



U.S. Department
of Transportation
Federal Highway

Administration

400 Seventh St., S.W.
Washington, D.C.
20590

Refer to: HSA-1/WZ-87B

Mr. JAN MILLER
EASTERN METAL/USA-SIGN
1430 SULLIVAN STREET
ELMIRA, NY 14901-1698

Dear Mr. MILLER:

Thank you for your facsimile transmissions of August 3 and August 21 requesting Federal Highway Administration (FHWA) acceptance of variations to a number of your company's portable sign stands using a variety of rigid sign panels as crashworthy traffic control devices for use in work zones on the National Highway System (NHS). You referenced the earlier testing, described the desired variations, and requested that we find your company's temporary sign stands acceptable for use on the NHS under the provisions of National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features." This letter will deal with variations to the X-602 stand.

Introduction

The FHWA guidance on crash testing of work zone traffic control devices is contained in two memoranda. The first, dated July 25, 1997, titled "INFORMATION: Identifying Acceptable Highway Safety Features," established four categories of work zone devices: Category I devices were those lightweight devices which could be self-certified by the vendor, Category II devices were other lightweight devices which needed individual crash testing, Category III devices were barriers and other fixed or massive devices also needing crash testing, and Category IV devices were trailer mounted lighted signs, arrow panels, etc. The second guidance memorandum was issued on August 28, 1998, and is titled "INFORMATION: Crash Tested Work Zone Traffic Control Devices." This later memorandum lists devices that are acceptable under Categories I, II, and III.

A brief description of the device as initially accepted in our acceptance letters WZ-59 and WZ-78A follows:

Model X-602 High Level Aluminum dual-coil spring Interstate Sign Stand tested with 48x48 0.080 Aluminum and 15 mm (5/8 in) plywood. mounted at 1524 mm (60 in), to include 3 wood dowel flags.

The **X-602** is an "X-footprint" stand with two vertically mounted steel coil springs. The four legs are 25 mm x 25 mm x 3.2 mm (1.0 in x 1.0 in x 0.125 in) 6063-T6 extruded aluminum tubing. Coil springs are used to attach the base unit to the 32 mm x 32 mm x 3.2 mm (1.25 in x 1.25 in x 0.125 in) and 25 mm x 25 mm x 3.2 mm (1.0 in x 1.0 in x 0.125 in) telescoping aluminum tube

upright. The bottom portion of the upright consists of two pieces of 32 mm x 32 mm x 3.2 mm aluminum tubing. A breakaway sleeve, consisting of 33 mm x 33 mm x 229 mm (1.3 in x 1.3 in x 9 in) aluminum, connects the two portions of the lower upright together at approximately 460 mm (18 in) above grade. The sign is attached to the mast tube by two formed steel brackets placed to hold the bottom and top points of the sign. The coil springs are rigidly attached with bolts on either end. Steel flag holders mount to the top sign bracket to support vinyl flags. Three 457 mm (18 in) square vinyl flags on 19 mm x 610 mm (0.8 in x 24.0 in) wooden dowels were placed in the steel holders.

The overall height of the **X-602** stand is 3962 mm (156 in) with flags and 3454 mm (136 in) without flags. The bottom of the sign is 1524 mm (60 in) above grade. The total weight of the stand is 23.6 kg (52 lbs). The 2 mm (0.08 in) thick aluminum sign weighs 8 kg (18 lbs) while the 16 mm (5/8 in) plywood sign weighs 13 kg (29 lbs) forming a combined stand/sign weight of 32 kg (70 lbs) and 37 kg (81 lbs) respectively.

The stand was accepted with the following sign substrates:

- 48x60, 48x48 or smaller center-hinged 6.35 mm (0.250 in) solid ABS plastic signs
- 48x60, 48x48 or smaller 2.0 mm (0.080 in) aluminum signs
- 48x60, 48x48 or smaller 2 mm AL/LDPE laminate
- 48x60, 48x48 or smaller 0.080 aluminum
- 48x60, 48x48 or smaller 16 mm (5/8 in) plywood

Requested Modifications

You asked for guidance on placing a 1220 mm x 610 mm (48x24) arrow panel below the tested 48x48 diamond warning sign, mounted at 1524 mm (60 inches) above grade. You suggested two options:

1. Use accepted substrate signs on X-600 series stands with the minimum mounting height at 1524 mm (60 inches). We concur that this is acceptable.
2. Use a roll-up or light weight rigid panel only for the arrow if it is to be placed below the diamond sign placed at 1524 mm above the pavement. We concur that the addition of arrow signs of these materials should not be detrimental to the performance of the sign stand.

Findings

The modified devices described above are acceptable for use as Test Level 3 devices on the NHS under the range of conditions that the original signs were tested, when proposed by a State.

Please note the following standard provisions which apply to FHWA letters of acceptance:

- Our 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 FHWA and NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance, designated as number WZ-87B 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.
- Eastern Metal/USA Signs stand may include patented components and if so are considered "proprietary." The use of proprietary work zone traffic control devices in Federal-aid projects is generally of a temporary nature. They are selected by the contractor for use as needed and removed upon completion of the project. Under such conditions they can be presumed to meet requirement "a" given below for the use of proprietary products on Federal-aid projects. On the other hand, if proprietary devices are specified 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 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, a copy of which was provided with previous correspondence.

Sincerely yours,

Frederick G. Wright, Jr.
Program Manager, Safety