



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

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

May 17, 2005

In Reply Refer To: HSA-10/WZ-166  
Amendment #1

Mr. Chuck Mettler  
Plastic Safety Systems, Incorporated  
2444 Baldwin Road  
Cleveland, OH 44104

Dear Mr. Mettler:

Thank you for your March 23, 2005, request for the Federal Highway Administration (FHWA) acceptance of a modification to your company's Type III Barricade as a crashworthy traffic control device for use in work zones on the National Highway System (NHS). You requested that we find the 7 foot high by 8 foot wide version of your Type III Barricade 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 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.

### **Type III Barricade**

The Plastic Safety Systems (PSS) Type III Barricade was found acceptable in the FHWA acceptance letter WZ-61 dated December 13, 2000. At that time, the tested barricade was described as follows:

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.

Additional testing showed that the type III barricades, modified with rails up to 12 feet long for 5-foot tall units, and up to 6 feet long with up to 7-foot units, would meet the FHWA requirements. These modifications were found acceptable in WZ-166 dated November 12, 2003.

### **Request**

Your present request is to permit modifications to your Type III plastic barricade to allow 8-foot wide units to be constructed to an overall height of 7 feet.

### **Findings**

In testing the 5-foot tall, 8-foot wide Type III plastic barricade, it was noted that the top rail impacted the windshield, causing moderate damage. When this is extended to an 8-foot tall design, it can be expected that the barricade will bridge the windshield area and reduce the amount of damage to the vehicle’s windshield. We concur in your assertion that this will meet the test and evaluation criteria in the NCHRP Report 350. Therefore, the PSS Type III barricade of 8-foot long rails at an overall height of 7 feet will be acceptable for use on the NHS under the range of conditions the original barricade was tested, when proposed by a State. Seven-foot tall barricades in widths of 6- and 4-feet will also be acceptable. We continue to recommend that the rails do not extend further than 24 inches, and preferably no greater than 12 inches, beyond the barricades uprights.

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-166, Amendment #1, 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 devices are patented products 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. Patent issues are to be resolved by the applicant and the patent owner.

Sincerely yours,

*/original signed by/*

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

Enclosures

FHWA:HSA-10:NArtimovich:tb:x61331:5/9/05  
File: h://directory folder/artimovich/WZ166-PSSamend1  
cc: HSA-10 (Reader, HSA-1; Chron File, HSA-10;  
N.Artimovich, HSA-10)