

Tech Brief No. 3 2007

This Tech Brief summarizes the key standards for sign installation.

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CORRECT SIGN INSTALLATION INCREASES MOTORIST SAFETY

Eight-five percent of all motor vehicles that run off the road recover safely within 30 feet of the roadway in a clear zone, according to a recent study by General Motors.

Although a 30-foot clear zone is not always possible, it's a good concept to try to achieve. Fewer barriers adjacent to the road increases motorist safety:

- **Remove** fixed objects and provide traversable terrain.
- **Relocate** objects outside the clear zone.
- **Retrofit** objects that cannot be removed or relocated by making them breakaway or crash worthy.
- **Shield** the hazards that cannot be improved by installing guardrails, barriers or crash cushions.
- **Delineate** the hazard as a temporary measure if the methods above are impractical.

Hazards

Road signs often are placed in the clear zone so they will be in the drivers' line of sight. Therefore, the construction of road sign posts and foundations is critical. Road signs should be placed on safe sign supports so that

they do not become a bigger hazard than the situation they are meant to improve.

A support post must be able to hold a particular sign in the proper position and withstand normal loads from wind and other sources, yet safely yield when struck by a vehicle.



Placement

A sign placed close to the roadway is more likely to be struck than one that is set farther away. Whenever possible, place signs where they are not likely to be struck by out-of-control vehicles. The following are some considerations for placing road signs:

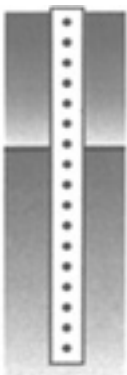
- Avoid placing signs on curves such as the outside of horizontal curves.
- Avoid placing signs next to lane drops or other places where the pavement narrows.
- Provide an unobstructed view of signs along the roadway.

- Place signs behind guardrails or other barriers whenever possible.
- Avoid placing signs in the bottom of ditches.
- Space signs along the roadway so they don't obstruct the view of each other.

Recommended spacing is 100 feet to 200 feet apart. Signs should not be clustered together.

Sign Installation Tips

- Bury posts in firm ground 4 feet deep. Loose or sandy soil may require deeper post placement.
- Use breakaway sign supports to enhance roadside safety.
- Use sign connections that prevent vandalism.



Height

The *Manual on Uniform Traffic Control Devices* states: "Signs erected at the side of the road in rural districts shall be mounted at a height of at least 5 feet, measured from the bottom of the sign to the near edge of the pavement."

"In business, commercial and residential districts where parking and/or pedestrian movement is likely to occur or where obstructions are present, the clearance to bottom of the sign must be at least 7 feet. The height of the bottom of a secondary sign mounted below another sign may be one foot less than the appropriate height specified above."

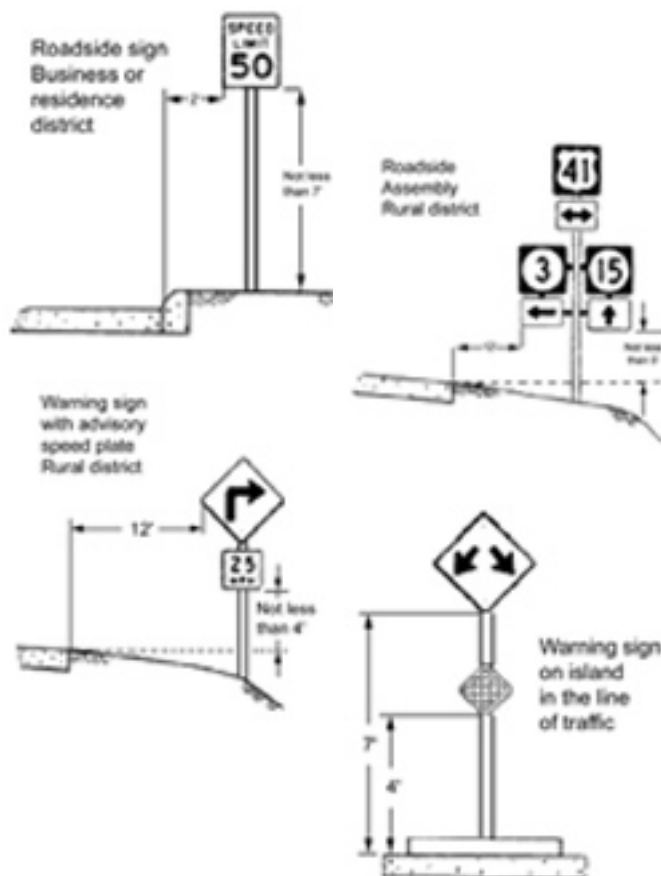
Lateral clearance

Signs should have the maximum lateral clearance that is practical from the edge of the traveled roadway for the safety of motorists who might leave the roadway and strike the sign supports. Existing guardrails, over-crossing structures and

other conditions should be used to minimize the exposure of sign supports to traffic. Otherwise, sign supports should be breakaway or yielding.

Normally, signs should not be closer than six feet from the edge of the shoulder, or 12 feet away from the edge of the traveled roadway if no shoulder is present. Although two feet are recommended as a working urban minimum, a clearance of one foot from the curb face is permissible where the sidewalk width is limited or where existing poles are close to the curb.

The diagrams show the proper height and lateral locations of signs. Note that the lateral placement of signs in rural districts is a six-foot minimum and out to 12 feet when possible.



U-channel steel posts

The U-channel rolled steel post is a common small sign support. It is considered breakaway because it will bend or breakaway at the post/base connec-

tion at the ground line when it is hit. This improves safety and makes repairs easier.



Photo of typical U-channel posts. The silver post has been galvanized.

The manufacturer of U-channel steel posts must provide certification that the posts and hardware have essentially the same chemistry, mechanical properties and the geometry as that used in the Federal Highway Administration tests and will meet the FHWA change in velocity requirements.

Certification must also be provided that the U-channel lap splice system will develop the full shear and bending yield strength of the sign post section being spliced.

Supports

Posts should be square tube post, U-channel type or timber. Signs mounted with the square tube posts should be installed as follows:

Sign Area (square feet)	Mounting with (P-5) Square Tube Post (inches)
Up to 7.5	Single 2 ¼ x 2 ¼ post
Over 7.5 to 15	Two 2 ¼ x 2 ¼ posts
Over 15 to 20	Two 2 ½ x 2 ½ posts



Examples of typical square tube posts which are sometimes used in proper sign installation.

Single post installations should be in accordance with WYDOT specifications. Signs with two posts require a slip base and should be installed according to the manufacturer's recommendations (except that the sign post anchor should be embedded at least 4 feet below the ground surface). Signs mounted with U-channel post should be installed as follows:

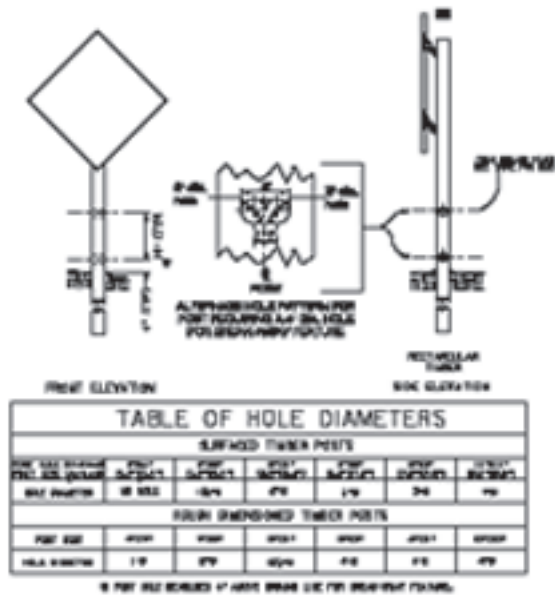
Sign Area (square feet)	Mounting with (P-5) U-Channel Posts
Up to 10	Single post
Over 10 to 20	Two posts



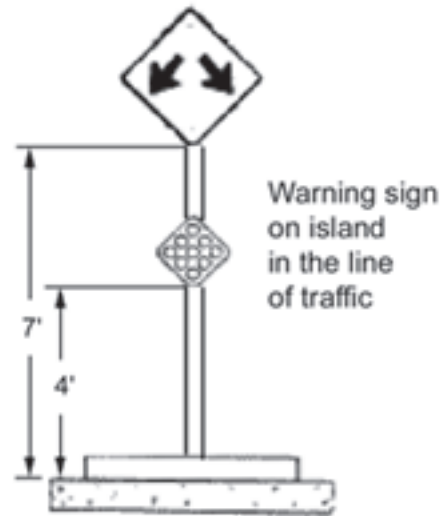
An example of a U-channel post used for sign placement and installation.



Standard breakaway timber post details for single or multiple post installations are shown below:



There should be a minimum of 1/4 inch of threads beyond nuts on all signs after they are securely fastened. Signs with a width greater than or equal to 4 feet, or an area more than 7.5 square feet up to and including 20 square feet, require 2 posts.



Panels

For typical installations of small signs (up to 20 square feet), use a hot-dipped galvanized button-head bolt with a slot in the head and nut with a lock washer.

Adapted with permission from the Baystate Roads Program Tech Note #40.

Wyoming Technology Transfer Center



The national Local Technical Assistance Program mission is to foster a safe, efficient, and environmentally sound surface transportation system by improving skills and increasing knowledge of the transportation workforce and decision makers.

