



U.S. Department
of Transportation
**Federal Highway
Administration**

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

February 25, 2005

In Reply Refer To: HSA-10/WZ-196

Mr. Chuck Mettler
Plastic Safety Systems
444 Baldwin Road
Cleveland, Ohio 44104

Dear Mr. Mettler:

Thank you for your letter of December 8, 2004, requesting Federal Highway Administration (FHWA) acceptance of up to 25 square feet of lightweight signs to your company's 8 foot wide and smaller Type III barricades as crashworthy traffic control devices for use in work zones on the National Highway System (NHS). You requested that we find these devices acceptable for use on the NHS under the provisions of the National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features."

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 are those lightweight devices which are to be self-certified by the vendor, Category II devices are other lightweight devices which need individual crash testing but with reduced instrumentation, Category III devices are barriers and other fixed or heavy devices also needing crash testing with normal instrumentation, and Category IV devices are trailer mounted lighted signs, arrow panels, etc. for which crash testing requirements have not yet been established. 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.

Plastic Safety Systems Type III Barricade

The horizontal rails, or "legs," are 1217-mm (48 inch) long, 98 mm (3.9 inch) square High Density Polyethylene (HDPE), and are placed 1225 mm (48 inches) apart. Underneath each end of the legs rubber pads are attached to increase friction with the pavement. On the top center of each leg is bolted a 127 mm x 76 mm (5 x 3 inch) steel plate, to which is welded a 72 mm diameter x 3.06 mm wall x 200 mm (2.83 x 0.12 x 7.87 inch) long steel tube. These



steel tubes support the vertical upright masts, which are 88 mm (3.5 inch) square x 5.08 mm (0.2 inch) wall x 1521 mm (60 inch) long HDPE plastic. To these vertical masts are bolted (with 1/4 - 20 bolts and nuts with washers) three 205 mm (8 inch) wide x 22.75 mm (0.9 inch) thick x 2435 mm (8 feet) long HDPE honeycomb extrusions. A “ballast board” was also used to connect the legs. This 130 mm (5 inch) wide x 29.83 mm (1.2 inch) thick x 1225 mm (48 inch) long HDPE extrusion with a wall thickness of 6.1 mm (1/4 inch) was installed as a safer location to place sandbags.

This configuration was tested in accordance with the NCHRP Report 350 guidelines and was successful. Subsequent informal testing of the Type III barricade with the ANCHOR base system showed that it was an acceptable alternative to the square HDPE leg. This was acknowledged in the FHWA acceptance letter WZ-152 dated April 10, 2003.

Discussion and Findings

Your present request is to permit modifications to your Type III plastic barricade by adding up to 25 square feet of lightweight substrate signs. Lightweight substrates were defined in the FHWA acceptance letter WZ-85 dated November 15, 2001. Minimum mounting height is 12 inches above the roadway, and all signs will be mounted directly to the rails. The FHWA acceptance letter WZ-100, dated June 20, 2002, permits up to 25 square feet of aluminum laminate substrate material to be used on any NCHRP Report 350 accepted Type III barricade. As corrugated plastic sign substrates up to 10 mm thickness, can be expected to perform in a similar manner *when bolted to Type III Barricades using 5/16 inch fasteners*, we find their use acceptable on the NHS under the range of conditions originally tested, when proposed by a State. This finding applies to your Type III Barricades, up to 8 feet in width, as found acceptable in the following letters:

WZ-61 dated December 13, 2000
 WZ-102 dated April 12, 2002
 WZ-152 dated April 10, 2003
 WZ-166 dated November 12, 2003
 WZ-190 dated August 11, 2004

Please note the following standard provisions that apply to the 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 the FHWA and the NCHRP Report 350.

- To prevent misunderstanding by others, this letter of acceptance, designated as number WZ-196 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 Plastic Safety Systems Type III barricade, and the lightweight sign substrates discussed above, are patented and 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 by a highway agency* for use on Federal-aid 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. These provisions do not apply to exempt non-NHS projects. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411, a copy of which is enclosed.
- 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,

/Original Signed by Harry W. Taylor/

~for~

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

Enclosure

FHWA:HSA-10:NArtimovich:tb:x61331:2/16/05

File: h://directory folder/artimovich/WZ196-PSSfin

cc: HSA-10 (Reader, HSA-1; Chron File, HSA-10;
N.Artimovich, HSA-10)