

Refer to: HSA-10/WZ-152

Mr. Chuck Mettler
Plastic Safety systems
2444 Baldwin Road
Cleveland, Ohio 44104

Dear Mr. Mettler:

This is in response to your letter of March 24, 2003, requesting Federal Highway Administration (FHWA) acceptance of a modification to your company's Type III barricades as crashworthy traffic control devices for use in work zones on the National Highway System (NHS). Plastic Safety System's Type III Barricades were found acceptable in our letter, WZ-61, dated December 13, 2000. You requested that we find these barricades, when using a new skid design, 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."

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.

Description of the barricade as initially accepted follows:

The horizontal rails, or "legs," are 1217-mm long, 98 mm square HDPE, and are placed 1225 mm 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 steel plate, to which is welded a 72 mm diameter x 3.06 mm wall x 200 mm long steel tube. These steel tubes support the vertical upright masts, which are 88 mm square x 5.08 mm wall x 1521 mm long High Density Polyethelene (HDPE) plastic. To these vertical masts are bolted (with 1/4 - 20 bolts and nuts with washers) three 205 mm wide x 22.75 mm thick x 2435 mm long HDPE honeycomb extrusions. A "ballast board" was also used to connect the legs. This 130 mm wide x 29.83 mm thick x 1225 mm long

HDPE extrusion with a wall thickness of 6.1 mm was installed as a safer location to place sandbags.

Full-scale automobile testing was conducted on your company's original devices. Two stand-alone examples of each were tested in tandem, one head-on and the next placed six meters downstream turned at 90 degrees, as called for in our guidance memoranda. Damage was limited to slight to moderate cracking of the windshield and superficial damage (scrapes) to the bumper, hood, quarterpanel, and doors, and was documented in WZ-61.

Modification

You requested that the "ANCHOR" base system, shown in the enclosed drawing for reference, be used in lieu of the square HDPE skids used on the tested system. Because we know that the barricade frame and panels remain together during crash testing, the unknown factor in the performance was the ability of the barricade to separate from the "ANCHOR" base system. You performed informal crash testing with an automobile on a Type III barricade using two ANCHOR bases to support the upper portion of a barricade that was identical to that tested and accepted in WZ-61. Each base was ballasted with 45 pounds of sand, giving a total weight of 50 pounds per side.

The barricade frame and panels separated cleanly from the ANCHOR base and were knocked ahead of the vehicle, showing no tendency to contact the windshield. Because these tests showed that the performance of the Plastic Safety Systems Type III Barricade was as good, if not better, using the ANCHOR base we concur that the Plastic Safety Systems Type III Barricade described above and shown in the enclosed drawings for reference are acceptable for use as Test Level 3 devices on the NHS under the range of conditions tested, when proposed by a State.

Please note the following standard provisions that 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-152 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 are patented devices 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 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 is enclosed.
- This acceptance letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented device. Patent issues are to be resolved by the applicant and the patent owner.

Sincerely yours,

Michael S. Griffith
Acting Director, Office of Safety Design
Office of Safety

Enclosures

FHWA:HSA-10:NArtimovich:tb:x61331:2/3/03
File: WZ152-PSS.wpd
cc: HSA-10 (Reader, HSA-1; Chron File, HSA-10;
N. Artimovich, HSA-10)