



U.S. Department
of Transportation

Federal Highway
Administration

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

February 9, 2018

In Reply Refer To:
HSST-1/B-300

Mr. Moffette Tharpe
Easi-Set Worldwide
5119 Catlett Road
PO Box 400
Midland, VA 22728

Dear Mr. Tharpe:

This letter is in response to your January 23, 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 B-300 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:

- J-J Hooks® MASH Free-Standing Barrier

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: J-J Hooks® MASH Free-Standing Barrier

Type of system: Longitudinal Barrier

Test Level: MASH Test Level 3 (TL3)

Testing conducted by: Texas A&M Transportation Institute

Date of request: January 23, 2018

Date initially acknowledged: January 23, 2017

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 B-300 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.
- 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:	January 23, 2018	<input type="radio"/> New <input checked="" type="radio"/> Resubmission
	Name:	Moffette Tharpe	
	Company:	Easi-Set Worldwide	
	Address:	5119 Catlett Road, PO Box 400, Midland, VA 22728	
	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

!-!-!

System Type	Submission Type	Device Name / Variant	Testing Criterion	Test Level
'B': Rigid/Semi-Rigid Barriers (Roadside, Median, Bridge Railings)	<input checked="" type="radio"/> Physical Crash Testing <input type="radio"/> Engineering Analysis	J-J Hooks® MASH Free-Standing Barrier	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:	Moffette Tharpe	Same as Submitter <input checked="" type="checkbox"/>
Company Name:	Easi-Set Worldwide	Same as Submitter <input checked="" type="checkbox"/>
Address:	5119 Catlett Road, PO Box 400, Midland, VA 22728	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.

Texas A&M Transportation Institute (TTI) was contracted by EASI-SET Worldwide to perform full-scale crash testing of the J-J Hooks® MASH Free-Standing Barrier. There are no shared financial interests in the J-J Hooks® MASH Free-Standing Barrier by TTI, or between EASI-SET Worldwide and Texas A&M Transportation Institute, other than the costs involved in the actual crash tests and reports for this submission to FHWA.

PRODUCT DESCRIPTION

<input checked="" type="radio"/> New Hardware or Significant Modification	<input type="radio"/> Modification to Existing Hardware
<p>J-J Hooks® MASH Free-Standing Barrier is an F-shape, precast median temporary concrete barrier with J-J Hooks connections. Each barrier segment is 12 ft long, 32 inches tall, and 24 inches wide at the base, tapering to 9 inches wide at the top with symmetrical lower and upper slopes on both faces. The barrier segments are connected using the J-J Hooks connection. This connection consists of interlocking 3/8-inch thick × 18-inch tall steel plates with the exposed ends bent 180° to a 3/8-inch inside radius to form a "J" hook with a 1½-inch long return. The top of the hook plates are 4 inches below the top of the barriers. The plates were longitudinally connected through the length of each barrier segment with four #5 continuous steel reinforcing bars that were welded to each plate.</p> <p>In each crash test, the test installation consisted of 16 unrestrained barrier segments. The total length of the barrier installation was approximately 193 ft - 10½ inches, including a nominal 1½-inch gap between the ends of the adjacent barrier segments.</p>	
<h3>CRASH TESTING</h3>	
<p>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.</p>	
Engineer Name:	Nauman M. Sheikh, P.E.
Engineer Signature:	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <h2 style="margin: 0;">Nauman Sheikh</h2> </div> <div style="font-size: small;"> Digitally signed by Nauman Sheikh DN: cn=Nauman Sheikh, o=Texas A&M Transportation Institute, ou, email=n-sheikh@tti.tamu.edu, c=US Date: 2018.01.23 09:32:21 -06'00' </div> </div>
Address:	TTI, TAMU 3135, College Station, TX 77843-3135
Country:	USA
	Same as Submitter <input type="checkbox"/>
	Same as Submitter <input type="checkbox"/>

A brief description of each crash test and its result:

Required Test Number	Narrative Description	Evaluation Results
3-10 (1100C)	<p>A 2011 Kia Rio, traveling at a speed of 61.0 mi/h, contacted the J-J Hooks® MASH Free-Standing PCB 3.3 ft upstream of a joint between barrier segments at an impact angle of 25.2°. The barrier contained and redirected the 1100C vehicle. The vehicle did not penetrate, underide, or override the installation. The working width was 49.2 inches at a height of 2.0 inches near the toe of the barrier. Maximum dynamic deflection of the barrier during the test was 26.2 inches, and maximum permanent deformation was 26.0 inches. No vehicle occupant compartment deformation or intrusion was noted. The 1100C vehicle remained upright during and after the collision event. Maximum roll and pitch angles were 25° and 10°, respectively. Maximum longitudinal OIV was 14.4 ft/s, and maximum lateral OIV was 22.0 ft/s. Maximum longitudinal occupant ridedown acceleration was 4.2 g, and maximum lateral occupant ridedown acceleration was 9.6 g.</p> <p>The J-J Hooks® Free-Standing PCB performed acceptably for MASH Test 3-10 for longitudinal barriers. Crash test report 690900-JJH11 is attached for this test.</p>	PASS

Required Test Number	Narrative Description	Evaluation Results
3-11 (2270P)	<p>A 2011 Dodge RAM 1500 pickup truck, traveling at a speed of 62.4 mi/h, impacted the J-J Hooks® MASH Free-Standing Barrier 3.5 ft upstream of the joint between barrier segments, at an impact angle of 25.8 degrees. The J-J Hooks® MASH Free-Standing Barrier contained and redirected the 2270P vehicle. The vehicle did not penetrate, underride, or override the installation. Maximum dynamic deflection during the test was 64.2 inches. Only small pieces of the concrete spalled off the installation; however, these pieces did not penetrate or show potential to penetrate the occupant compartment, nor present hazard to others in the area. No occupant compartment deformation or intrusion occurred. The 2270P vehicle remained stable during and after the collision event. Maximum roll and pitch angles were 24 degrees and 13 degrees, respectively. Longitudinal OIV was 15.1 ft/s, and lateral OIV was 19.7 ft/s. Maximum longitudinal ridedown acceleration was 4.0 g, and maximum lateral ridedown acceleration was 13.6 g.</p> <p>The J-J Hooks® MASH Free-Standing Barrier performed acceptably for MASH Test 3-11. Crash test report 690900-JJH10 is attached for this test.</p>	PASS
3-20 (1100C)	This device is not a transition. Test not performed.	Non-Relevant Test, not conducted
3-21 (2270P)	This device is not a transition. Test not performed.	Non-Relevant Test, 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	Darrell L. Kuhn 2018.01.23 10:03:12 -06'00'
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*:Moffette Tharpe

Digitally signed by Moffette Tharpe
DN: cn=Moffette Tharpe, o=Easi-Set
Worldwide, ou,
email=mttharpe@easiset.com, c=US
Date: 2018.01.23 11:30:14 -0500

Submit Form

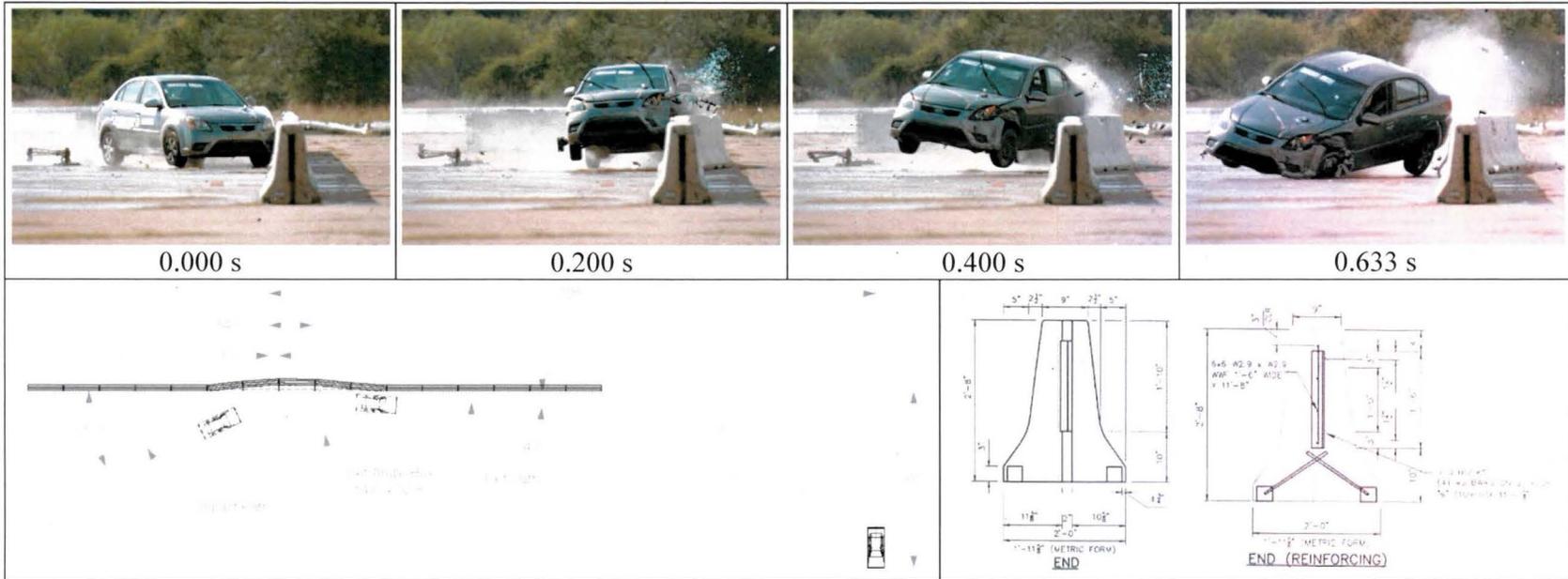
ATTACHMENTS

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		Key Words
Number	Date	



General Information

Test Agency..... Texas A&M Transportation Institute (TTI)
 Test Standard Test No..... MASH Test 3-10
 TTI Test No..... 690900-JJH11
 Test Date..... 2017-11-13

Test Article

Type..... Portable Concrete Barrier
 Name..... J-J Hooks Free-Standing PCB
 Installation Length..... 193 ft-10½ inches
 Material or Key Elements... 16 standard F-Shape concrete barrier segments 12 ft long (face-to-face), 32 inches tall, and 24 inches wide at the base, tapering to 9 inches wide at the top with J-J Hooks connectors

Soil Type and Condition..... Placed on concrete surface, damp

Test Vehicle

Type/Designation..... 1100C
 Make and Model..... 2011 Kia Rio
 Curb..... 2540 lb
 Test Inertial..... 2449 lb
 Dummy..... 165 lb
 Gross Static..... 2614 lb

Impact Conditions

Speed..... 61.0 mi/h
 Angle..... 25.2°
 Location/Orientation..... 3.3 ft upstream of joint 7-8

Impact Severity..... 55 kip-ft

Exit Conditions

Speed..... 51.1 mi/h
 Angle..... 4.0°

Occupant Risk Values

Longitudinal OIV..... 14.4 ft/s
 Lateral OIV..... 22.0 ft/s
 Longitudinal Ridedown..... 4.2 g
 Lateral Ridedown..... 9.6 g
 THIV..... 28.6 km/h
 PHD..... 9.6 g
 ASI..... 1.82

Max. 0.050-s Average

Longitudinal..... -7.4 g
 Lateral..... 12.4 g
 Vertical..... -2.0 g

Post-Impact Trajectory

Stopping Distance..... 205 ft downstream
 60 ft twd traffic

Vehicle Stability

Maximum Yaw Angle..... 62°
 Maximum Pitch Angle..... 10°
 Maximum Roll Angle..... 25°
 Vehicle Snagging..... No
 Vehicle Pocketing..... No

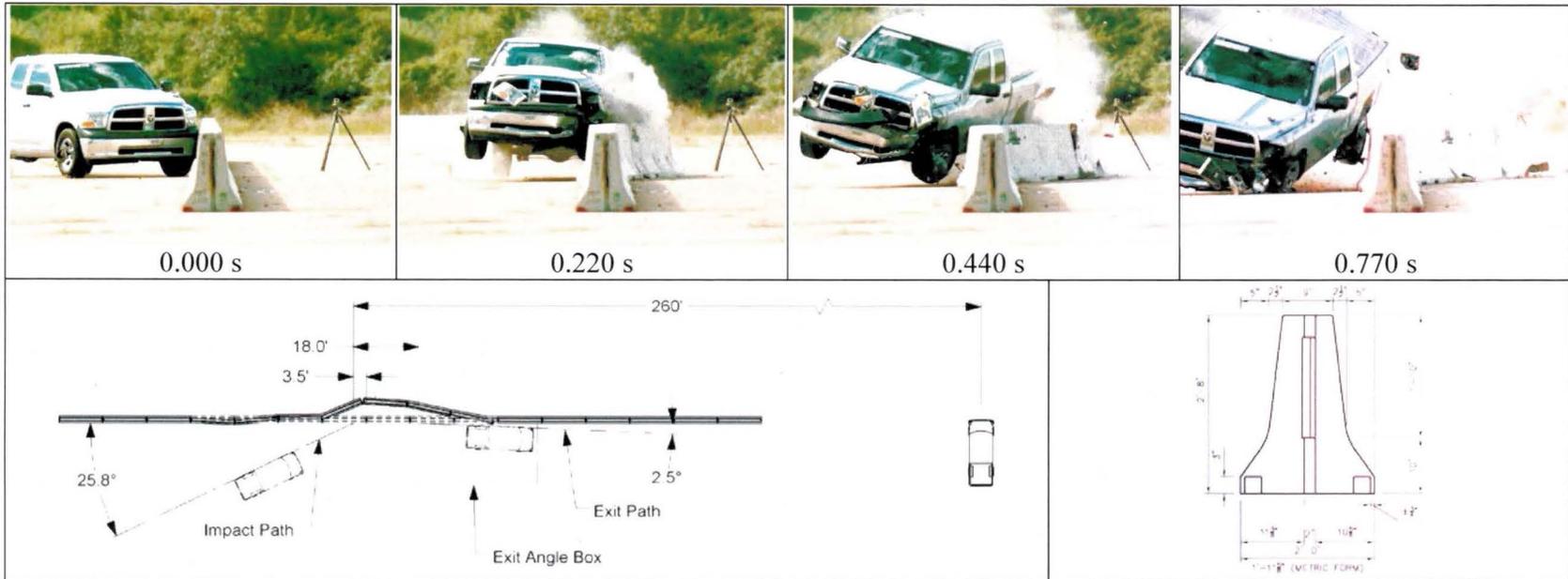
Test Article Deflections

Dynamic..... 26.2 inches
 Permanent..... 26.0 inches
 Working Width..... 49.2 inches
 Height of Working Width..... 2.0 inches

Vehicle Damage

VDS..... 11LFQ4
 CDC..... 11FLEW4
 Max. Exterior Deformation..... 8.0 inches
 OCDI..... LF0000000
 Max. Occupant Compartment Deformation..... None

Figure 5.7. Summary of Results for MASH Test 3-10 on J-J Hooks® Free-Standing PCB.



General Information

Test Agency Texas A&M Transportation Institute (TTI)
 Test Standard Test No. MASH Test 3-11
 TTI Test No. 690900-JJH10
 Test Date 2016-11-10

Test Article

Type Portable Concrete Barrier
 Name Easi-Set MASH Free-Standing Barrier
 Installation Length 193 ft-10½ inches
 Material or Key Elements 16 F-Shape unrestrained median barriers, 12 ft long, 32 inches tall, 24 inches wide at the base, tapering to 9 inches wide at the top

Soil Type and Condition Placed on concrete surface

Test Vehicle

Type/Designation 2270P
 Make and Model 2011 Dodge RAM 1500
 Curb 5040 lb
 Test Inertial 5039 lb
 Dummy No dummy
 Gross Static 5039 lb

Impact Conditions

Speed 62.4 mi/h
 Angle 25.8 degrees
 Location/Orientation 3.5 ft upstream of joint 7 and 8

Impact Severity

..... 124 kip-ft

Exit Conditions

Speed 53.0 mi/h
 Angle 2.5 degrees

Occupant Risk Values

Longitudinal OIV 15.1 ft/s
 Lateral OIV 19.7 ft/s
 Longitudinal Ridedown 4.0 g
 Lateral Ridedown 13.6 g
 THIV 27.4 km/h
 PHD 13.6 g
 ASI 1.28

Max. 0.050-s Average

Longitudinal -6.5 g
 Lateral 10.1 g
 Vertical -4.3 g

Post-Impact Trajectory

Stopping Distance 260 ft downstream

Vehicle Stability

Maximum Yaw Angle 46 degrees
 Maximum Pitch Angle 13 degrees
 Maximum Roll Angle 24 degrees
 Vehicle Snagging No
 Vehicle Pocketing No

Test Article Deflections

Dynamic 64.2 inches
 Permanent 63.0 inches
 Working Width 84.6 inches

Vehicle Damage

VDS 11LFQ4
 CDC 11FLEW4
 Max. Exterior Deformation 16.0 inches
 OCCDI LF0000000
 Max. Occupant Compartment Deformation None

Figure 5.9. Summary of Results for MASH Test 3-11 on Easi-Set MASH Free-Standing Barrier.

