



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

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

Refer to: HSA-1\WZ-72

Mr. Chuck Bailey
Plastic Safety Systems, Inc.
P.O. Box 20140
Cleveland, OH 44120

Dear Mr. Bailey:

Thank you for your letter of December 18, 2000, to Mr. Nicholas Artimovich of my office requesting a modification to the Federal Highway Administration (FHWA) acceptance of your company's Type III plastic barricade as a crashworthy traffic control device for use in work zones on the National Highway System (NHS). We initially found this barricade acceptable for use in our letter WZ-61, dated December 13, 2000. You requested that we find your company's Type III barricades acceptable with signs and a warning light as tested by the Pennsylvania Department of Transportation (PennDot). That barricade was found acceptable in our letter WZ-44 dated July 25, 2000.

Introduction

The **Plastic Safety Systems Type III (PSS Type III) barricade** tested and accepted was described as follows: The horizontal rails, or "legs," are 1217 mm long 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 Polyethylene (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.

The **proposed modification** would extend the height of the vertical upright masts in order to attach a 1220 mm diamond (48 x 48 inch) sign and a detachable head warning light. The bottom height of the diamond sign would be at 1525 mm (5 feet) as tested, or at 2130 mm (7 feet) as sometimes required. The light would be affixed to an upper edge of the sign, and the light's battery pack would be located at the base of the barricade. Also as per the PennDot design, a square advisory speed plate would be mounted to the top two rails.

Findings

Damage in the initial testing was limited to slight to moderate cracking of the windshield and superficial damage (scrapes) to the bumper, hood, quarterpanel, and doors. In the head-on test the center line of the car was aligned with one of the vertical upright posts of the barricade. During the

impact the top of the post struck the windshield and caused some cracking in both layers of glass though there did not appear to be any potential for penetration. The results of the test met the FHWA requirements and, therefore, the Plastic Safety Systems Type III Barricade described above was found acceptable for use as Test Level 3 (TL-3) devices on the National Highway System under the range of conditions tested, when proposed by a State.

The proposed modification would extend the height of the vertical upright masts in order to attach a 1220 mm diamond (48 x 48 inch) sign and a detachable head warning light. The light would be affixed to an upper edge of the sign, and the light's battery pack would be located at the base of the barricade.

We have again reviewed the test videos of the PSS Type III barricade as well as those of the PennDot testing, and conclude that the PSS Type III barricade, as modified to accommodate the signs and light, would also perform in an acceptable manner. Both the 1525 and 2130 mm mounting heights for the diamond sign will be acceptable for use as TL-3 devices on the NHS under the range of conditions tested (except as modified by this letter) when proposed by a state.

Because the PennDot Type III barricade/sign support was tested with plywood signs (which are the heaviest of common sign substrates) the PSS Type III barricade would be acceptable with plywood, "0.080" aluminum, Alpollic/Renalite aluminum composite, Endurance, or plasticore sign substrates.

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-72 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.
- Plastic Safety Systems Barricades 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 is enclosed.

Sincerely yours,

Frederick G. Wright, Jr.
Program Manager, Safety

Enclosure

Sec. 635.411 Material or product selection.

(a) Federal funds shall not participate, directly or indirectly, in payment for any premium or royalty on any patented or proprietary material, specification, or process specifically set forth in the plans and specifications for a project, unless:

(1) Such patented or proprietary item is purchased or obtained through competitive bidding with equally suitable unpatented items; or

(2) The State highway agency certifies either that such patented or proprietary item is essential for synchronization with existing highway facilities, or that no equally suitable alternate exists; or

(3) Such patented or proprietary item is used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes.

(b) When there is available for purchase more than one nonpatented, nonproprietary material, semifinished or finished article or product that will fulfill the requirements for an item of work of a project and these available materials or products are judged to be of satisfactory quality and equally acceptable on the basis of engineering analysis and the anticipated prices for the related item(s) of work are estimated to be approximately the same, the PS&E for the project shall either contain or include by reference the specifications for each such material or product that is considered acceptable for incorporation in the work. If the State highway agency wishes to substitute some other acceptable material or product for the material or product designated by the successful bidder or bid as the lowest alternate, and such substitution results in an increase in costs, there will not be Federal-aid participation in any increase in costs.

(c) A State highway agency may require a specific material or product when there are other acceptable materials and products, when such specific choice is approved by the Division Administrator as being in the public interest. When the Division Administrator's approval is not obtained, the item will be nonparticipating unless bidding procedures are used that establish the unit price of each acceptable alternative. In this case Federal-aid participation will be based on the lowest price so established.

(d) Appendix A sets forth the FHWA requirements regarding (1) the specification of alternative types of culvert pipes, and (2) the number and types of such alternatives which must be set forth in the specifications for various types of drainage installations.

(e) Reference in specifications and on plans to single trade name materials will not be approved on Federal-aid contracts.

ENCLOSURE 2