



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

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

In Reply Refer To: HSA-10/WZ-216

Mr. Jan Miller  
Traffix Devices Inc.  
220 Calle Pinteroesco  
San Clemente, California 92672

Dear Mr. Miller:

Thank you for your letter of May 6, 2005, requesting Federal Highway Administration (FHWA) acceptance of your company's Type I/II Barricade Sign Stand as a crashworthy traffic control device for use in work zones on the National Highway System (NHS). Accompanying your letter were reports of crash testing conducted by Karco Engineering and video of the tests. You requested that we find these devices 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**

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.

A brief description of the devices follows:

The barricade/sign support consists of two main parts, the diamond sign panel and the support structure. The support structure was made of two legs (each with two horizontal rails) connected by a revolute joint. The legs pivoted at the joint to form an A-shape structure with an angle of 45 degrees when positioned on the ground. The height of the legs was 42 inches and the barricade had a foot print size of 36" x 25". The diamond sign was a 48" x 48" x 3/8" (10 mm) corrugated plastic panel. The sign was attached to the legs using two 1" - 20 x 1 1/4" hex bolts with hex nuts and flat washers. The barricade components were made of high-density polyethylene plastic with a total height of 72" and a total weight of 15 pounds.



You also requested acceptance of the same sign affixed to previously accepted (and virtually identical) Traffix Devices Inc. traditional type Type I/II folding plastic barricade series.

### Testing

Full-scale automobile testing was conducted on your company' devices. Two stand-alone examples of the device were tested in tandem, one oriented at 90 degrees and the next placed six meters downstream facing head-on, as called for in our guidance memoranda.

The tests are summarized in the table below.

NCHRP Report 350 Test 3-71		
Test Number	TR-P25025-01-NC	
Sign Stand Orientation	90 degrees	Head-on
Weight of Tested Stand	15 Pounds	
Mounting heights	12 Inches	
Flags? Lights?	None (48x48 diamond sign panel)	
Mass of Test Vehicle	798 kg	
Impact Speed	97.17 km/hr	
Exit Speed	94.68 km/hr	
Velocity Change	0.70 km/hr	
Extent of contact	Glanced off windshield	Top slapped windshield
Windshield Damage	None	Minor to moderate cracking

### Findings

Windshield damage was limited to an area of moderate cracking at the impact point of the sign on the head-on barricade, and minor cracking radiating from that point. No potential for passenger compartment intrusion was evident.

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. We also concur that the following TDI Barricade Product Series are acceptable with a 48 x 48 corrugated sign, 3/8 (10 mm) thick, or lighter:

Product	Description	Weight each
35000 Series	12ga steel legs with injection molded plastic panels	17.4 lbs
	14ga steel legs with injection molded plastic panels	14.9 lbs
36000 Series	Blow molded plastic legs w/injection molded plastic panels	12.0 lbs
37000 Series	Blow molded plastic legs and blow molded plastic panels	12.0 lbs
39000 Series	Injection molded plastic legs w/injection molded plastic panels	10.2 lbs

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

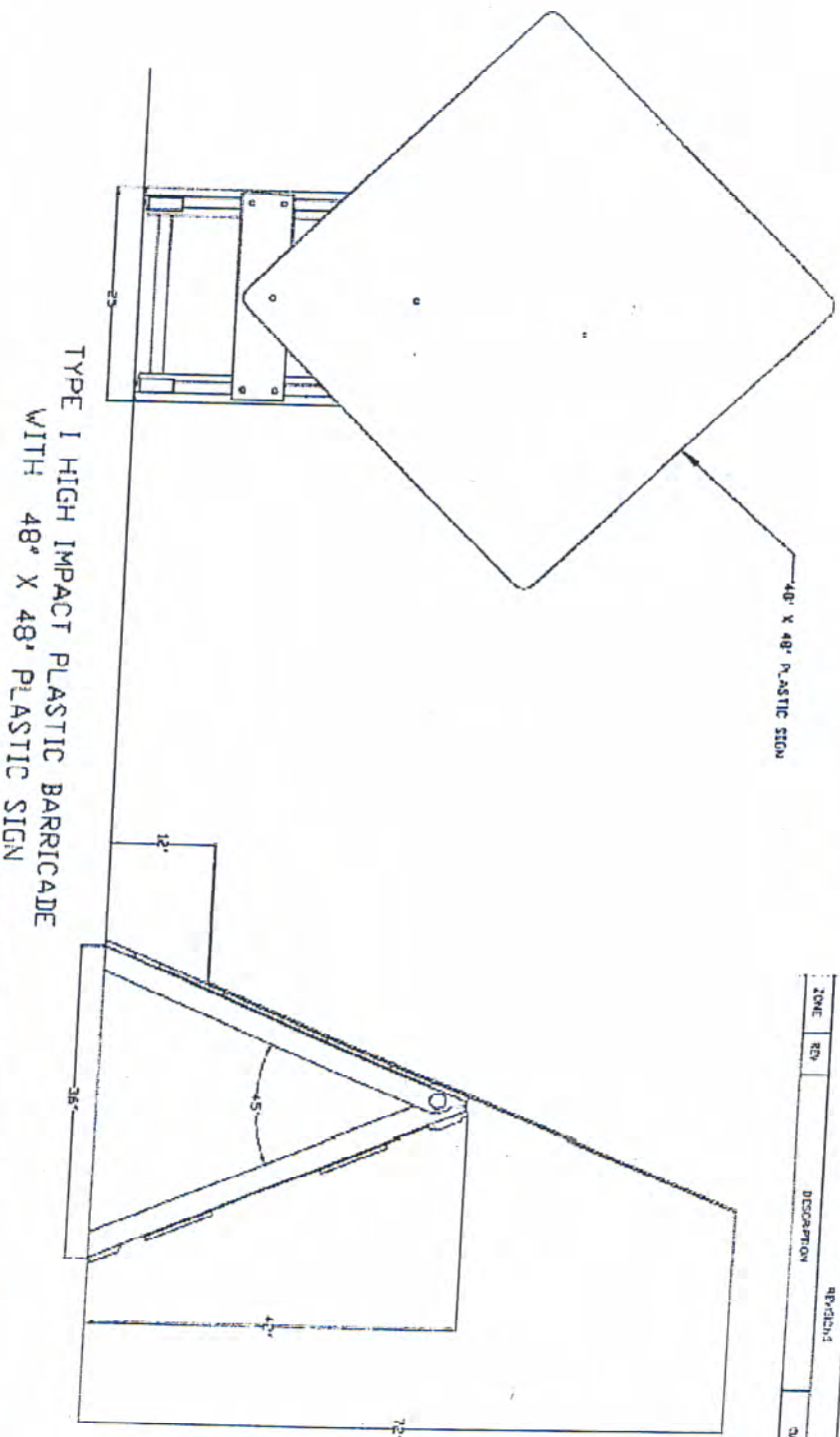
- Our acceptance is limited to the crashworthiness characteristics of the devices and does not cover their structural features, nor conformity with the Manual on Uniform Traffic Control Devices.

- 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-216 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 Traffix Devices Type I/II Barricade Sign Stand is 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. 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,

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

Enclosures



TYPE I HIGH IMPACT PLASTIC BARRICADE  
WITH 48' X 48' PLASTIC SIGN

ZONE	RD	DESCRIPTION	DATE	APPLICED

NOTES: UNLESS OTHERWISE SPECIFIED.

FIGURE 1: MANUFACTURER'S DRAWING OF TEST ARTICLE

UNLESS OTHERWISE SPECIFIED:  
ALL DIMENSIONS ARE IN INCHES.

**Traffic Devices Inc.**

TYPE I BARRICADE  
W/ 48" X 48" PLASTIC SIGN

DRAWN BY:	DATE:	SCALE:	SHEET:
CHECKED BY:	DATE:	SCALE:	SHEET:
APPROVED BY:	DATE:	SCALE:	SHEET:

37000 SERIES

1 OF 1