



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

June 27, 2008

400 Seventh St., S.W.
Washington, DC 20590

In Reply Refer To:
HSSD/WZ-255 Revised

Mr. David E. Wasserstrom
President
Trident Security Devices, Inc.
P.O. Box 26716
Elkins Park, PA 19027

Dear Mr. Wasserstrom :

This letter is in response to mail correspondence of January 4, 2007, requesting the Federal Highway Administration's (FHWA) acceptance of your company's ROADGUARD/2 Longitudinal Channelizer for use on the National Highway System (NHS) under the provisions of the National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features." Accompanying the letter was a report on testing of your company's ROADGUARD/2 prepared by Transportation Research Center Inc., including test videos and drawings.

Requirements

Longitudinal channelizing barricades (LCBs) are classified as work zone traffic control devices and should meet the guidelines contained in the NCHRP Report 350, "Recommended Procedures for the Safety Performance Evaluation of Highway Features." The FHWA Memorandum "ACTION: Identifying Acceptable Highway Safety Features" of July 25, 1997, provides further guidance on crash testing of work zone traffic control devices.

Product description

The ROADGUARD/2 Longitudinal Channelizing Barricade system consists of water filled UV-resistant polyethylene barricades, each consisting of two equal chambers that are manufactured from High Density Polyethylene (HDPE) plastic. Each barricade weighs approximately 19.3 kg (42.5 lbs) empty and each unit has the capacity to be filled with 340 liters (90 gallons) of water in each of the two chambers. Drawings of your company's ROADGUARD/2 are enclosed.

Test article installation

The test article consisted of 10 interlocking barricades, positioned in a straight line. Each chamber of each individual barricade was filled with approximately 20.5 liters (5.4 gallons) of water. The overall length of the 10 interlocking barricades was approximately 60 feet. Details of the test article installation are enclosed.



Testing

The NCHRP Report 350 requires that in order for work zone traffic control devices to meet test level 3 (TL-3) criteria, they must successfully pass tests 3-70 and 3-71. The low-speed test 3-70, where a 820C vehicle impacts the device at 35 km/h, evaluates the breakaway, fracture, or yielding mechanism of the device along with the occupant risk and may be omitted if it can be shown that it is less critical than the high speed test.

Since your company's ROADGUARD/2 LCB is intended to be used for highway applications ballasted with no more than 20.5 liters (5.4 gallons) of water in each of two chambers of each barricade, it has a relatively small mass. Therefore, test 3-71 was conducted and test 3-70 was omitted on your company's LCB because the high speed test is deemed more critical.

Test 3-71 involved the 820C vehicle impacting the center of barricade number 5 at 100.5 km/h and a 20 degree angle. The vehicle continued in a forward direction after impact, penetrated through the LCB, and disconnected the units from each other. From the test video, it was observed that the vehicle's right front wheel started to ride up barricade number 6 and both right front and back wheels became airborne. However, the vehicle remained upright throughout the test event with maximum roll, pitch and yaw angles of 23.2, 6.2 and 22.1 degrees respectively.

Five of the ten individual barricade sections that made up the test article were displaced beyond the immediate impact zone and four of them incurred damage to their overall outer shell sidewalls. No measurable crush was evident to the occupant compartment of the vehicle. The occupant impact velocity was 6.7 m/s in the longitudinal direction, and 0.4 m/s in the lateral direction. The highest occupant ridedown acceleration was 5.6 g's in the longitudinal direction and 3.0 g's in the lateral direction. While the occupant impact velocity in the longitudinal direction exceeds the maximum NCHRP 350 limit of 5 m/s for test 3-71, it is within the maximum NCHRP 350 limit of 12 m/s for longitudinal barriers and gating end treatments. Given the nature of your device as a LCB, it is agreed that 12 m/s may be used as an occupant impact velocity criterion for this test.

In summary, the ROADGUARD/2 Longitudinal Channelizing Barricade, as described above, meets the appropriate evaluation criteria for the NCHRP 350 TL-3 work zone traffic control devices and may be used at all appropriate locations on the NHS when selected by the contracting authority. This device is accepted by the FHWA for use under the range of conditions tested and may be used with up to 20.5 liters (5.4 gallons) of water in each chamber to provide enough ballast to keep the barricades from being displaced by wind. As the quantity of water used for ballast may substantially affect the performance of the longitudinal channelizing barricades, a permanent indication should be applied to each unit notifying users of this limitation.

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

- This 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.

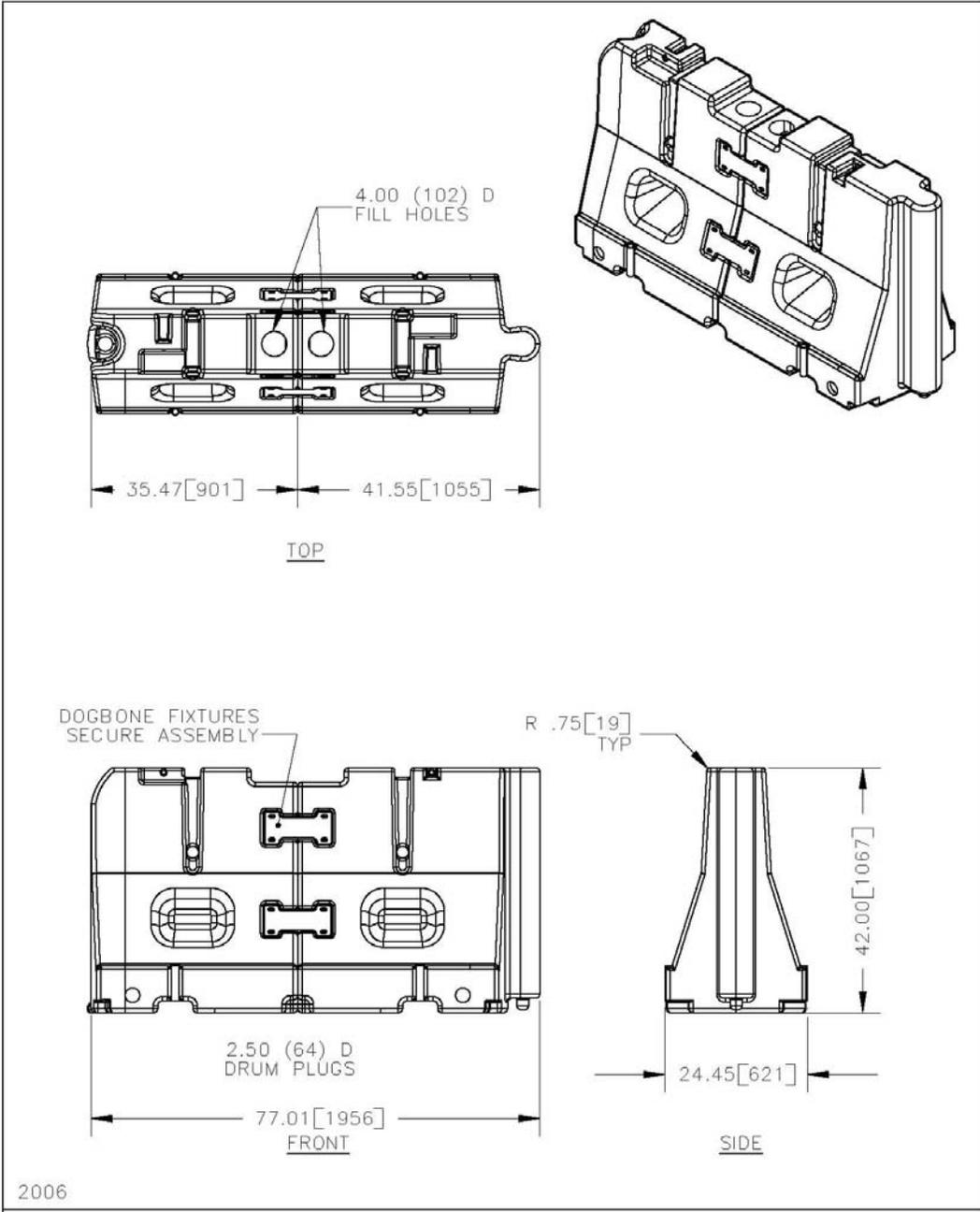
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals unacceptable safety problems, or that the device being marketed is significantly different from the version that was crash tested, it reserves the right to modify or revoke its acceptance.
- You 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-255, 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 ROADGUARD/2 Longitudinal Channelizing Barricade is a patented product and considered proprietary. 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 the 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.
- 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,

A handwritten signature in blue ink, appearing to read "George E. Rice, Jr.", with a stylized flourish at the end.

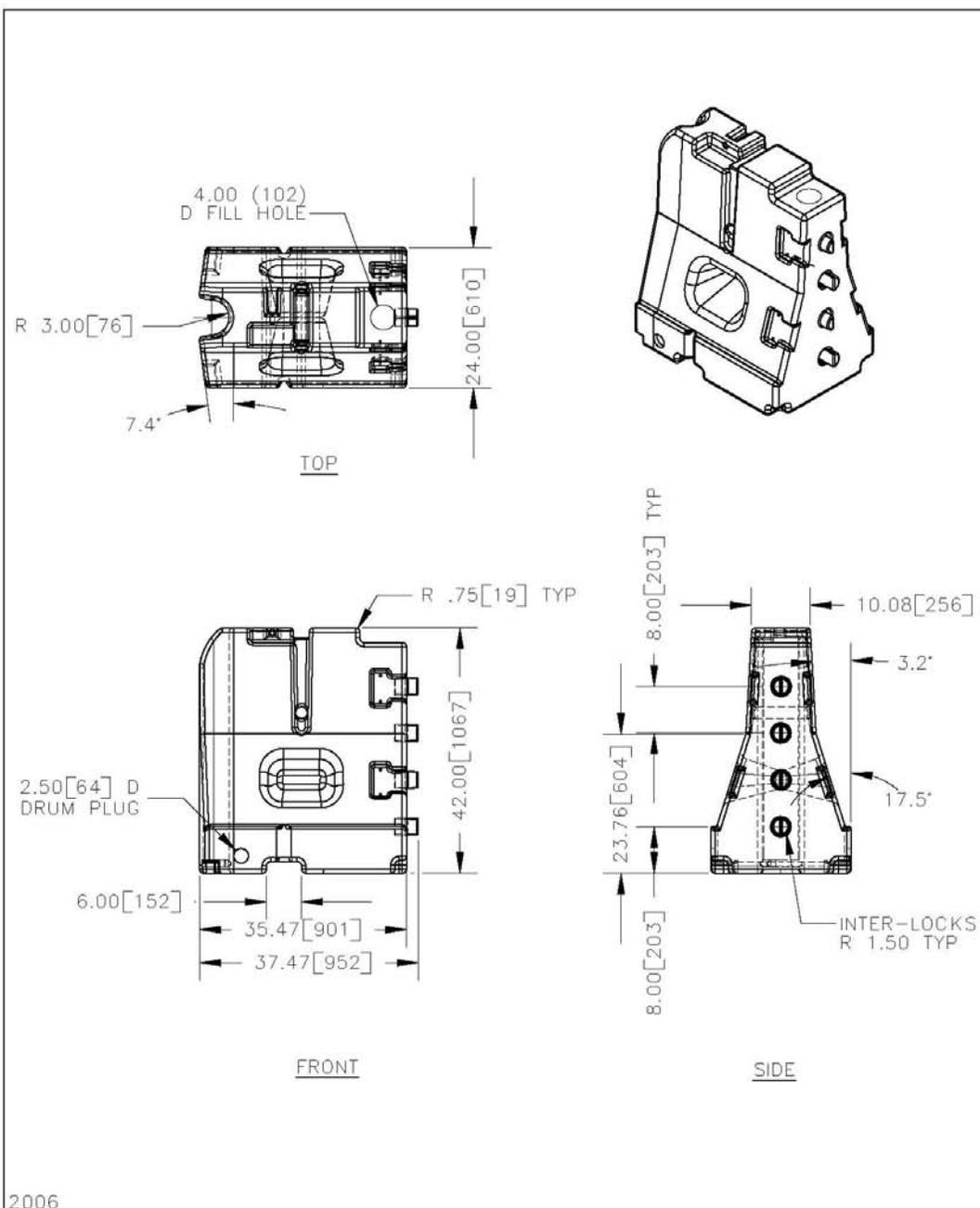
George E. Rice, Jr.
Acting Director, Office of Safety Design
Office of Safety

Enclosures



TRAFFIC BARRIER ASSEMBLY

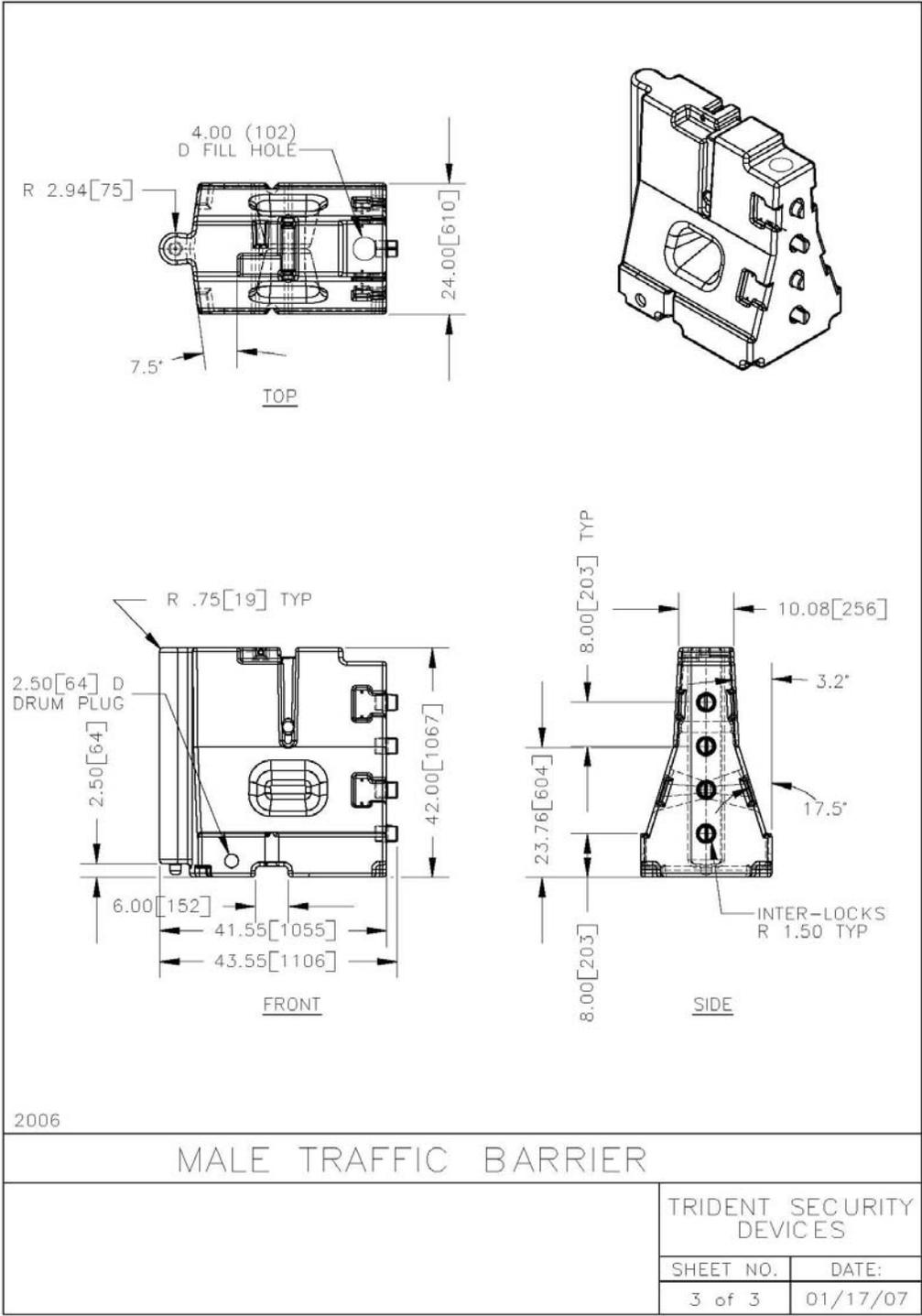
TRIDENT SECURITY DEVICES	
SHEET NO.	DATE:
1 of 3	01/17/07

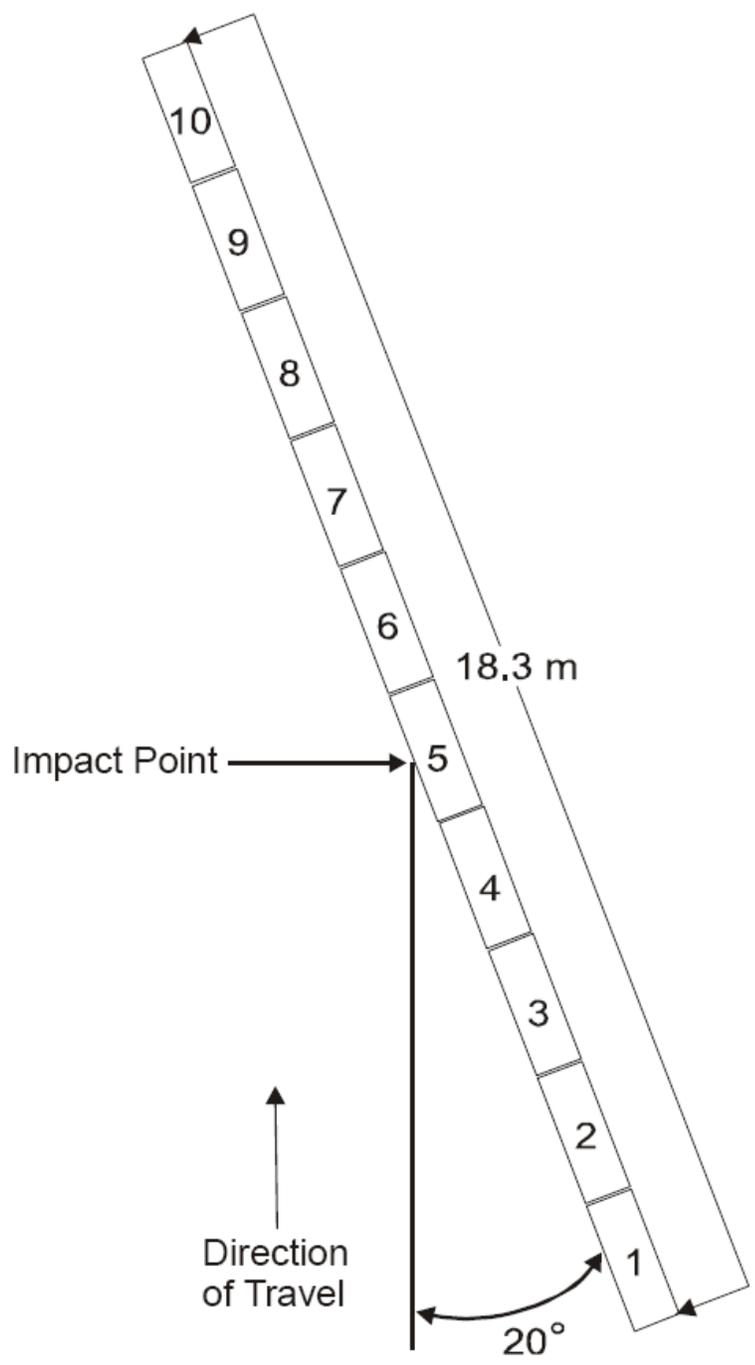


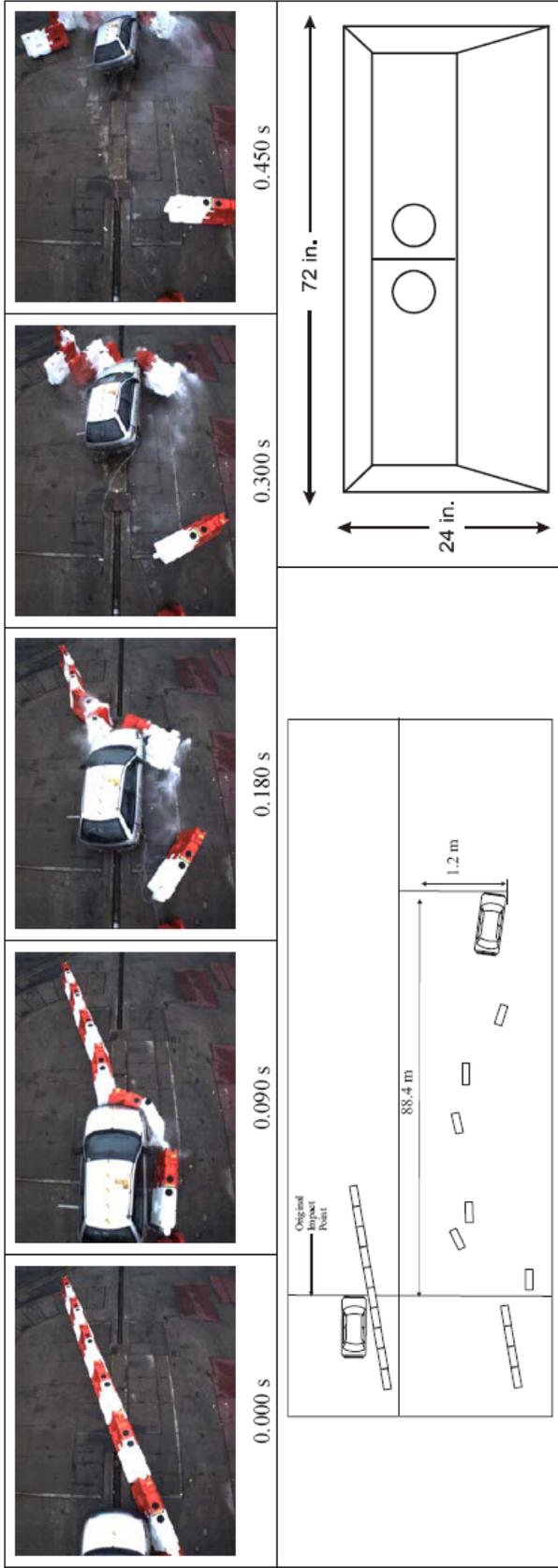
2006

FEMALE TRAFFIC BARRIER

TRIDENT SECURITY DEVICES	
SHEET NO.	DATE:
2 of 3	01/17/07







General Information	Impact Conditions	Test Article Deflections (m)	Vehicle Trajectory Post Test
Test Agency Transportation Research Center Inc. (TRC Inc.)	Speed (km/h) 100.5	Dynamic 13.3	The impacting vehicle's final most outer left trajectory stayed within twelve feet of the barrier.
Test No. 061221	Angle (deg) 20	Permanent 13.3	Assuming that the barrier was at the edge of the lane, the vehicle would have stayed within a 12-foot lane width.
Date December 21, 2006	Exit Conditions N/A	Vehicle Damage Exterior N/A	
Test Article Type Longitudinal Channelizing Barricade	Speed (km/h) N/A	Exterior VDS N/A	
Name or Manufacturer MB-42x72 JSS LCB by Off the Wall Products, LLC	Angle (deg) N/A	Interior CDC 01FZEW1	
Size and/or dimension and material of key elements 10 individual portable polyethylene water filled barricades, each being 107 cm (H) 182.9 cm (L) x 61 cm (W)	Occupant Risk Values Impact Velocity (m/s) 6.7	Maximum Exterior Vehicle Crush (mm) 280	
Soil Type and Condition N/A	THIV (optional) 24.38	Max. Occ. Compart. Deformation (mm) 0	
Test Vehicle Type Production Model	Ride-down Acceleration (g's/s) x-direction 5.6 y-direction 3.0 PHD (optional) 5.59g ASI (optional) 0.48	Post-Impact Vehicular Behavior Maximum Roll Angle (deg) -23.2 Maximum Pitch Angle (deg) 6.2 Maximum Yaw Angle (deg) -22.1	
Designation Model 820C	Max. 0.050-s Average (g/s) x-direction -5.7 g y-direction 1.4 g z-direction -2.4 g		
Mass (kg) Curb 860.6			
Test Inertial 844.8			
Dummy(s) 74.8			
Gross Static 919.6			