



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

**Administration**

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

Refer to: HSA-10/WZ-81

Mr. DAVID Gertz  
Traffix Devices, Inc.  
Director of Engineering  
220 Calle Pintoresco  
San Clemente, CA 92672

Dear Mr. GERTZ:

Thank you for your letter of July 9 requesting Federal Highway Administration (FHWA) acceptance of your company's LittleBuster sign stand tested with a 1220 mm x 1220 mm (48 x 48 in) "080" aluminum sign panel as a crashworthy traffic control device for use in work zones on the National Highway System (NHS). The crash test report by Karco Engineering [and videos of the tests] were received under separate cover. You requested that we find the device 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 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. Additional guidance on testing of work zone traffic control devices may be found at our web site: <http://safety.fhwa.dot.gov/fourthlevel/hardware/wzd.htm>

A brief description of the tested device follows. The test article is shown in Enclosure 1 for reference. The portable sign stand that is the subject of this letter was tested along with a number of other devices that will be dealt with in a future revision of this letter.

**Test 4. Little Buster Sign Stand with 1220 x 1220 mm (48 x 48 in) Aluminum Sign bolted to Full Length Inner Mast and Traffix Flag holder. Sign mounted 460 mm (18 in) above ground.**

An “X-footprint” portable sign stand with a telescoping mast supporting the diamond warning sign, topped by a flag bracket. The sign was affixed to the mast using 7 mm diameter bolts, nuts, and washers.

Component	Material	Height to top	Width	Thickness	Weight
Base	Steel	16 inches	2.5 inches	0.250 wall	30 pounds
Mast	Steel	82.5 inches	1.2 in	16 ga	7 pounds
Sign	080 aluminum	82.5 inches	48x48	0.080 in	16 pounds
Light (none)	[flag bracket]	n/a	n/a	n/a	n/a

### Testing

Full-scale automobile testing was conducted on the subject Traffix sign stand. The testing is summarized in the table below. The test vehicle met the weight criteria of NCHRP Report 350 for the 820C vehicles, even though most were older than the 6 year model year limit (which has been sanctioned by FHWA.) Damage to the test vehicle sheet metal was limited to minor to moderate denting and scratching of the bumper and hood which is not enumerated in the table as none of those contacts had potential for occupant compartment intrusion. There was significant windshield cracking at the point of impact, but the cracking did not appear to be severe enough to cause penetration nor extensive enough to block the view of the driver. No windshield impacts caused a hole through the glass. The results of this testing met the FHWA requirements.

Test # and Test Article Name	Impact Speed (kmh)		Delta V (mps)**	Windshield Damage
	Head-on	90-deg.		
4 Little Buster Stand	98.17	97.87	0.1	Significant cracking, no intrusion

\*\* Vehicle velocity was only recorded at the two impact points. As the test articles in each test were identical except for orientation, the change in velocity (in meters per second) between the first and second impacts is a satisfactory measure of the average delta V due to the impacts.

### Findings

The results of the testing met the FHWA requirements and, therefore, the device described above and shown in the enclosed drawings for reference is acceptable for use as a Test Level 3 device on the NHS under the range of conditions 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-81, shall not be reproduced except in full.
- Many TrafFix work zone devices are 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

FHWA:HSA-10:NArtimovich:tm:x61331:07/18/01

File: TrafFixJulyFinWZ81.wpd

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

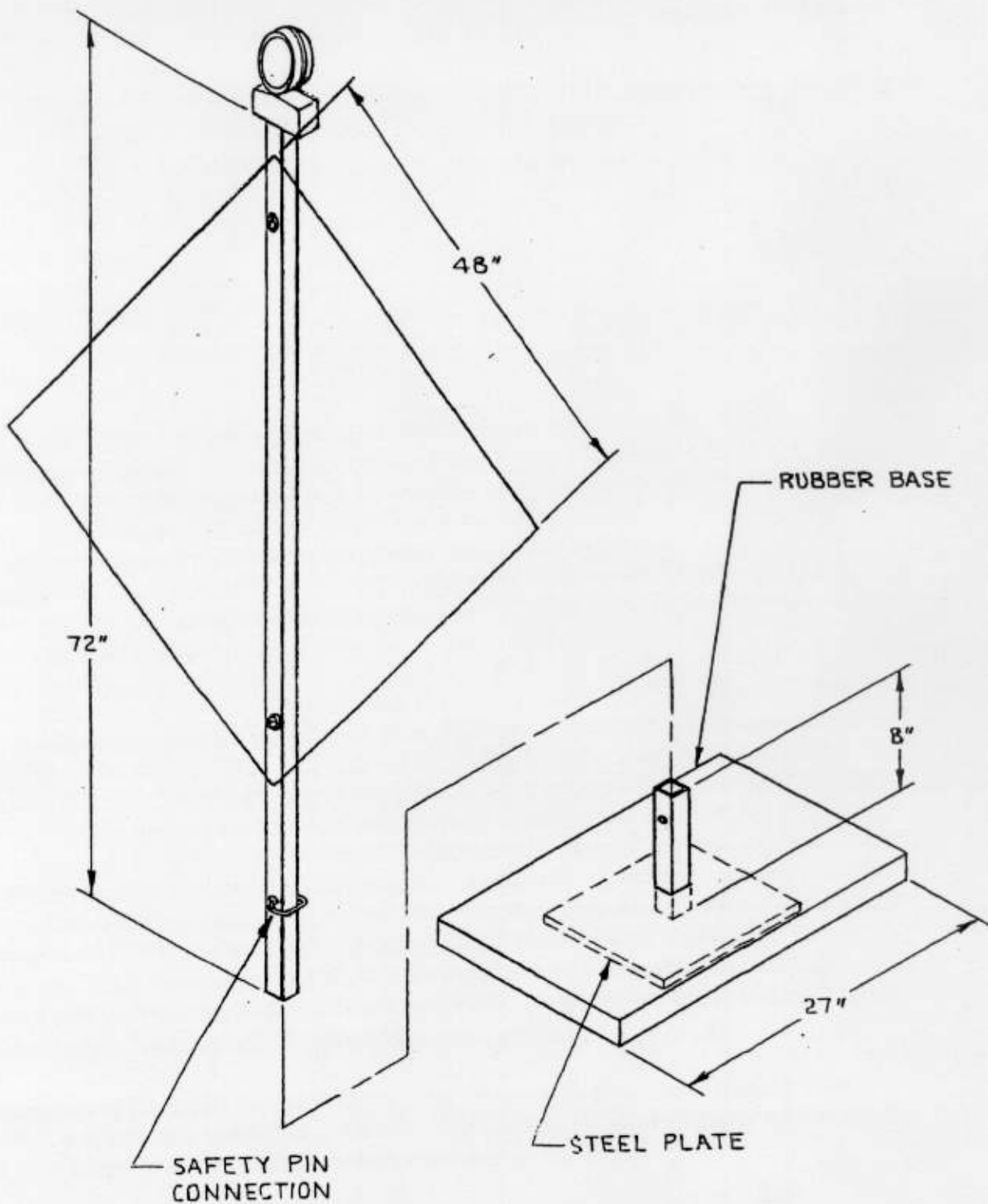


Figure 5. - Rubber Base Sign Stand with Pinned Inner Mast, Forty-eight Inch by Forty-eight Inch Aluminum Sign, and B-Light; Sign Height Twelve Inches Above Ground