



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

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

Refer to: HSA-1\WZ-63

**Mr. Peter Speer
Davidson Plastics Corporation
3110 70th Avenue East
Tacoma, WA 98424**

Dear Mr. Speer:

This is in response to your letters of October 2 and October 3 requesting modification to the Federal Highway Administration (FHWA) acceptance of your company's T3B Plastic Type III Barricades as crashworthy traffic control devices for use in work zones on the National Highway System (NHS). We initially accepted this barricade in our letter to you dated June 20 and numbered WZ-39. We also accepted a modification that used perforated square steel tubes (PSST) as the vertical and horizontal elements of the barricade frame. You have now requested that we find this barricade acceptable for use on the National Highway System under the provisions of National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features" with the following modifications:

A) Modified support legs constructed as follows:

1525 mm (60 inches) long hot-rolled high carbon steel 38 mm x 38 mm x 3.2 mm thick (1.5 inch x 1.5 inch x 1/8 inch thick) angles, either painted or galvanized. A 51 mm square 14 gage steel tube 200 mm long is welded to each leg 460 mm from the upstream end. These stubs support the plastic vertical barricade frame elements. (The crash tested barricade used PSST horizontal "feet.")

B) Warning lights added as follows:

Two "Tough-Lite" 2000 or other Manual on Uniform Traffic Control Devices (MUTCD) Type A, B, or C warning lights with a mass of 1.5 kg or less attached to the barricade frame using standard vandal resistant hardware (with the "cupped washer.") (No lights were used on the tested T3b barricade.)

Analysis

A) The crash tested T3b barricade used PSST horizontal "feet." We do not expect there will be any significant difference in the performance of the barricade if angle sections are substituted. The successfully-tested "generic" type III barricade, found acceptable in our memorandum WZ-54 dated September 15, 2000, also used steel angles as feet.

B) The crash tested T3b barricade had no warning lights. The "generic" type III barricade was tested with lightweight warning lights in place. In both tests there was extensive cracking of the windshield but no holes were made. The T3b barricade rails struck the lower part of the

windshield, while the generic Type III caused general overall cracking. Although we expect that the light would impact the windshield in a crash, we believe that impact would not cause penetration of the passenger compartment.

Findings

The **T3B Barricade** is a plastic, lightweight, portable Type III barricade. The T3B 25.4mm x 210mm hollow plastic barricade panels are made from a specially formulated polyolefin plastic, and the vertical uprights are 44.5-mm square thermoplastic tubing extrusions. The support legs are 14 ga, 50.8-mm square perforated galvanized mild steel tubing. One 150-mm tall PSST stub is welded to each support leg, and the vertical uprights are inserted into them. Testing of your 2438-mm (8 foot) wide version of this barricade was discussed in our letter WZ-39 below. The fasteners used were 7.94 mm (5/16") bolts with Nylock nuts and steel washers to attach panels to the uprights.

We concur with the modifications you requested to alter the support legs and to add lightweight warning lights. Therefore, the Davidson Plastics T3B Plastic Barricade, as modified above, is acceptable for use as Test Level 3 devices on the NHS under the range of conditions tested, when proposed by a state. The conditions stated in our previous letter on the T3B barricade (WZ-39) remain in effect.

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 MUTCD.
- ! 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-63, shall not be reproduced except in full.
- ! Davidson Plastic Corporation's barricades 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 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.