Miscellaneous Requirements

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Hardware and Assembly Details

This section provides details on sign mounting. Figure 1 below shows the proper way to fasten a sign panel to a wood post. All Materials shown are available from the warehouse. Bolts, nuts, and flat washers are to be galvanized, or aluminum, to prevent rusting. Nylon washers in the positions shown are important for proper sign installation.

The nut on the back is to be turned to tighten the bolt. If the head is allowed to turn, it may distort the sheeting on the sign surface, and destroy the reflective qualities.

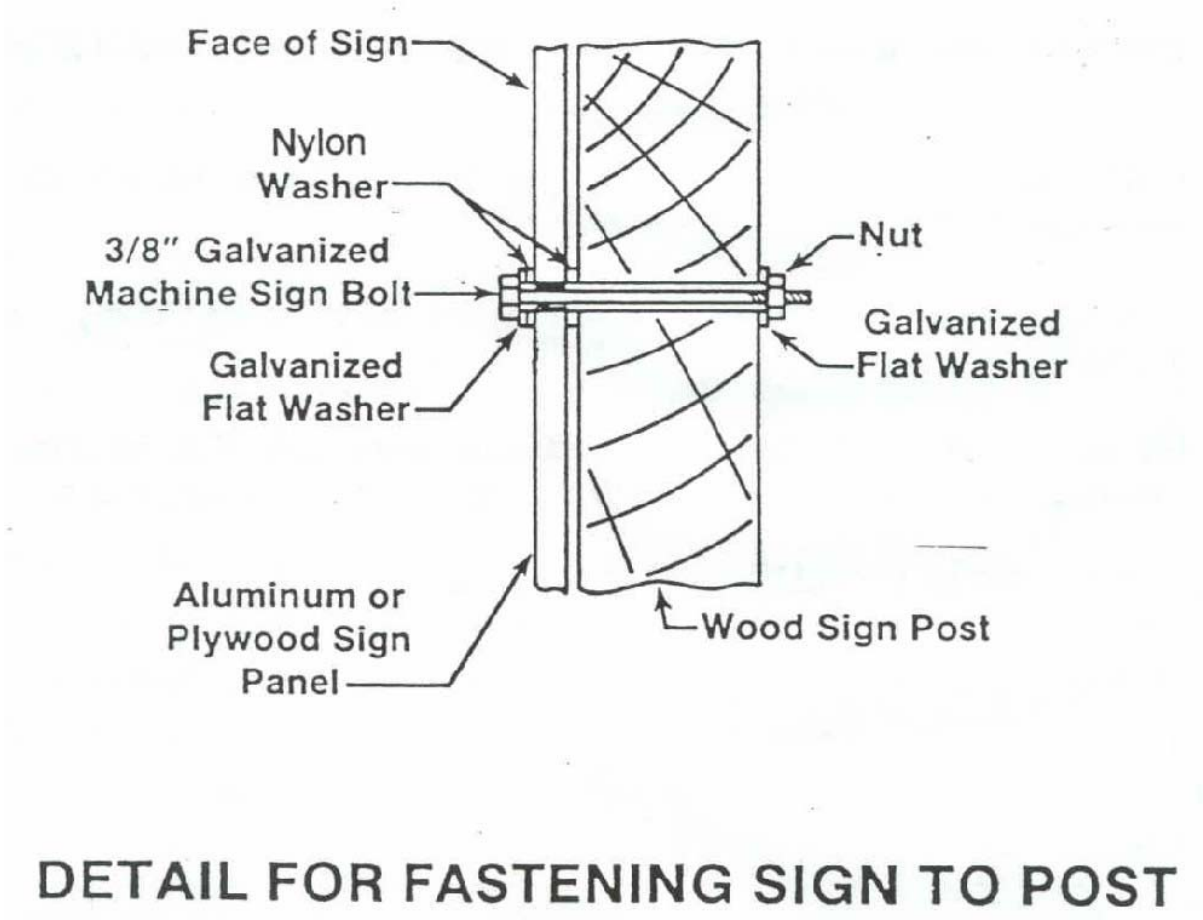


Figure 1

Typical assemblies for mounting route markers are shown in Figure 2 and Figure 3. Post size and number are determined by using the cumulative area of the individual sign panels. For multiple

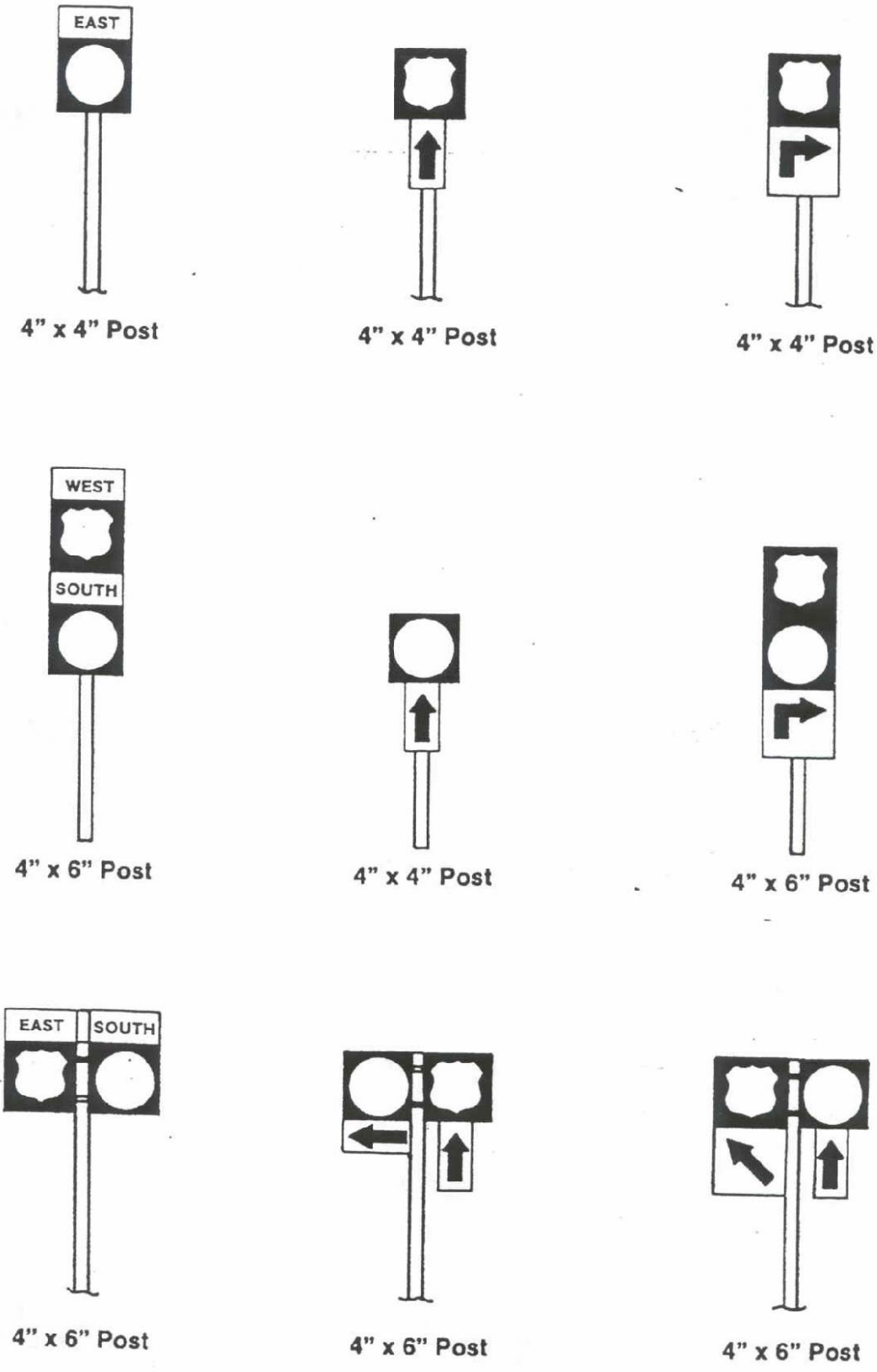
assemblies, left pointing arrow should be on the left side and right pointing arrow on the right side. The bottoms of route markers on multiple panel assemblies should be at the same level.

Brackets are available for mounting several panels in a group on the same post(s). Two sizes are used. One is for a single post assembly and the other is for a two-post assembly. An auxiliary sign-mounting bar is available for fastening signs together. These units are illustrated in Figure 4 and Figure 5.

General Guidelines are as follows:

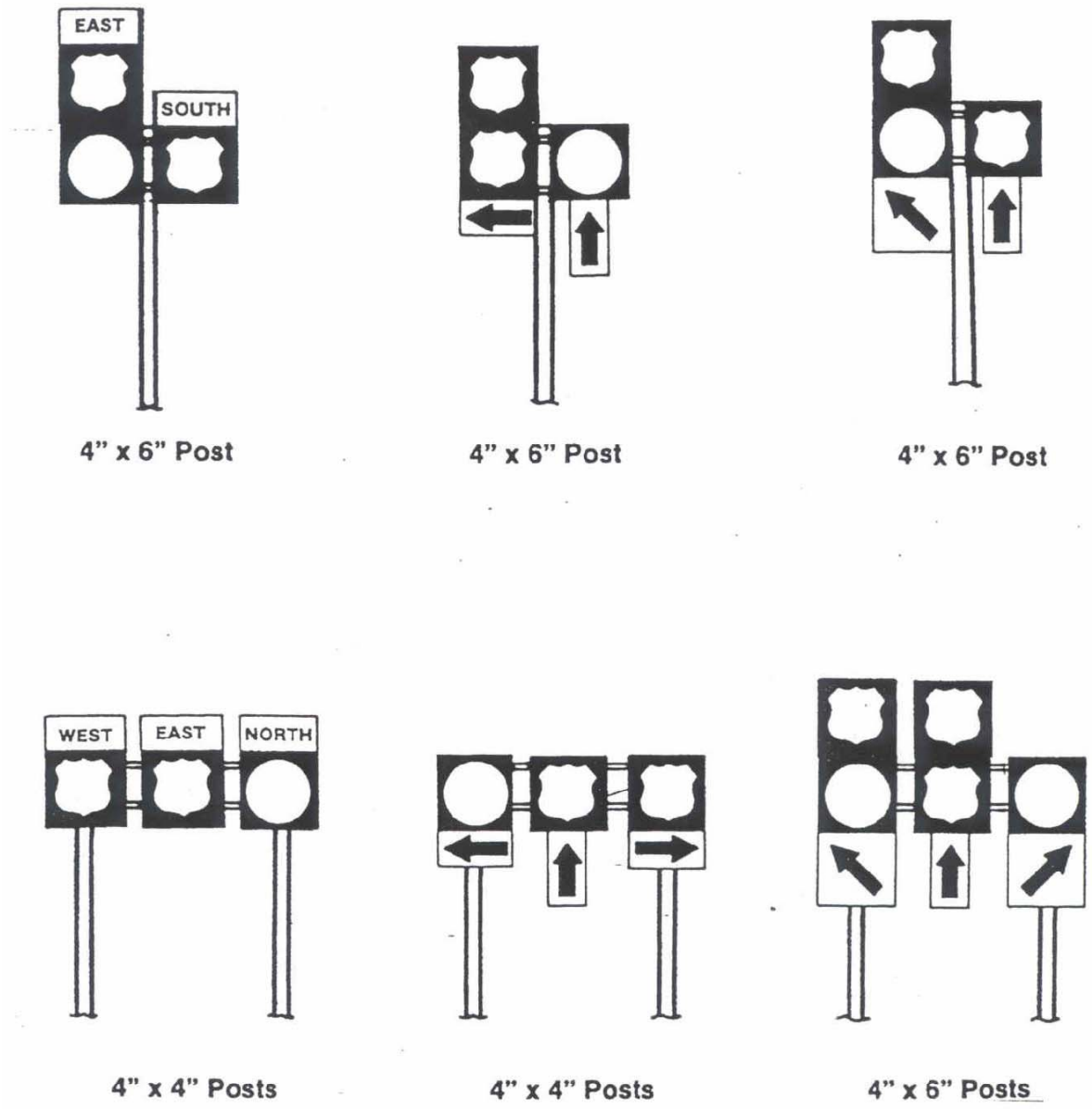
- Interstate route markers should be mounted to the left or above U.S. route markers.
- U.S. route markers should be mounted to the left or above State route markers.
- State route markers should be mounted to the left or above County route markers.
- For route markers with the same designation (Interstate, U.S., etc.) the lower route number should be mounted to the left or above the higher route number.

Route markers for detours should be handled in the same manner.



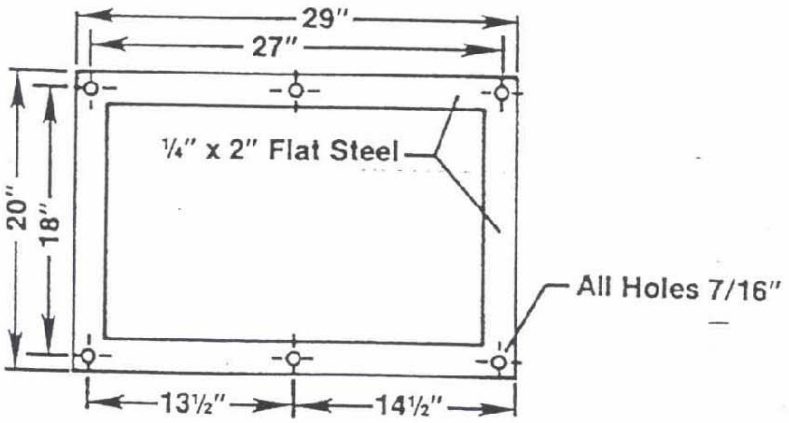
TYPICAL GUIDE SIGN GROUPING ASSEMBLIES

Figure 2

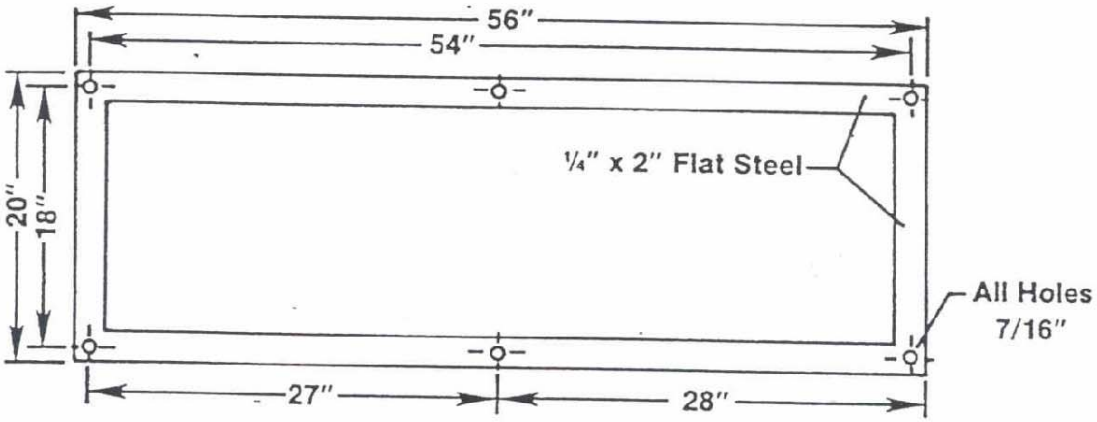


TYPICAL GUIDE SIGN GROUPING ASSEMBLIES

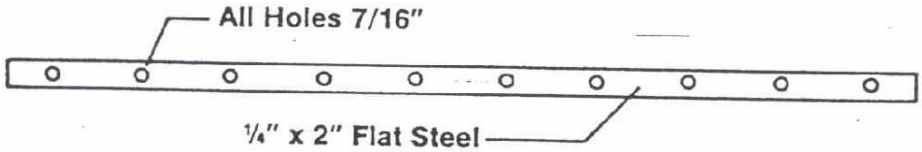
Figure 3



One Post Sign Mounting Bracket



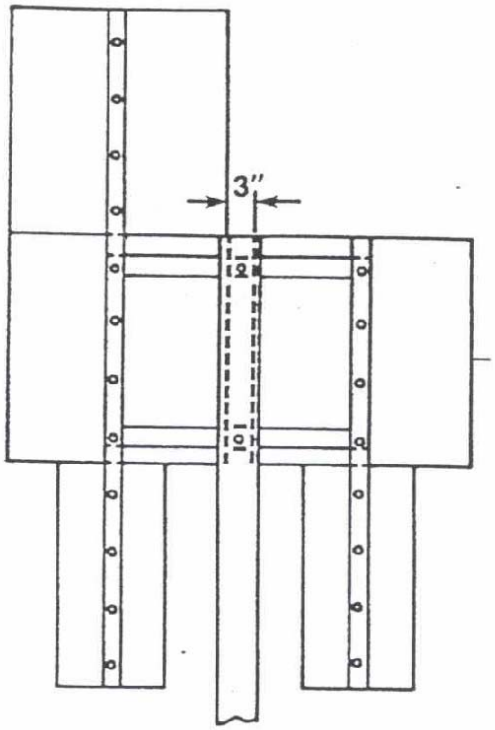
Two Post Sign Mounting Bracket



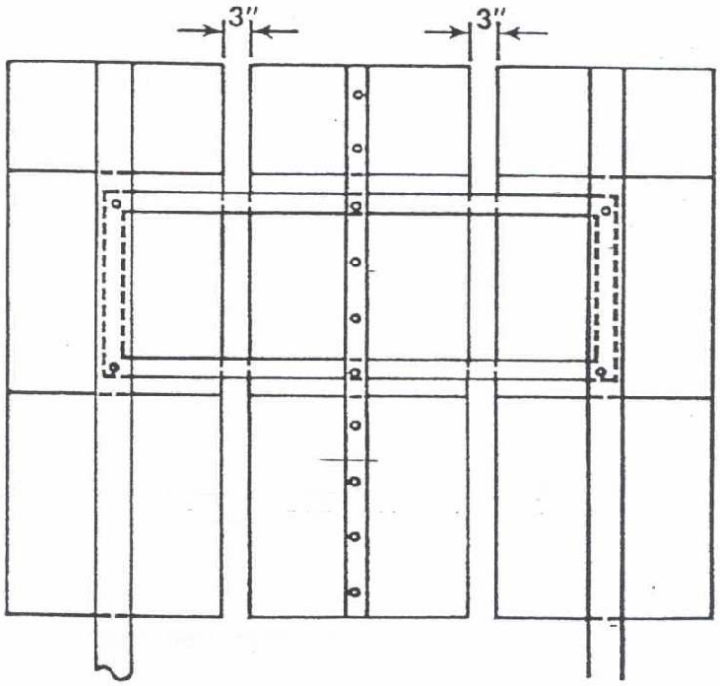
Auxiliary Sign Mounting Bar

SIGN MOUNTING BRACKETS

Figure 4



Typical One Post Sign Installation



Typical Two Post Sign Installation

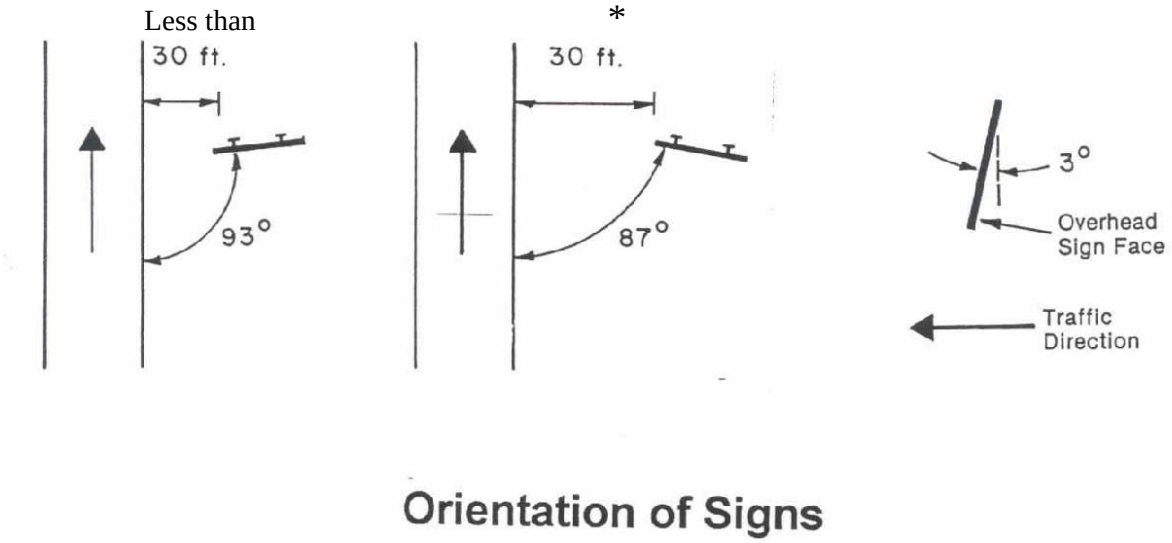
TYPICAL USE OF SIGN MOUNTING BRACKETS

Figure 5

Sign Orientation

Signs are normally mounted at approximately right angles to the direction of traffic that they are intended to serve. Signs located close to the traveled way should be turned slightly away from the roadway to avoid reflection of headlights off the sign face back into the driver's eyes. An angle of approximately 93 degrees to the line of approaching traffic should be used for sign locations less then 30 feet from the pavement edge. For signs 30 feet from the pavement edge, 87 degrees should be used. For each additional 10 feet of sign offset from the pavement edge, the sign should be at one less degree. On curved alignments, the angle should be determined by the course of approach traffic, rather than by the roadway edge at the point where the sign is located. On grades it may be desirable to tilt a sign forward or back from the vertical to improve the viewing angle.

The face of all overhead signs should be tilted at least 3 degrees towards traffic. This will help insure that dirt, dust, snow, and bird droppings will not drop onto the sign face. Figure 6 illustrates proper orientation of signs.



Orientation of Signs

* For each additional 10 feet of sign offset, the sign should be at one less degree (i.e. 40 ft, 86 deg)

Figure 6

Where two roads intersect at an acute angle, the stop sign should be positioned at an angle or shielded so that the legend is out of view of traffic to which it does not apply. Such installations should be reviewed during the day and at night to ensure that legibility of the sign for traffic to be stopped is not compromised.

Sizes of Signs for Conventional Roads, Expressways and Freeways

For the purposes of this section, definitions of the types of roads are as follows:

- Conventional Roads: Two-lane, multi-lane undivided and multi-lane divided with raised median or lowered median less than 30 feet wide.
- Expressway: Multi-lane divided with lowered median 30 feet or more wide.
- Freeway: Multi-lane divided with access only at interchanges.

Sign dimensions for regulatory and warning signs shall be as shown in Table 2B-1 and Table 2C-2 of the MUTCD. Sign dimensions for many guide signs are variable depending on the length of message and the size of lettering needed for proper legibility. For guide signs with standardized designs, such as route signs, the sizes shall be as shown in the "Standard Highway Signs" book.

Route sign auxiliary sizes are shown in the Iowa DOT sign catalog.

Increases above listed sizes are desirable where greater emphasis is needed. Some of the most commonly used sign sizes for use on Iowa primary highways are shown in Table 1, Stop Sign Sizes and Table 2, Speed Reduction and Speed Limit Sign Sizes.

Table 1

Stop Sign Sizes

Stopped Route	Through Route	
	Conventional	Expressway
Conventional Non-Primary	30 inch	36 inch
Conventional Primary	36 inch	36 inch
Expressway	48 inch	48 inch
Expressway Ramps	48 inch	48 inch
Freeway Ramps	48 inch	48 inch

Table 2

Speed Reduction and Speed Limit Sign Sizes

	Conventional			
	Speed Limit 45 mph or less	Speed Limit More than 45 mph	Expressway	Freeway
Speed Limit	24 in x 30 in	36 in x 48 in	48 in x 60 in	48 in x 60 in
Speed Reduction	36 in x 36 in	36 in x 36 in	48 in x 48 in	48 in x 48 in
1st Speed Limit Sign Following Speed Reduction Sign	36 in x 48 in	36 in x 48 in	48 in x 60 in	48 in x 60 in

Sign Reflectivity and Illumination

Regulatory, warning and guide signs must be retroreflective or illuminated to show the same shape and similar color by both day and night. Since the retroreflective materials currently in use perform effectively without illumination, it is not necessary to provide lighting for roadside or overhead signs. The State Traffic Engineer will provide assistance for individual cases at the request of the District Office.

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