



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

August 3, 2020

1200 New Jersey Ave., SE
Washington, D.C. 20590

In Reply Refer To:
HSST-1/WZ-417

Mr. Darrell Heald
Shur-Tite Products
P.O. Box 2283
Round Rock, TX 78680
USA

Dear Mr. Heald:

This letter is in response to your May 14, 2020 request for the Federal Highway Administration (FHWA) to review a roadside safety device, hardware, or system for eligibility for reimbursement under the Federal-aid highway program. This FHWA letter of eligibility is assigned FHWA control number WZ-417 and is valid until a subsequent letter is issued by FHWA that expressly references this device.

Decision

The following device is eligible within the length-of-need, with details provided in the form which is attached as an integral part of this letter:

- Shur-Curb Traffic Separator

Scope of this Letter

To be found eligible for Federal-aid funding, new roadside safety devices should meet the crash test and evaluation criteria contained in the American Association of State Highway and Transportation Officials' (AASHTO) Manual for Assessing Safety Hardware (MASH). However, the FHWA, the Department of Transportation, and the United States Government do not regulate the manufacture of roadside safety devices. Eligibility for reimbursement under the Federal-aid highway program does not establish approval, certification or endorsement of the device for any particular purpose or use.

This letter is not a determination by the FHWA, the Department of Transportation, or the United States Government that a vehicle crash involving the device will result in any particular outcome, nor is it a guarantee of the in-service performance of this device. Proper manufacturing, installation, and maintenance are required in order for this device to function as tested.

This finding of eligibility is limited to the crashworthiness of the system and does not cover other structural features, nor conformity with the Manual on Uniform Traffic Control Devices.

Eligibility for Reimbursement

Based solely on a review of crash test results and certifications submitted by the manufacturer, and the crash test laboratory, FHWA agrees that the device described herein meets the crash test and evaluation criteria of the AASHTO's MASH. Therefore, the device is eligible for reimbursement under the Federal-aid highway program if installed under the range of tested conditions.

Name of system: Shur-Curb Traffic Separator
Type of system: Work Zone Longitudinal Channelizer
Test Level: MASH Test Level 3 (TL3)
Testing conducted by: Texas A&M Transportation Institute.
Date of request: May 14, 2020

FHWA concurs with the recommendation of the accredited crash testing laboratory on the attached form.

Full Description of the Eligible Device

The device and supporting documentation, including reports of the crash tests or other testing done, videos of any crash testing, and/or drawings of the device, are described in the attached form.

Notice

This eligibility letter is issued for the subject device as tested. Modifications made to the device are not covered by this letter. Any modifications to this device should be submitted to the user (i.e., state DOT) as per their requirements.

You are expected to supply potential users with sufficient information on design, installation and maintenance requirements to ensure proper performance.

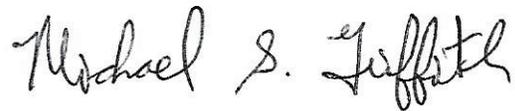
You are expected to certify to potential users that the hardware furnished has the same chemistry, mechanical properties, and geometry as that submitted for review, and that it will meet the test and evaluation criteria of AASHTO's MASH.

Issuance of this letter does not convey property rights of any sort or any exclusive privilege. This letter is based on the premise that information and reports submitted by you are accurate and correct. We reserve the right to modify or revoke this letter if: (1) there are any inaccuracies in the information submitted in support of your request for this letter, (2) the qualification testing was flawed, (3) in-service performance or other information reveals safety problems, (4) the system is significantly different from the version that was crash tested, or (5) any other information indicates that the letter was issued in error or otherwise does not reflect full and complete information about the crashworthiness of the system.

Standard Provisions

- To prevent misunderstanding by others, this letter of eligibility designated as FHWA control number WZ-417 shall not be reproduced except in full. This letter and the test documentation upon which it is based are public information. All such letters and documentation may be reviewed upon request.
- This letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented system for which the applicant is not the patent holder.
- This FHWA eligibility letter is not an expression of any Agency view, position, or determination of validity, scope, or ownership of any intellectual property rights to a specific device or design. Further, this letter does not impute any distribution or licensing rights to the requester. This FHWA eligibility letter determination is made based solely on the crash-testing information submitted by the requester. The FHWA reserves the right to review and revoke an earlier eligibility determination after receipt of subsequent information related to crash testing.

Sincerely,

A handwritten signature in black ink that reads "Michael S. Griffith". The signature is written in a cursive, slightly slanted style.

Michael S. Griffith
Director, Office of Safety Technologies
Office of Safety

Enclosures

Request for Federal Aid Reimbursement Eligibility of Highway Safety Hardware

Submitter	Date of Request:	May 14, 2020	<input checked="" type="radio"/> New <input type="radio"/> Resubmission
	Name:	Darrell Heald	
	Company:	Shur-Tite Products	
	Address:	P.O. Box 2283, Round Rock, TX 78680	
	Country:	U.S.	
	To:	Michael S. Griffith, Director FHWA, Office of Safety Technologies	

I request the following devices be considered eligible for reimbursement under the Federal-aid highway program.

Device & Testing Criterion - Enter from right to left starting with Test Level

! - ! - !

System Type	Submission Type	Device Name / Variant	Testing Criterion	Test Level
'WZ': Crash Worthy Work Zone Traffic Control Devices	<input checked="" type="radio"/> Physical Crash Testing <input type="radio"/> Engineering Analysis	Shur-Curb Traffic Separator	AASHTO MASH	TL3

By submitting this request for review and evaluation by the Federal Highway Administration, I certify that the product(s) was (were) tested in conformity with the AASHTO Manual for Assessing Safety Hardware and that the evaluation results meet the appropriate evaluation criteria in the MASH.

Individual or Organization responsible for the product:

Contact Name:	Darrell Heald	Same as Submitter <input checked="" type="checkbox"/>
Company Name:	Shur-Tite Products	Same as Submitter <input checked="" type="checkbox"/>
Address:	P.O. Box 2283, Round Rock, TX 78680	Same as Submitter <input checked="" type="checkbox"/>
Country:	U.S.	Same as Submitter <input checked="" type="checkbox"/>

Enter below all disclosures of financial interests as required by the FHWA 'Federal-Aid Reimbursement Eligibility Process for Safety Hardware Devices' document.

Texas A&M Transportation Institute (TTI) was contracted by Shur-Tite Products to perform full-scale crash testing of the Shur-Curb Traffic Separator. There are no financial shared interests in the Shur-Curb Traffic Separator by TTI, or between Shur-Tite Products and TTI, other than the costs involved in the actual crash tests and reports for this submission to FHWA.

PRODUCT DESCRIPTION

- New Hardware or Significant Modification
 Modification to Existing Hardware

The installation consisted of 36 sections of SHUR-CURB® traffic separator, each 40 inches long, for a total length of 120 ft, and 10 sections of SHUR-CURB® beginning at the left end field side of the 36 sections and running at a 30° angle to the left, for a total length of 33 ft 4 inches. Each section of SHUR-CURB® consisted of a longitudinal channelizer, a 36-inch tall centered delineator, and two reflectors on either side of the delineator. Each longitudinal channelizer was anchored to the concrete apron with six lag bolts per section.

CRASH TESTING

By signature below, the Engineer affiliated with the testing laboratory, agrees in support of this submission that all of the critical and relevant crash tests for this device listed above were conducted to meet the MASH test criteria. The Engineer has determined that no other crash tests are necessary to determine the device meets the MASH criteria.

Engineer Name:	Nathan D. Schulz	
Engineer Signature:	Nathan D. Schulz	Digitally signed by Nathan D. Schulz Date: 2020.05.12 08:44:44 -05'00'
Address:	TTI, TAMU 3135, College Station, TX 77843-3135	Same as Submitter <input type="checkbox"/>
Country:	U.S.	Same as Submitter <input type="checkbox"/>

A brief description of each crash test and its result:

Required Test Number	Narrative Description	Evaluation Results
3-90 (1100C)	<p>Test 3-90 involved an 1100C vehicle impacting the Shur-Tite Shur-Curb Traffic Separator at a target impact speed of 62 mi/h and target impact angles between 0° and 25°.</p> <p>The target CIAs for the tests were selected to maximize the risk of vehicle rollover and/or excessive vehicle deceleration. The tests were performed at target CIAs of 25°, 15° (cross V), and 0° (tire on curb). In addition, the 1100C vehicle was tested while performing a lane change maneuver.</p> <p>The results of the tests conducted on March 17, 2020 are found in TTI Test Report No. 690900-STP1-8 dated April 2020.</p> <p>The Shur-Curb Traffic Separator yielded to the 1100C vehicle in all four test configurations, allowing controlled penetration of the vehicle. No detached elements, fragments, or other debris was present to penetrate or show potential for penetrating the occupant compartment, or to present undue hazard to others in the area. No occupant compartment deformation or intrusion was observed. The 1100C vehicle remained upright during and after the collision event in all test configurations. The 1100C test vehicle was directed into the installations by a live driver, and were performed without the instrumentation necessary for determining occupant risk. The vehicle remained stable as it traversed through the channelizer installations and did not demonstrate excessive decelerations. The fact that a live driver was used during testing and no injuries were reported indicate the occupant risk is within MASH limits.</p> <p>The Shur-Curb Traffic Separator performed acceptably during all test configurations for MASH Test 3-90 for longitudinal channelizers.</p>	PASS

3-91 (2270P)	<p>Test 3-91 involved an 2270P vehicle impacting the Shur-Tite Shur-Curb Traffic Separator at a target impact speed of 62 mi/h and target impact angles between 0° and 25°.</p> <p>The target CIAs for the tests were selected to maximize the risk of vehicle rollover and/or excessive vehicle deceleration. The tests were performed at target CIAs of 25°, 15° (cross V), and 0° (tire on curb). In addition, the 2270P vehicle was tested while performing a lane change maneuver.</p> <p>The results of the tests conducted on March 17, 2020 are found in TTI Test Report No. 690900-STP1-8 dated April 2020.</p> <p>The Shur-Curb Traffic Separator yielded to the 2270P vehicle in all four test configurations, allowing controlled penetration of the vehicle. No detached elements, fragments, or other debris was present to penetrate or show potential for penetrating the occupant compartment, or to present undue hazard to others in the area. No occupant compartment deformation or intrusion was observed. The 2270P vehicle remained upright during and after the collision event in all test configurations. The 2270P test vehicle was directed into the installations by a live driver, and were performed without the instrumentation necessary for determining occupant risk. The vehicle remained stable as it traversed through the channelizer installations and did not demonstrate excessive decelerations. The fact that a live driver was used during testing and no injuries were reported indicate the occupant risk is within MASH limits.</p> <p>The Shur-Curb Traffic Separator performed acceptably during all test configurations for MASH Test 3-91 for longitudinal channelizers.</p>	PASS

Full Scale Crash Testing was done in compliance with MASH by the following accredited crash test laboratory (cite the laboratory's accreditation status as noted in the crash test reports.):

Laboratory Name:	Texas A&M Transportation Institute	
Laboratory Signature:	Digitally signed by Darrell L. Kuhn 'Date: 2020.05.13 18:29:28 -05'00' 	
Address:	TTI, TAMU 3135, College Station, TX 77843-3135	Same as Submitter <input type="checkbox"/>
Country:	U.S.	Same as Submitter <input type="checkbox"/>
Accreditation Certificate Number and Dates of current Accreditation period :	ISO 17025-2017 Laboratory A2LA Certificate Number 2821.01 Valid To: April 30, 2021	

Submitter Signature*:



Submit Form

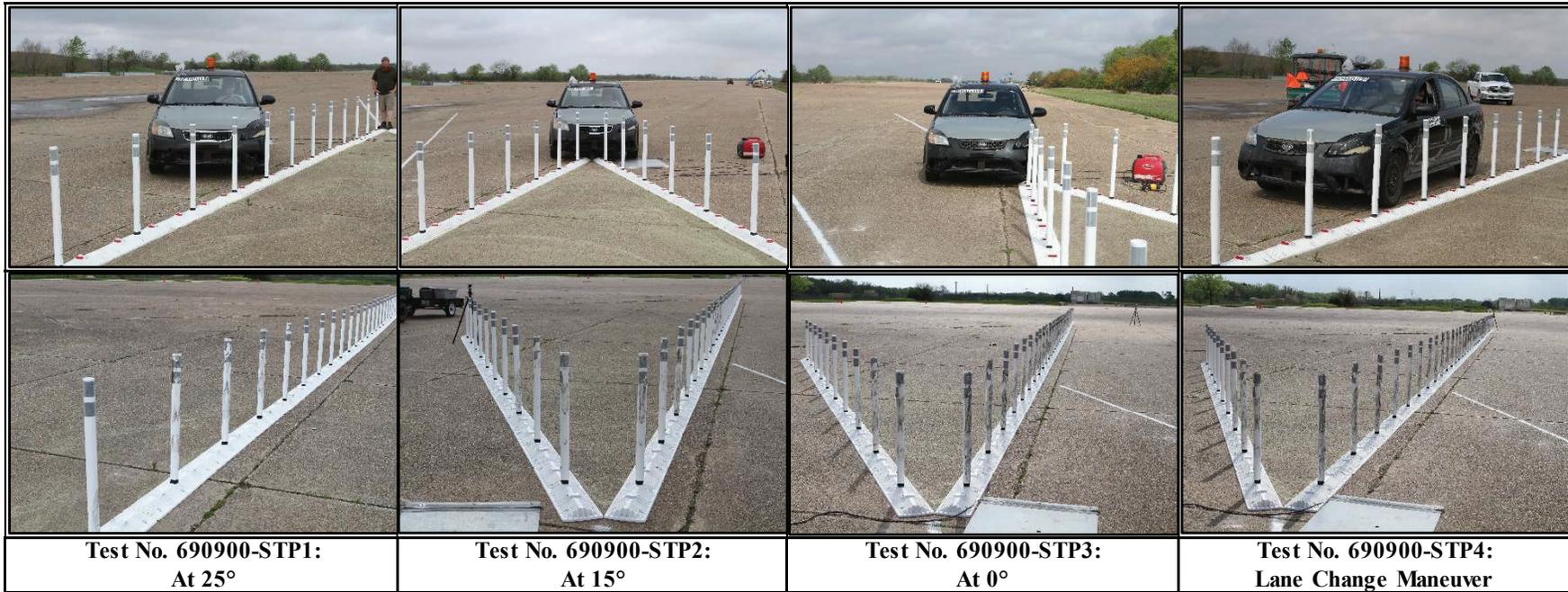
ATTACHMENTS

Attach to this form:

- 1) Additional disclosures of related financial interest as indicated above.
- 2) A copy of the full test report, video, and a Test Data Summary Sheet for each test conducted in support of this request.
- 3) A drawing or drawings of the device(s) that conform to the Task Force-13 Drawing Specifications [Hardware Guide Drawing Standards]. For proprietary products, a single isometric line drawing is usually acceptable to illustrate the product, with detailed specifications, intended use, and contact information provided on the reverse. Additional drawings (not in TF-13 format) showing details that are relevant to understanding the dimensions and performance of the device should also be submitted to facilitate our review.

FHWA Official Business Only:

Eligibility Letter		
Number	Date	Key Words



General Information

Test Agency Texas A&M Transportation Institute (TTI)
 Test Standard Test No..... MASH Test 3-90
 TTI Test No. 690900-STP1-4
 Test Date..... 2020-03-17

Test Article

Type Channelizer
 Name..... SHUR-CURB® Traffic Separator
 Installation Length 120 ft and 33 ft 4 inches
 Material or Key Elements ... Longitudinal channelizer, a centered delineator, and two reflectors attached to a plastic curb that is anchored to concrete using 6 lag bolts per section

Soil Type and Condition..... Concrete Surface, Dry

Test Vehicle

Type/Designation 1100C
 Make and Model..... 2011 Kia Rio
 Curb 2343 lb
 Test Inertial 2453 lb
 Driver..... 165 lb
 Gross Static..... 2618 lb

Impact Conditions

Speed 62.1 - 63.3 mi/h
 Angle..... 25°, 15°, 0°
 Plus lane change

Occupant Risk Values..... Data not recorded

Post-Impact Trajectory..... NA

Vehicle Stability

Vehicle Snagging..... No
 Vehicle Pocketing No
 Vehicle Roll..... No

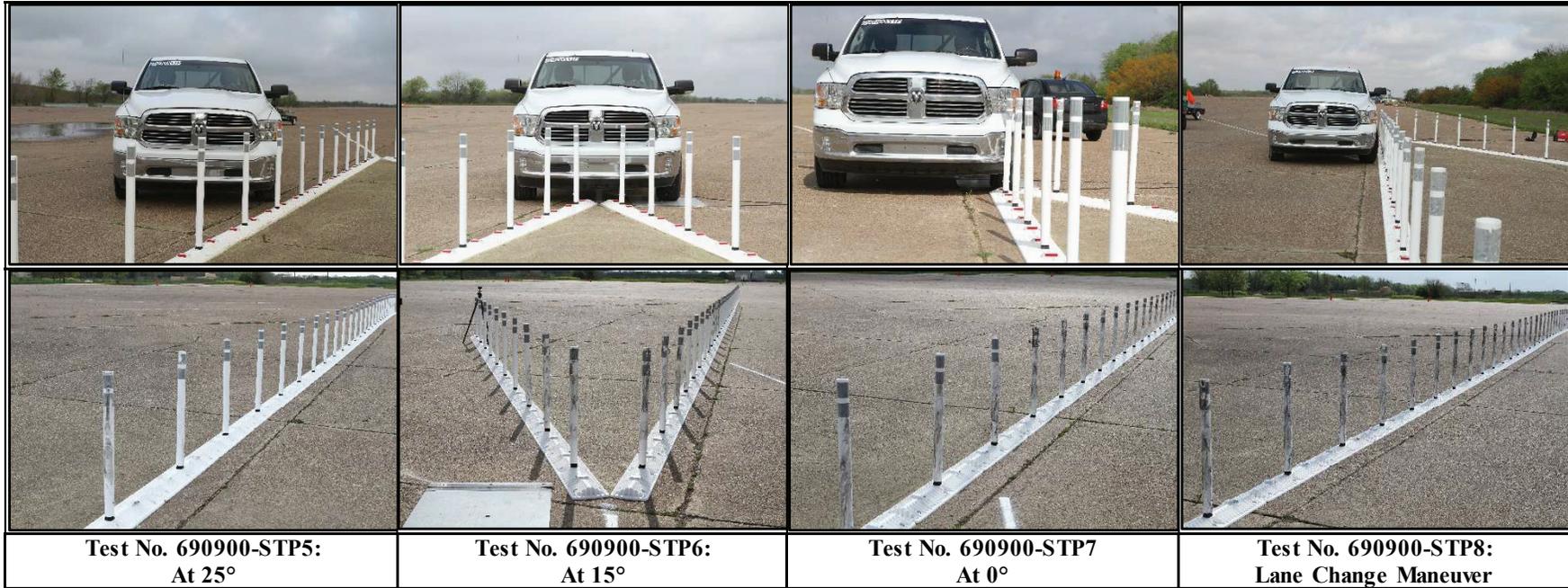
Vehicle Damage

VDS 12FD0
 CDC 12FDEW0
 Max. Exterior Deformation None
 OCDI..... LF0000000
 Maximum Occupant
 Compartment Deformation.. None



Damage to vehicle after
 Test Nos. 690900-STP1-4

Figure 5.8. Summary of Results for MASH Test 3-90 on SHUR-CURB® Traffic Separator.



General Information

Test Agency Texas A&M Transportation Institute (TTI)
 Test Standard Test No. MASH Test 3-91
 TTI Test No. 690900-STP5-8
 Test Date..... 2020-03-17

Test Article

Type Channelizer
 Name..... SHUR-CURB® Traffic Separator
 Installation Length 120 ft and 33 ft 4 inches
 Material or Key Elements ... Longitudinal channelizer, a centered delineator, and two reflectors attached to a plastic curb that is anchored to concrete using 6 lag bolts per section

Soil Type and Condition.....

Concrete Surface, Dry

Test Vehicle

Type/Designation 2270P
 Make and Model..... 2014 RAM 1500 Pickup
 Curb 4920 lb
 Test Inertial 5103 lb
 Driver..... 165 lb
 Gross Static..... 5268 lb

Impact Conditions

Speed 60.4 – 64.1 mi/h
 Angle..... 25°, 15°, 0°
 Plus lane change

Occupant Risk Values..... Data not recorded
Post-Impact Trajectory..... NA

Vehicle Stability

Vehicle Snagging..... No
 Vehicle Pocketing No
 Vehicle Roll..... No

Vehicle Damage

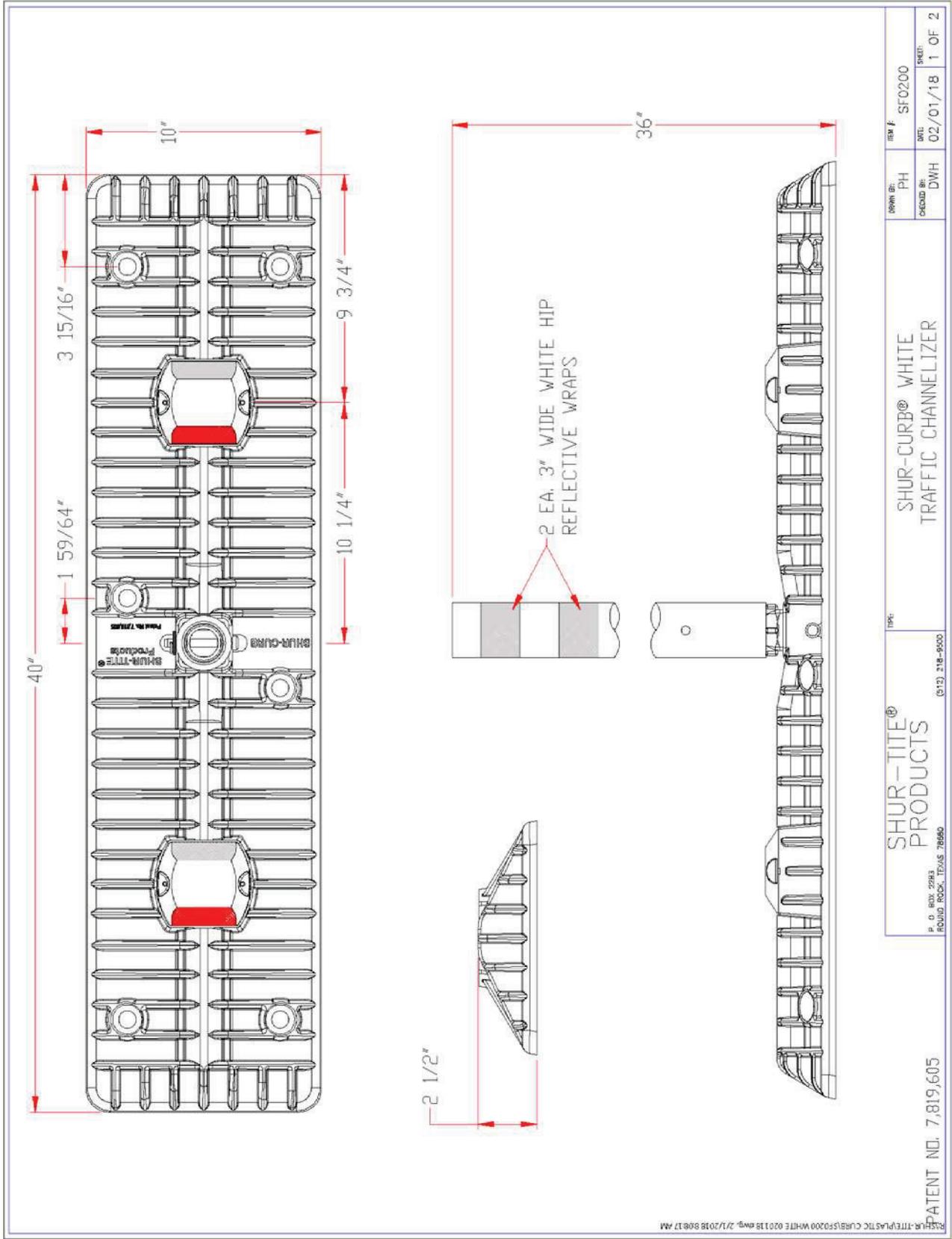
VDS 12FD0
 CDC 12FDEW0
 Max. Exterior Deformation None
 OCDI..... LF0000000
 Maximum Occupant
 Compartment Deformation.. None



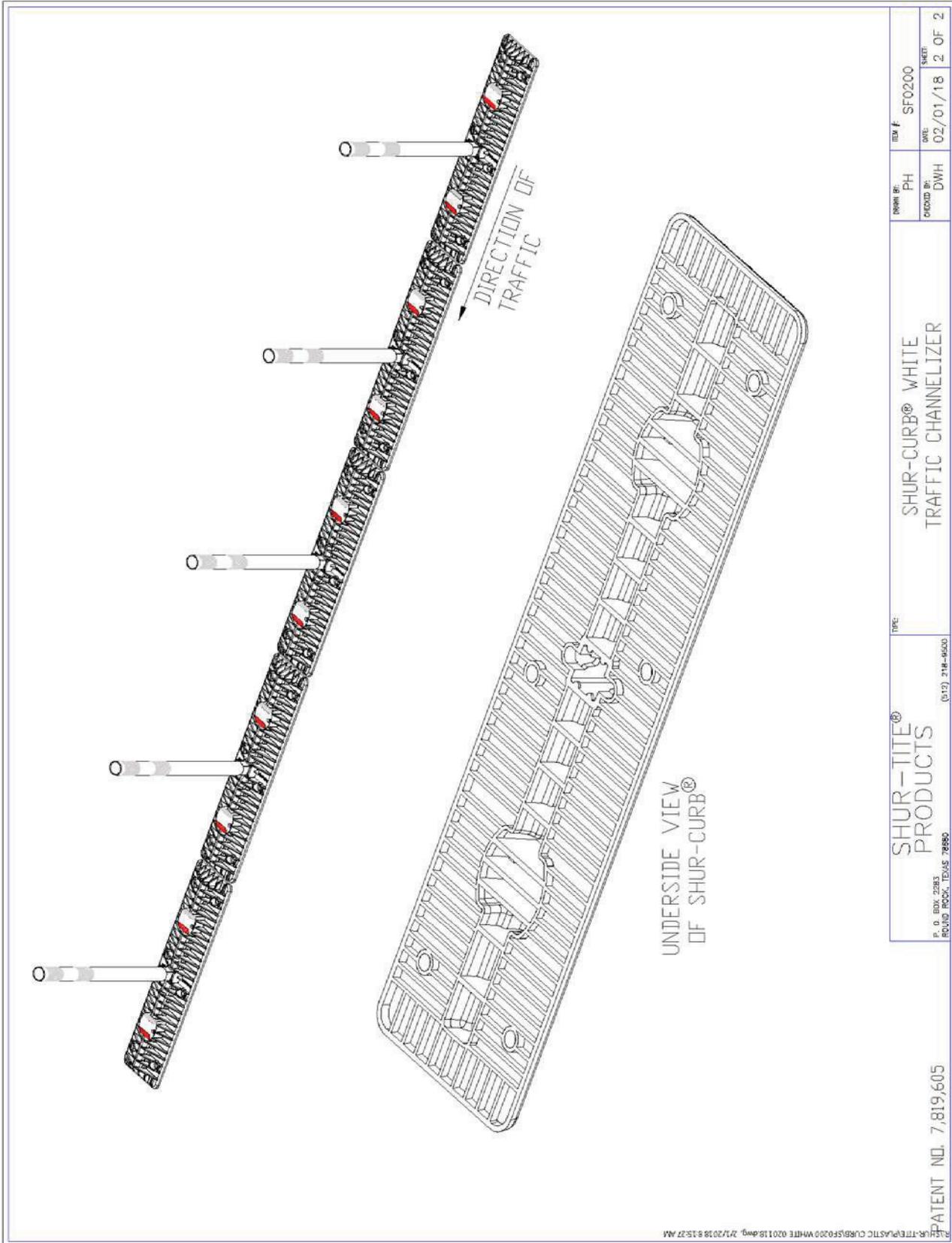
Damage to vehicle after
 Test Nos. 690900-STP5-8

Figure 6.8. Summary of Results for MASH Test 3-90 on SHUR-CURB® Traffic Separator.

APPENDIX A. DETAILS OF SHUR-CURB® TRAFFIC SEPARATOR



SHUR-TITE® PRODUCTS P. O. BOX 2983 ROUND ROCK, TEXAS 78680 (512) 318-9500	TYPE: SHUR-CURB® WHITE TRAFFIC CHANNELIZER	DRAWN BY: PH	REV. F: SF0200
	PATENT NO. 7,819,605	CHECKED BY: DWH	DATE: 02/01/18
		SHEET: 1 OF 2	



SHUR-TITE® PRODUCTS P. O. BOX 2293 ROUND ROCK, TEXAS 78680		TYPE: (012) 218-6000	
SHUR-CURB® WHITE TRAFFIC CHANNELIZER		DRAWN BY: PH	ITEM # SF0200
PATENT NO. 7,819,605		CHECKED BY: DWH	DATE: 02/01/18
			SHEET 2 OF 2