U.S. Department
of Transportation
Federal Highway Administration

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

April 19, 2004

Refer to: HSA-10/WZ-173

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

Dear Mr. Mettler:

Thank you for your letter of March 2, 2004, requesting Federal Highway Administration (FHWA) acceptance of your company's new plastic barricade board, "The Wave ™," as a component of crashworthy Type III barricades for use in work zones on National Highway System (NHS). Accompanying your letter was a sample of the board. You requested that we find these devices 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.

The new board is a blow molded version of the extruded HDPE barricade boards that are made by extrusion. The Wave ™ board measures 0.8 inches thick and 8.25 inches wide. It weighs 0.48 pounds per foot, which is 28 percent lighter than the 0.67 pound per foot of your 0.8 inch thick by 8.25 inch wide extruded board. The Wave™ board's flex strength is 11 percent less than the extruded version, but molded mounting holes increase the mounting strength when compared to drilled holes, thus improving the tendency of the barricade frame and boards to remain intact during a crash. A drawing of The Wave™ barricade board is enclosed for reference.

Testing
Crash testing has been conducted on a number of barricades using extruded plastic rails. The following table summarizes the FHWA acceptance letters dealing with your Type III barricades, or with generic devices that covers your barricades as well:

FHWA Letter	Date	Barricade
WZ-61	12/13/2000	PSS Type III, 8 foot long boards, HDPE uprights
WZ-85	11/15/2001	Generic Type III, extruded hollow HDPE rails permitted
WZ-102	4/12/2002	PSS Type III, modified by Lightweight light, panel spacing
WZ-152	4/12/2003	PSS Type III with "Anchor" base
WZ-166	11/12/2003	PSS Type III, modified length and height

Findings
Because Plastic Safety Systems extruded HDPE plastic barricade panels have performed well in crash testing, and because The Wave™ molded HDPE rail appears comparable and a reasonable substitute, we concur in your request. Therefore, The Wave™ blow-molded HDPE barricade panel described above and detailed in the enclosed drawing in 4-foot, 6-foot, and 8-foot lengths is acceptable for use on PSS and generic crashworthy Type III barricades on the NHS under the range of conditions tested and/or as modified by this and the prior letters listed above, when proposed by a State.

You subsequently asked if The Wave™ molded HDPE boards could be used on the Generic Type II barricades as detailed in the FHWA acceptance letter WZ-85. As the generic Type II barricade is acceptable with either "1/2 inch plywood" or "1/2 inch waffleboard" we concur that The Wave™ boards may also be used in generic Type II barricades 24 or 36 inches wide.

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 the FHWA and the NCHRP Report 350.

- To prevent misunderstanding by others, this letter of acceptance, designated as number WZ-173 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 Wave™ is a patented device and is 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,

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

Enclosures

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

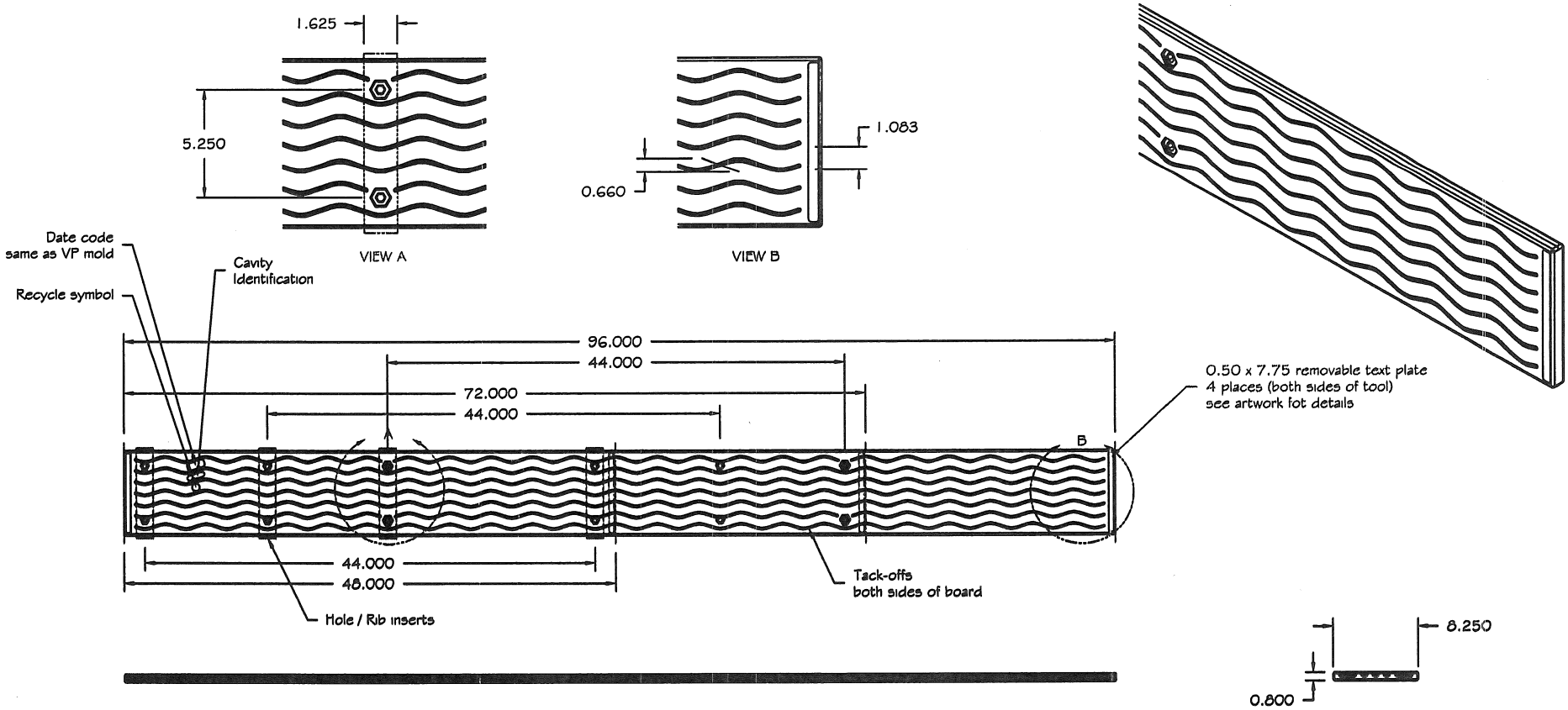
(3) Such patented or proprietary item is used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes.

(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.



Note: Material: HDPE / white.
Estimated part weight 0.48 lbs. / foot.
Modular tool to make 48" / 72" / 96" lenghts.
Hole inserts to be replaced with Rib inserst when holes are not in use.

REV.	Date	Description
E		
D		
C		
B		
A		

Material: See note
Sheet: 1 of 1 | Scale: Full
Tolerances unless noted: *.** ± 0.030; *.*** ± 0.010; fractions ± 1/16; angles ± 2°

Date: 8/28/03 | By: CMM | File: CB-BM10

Title: Center Board Blow-Molded

Plastic Safety Systems, Inc.