



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

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

Refer to: HSA-10\WZ-70

MR. Alan D. Richter
Product Manager
Protection Services Inc.
635 Lucknow Road
Harrisburg, PA 17110

Dear Mr. Richter:

Thank you for your letter of December 12, 2000, requesting Federal Highway Administration (FHWA) acceptance of your company's Type III barricades using perforated square steel tubes (PSST) with plastic, plastic hollow core, or wood panels for use in work zones on the National Highway System (NHS). Type III barricades framed with PSST have been successfully tested using a number of different base connections, which were summarized in Acceptance Letter WZ-51 dated September 8, 2000. Type III barricades using "angle iron" or "L-channel" horizontal rails supporting a steel frame were accepted in Acceptance Letter WZ-40, dated June 6, 2000. Finally, a "generic" Type III barricade using hot-rolled high carbon steel was distributed by our Acceptance Letter WZ-54, dated September 15, 2000.

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.

Testing

Type III barricades with frames of PSST or "angle iron" have been tested in a number of studies. The table below lists the FHWA letters of acceptance which include these barricades:

FHWA WZ-3 8-28-98	TTI for Texas DOT	TTI tested numerous work zone traffic control devices. All the devices listed here were successfully tested in these two crash test programs and met Test Level 3 (TL-3) criteria. The crash testing is fully documented in the two reports ^{1,2} which should be consulted for additional details of the hardware.
		Perforated Steel Tube Type III Barricade with Plastic Panels. Base connection uses splice plates.
		Perforated Steel Tube Type III Barricade with 1x8 Wood Panels. Base connection uses splice plates.

		Type III Perforated Tubing Barricade (3.7 m) Similar to barricades above except for welded base connection. (Vertical braces added Acceptable with 1x8 wood or hollow core plastic rails.)
		Type III perforated Tubing Barricade (1.2 m) Welded Base Connection. Acceptable with 1x8 wood or hollow core plastic rails.
WZ-36 6-29-2000	Davidson Plastics	Davidson Plastics Type III Barricades with Perforated Square Steel Tube Frame
WZ-40 6-6-2000	FHWA / TTI	Pooled-Fund Study Devices:Perf.Square Tube Type III with sign,
WZ-44 7-25-2000	Penn Dot	Type III Barricade / Sign Support. Perforated square tube frame, 4 ft. plastic rails, plywood sign, warning light.
WZ-51 9-8-2000	Xcessories Sq	Type III barricades
WZ-54 9-15-2000	Memo to Field	Generic Type I, II, and III Barricades, Drums with Lights, lightweight warning lights.
WZ-55 12-18-2000	Minnesota Dept of Transportation	Type III Barricade perforated square steel tube. Type III Barricade with sign (no lights on either)

You indicated that your PSST-framed Type III barricade could be fabricated using PSST or A36 steel angle horizontal “feet”, as shown in the drawing “Construction Barricade Type III.

Findings

The results of the crash testing of the various PSST Type III barricades met the FHWA requirements. We concur that the design of your company’s PSST Type III barricades is comparable to the tested barricades, therefore they are acceptable for use as TL-3 devices on the NHS under the range of conditions tested, [with 200 mm (8 inch) wide, 7.4 mm (0.29 inch) thick plastic, plastic hollow core, or wood panels rails from 1220 mm to 2440 mm (48 inches to 96 inches)] when proposed by a State. Note that according to our Acceptance Letter WZ-40 referenced above, signs may not be placed on barricades wider than 1220 mm unless crash tested, and frangible plastic rails may not be used. Plastic rails must be capable of absorbing crash forces while keeping the barricade structure intact. Lightweight warning lights (Manual on Uniform Traffic Control Devices (MUTCD) Type A, B, or C weighing less than 1.5 kg or 3.3 pounds, or where the battery pack is separate and located at the base) may be attached to the top of the PSST uprights.

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 National Cooperative Highway Research Program Report 350.
- To prevent misunderstanding by others, this letter of acceptance, designated as number WZ-70, shall not be reproduced except in full.
- Some of the barricade components may be 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