



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

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

November 30, 2004

In Reply Refer To: HSA-10/B-130

Mr. Felipe Almanza
TrafFix Devices Incorporated
220 Calle Pinteresco
San Clemente, California 92672

Dear Mr. Almanza:

In your October 12 letter to Mr. Richard Powers of my staff, you requested formal acceptance of a temporary water-filled barrier, called the TrafFix Water Wall, as a National Cooperative Highway Research Program (NCHRP) Report 350 temporary traffic barrier at test level 1 (TL-1). To support this request, you also sent a copy of KARCO Engineering's September 16 test report No. TR-P24135-01-NC and digitized video showing the tests that were conducted.

The TrafFix Water Wall consists of a freestanding series of units made from medium-density polyethylene. Each unit is 71-inches long by 18-inches wide and 32-inches tall with a wall thickness of ¼ inch. Empty weight is approximately 77 pounds and the units weigh approximately 1100 pounds when filled with water. They are pinned together with a 1.25-inch diameter steel rod inserted through lugs formed into the ends of each segment. These details are shown in Enclosure 1.

You conducted two tests on the Water Wall, the NCHRP Report 350 tests 1-11 and 2-10. The first test consisted of a pickup truck impacting near the midpoint of a 124-foot long installation (21 units) at 25 degrees and a speed of 31.9 mph (TL-1 impact speed). The test installation was not anchored at either end and the reported barrier deflection was 15.5 feet. The truck reached a maximum roll angle of 28.8 degrees and come to rest with the front wheel on top of the barrier. In the second test, the small car impacted near the midpoint of a 154-foot long installation (26 units) at 20 degrees and a speed of 44.3 mph (TL-2 impact speed). Deflection was reported to be almost 6 feet and the vehicle again came to rest with the front wheel on the impact side resting on top of the barrier. As with all unanchored barrier installations, impacts nearer either end would have resulted in greater deflections. Impacts very near the ends would not have contained or redirected the vehicles. Since there is currently no crashworthy terminal for the Water Wall, its ends should be flared away from approaching traffic or adequately shielded. In both tests, all occupant risk values were well within Report 350 preferred ranges. Test summary sheets are shown in Enclosure 2.



Based on the reported crash performance of the Traffix Water Wall with the pickup truck, it may be considered an NCHRP Report 350 TL-1 temporary traffic barrier (even though it has been shown to meet evaluation criteria for the small car at the TL-2 impact speed) and used at appropriate low-speed locations on the National Highway System (NHS) when selected by the contracting authority.

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

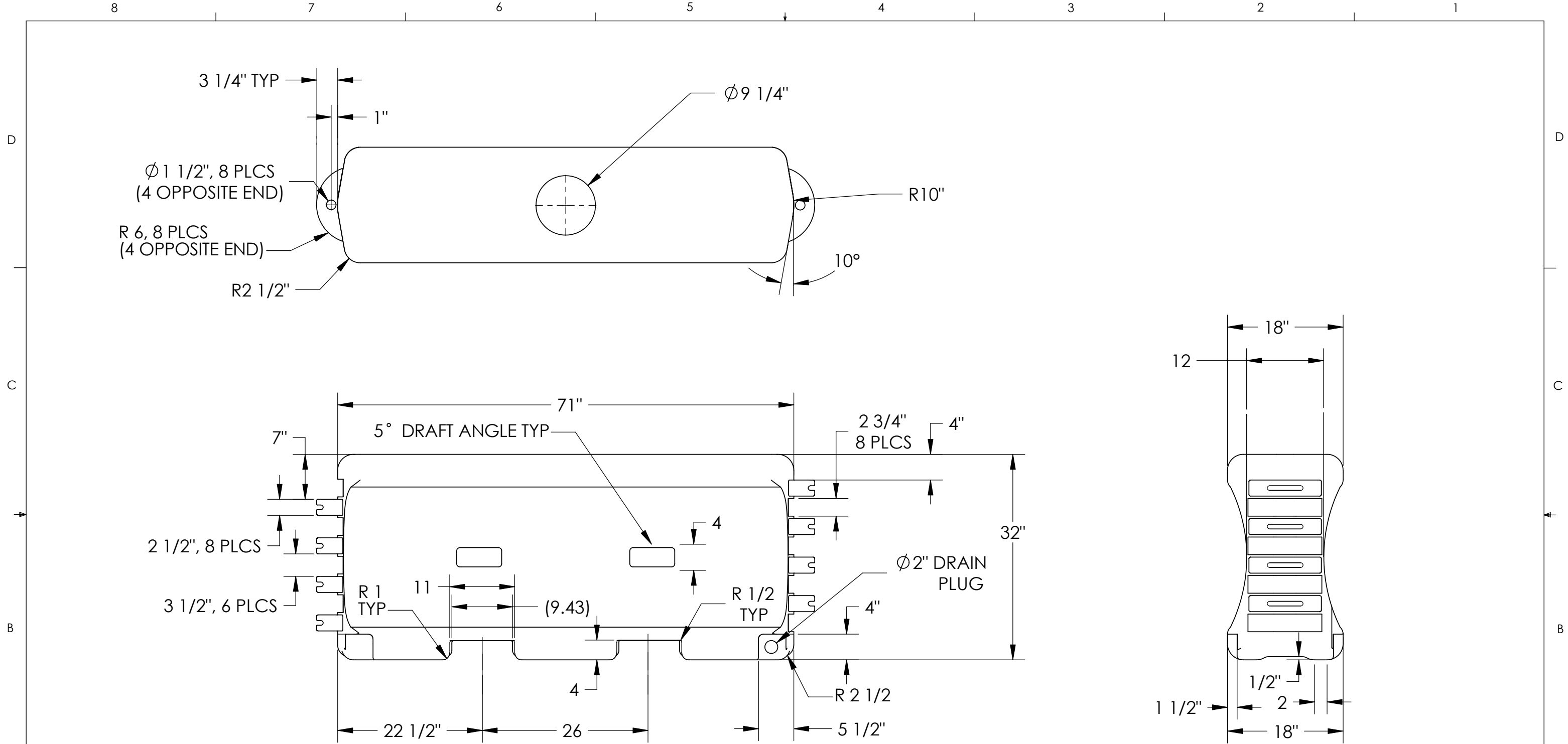
- Our acceptance is limited to the crashworthiness characteristics of the Traffix Water Wall and does not address its structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
- Any changes to the tested design that may adversely influence its crashworthiness will require 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 optimal performance.
- You will be expected to certify to users that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as the design that was crash tested.
- To prevent misunderstanding by others, this letter of acceptance, designated as number B-130 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 Water Wall is assumed to be a proprietary product. The use of proprietary hardware in a work zone on Federal-aid projects is generally of a temporary nature. These features are usually *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, 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.

Sincerely yours,

(original signed by John R. Baxter)

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

2 Enclosures



**TraFFix
Devices Inc.** 

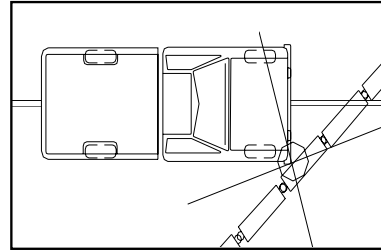
220 Calle Pintoresco
San Clemente, CA 92672
(949) 361-5663
FAX (949) 361-9205
www.traffixdevices.com

TITLE:
**TRAFFIX
WATER WALL**

DRAWN BY: Felipe Almanza	DATE: 4-29-04	SIZE B	DWG. NO. 45032	REV -
CHECKED BY:	DATE:			
APPROVED BY:	DATE:			SHEET 1 OF 2

DATA SHEET NO. 5

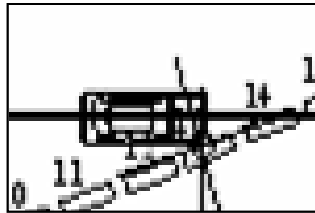
SUMMARY OF RESULTS FOR TEST NO. 1-11



GENERAL INFORMATION		OCCUPANT RISK VALUES	
TEST AGENCY	KARCO ENGINEERING	IMPACT VELOCITY (m/sec)	
TEST NO.	1-11	X-DIRECTION	4.6
DATE	02/06/04	Y-DIRECTION	N/A
TEST ARTICLE		THIV (optional)	N/A
TYPE	LONGITUDINAL WATER BARRIER UNIT	RIDEDOWN ACCELERATION (g's)	
Installation LENGTH (m)	N/A	X-DIRECTION	-2.9
SIZE AND/OR DIMENSION OF KEY ELEMENTS	LESS THAN 45 Kg	Y-DIRECTION	N/A
SOIL TYPE AND CONDITION	CONCRETE	PHD (optional)	N/A
TEST VEHICLE	2000P	ASI (optional)	0.26
TYPE	PRODUCTION	TEST ARTICLE DEFLECTIONS (m)	N/A
DESIGNATION	1-11	DYNAMIC	N/A
MODEL	CHEVY SILVERADO PICKUP	PERMANENT	15.52 ft.
MASS (CURB)	2096 Kg (4620 lbs)	VEHICLE DAMAGE	
MASS (TEST INERTIAL)	1964 Kg (4330 lbs)	EXTERIOR	
DUMMY(S) MASS	N/A	VDS	1FR1
GROSS STATIC WEIGHT	1964 Kg (4330 lbs)	CDC	01RDEN1
IMPACT CONDITIONS		INTERIOR	
SPEED (km/h)	51.4 (31.9 mph)	OCDI	FS0000000
ANGLE (Deg.)	25		
IMPACT SEVERITY (kJ)	33.03	POST IMPACT VEHICULAR BEHAVIOR	
EXIT CONDITIONS		MAXIMUM ROLL ANGLE (Deg.)	-28.8
SPEED (km/h)	0	MAXIMUM PITCH ANGLE (Deg.)	-5.5
ANGLE (Deg.)	0	MAXIMUM YAW ANGLE (Deg.)	11.5

DATA SHEET NO. 6

SUMMARY OF RESULTS FOR TEST NO. 2-10



GENERAL INFORMATION		OCCUPANT RISK VALUES	
TEST AGENCY	KARCO ENGINEERING	IMPACT VELOCITY (m/sec)	
TEST NO.	2-10	X-DIRECTION	6.4
DATE	08/06/04	Y-DIRECTION	N/A
TEST ARTICLE		THIV (optional)	N/A
TYPE	LONGITUDINAL WATER BARRIER UNIT	RIDEDOWN ACCELERATION (g's)	
Installation LENGTH (m)	N/A	X-DIRECTION	-3.9
SIZE AND/OR DIMENSION OF KEY ELEMENTS	LESS THAN 45 Kg	Y-DIRECTION	1.0
SOIL TYPE AND CONDITION	CONCRETE	PHD (optional)	N/A
TEST VEHICLE	820C	ASI (optional)	0.47
TYPE	PRODUCTION	TEST ARTICLE DEFLECTIONS (m)	N/A
DESIGNATION	2-10	DYNAMIC	N/A
MODEL	GEO METRO 2-DOOR	PERMANENT	5.96 ft.
MASS (CURB)	842 Kg (1872 lbs)	VEHICLE DAMAGE	
MASS (TEST INERTIAL)	894 Kg (1988 lbs)	EXTERIOR	
DUMMY(S) MASS	75 kg	VDS	1FR1
GROSS STATIC WEIGHT	894 Kg (1988 lbs)	CDC	01RDEN2
IMPACT CONDITIONS		INTERIOR	
SPEED (km/h)	71.4 (44.3 mph)	OCDI	FS0000000
ANGLE (Deg.)	20		
IMPACT SEVERITY (kJ)	18.88	POST IMPACT VEHICULAR BEHAVIOR	
EXIT CONDITIONS		MAXIMUM ROLL ANGLE (Deg.)	0.0*
SPEED (km/h)	0	MAXIMUM PITCH ANGLE (Deg.)	3.0
ANGLE (Deg.)	0	MAXIMUM YAW ANGLE (Deg.)	-4.2

* Data channel failed.