



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

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

Refer to: HSA-1/WZ-65

Ms. Denise Mischel
American Fence and Fab. Inc
975 Armour Street
West Fargo, ND 58078

Dear Ms. Mischel:

Thank you for your letter of December 7 requesting Federal Highway Administration (FHWA) acceptance of your company's recycled rubber ballast as a replacement for sandbags on crashworthy Perforated Square Steel Tube (PSST) Type III barricades for use in work zones on the National Highway System (NHS). Accompanying your letter was a drawing of the ballast. You also reference recent crash testing of a PSST Type III barricade by the Midwest Roadside Safety Facility. This testing was the subject of our acceptance letter to the State of Minnesota, Number WZ-55, dated December 18, 2000. You requested that we find Type III barricades using your company's ballast 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

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.

The recycled rubber ballast has a mass of approximately 16 kg (35 pounds) and measures 768 mm x 355 mm x 57 mm (30.25 x 14 x 2.25 inches). As can be seen in the enclosed drawing there is a 45 mm wide channel on the bottom of the ballast (parallel to the 355 mm sides) and 35 mm wide deformations on the top of the ballast. These features interlock to assist storage and shipping, but also improve the profile of the ballast in use. The 45 mm wide channel on the bottom fits snugly over a 44 mm (1.75 inch) PSST leg of a Type III barricade.

Testing

Full-scale automobile testing has been conducted on various PSST Type III barricades, some using sand bags as ballast. The bags of sand typically broke on contact with the test vehicle's undercarriage spreading sand downrange. This behavior is expected and not a problem. Should a vehicle undercarriage snag on solid ballasts, or have a wheel ride up on one, vehicle trajectory may be unpredictable. This is a distinct possibility if the solid ballast projects higher than 100 mm (4 inches) above the ground.

Findings

The channel on the underside of your recycled rubber ballast fits over a 44 mm square tube section, thus maintaining a profile of approximately 100 mm (4 inches) above the ground. This conforms to the guidance for undercarriage clearance contained in the 1994 American Association of State Highway and Transportation Officials "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals." We believe this is important to the acceptable performance of your company's ballast when used with PSST Type III barricades, or other crashworthy devices that use 44 mm or smaller PSST legs or rails on the ground. Therefore, your company's recycled rubber ballast shown in the enclosed drawings for reference are acceptable for use as ballast on crashworthy devices having ground-level legs 44 mm wide or narrower on the NHS under the range of conditions that the crashworthy devices were tested, when proposed by a State.

Please note the following standard provisions which apply to FHWA letters of acceptance:

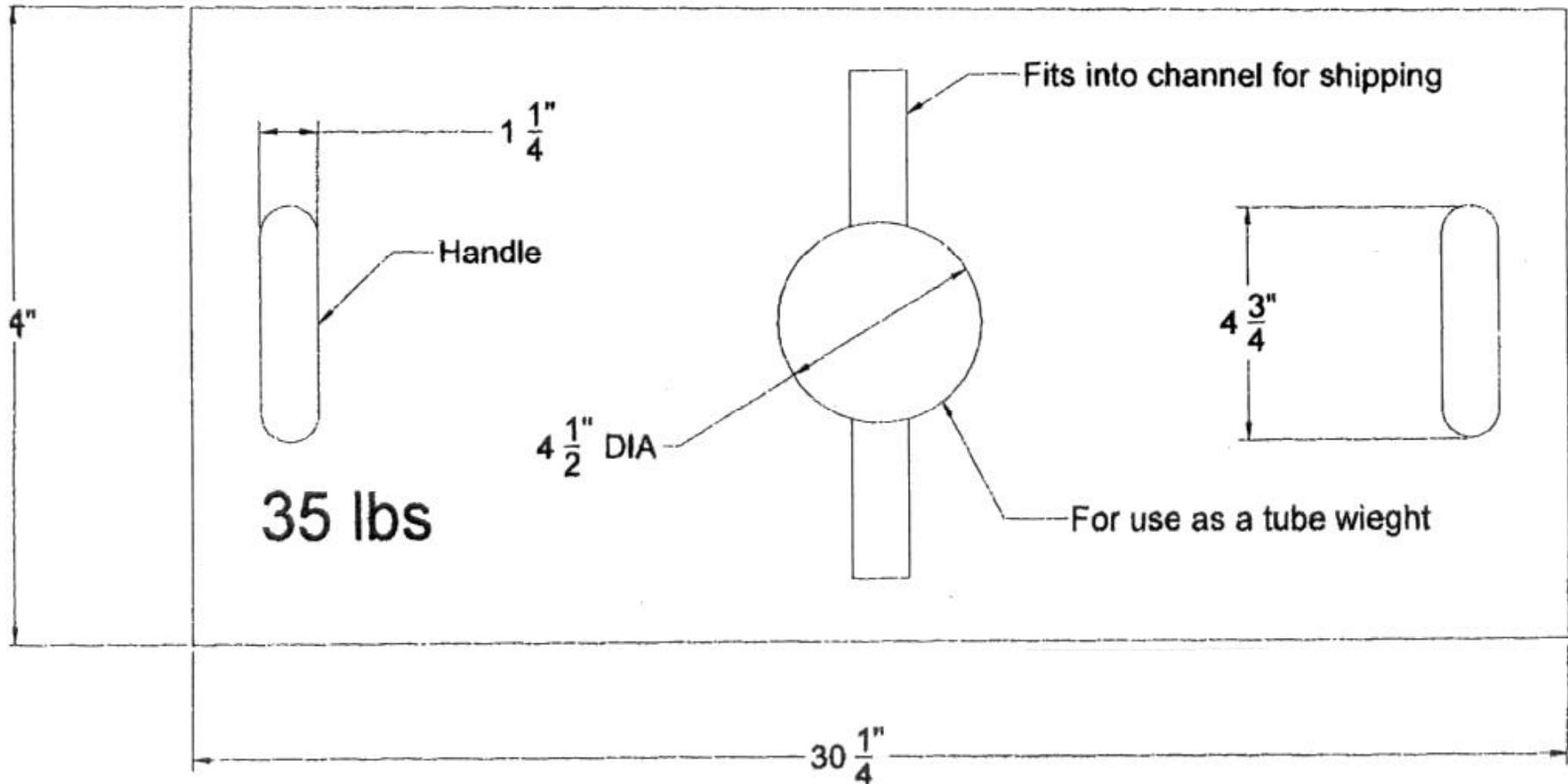
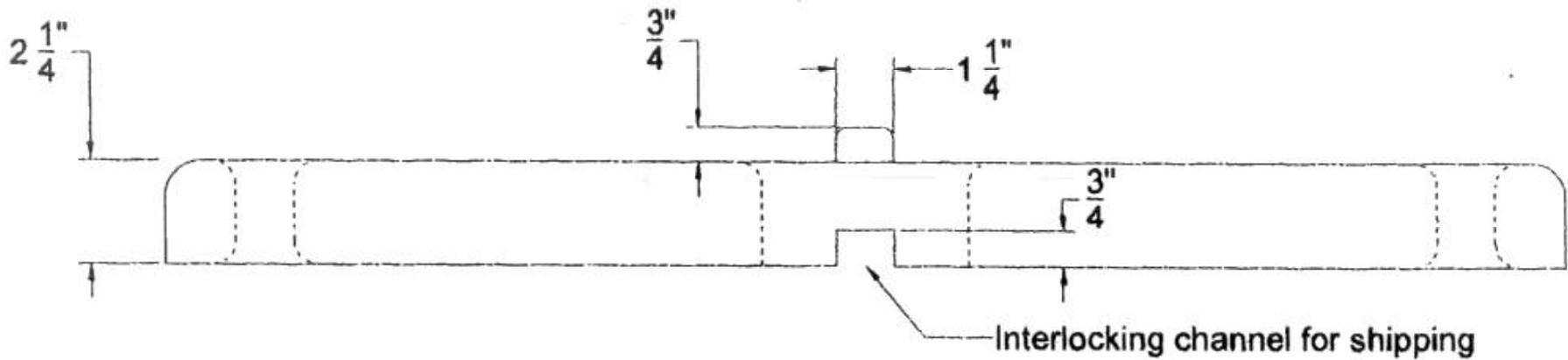
- ! Our acceptance is limited to the crashworthiness characteristics of the devices and does not cover their structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
- ! Any changes that may adversely influence the crashworthiness of the device will require a new acceptance 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-65 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.
- ! Your company's ballast is patented 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.