



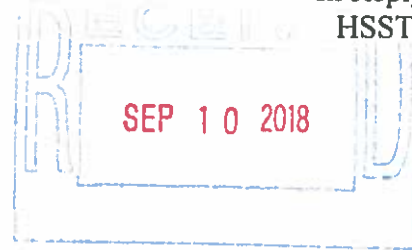
U.S. Department
of Transportation
**Federal Highway
Administration**

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

September 6, 2018

In Reply Refer To:
HSST-1/WZ-359

Mr. Charles Mettler
Plastic Safety Systems, Inc.
2444 Baldwin Road
Cleveland, Ohio 44104



Dear Mr. Mettler:

This letter is in response to your June 26, 2018 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-359 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:

- SafetyRail

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: SafetyRail
Type of system: Channelizer
Test Level: MASH Test Level 3 (TL3)
Testing conducted by: Texas A&M Transportation Institute
Date of request: June 26, 2018
Date initially acknowledged: June 29, 2018

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-359 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.
- If the subject device is a patented product it may be considered to be proprietary. If proprietary systems are specified by a highway agency for use on Federal-aid projects: (a) they 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.

Sincerely,



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:	June 27, 2018	<input checked="" type="radio"/> New <input type="radio"/> Resubmission
	Name:	Chuck Mettler	
	Company:	PSS (Plastic Safety Systems) Inc.	
	Address:	2444 Baldwin Road, Cleveland, Ohio 44104	
	Country:	USA	
	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

1-1-1

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	SafetyRail	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:	Chuck Mettler	Same as Submitter <input checked="" type="checkbox"/>
Company Name:	PSS (Plastic Safety Systems) Inc.	Same as Submitter <input checked="" type="checkbox"/>
Address:	2444 Baldwin Road, Cleveland, Ohio 44104	Same as Submitter <input checked="" type="checkbox"/>
Country:	USA	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.

None

PRODUCT DESCRIPTION

New Hardware or Significant Modification
 Modification to Existing Hardware

The SafetyRail channelizer was comprised of upper and lower notched wave boards, each measuring 48 inches long x 8 1/4 inches wide x 13/16 inches thick, supported by right-triangle shaped, hollow up-rights, each 38 inches tall x 24 inches wide at the base x 3/4 inches thick. Each up-right was weighted to the apron with one 45-to-50 lb sandbag. There were no bolts, pins, or adhesives that secured the up-rights to the concrete apron. The notched wave boards were attached to the up-rights with proprietary break-away bushings. The up-rights and wave boards were constructed of high density polyethylene (HDPE) material.

Up-rights No. 6 through 25 (see attached report) were fitted with Type A-C beacon lights (Dicke Safety Products TrafILITE, with batteries). The upper wave boards between up-rights No. 10 and 11, and 11 and 12 (see attached report) were fitted with aluminum "SIDEWALK CLOSED" signs that measured 24 inches long x 18 inches tall x 0.100 inch thick.

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:	D. Lance Bullard, Jr.	
Engineer Signature:	D. Lance Bullard, Jr.	Digitally signed by D. Lance Bullard, Jr. Date: 2018.06.04 08:20:48 -05'00'
Address:	TTI, TAMU 3135, College Station, TX 77843-3135	Same as Submitter <input type="checkbox"/>
Country:	USA	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 involves an 1100C vehicle impacting the test article at a target speed of 62 mph and at a target angle of 0-to-25 degrees. The results of the test conducted on October 16, 2017 are found in TTI Test Report number 690900-PSS9&10. The test vehicle contacted the channelizer at a barricade support at the joint between barricade 9 and 10 at an impact angle of 9.7° while traveling at an impact speed of 61.7 mi/h. The vehicle penetrated through the channelizer and the brakes on the vehicle were applied 1.7 s after impact. The vehicle subsequently came to rest 223 ft downstream of impact and 16 ft behind the installation. The wave boards and sand/sand bags were strewn over an area 250 ft long, 53 ft behind the field side, and 35 ft forward of the traffic side. The channelizer opening created from the impact extended from supports 10 through 21. One of the wave boards lodged under the vehicle, but did not penetrate or show potential to penetrate the occupant compartment. The front bumper, hood, right front fender, and front part of the roof received slight denting and scuffing, and the headlight was dislodged. There was slight denting, but no measurable deformation of the exterior of the vehicle. No occupant compartment deformation or intrusion occurred. Occupant risk factors were all within the preferred MASH limits. The device performed acceptably for MASH test 3-90.</p>	PASS

Required Test Number	Narrative Description	Evaluation Results
3-91(2270P)	Test 3-91 Involves a 2270P vehicle impacting the test article at a target speed of 62 mph and at a target angle of 0-to-25 degrees. The test vehicle contacted the channelizer at barricade support 10 at an impact angle of 9.9° while traveling at an impact speed of 64.0 mi/h. The vehicle penetrated the channelizer and the brakes on the vehicle were applied at 1.7 s. The vehicle subsequently came to rest 307 ft downstream of the impact and 15 ft toward the field side. The wave boards and sand/sand bags were strewn over an area 327 ft long, 45 ft behind the field side, and 48 ft forward of the traffic side. The channelizer opening created by the impact extended from supports 10 through 22. The front bumper, grill, hood, and right front fender were slightly deformed. No occupant compartment deformation or intrusion occurred. Occupant risk factors were all within the preferred MASH limits. The device performed acceptably for MASH test 3-91.	PASS
		Non-Critical, not conducted

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:	Darrell L. Kuhn	Digitally signed by Darrell L. Kuhn Date: 2018.06.01 17:08:30 -05'00'
Address:	TTI, TAMU 3135, College Station, TX 77843-3135	Same as Submitter <input type="checkbox"/>
Country:	USA	Same as Submitter <input type="checkbox"/>
Accreditation Certificate Number and Dates of current Accreditation period :	ISO 17025 Laboratory Certificate Number: 2821.01 Valid To: April 30, 2019	

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.

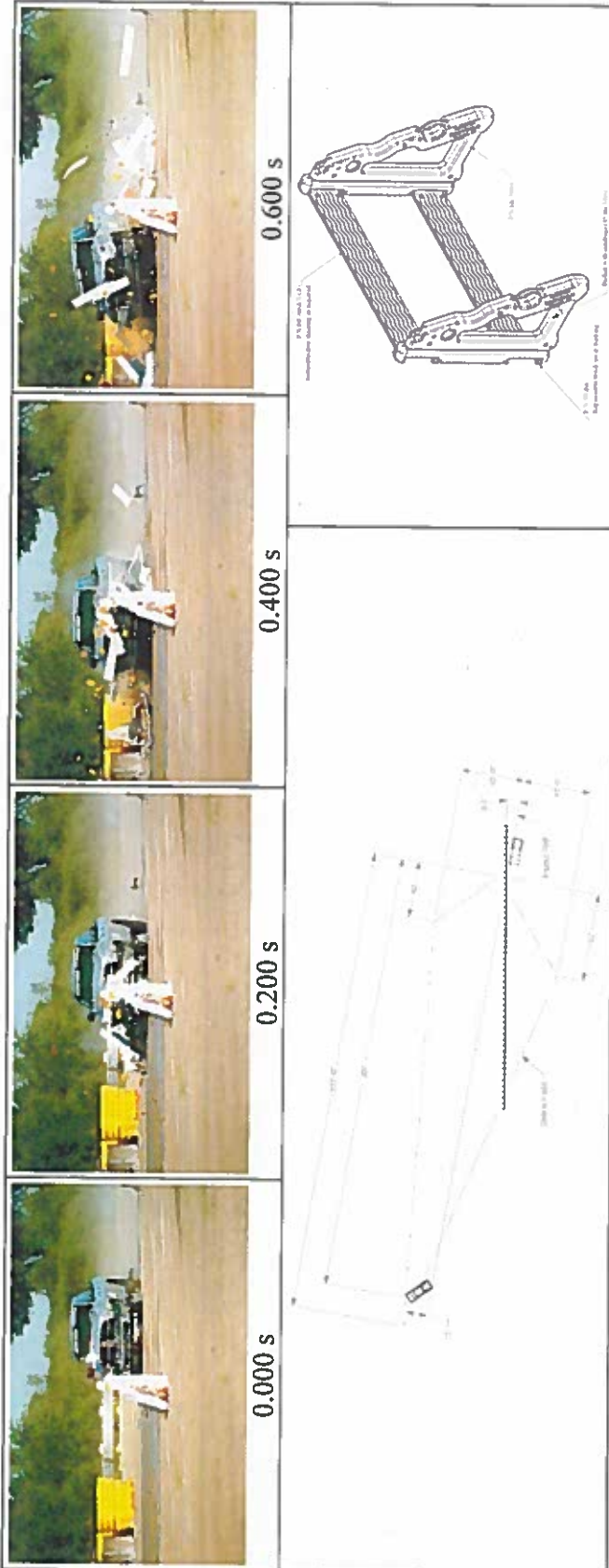
FHWA Official Business Only:

Eligibility Letter		
Number	Date	Key Words



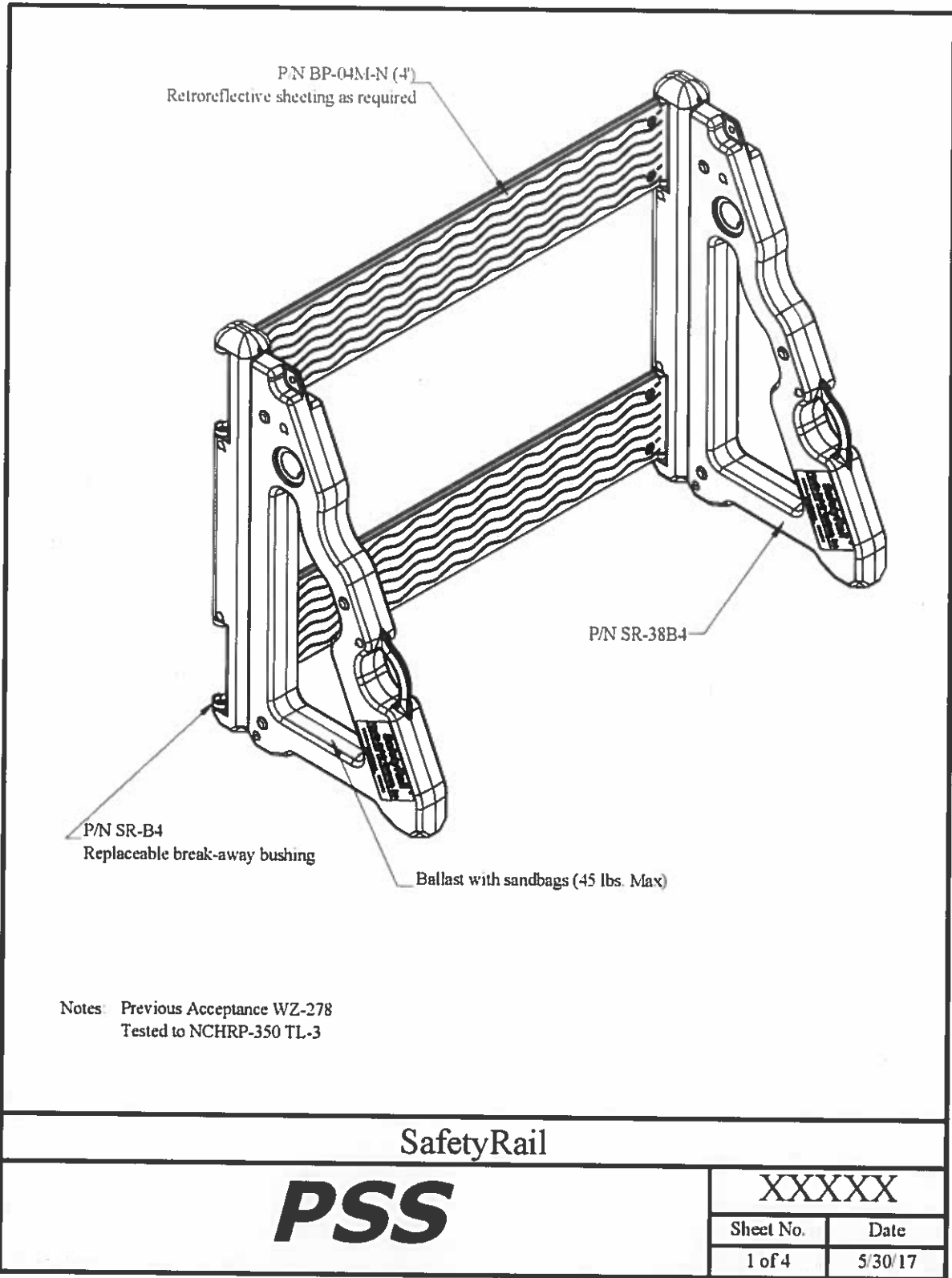
General Information		Impact Conditions		Post-Impact Trajectory	
Test Agency	Texas A&M Transportation Institute (TTI)	Speed	61.7 mi/h	Stopping Distance	223 ft downstream
Test Standard Test No.	MASH Test 3-90	Angle	9.7°	16 ft twd field side
TTI Test No.	690900-PSS9	Location/Orientation	Support 10	Vehicle Stability	
Test Date	2017-10-16	Kinetic Energy	311 kip-ft	Maximum Yaw Angle	Not obtainable
Test Article		Exit Conditions		Maximum Pitch Angle	Not obtainable
Type	Longitudinal Channelizer	Speed	55.3 mi/h	Maximum Roll Angle	Not obtainable
Name	PSS SafetyRail™	Angle	13.8°		
Installation Length	201 ft	Occupant Risk Values		Test Article Debris Field	
Material or Key Elements ...	50 4-ft long proprietary, repositionable, high density polyethylene (HDPE) pedestrian barrier segments	Longitudinal OIV	13.8 ft/s	Longitudinal	250 ft
	Concrete Surface, Dry	Lateral OIV	NA	Toward Traffic Side	53 ft
		Longitudinal Ridedown	2.4 g	Toward Field Side	35 ft
		Lateral Ridedown	NA		
Soil Type and Condition		THIV	Not obtainable	Vehicle Damage	
Test Vehicle		PHD	Not obtainable	VDS	01RFQ1
Type/Designation	1100C	ASI	Not obtainable	CDC	01FREW1
Make and Model	2011 Kia Rio	Max. 0.050-s Average	Not obtainable	Max. Exterior Deformation	Negligible
Curb	2460 lb	Longitudinal	Not obtainable	Max. Occupant Compartment Deformation	FS0000000
Test Inertial	2429 lb	Lateral	Not obtainable		
Dummy	165 lb	Vertical	Not obtainable		
Gross Static	2594 lb				

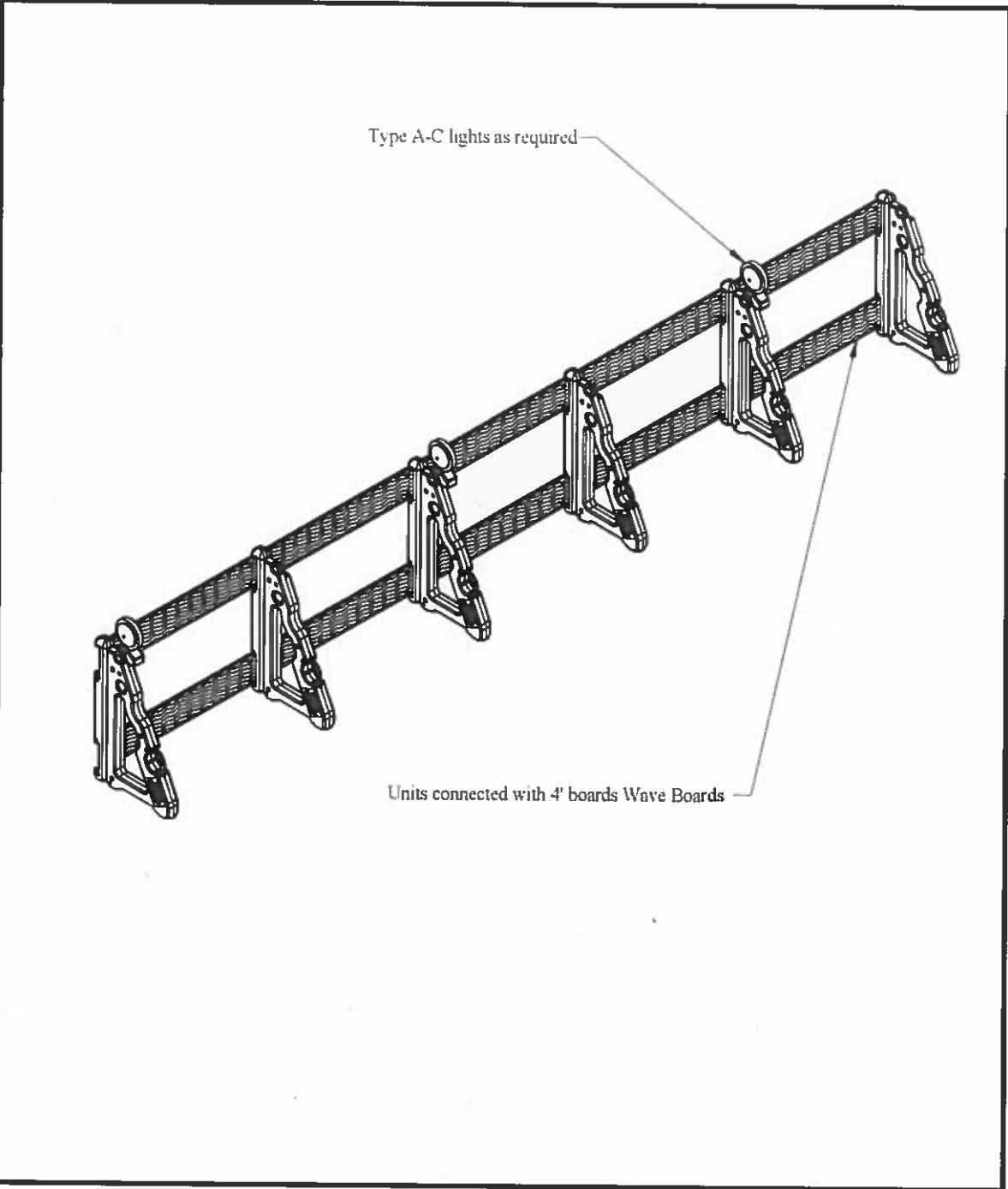
Figure 5.8. Summary of Results for MASH Test 3-90 on PSS SafetyRail™ Channelizer.



General Information		Impact Conditions		Post-Impact Trajectory	
Test Agency.....	Texas A&M Transportation Institute (TTI)	Speed.....	64.0 mi/h	Stopping Distance.....	307 ft downstream
Test Standard Test No.....	MASH Test 3-91	Angle.....	9.9°	15 ft twd field side	
TTI Test No.....	690900-PSS10	Location/Orientation.....	Support 10		
Test Date.....	2017-10-17	Kinetic Energy.....		Vehicle Stability	
Test Article		Exit Conditions.....		Maximum Yaw Angle.....	3°
Type.....	Longitudinal Channelizer	Speed.....	59.4 mi/h	Maximum Pitch Angle.....	3°
Name.....	PSS SafetyRail™	Angle.....	11.1°	Maximum Roll Angle.....	10°
Installation Length.....	201 ft	Occupant Risk Values			
Material or Key Elements.....	50.4-ft long proprietary, repositionable, high density polyethylene (HDPE)	Longitudinal OIV.....	7.2 ft/s	Test Article Debris Field	
Soil Type and Condition	pedestrian barrier segments	Lateral OIV.....	1.6 ft/s	Longitudinal.....	327 ft
Test Vehicle		Longitudinal Ridedown.....	0.8 g	Toward Traffic Side.....	48 ft
Type/Designation.....	2270P	Lateral Ridedown.....	0.6 g	Toward Field Side.....	45 ft
Make and Model.....	2012 Dodge RAM 1500 Pickup	THIV.....	8.5 km/h		
Curb.....	5005 lb	PHD.....	0.8 g	Vehicle Damage	
Test Inertial.....	5054 lb	ASI.....	0.11	VDS.....	01RFQ1
Dummy.....	No dummy	Max. 0.050-s Average.....		CDC.....	01FREW1
Gross Static.....	5054 lb	Longitudinal.....	-0.7 g	Max. Exterior Deformation.....	Negligible
		Lateral.....	0.6 g	OCDI.....	FS0000000
		Vertical.....	1.0 g	Max. Occupant Compartment Deformation.....	None

Figure 6.8. Summary of Results for MASH Test 3-91 on PSS SafetyRail™ Channelizer.





Type A-C lghts as required

Units connected with 4' boards Wave Boards

SafetyRail

PSS

XXXXXX	
Sheet No.	Date
2 of 4	5/30/17