U.S. Department of Transportation
Federal Highway Administration

1200 New Jersey Ave., S.E.
Washington, DC 20590

April 27, 2009

In Reply Refer To: HSSD/WZ-279

Mr. John M. Sandy
Director of Sales/Product R&D
ATM Traffic Systems LLC
448 Hollywood Avenue
South Plainfield, NJ 07080

Dear Mr. Sandy:

In your letter of March 26, you requested the Federal Highway Administration (FHWA) acceptance of your longitudinal channelizing device, the ATM 590 Water Filled Barrier, for use as a crashworthy traffic control device in work zones on the National Highway System (NHS). Accompanying your letter was the FHWA Office of Safety Design forms and a copy of the crash test report. The test summary, device drawing, and test article description pages are enclosed with the acceptance form. The ATM 590 is intended for use with a maximum capacity of 75 gallons of water in each module as ballast. You requested that we find this device acceptable for meeting Test Level 2 criteria 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".

This letter is the acknowledgement of the FHWA's acceptance of your requests. Longitudinal channelizers should not be described as "barriers" because they do not meet crashworthiness requirements for redirection. The FHWA recommendations for labeling each unit or module to indicate limitations of use are enclosed. The original completed forms have been modified by the addition of the FHWA acceptance letter number and the date of our review. The form will be posted on our Web site in the near future.

Sincerely yours,

David A. Nicol
Director, Office of Safety Design
Office of Safety

Enclosures

Page 1	**FEDERAL HIGHWAY ADMINISTRATION** **OFFICE OF SAFETY DESIGN** **Category 2 Work Zone Device Acceptance Letter**	Letter Number WZ-279 Date 4/16/09
Contact Info	Petitioner / Developer Name and Address: ATM TRAFFIC SYSTEMS 448 HOLLYWOOD AVE S. PLAINFIELD NJ 07080	
	I herby certify that the device(s) covered by this Acceptance Letter meet(s) the crash – worthiness test and evaluation requirements of the FHWA and NCHRP Report 350.	
Signature	John Sandy	
Telephone #	800-360-8806	
Email Address	SALES@ATMTRAFFICSYSTEMS.COM	
	Laboratory / Engineer Name and Address TRANSPORTATION RESEARCH CTR INC 10820 STATE RT 347 EAST LIBERTY OHIO 43319	
☑	I hereby certify that the testing that supports this Acceptance Letter was conducted in accordance with NCHRP Report 350 guidelines, that the device(s) tested is/are accurately described on this form, and that the test results indicate that the device meets all applicable NCHRP Report 350 evaluation criteria.	
☐	I have evaluated the requested modifications to these devices previously found acceptable by the FHWA in Acceptance Letter WZ-___, and hereby certify that, in my opinion, the modifications do not adversely affect the crash performance of the devices. I also certify that these devices are accurately described on this form.	
Signature	MIKE TONNEMAN	
Telephone #	937-666-2011 EXT 242	
Email Address	TONNEMM@TRCPG.COM	
Keywords:		
	Type of Device (See page 3) LONGITUDINAL CHANNELIZING BARRICADE	
	Composition of Sign or Rail substrate (See Page 3) N/A	
	Thickness of substrate (inches): N/A	
	Height of sign from the ground (inches), if applicable: (See Page 3) N/A	
	Flags and or lights present during test? Indicate number of each: # of flags: 0 # of lights: 0 Weight of lights: 0 ea.	
Device Name		
Detailed Desc. Of Device, Materials, sizes. Fasteners, Substrates Foundation, Aux. Features Ballast, etc.	(May be attached on separate page(s) ALL PLASTIC See PDF 'A'	

Page 2	**FEDERAL HIGHWAY ADMINISTRATION** **OFFICE OF SAFETY DESIGN** **Category 2 Work Zone Device Acceptance Letter**		Letter Number WZ-279 Date 04/16/2009
	Mandatory Attachments		
	Attachment # 1: Test data summary page(s)		
	Attach. #1a	Test # 090304	
	Attach. #1b	Test #	
	Attach. #1c	Test #	
	Attach. #1d	Test #	
Alternative	**Attachment # 1:** Description and discussion of modification(s) to crash tested and/or accepted device.		
	Date:		
	Attachment # 2: PDF drawing(s) of device(s)		
	Attach. #2a	Drawing Title: ATM Barrier	
		Drawing #:	
	Attach. #2b	Drawing Title:	
		Drawing #:	
	Attach. #2c	Drawing Title:	
		Drawing #:	
	Attach. #2d	Drawing Title:	
		Drawing #:	
	Attach. #2e	Drawing Title:	
		Drawing #:	
	Attach. #2f	Drawing Title:	
		Drawing #:	
	Attach. #2g	Drawing Title:	
		Drawing #:	

Page 3	FEDERAL HIGHWAY ADMINISTRATION OFFICE OF SAFETY DESIGN Category 2 Work Zone Device Acceptance Letter	Letter Number WZ-279 Date 04/16/2009

Please select from the following Keywords for "Type of Device":

Longitudinal Channelizing Barricade
Curb (Curb channelizer system with or without road tubes or other channelizers)
Drum
H-Footprint Sign Stand
X-Footprint Sign Stand
Trailer Mounted Signs (Does not include arrow boards or variable message signs or other Category 4 trailer mounted devices.)
Automated Flagger Device (not trailer mounted)
Tripod Sign Stand
Type I Barricade
Type II Barricade
Type III Barricade
Vertical Panel
Intrusion Detector
Ballast (Action relates to ballast on one or more devices)
Channelizer (Individual units unlike cones, road tubes, or drums)

Please select from the following Keywords for "Sign Substrate":

Roll-up / Fabric (with fiberglass spreaders – aluminum or steel spreaders are not allowed.)
Plywood
Aluminum – Solid
Aluminum – Laminate
Corrugated Plastic
Extruded Plastic
Waffleboard Plastic
Wood / Lumber

Please select from the following Keywords for "Height of Sign":

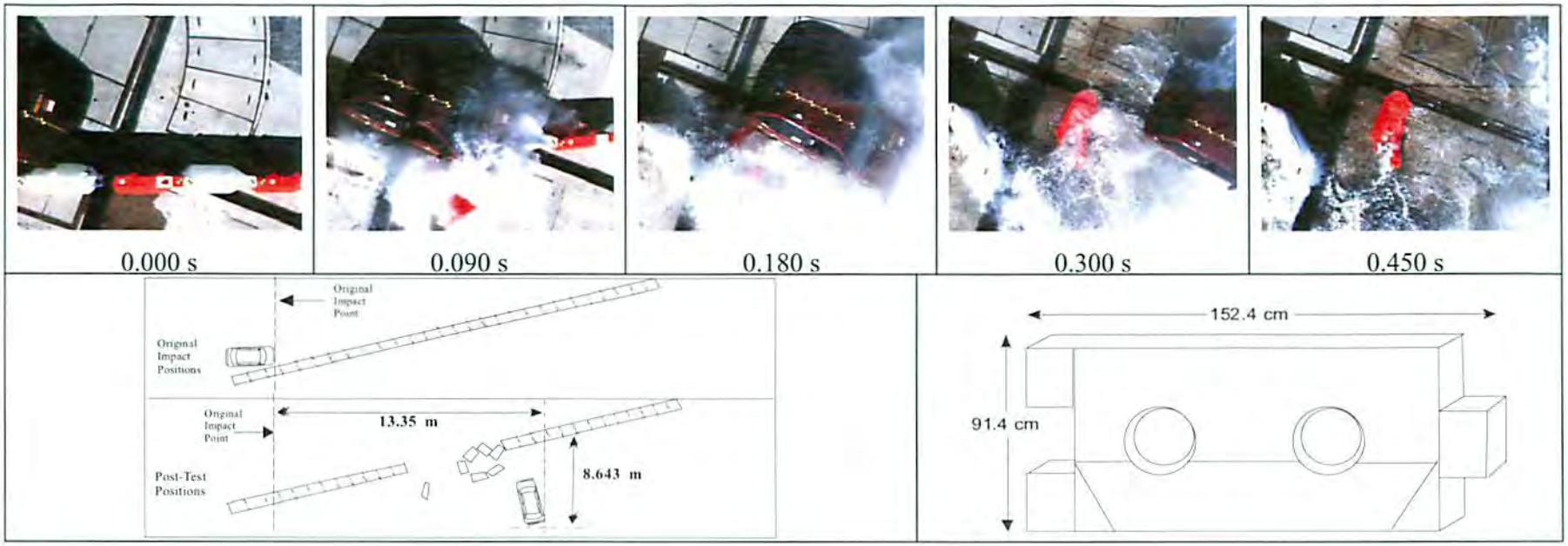
The distance to the lowest point on the sign is:

Low	12 to 18 inches above the pavement
Mid-A	20 to 24 inches above the pavement
Mid-B	25 to 36 inches above the pavement
Mid-C	37 to 59 inches above the pavement
Tall	60 to 71 inches above the pavement
Oversized	72 inches and taller

Page 4	FEDERAL HIGHWAY ADMINISTRATION OFFICE OF SAFETY DESIGN Category 2 Work Zone Device Acceptance Letter	Letter Number W2-270 Date 4/16/2007

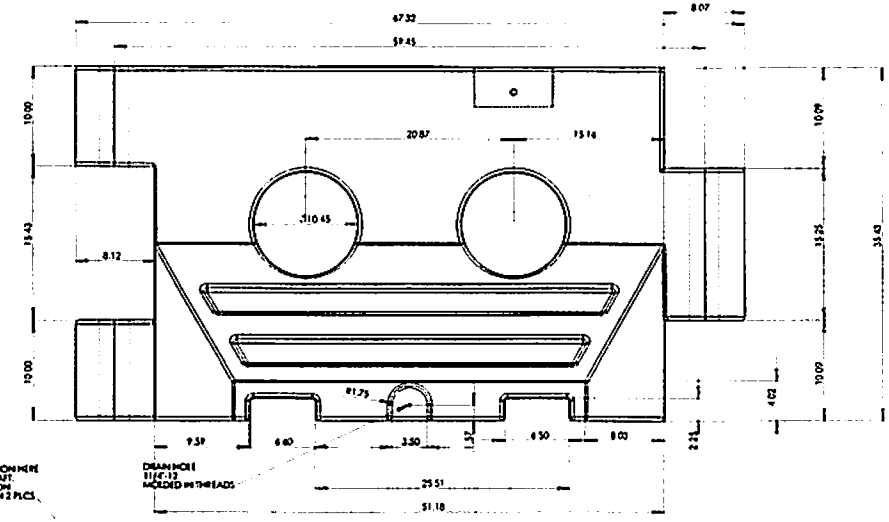
Please note the following standard provisions that apply to FHWA letters of acceptance:

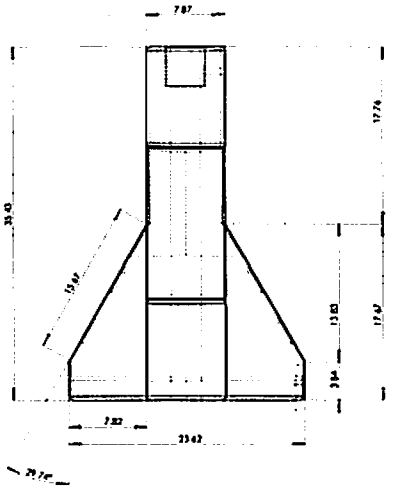
- Our acceptance is limited to the crashworthiness characteristics of the devices and does not cover their structural features, or conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may adversely influence the crashworthiness of the device will require a new acceptance 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 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.
- If the subject of this letter is a patented device it 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 Federal Highway Administration 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.

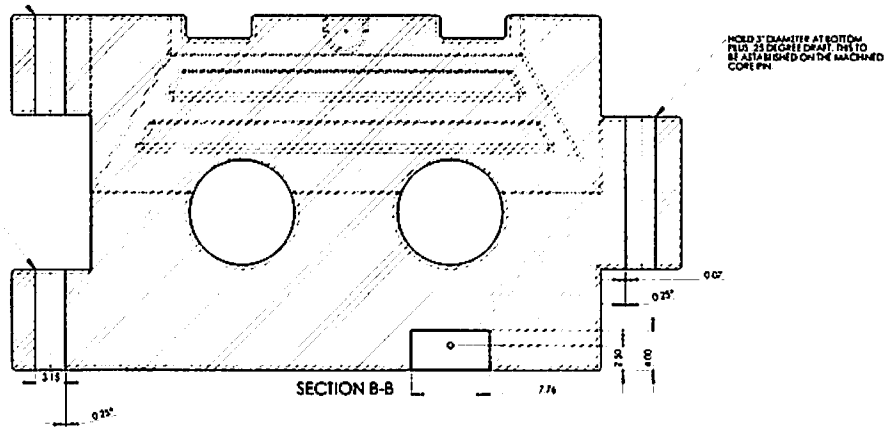


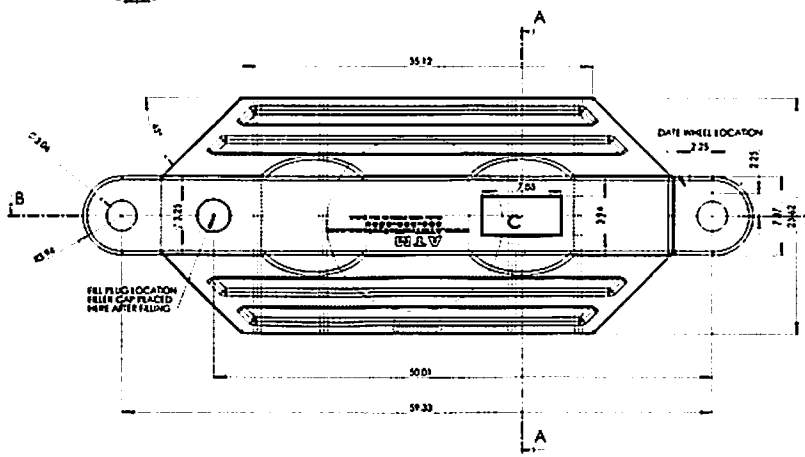
General Information		Impact Conditions		Test Article Deflections (m)		Vehicle Trajectory Post Test	The impacting vehicle pass through the ATM Traffic Systems, Model ATM 590 Water Fill Barrier Channelizing Barricade System.
Test Agency	Transportation Research Center Inc. (TRC Inc.)	Speed (km/h)	69.0	Dynamic	3.1		
Test No.	090304	Angle (deg)	20	Permanent	3.1		
Date	March 4, 2009	Exit Conditions					
Test Article		Speed (km/h)	N/A	Vehicle Damage			
Type	Longitudinal Channelizing Barricade	Angle (deg)	N/A	Exterior			
Name or Manufacturer	Model ATM 590 Water Fill Barriers by Traffic Safety Service, LLC	Occupant Risk Values		VDS	N/A		
		Impact Velocity (m/s)		CDC	01FZEW1		
Size and/or dimension and material of key elements	40 individual portable polyethylene water filled barricades, each being 91.4 cm (H) 152.4 cm (L) x 61 cm (W)	x-direction	7.34	Interior			
		y-direction	0.52	OCDI	RF0000000		
		THIV (optional)	7.4	Maximum Exterior			
Soil Type and Condition	N/A	Ridedown Acceleration (g's)		Vehicle Crush (mm)	210		
Test Vehicle		x-direction	4.19	Max. Occ. Compartment			
Type	Production Model	y-direction	1.94	Deformation (mm)	67		
Designation	820C	PHD (optional)	4.28 g				
Model	1993 Geo Metro	ASI (optional)	0.54	Post-Impact Vehicular Behavior			
Mass (kg)		Max. 0.050 –s Average (g's)		Maximum Roll Angle (deg)	13.6		
Curb	716.8	x-direction	-6.1 g	Maximum Pitch Angle (deg)	12.1		
Test Inertial	825.4	y-direction	-1.7 g	Maximum Yaw Angle (deg)	-76.5		
Dummy(s)	74.8	z-direction	-2.7 g				
Gross Static	900.2						

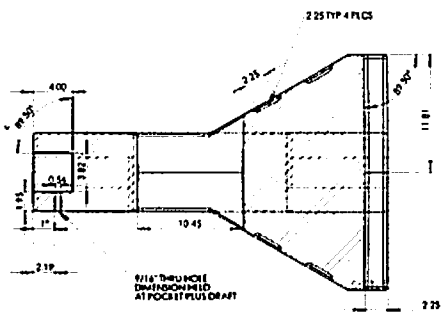
Figure 8. Summary of results for test 090304











DETAIL C
SCALE 2 : 5

ATM BARRIER
12/08/07
PLEASE CONFIRM AND APPROVE DESIGN

SIGNATURE _____

DATE _____

2.0 Technical Discussion

Test Article

The ATM Traffic Systems, Model ATM 590 Water Fill Barrier longitudinal channelizing barricade system consisted of forty (40) water-filled polyethylene barricades, to be tested to the NCHRP 350 test level 2-10 guidelines.

Each polyethylene barricade consists of 152.4 cm (60") length sections that are interlocked with a swivel pin. Each barricade weighs approximately 23 kg (50 lbs) empty and can be filled with up to 318 liters (approximately 84 gallons) of water or sand.

The ATM Traffic Systems, Model ATM 590 Water Fill Barrier system was positioned in a longitudinal line such that the right front corner of the impacting 820C vehicle struck the center of the twenty-first barricade in the system.

Each individual barricade was filled with approximately 322 liters (75 gallons) of water. The overall length of the forty (40) interlocking barricade system was approximately 61 meters (see Figure 1).

Details of the ATM Traffic Systems, Model ATM 590 Water Fill Barrier system are shown in Figure 1, Figure 2, and Appendix D.

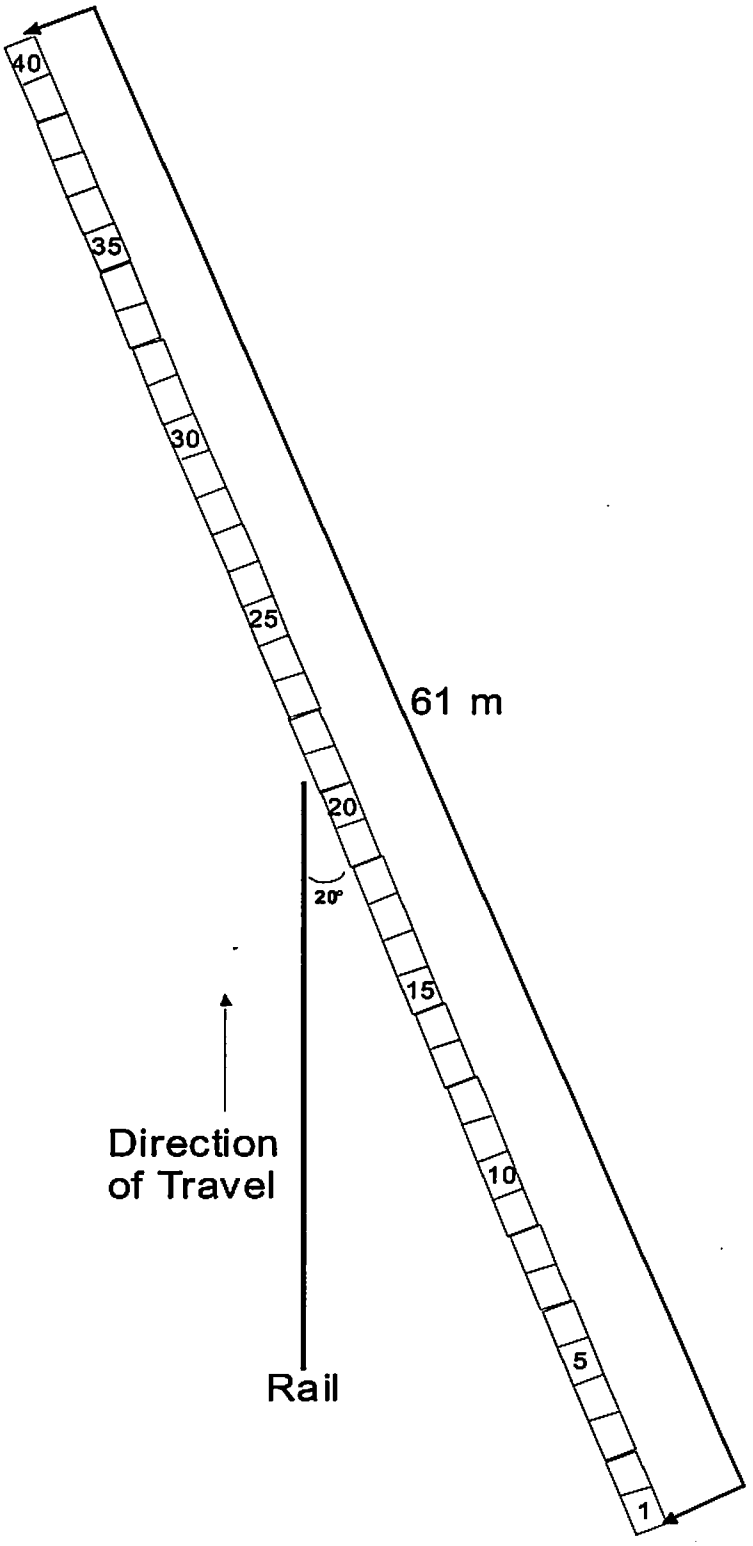
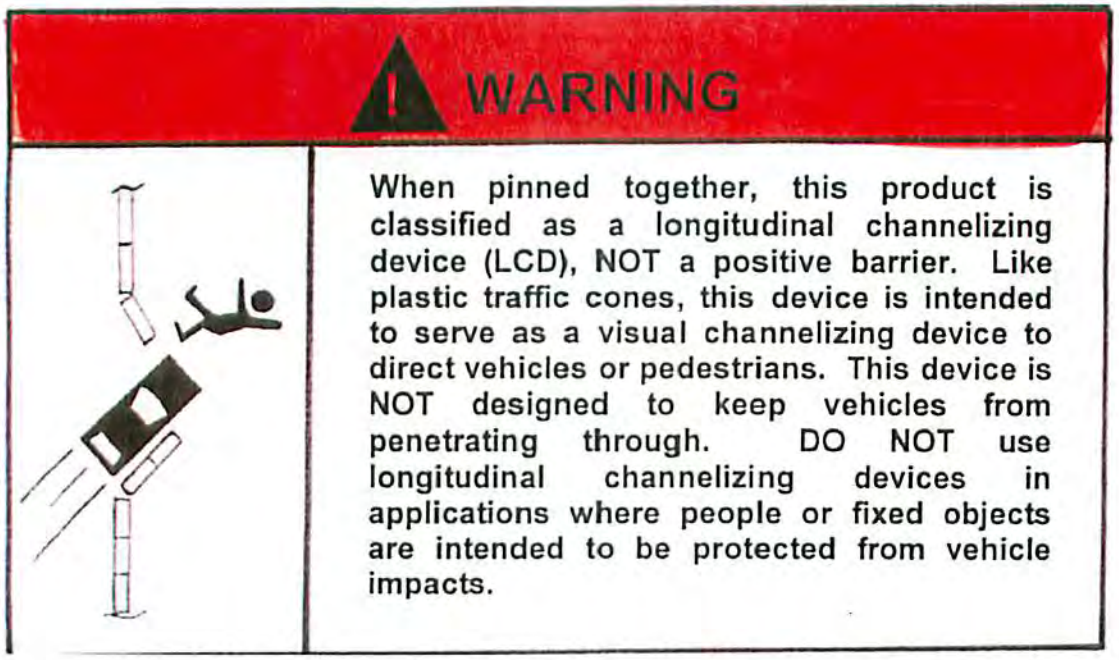


Figure 1. Details of the ATM Traffic Systems, Model ATM 590 Water Fill Barrier (continued)

Test Description

The vehicle, traveling at 69.0 km/h, impacted 50 millimeters to the right of the center of barricade 21 of the ATM Traffic Systems, Model ATM 590 Water Fill Barrier system at 20° with the vehicle's right front fender (see Figure 4). The vehicle continued in a forward direction, remained in momentary contact with and began to climb barricade 21. It then impacted barricades 22, 23, and 24. The vehicle decelerated as it continued through the barricade system, and displaced barricades 20 through 29 prior to stopping. The vehicle remained upright throughout the test event. No barricades or portions of barricades entered the passenger compartment. The maximum roll was 12.6 degrees. The maximum pitch was 12.1 degrees. The maximum yaw was -76.5 degrees.



Example of a possible Plastic Water-Filled Longitudinal Channelizing Device (LCD) Decal