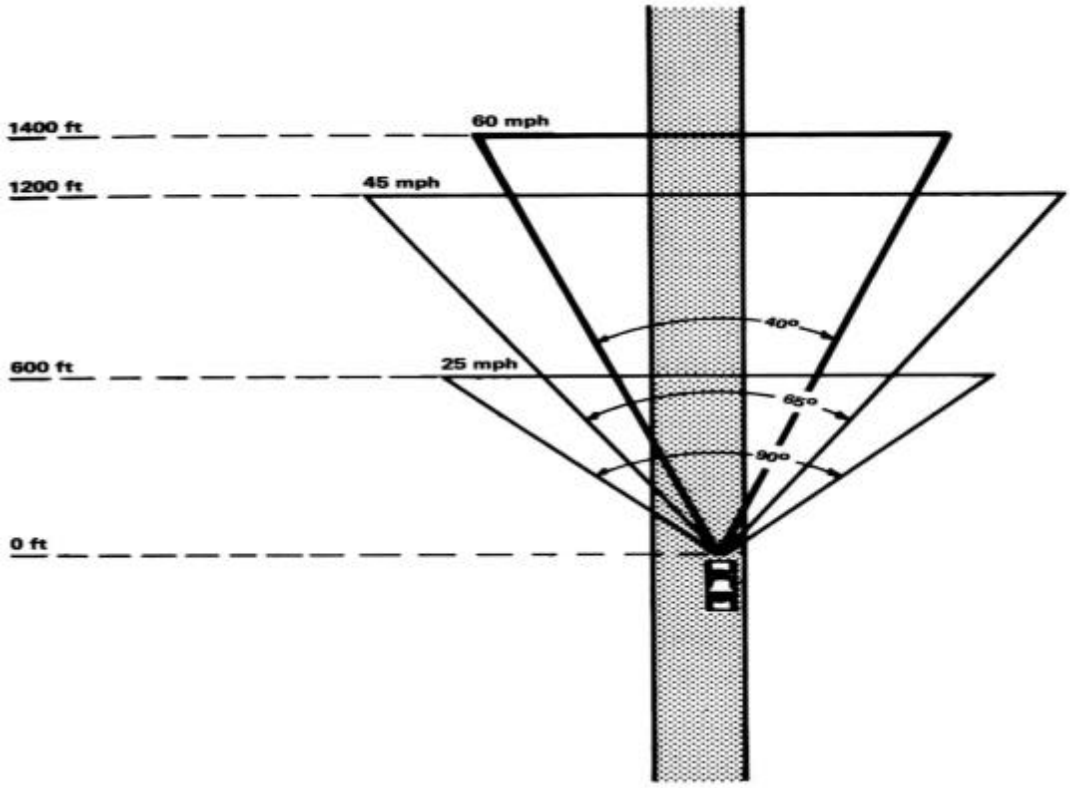
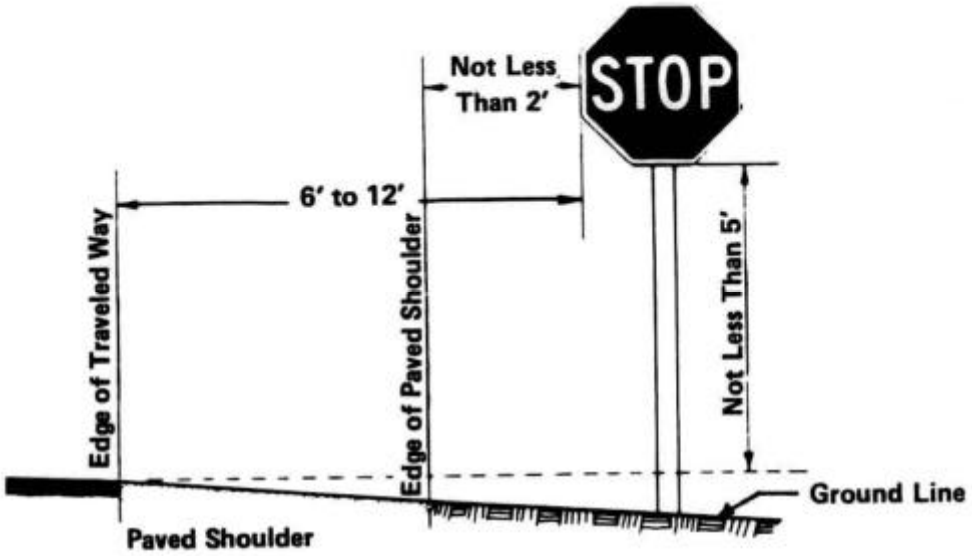
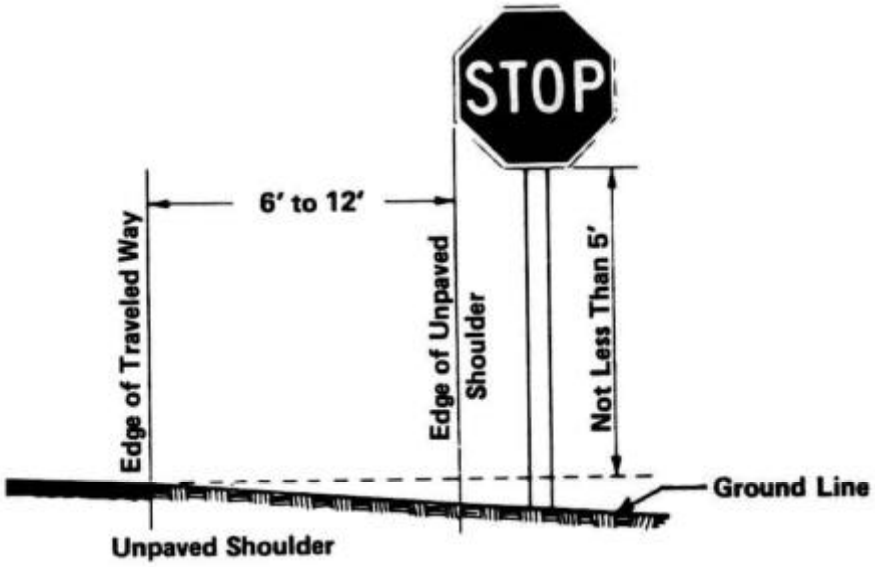


Figure 7
Typical Lateral Clearances and Heights



WITH PAVED SHOULDER



WITH UNPAVED SHOULDER

d. Canting

Depending on the distance from the road, signs should be mounted approximately 87 degrees or 93 degrees to the direction of, and facing, those they are intended to serve. This canting aids in reducing mirror reflectivity. Sign faces are normally vertical or tilted only slightly (see paragraph below). On upgrades and downgrades, it may be desirable to tilt from the vertical to improve readability.

e. Tilting

Tilting a sign slightly forward helps prevent environmental contaminants, such as sap or bird residue, from defacing the sign.