U.S. Department of Transportation
Federal Highway Administration

400 Seventh St., S.W.
Washington, DC 20590

April 6, 2007

In Reply Refer To:
HSSD/SS-147

Mr. Herbert G. Bray
Wright County
1901 Highway 25 North
Buffalo, MN 55313

Dear Mr. Bray:

Thank you for your correspondence via an e-mail of March 21, 2007 requesting the Federal Highway Administration's (FHWA) acceptance of the U-channel post mounted to a perforated square steel tube that is inserted into a permanent base as a breakaway small sign support on the National Highway System (NHS). Accompanying your correspondence were drawings for the support and its foundation. You requested that we find the system acceptable based on observed field performance and by comparison to other breakaway supports under the provisions of National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features."

Requirements and warrants for breakaway supports are those in the American Association of State Highway and Transportation Officials' (AASHTO) Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. Testing of breakaway supports is subject to the guidelines contained in the NCHRP Report 350.

The following is a brief description of your generic design and detailed drawings are enclosed for reference. A standard 2-1/2 pound per foot U-channel post is bolted to a 12 inch long 1-3/4 inch perforated square steel tube (PSST) riser using two 5/16 inch Grade 5 bolts with locking nuts. The bolts should be spaced 4 inches apart and connected such that the U-channel is approximately one inch above the ground line. The PSST riser must fit snug as it is inserted at least 4 inches into the base that is securely held in a concrete footing (minimum 8 inches deep). The PSST riser projects 8 inches above the concrete.

No crash testing of this support has been conducted. However, successful crash tests have been conducted on 1-3/4 inch PSST inserted into 2 inch PSST and securely bolted together near the ground line. The tested PSST support referenced in the FHWA acceptance letter SS-36 (design 92F039), is considered equivalent to your proposed design. Also, based on your observations of field performance, the 1-3/4 inches PSST riser consistently breaks at the ground line with no

remaining stub exceeding 4 inches. It is apparent that, in the event of an impact, the 1-3/4 inches PSST riser breaks at the ground line and it would be anticipated that the vehicle velocity change caused by your proposed generic design will be equivalent to that of the successfully tested support.

Since perforated square steel supports mounted to U-channel posts have not been crash tested, it is not known if potential exists for the support or sign to penetrate the occupant compartment. In order to reduce that potential we recommend that the mounting height of the sign be, as a minimum, seven feet to the bottom of the sign. You also requested the installation of two posts within a seven foot path to be used to support a sign. We concur with this request as similar supports were also successfully tested with a dual post configuration.

The support described above and shown in the enclosed drawings for reference can be expected to meet the NCHRP Report 350 requirements and it may be considered acceptable for use as a test level 3 device when installed as shown in the attached drawing. Please note the following standard provisions, which apply to the FHWA letters of acceptance:

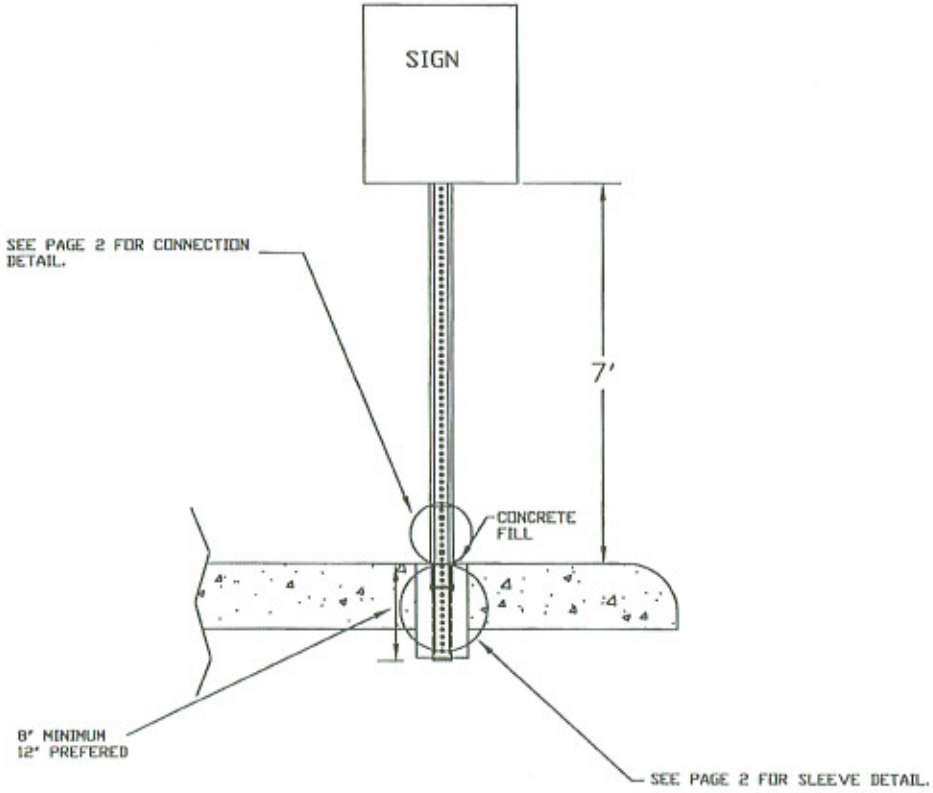
- This acceptance is limited to the crashworthiness characteristics of the devices and does not cover their structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may adversely influence the crashworthiness of the device will require a new acceptance letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals unacceptable safety problems, or that the device being marketed is significantly different from the version that was crash tested, it reserves the right to modify or revoke its acceptance.
- You will be expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.
- You will be expected to certify to potential users that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance, and that they will meet the crashworthiness requirements of the FHWA and the NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance, designated as number SS-147, shall not be reproduced except in full. This letter, and the test documentation upon which this letter is based, is public information. All such letters and documentation may be reviewed at our office upon request.
- The device is not a patented product and not considered proprietary. However, if proprietary devices are specified by a highway agency for use on Federal-aid projects, except exempt, non-NHS projects, they: (a) must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with the existing highway facilities or that no equally suitable alternative exists; or (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411.

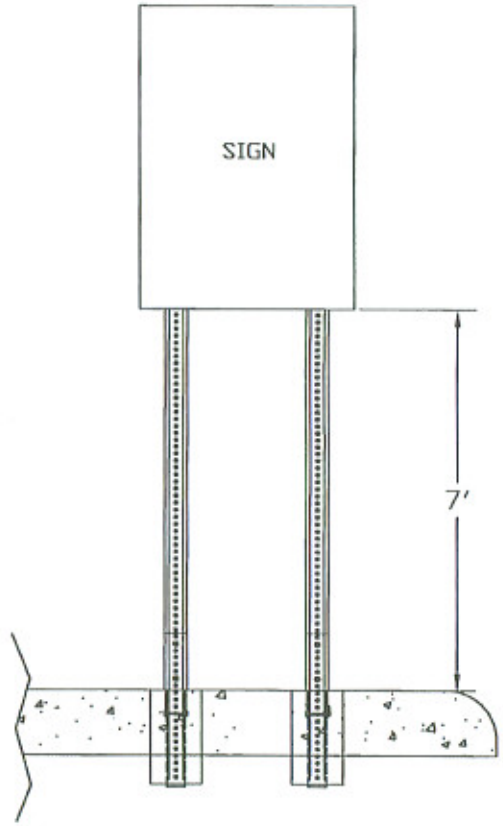
- This acceptance letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented device for which the applicant is not the patent holder. The acceptance letter is limited to the crashworthiness characteristics of the candidate device, and the FHWA is neither prepared nor required to become involved in issues concerning patent law. Patent issues, if any, are to be resolved by the applicant.

Sincerely yours,

John R. Baxter, P.E.
Director, Office of Safety Design
Office of Safety

Enclosures

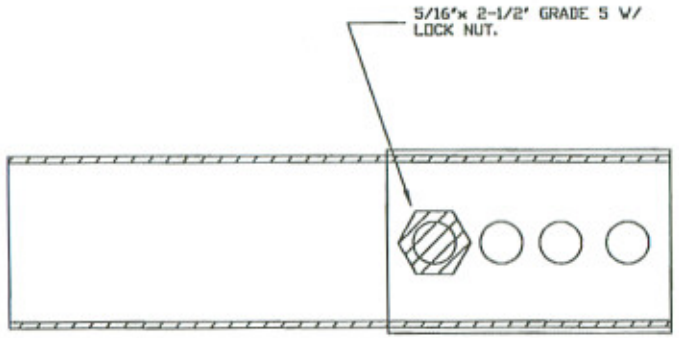



NO SCALE

# TYPE C SIGNS, DELINEATORS, & MARKERS IN CONCRETE

| WRIGHT COUNTY | |
|---|---|
| SHEET NO. 1 OF 2 | DATE 04-03-07 |




SLEEVE DETAIL
(SIDE VIEW)

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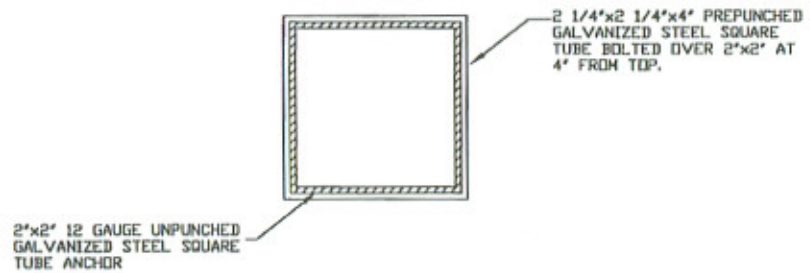


SLEEVE DETAIL
(PLAN VIEW)

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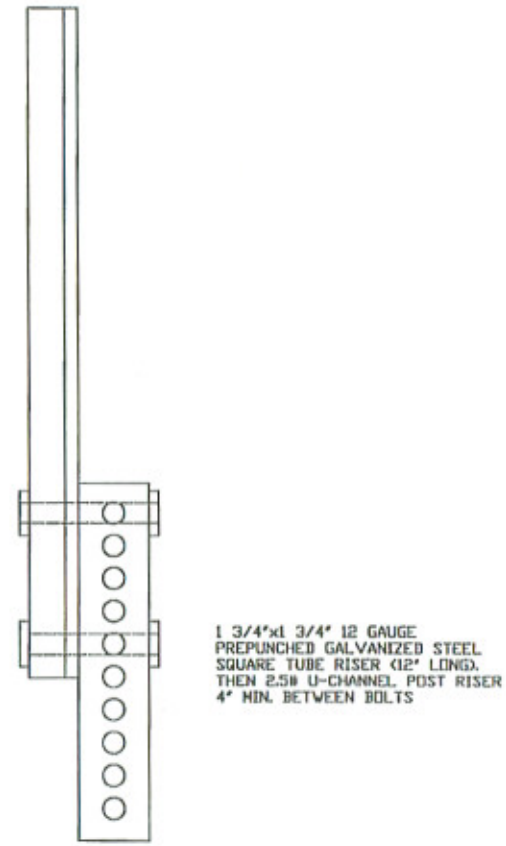


CONNECTION DETAIL

NO SCALE

# SLEEVE DETAIL/CONNECTION DETAIL

| WRIGHT COUNTY | |
|---|---|
| SHEET NO.<br>2 OF 2 | DATE<br>04-03-07 |