



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

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

Refer to: HSA-10/WZ-84

**MR. ALAN RICHTER
PROTECTION SERVICES
635 LUCKNOW ROAD
HARRISBURG, PA 17110**

Dear Mr. Richter:

Thank you for your letter of June 12 requesting Federal Highway Administration (FHWA) acceptance of your company's Big Foot Horizontal Channelizer Type Two Barricade as a crashworthy traffic control device for use in work zones on the National Highway System (NHS). Accompanying your letter was a report of your crash testing along with a video of the tests. You requested that we find these barricades 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." You also asked that wider barricades of the same general design be considered acceptable. Your December 7 facsimile message provided additional information at our request.

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.

A brief description of the devices for which you are requesting acceptance follows:

Self ballasting Type II barricade with 45 pound rubber base with a friction fit plastic bayonet mount. The top plastic panels are 12 x 24 inches and the lower are 8 x 24 inches, 0.250 inch thick polypropylene. A detachable head warning light of polycarbonate is affixed to the top of one of the vertical legs with a 1/4 inch screw, with the battery pack placed at the base. The base is composed of recycled tire rubber. The polyethylene friction fit bayonet base is 8x12 inches.

Testing

You conducted full-scale automobile testing on your company's devices. Two stand-alone examples of the device were tested in tandem, one head-on and the next placed six meters

downstream turned at 90 degrees, as called for in our guidance memoranda. The complete devices as tested are shown in the Enclosure 1.

The crash test is summarized in the table below:

Test Article	Big-Foot Horizontal Channelizer Type II Barricade
Height to Top Panel	37 inches
Height to Bottom Panel	20 3/4 inches
Flags or lights	Detachable Head Warning Light
Test Article Mass (w/o base)	20 pounds
Ballast Mass	45 pounds
Vehicle Inertial Mass	850 kg (1873 pounds)
Impact Speed, Head-on	Approximately 60 mph
Impact Speed, 90 Deg.	Approximately 60 mph
Velocity Change, Head-on**	Unknown
Velocity Change, 90 deg.**	Unknown
Vehicle crush	Dents to bumper and hood, no windshield damage
Occupant Compart. Intrusion	None

** Velocity was checked with a radar unit and displayed on a variable message sign visible in the test video. Although the live-driver vehicle's velocity change was not measured, it was obvious that the test article did not have a significant effect on the vehicle's speed.

Findings

Damage was limited to dents on the bumper and hood. The results of the testing met the FHWA requirements and, therefore, the devices described above and shown in the enclosed drawings for reference are acceptable for use as Test Level 3 devices on the NHS under the range of conditions tested, when proposed by a State.

You also asked that we find this Type II barricade acceptable with 36 inch wide panels. Because the additional 6 inches to each end of the four panels only adds 3 pounds to the weight of the barricade, we consider it acceptable for use.

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-84 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.
- Bigfoot Horizontal Channelizers 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,

Michael L. Halladay
Acting Program Manager, Safety

Enclosure

FHWA:HSA-10:NArtimovich:tm:x61331:12/11/01

File: WZ84RichterSeptFin.wpd

cc: HSA-10 (Reader, HSA-1; Chron File, HSA-10;
N. Artimovich, HSA-10)