



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

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

March 4, 2005

In Reply Refer To: HSA-10/WZ-199

Mr. Kenneth H. Williamson
Personal Safety First
P.O. Box 9026
Memphis, Tennessee 38190-9026

Dear Mr. Williamson:

Thank you for your letter of November 4, 2004, requesting Federal Highway Administration (FHWA) acceptance of your company's Rubbersand ballast as a crashworthy element of A-Frame Type I and Type II barricades for use in work zones on the National Highway System (NHS). Accompanying your letter were reports of crash testing conducted by Tri State Testing Services, Inc., and a DVD of the tests. You requested that we find these devices acceptable for use on the NHS under the provisions of the National Cooperative Highway Research Program 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.

Testing

Full-scale automobile testing was conducted on Rubbersand ballasts placed in Type II A-Frame barricades. Two stand-alone barricades 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. Each barricade was weighted with two Rubbersand ballasts weighing 9.5 pounds each, one placed each end of the barricade. As seen in the enclosed drawing for reference, the Rubbersand ballast conforms to the void in the A-Frame of the barricade.

The polypropylene foam/plastic – recycled plastic A-Frame legs of each barricade measured 40 3/8 inches tall, 23 3/8 inches wide at the base, and 1 15/16 inches thick. Each barricade rail was 7 3/4 inches wide, 1 3/4 inches thick, and 6 feet, 8 inches long.

The tests are summarized in the table below.

Test Number	LO-32907-A	
Barricade Orientation	Head-on	90 degrees
Weight of Barricade	Approx. 28 pounds	
Weight of Ballast	Two 9 pound Rubbersands	Two 9 pound Rubbersands
Flags? Lights?	None	None
Mass of Test Vehicle	1800 pounds	
Impact Speed	64 mph	Not recorded
Velocity Change	N/A	N/A
Extent of contact	Bumper, Grille	Bumper, grille, windshield
Windshield Damage	No contact	Few small spots of plastic
Other notes	No cracking or deformation of the windshield occurred.	

Findings

Damage was limited to breakage to the grille of the test vehicle, and minor abrasions to the windshield. None of the Rubbersand devices came near the windshield as they remained at bumper level or lower. Portions of the vehicle's grille were knocked loose and impacted the windshield, leaving small contact marks on the surface while causing no cracking.

The results of the testing met the FHWA requirements and, therefore, the devices described in the various requests above and detailed in the enclosed drawings are acceptable for use on the NHS under the range of conditions tested, when proposed by a State. The Rubbersand barricade ballast may be used on any acceptable A-Frame or "Parade-style" barricade when placed no higher than approximately 14 inches above the ground (as measured to the bottom of the Rubbersand weight.)

Please note the following standard provisions that apply to the 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-199 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 Rubbersand barricade ballast is or will be 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 for which the applicant is not the patent holder. The acceptance letter is limited to the crashworthiness characteristics of the candidate device, and the FHWA is neither prepared nor required to become involved in issues concerning patent law. Patent issues, if any, are to be resolved by the applicant.

Sincerely yours,

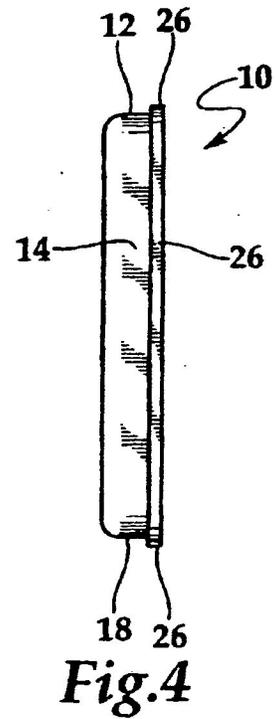
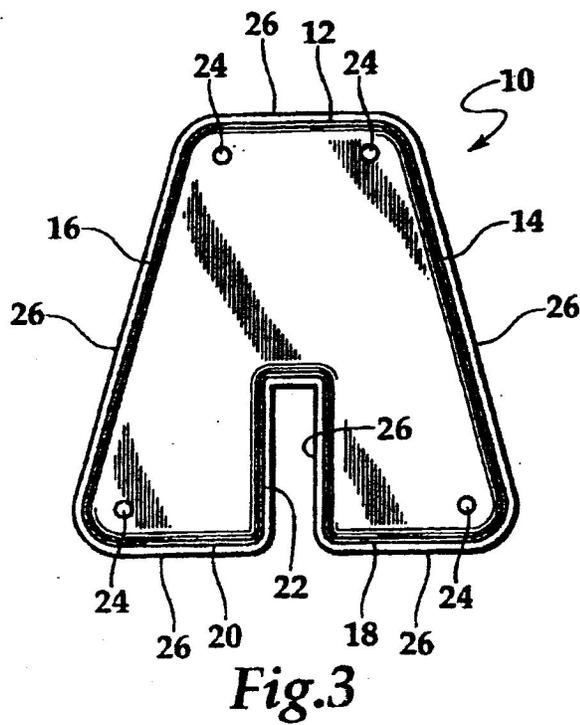
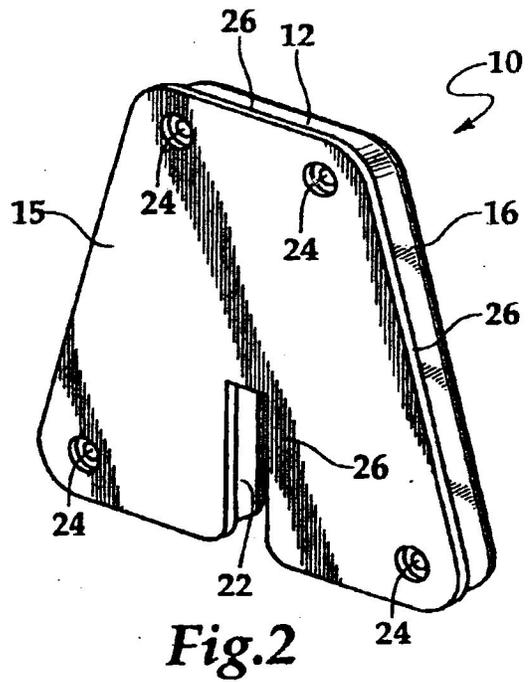
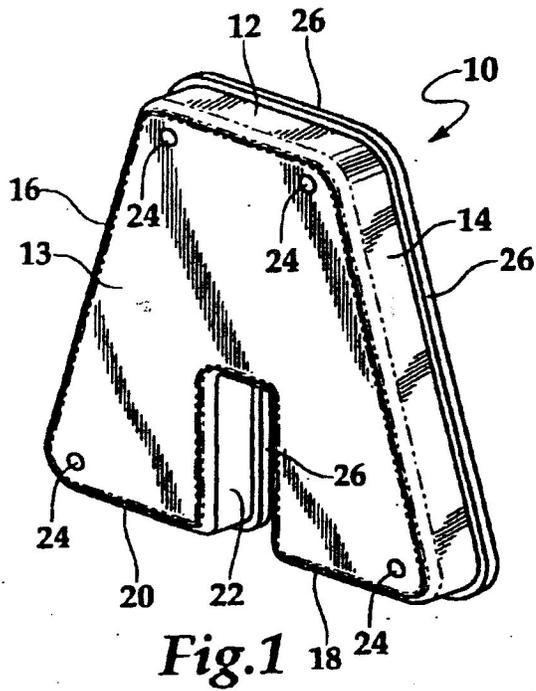
/Original Signed by/

~for~

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

Enclosure

FHWA:HSA-10:NArtimovich:tb:x61331:2/24/05
File: h://directory folder/artimovich/WZ1202-Remconfin
cc: HSA-10 (Reader, HSA-1; Chron File, HSA-10;
N.Artimovich, HSA-10)



U.S. Patent

Jun. 9, 1998

Sheet 1 of 4

5,762,444

FIG. 1

