

SECTION 13

GUIDELINES FOR THE DESIGN OF GROUND MOUNTED SIGN SUPPORTS

13-01 INTRODUCTION

Highway signs fall into two main categories, which are subdivided as follows:

1. Overhead Signs
 - a. Sign Bridge Structures (GO)
 - b. Sign Cantilever Structures (GO)
 - c. Bridge Mounted (GOX)
2. Ground Mounted Signs
 - a. Small Highway Signs (GA)
 - b. Large Highway Signs (GA)

This section covers the design guidelines for Ground Mounted Sign Supports. These guidelines have been developed utilizing the 2002 AASHTO *A Policy on Geometric Design of Highways and Streets*, the 2001 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, 2002 AASHTO *Interim to Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, the 2002 AASHTO *Roadside Design Guide*, and the 2000 *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD).

Design guidelines and Standard Drawing Plates for overhead signs are covered in the *NJDOT Design Manual - Bridges and Structures, Third Edition, 1998*.

The designer has four options from which to choose when locating signs within the highway right-of-way. These options are:

1. Locate the sign beyond the clear zone.
2. Mount the sign overhead.
3. Utilize a breakaway support to reduce impact severity
4. Shield the sign with a longitudinal barrier and/or crash cushion

Ground mounted signs should desirably be located beyond the clear zone. In addition, all ground mounted highway signs are to be installed on breakaway supports, unless otherwise indicated herein. When a sign is located behind a traffic barrier (which is required for another reason), non-breakaway supports may be used. In cases where noise walls are required at a particular sign location, additional berm widths may be necessary.

In considering the above, it is critical that sign locations and the design of the sign support be considered early in the Initial Design Development Stage. Depending upon the size of the sign, additional right-of-way, or slope easements may be required (see *Standard Roadway Construction Details* CD-619-4 and 7 for grading details). Also, where sign supports must be shielded, sufficient area must be provided to accommodate guide rail or a crash cushion.

13-02 SMALL HIGHWAY SIGNS

Small highway signs are defined as those with total panel areas less than 50 square feet. When this category of sign is used, the design guidelines for its support shall be steel "U" post sign supports. Aluminum posts are not permitted for small highway signs. Small highway signs shall not be placed in front of guide rails, and the posts shall not straddle guide rail. All small highway sign supports shall be of the breakaway type with the exception of those installed behind guide rail or behind other roadside barriers.

For those signs included in the NJDOT *Standard Roadway Construction Details* (CD-619-1, 2 and 3), the contractor shall be responsible for determining the horizontal offset, the quantity of posts, the post size and their associated lengths by utilizing the information provided in *Standard Roadway Construction Details* CD-619-4.

For signs not included in the NJDOT *Standard Roadway Construction Details*, the designer shall be responsible for establishing all offsets, quantity of posts, post sizes and lengths by following the step by step design guidelines below:

Step 1. Once provided with the necessary panel size, determine the horizontal offset (X_1) from edge of pavement to inside edge of sign, as shown in Figure 13-A, by applying Section 2A-24 of the MUTCD as follows:

- a. Urban installations – 1 ft. minimum from curb face where sidewalk width is limited or existing poles are close to the curb. Otherwise 2 ft. minimum.
- b. Rural installations – 6 ft. minimum desirable from edge of shoulder, but 12 ft. minimum desirable from edge of traffic or auxiliary lane.
- c. Interstate and Freeway installations – 6 ft. minimum from edge of shoulder, but not less than 10 ft. from the edge of traffic or auxiliary lane.

Step 2. When determining the height of ground mounted signs, the following checks should be made:

- a. When signs are installed on slopes 10H:1V or flatter the minimum vertical clearance above the edge of pavement to bottom of the sign panel as shown in Figure 13-A are as follows: