



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

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

May 17, 2018

In Reply Refer To:  
HSST-1 / B-303

Mr. Michael van der Vlist  
Laura Metaal Road Safety  
Rimburgerweg 40, 6471 XX Kerkrade  
The Netherlands

Dear Mr. van der Vlist:

This letter is in response to your March 18, 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-303 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:

- BarrierGuard 800 MASH TL-3 Standard

### **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: BarrierGuard 800 MASH TL-3 Standard

Type of system: Longitudinal Barrier

Test Level: MASH Test Level 3 (TL3)

Testing conducted by: Crashtest-service (CTS)

Date of request: March 18, 2018

Date initially acknowledged: March 19, 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.

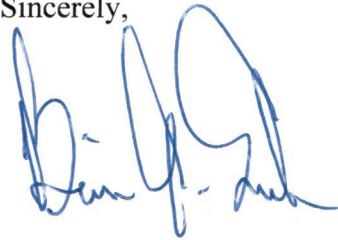
You are expected to certify to potential users that the hardware furnished has the same chemistry, mechanical properties, and geometry as that submitted for review, and that it will meet the test and evaluation criteria of AASHTO's MASH.

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 B-303 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

(7)  
for

Enclosures



## Request for Federal Aid Reimbursement Eligibility of Highway Safety Hardware

<b>Submitter</b>	Date of Request:	13-12-2017	<input checked="" type="radio"/> New <input type="radio"/> Resubmission
	Name:	Michael van der Vlist	
	Company:	Laura Metaal Road Safety	
	Address:	Rimburgerweg 40, 6471 XX Kerkrade	
	Country:	The Netherlands	
	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	BarrierGuard 800 MASH TL-3 Standard	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:	Michael van der Vlist	Same as Submitter <input checked="" type="checkbox"/>
Company Name:	Laura Metaal Road Safety	Same as Submitter <input checked="" type="checkbox"/>
Address:	Rimburgerweg 40, 6471 XX Kerkrade	Same as Submitter <input checked="" type="checkbox"/>
Country:	The Netherlands	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.

With respect to Laura Metaal Road Safety, Crashtest-service.com GmbH does not hold any financial interests. Laura Metaal Road Safety contracted Crashtest-service.com GmbH for the services of crash testing our product BarrierGuard 800 according to specifications of AASHTO Manual for Assessing Safety Hardware (MASH) Tests 3-10 and 3-11. Crashtest-service.com GmbH was compensated for the cost of the crash tests. No consulting relationship, research funding or other forms of research support, patents, copyrights, other intellectual property interests, licenses, contractual relationships, business ownership or investments interests are retained for Crashtest-service.com GmbH

## PRODUCT DESCRIPTION

- New Hardware or Significant Modification
  Modification to Existing Hardware

BarrierGuard 800 system is a proprietary modular high containment and low deflection steel barrier developed by Laura Metaal Road Safety. It is designed for both permanent and temporary use in construction and roadwork applications. The system is typically deployed in 6.0 m (236 in) standard sections that can quickly be connected together to form the desired total length of barrier wall.

Joining of the sections is done by linking them together and applying one security bolt per section to keep the sections securely fastened. If desired, two or three sections can remain connected permanently to form 12.0 m (472 in) or 18.0 m (709 in) combined sections for quicker placement on the road.

BarrierGuard 800 is 0.80 m (31.5 in) high and 0.54 m (21.3 in) wide without anchor units or 0.70 m (27.6 in) with anchor units. The weight is approximately 90 kg/m or 620bs/ft. For the MASH TL-3 standard setup, 12 standard sections were lined up on asphalt, forming a 72.0 m (236 ft) string. 8 flat top anchor pins at either end were used to secure the barriers. The pins are 0.45 m (17.7 in) long and 0.030 m (1.18 in) in diameter. The anchor units are evenly spread over the first and last element by placing them in the anchor slots. This type of anchoring on asphalt is the worst case scenario, anchoring on concrete is also acceptable with the same pins, or when adjusting to be epoxied, with 0.30 m (11.8 in) long and 0.030 m (1.18 in) diameter threaded rods. The dynamic deflection of the MASH TL3-11 test was 1.69 m (66.5 in) and the permanent deflection was 1.60 m (63.0 in). The dynamic working width was 2.22 m (87.4 in) and the permanent working width was 2.14 m (84.3 in).

BarrierGuard 800 was previously successfully tested according NCHRP 350 level.

### 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:	Peter Schimmelpfennig	
Engineer Signature:	Peter Schimmelpfennig	Digital unterschrieben von Peter Schimmelpfennig Datum: 2017.12.15 15:08:22 +01'00'
Address:	Amelunxenstraße 30, 48167 Münster	Same as Submitter <input type="checkbox"/>
Country:	Germany	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)	Test nr. 18760. Test report nr. 11717-2964/18760 performed 29 May 2017 by Crashtest-Service.com GmbH. The 0.80m (31.5 in) high longitudinal barrier contained and redirected the 1100C vehicle. The vehicle did not penetrate, underide or override the installation. Maximum dynamic working width during the test was 1.74m (68.5 in). No significant parts separated from either vehicle or barrier. No occupant compartment deformation or intrusion occurred. The vehicle remained upright during and after the impact.	PASS
3-11 (2270P)	Test nr. 18761. Test report nr. 11717-2964/18761 performed 30 May 2017 by Crashtest-service.com GmbH. The 0.80m (31.5 in) high longitudinal barrier contained and redirected the 2270P vehicle. The vehicle did not penetrate, underide or override the installation. Maximum dynamic working width during the test was 2.22m (87.4 in). No significant parts separated from either vehicle or barrier. No occupant compartment deformation or intrusion occurred. The vehicle remained upright during and after the impact.	PASS
3-20 (1100C)	Device is stand alone. 3-20 now not relevant	Non-Relevant Test, not conducted
3-21 (2270P)	Device is stand alone. 3-21 now not relevant	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:	Crashtest-service.com GmbH	
Laboratory Signature:	<b>Peter Schimmelpfennig</b>	Digital unterschrieben von Peter Schimmelpfennig Datum: 2017.12.15 15:09:13 +01'00'
Address:	Amelunxenstraße 30, 48167 Münster	Same as Submitter <input type="checkbox"/>
Country:	Germany	Same as Submitter <input type="checkbox"/>
Accreditation Certificate Number and Dates of current Accreditation period :	D-PL-17359-01-00 07.05.2013 - 06.05.2018	

Submitter Signature\*: Michael van der Vlist

Digitaal ondertekend door  
Michael van der Vlist  
Datum: 2017.12.18 17:54:34  
+01'00'

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:

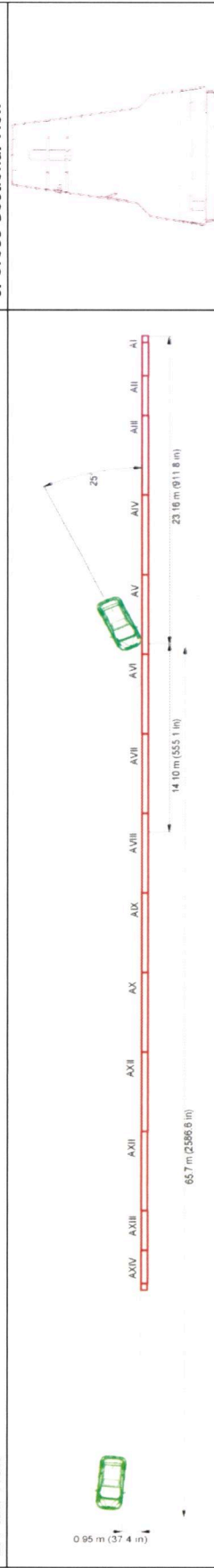
Eligibility Letter		
Number	Date	Key Words



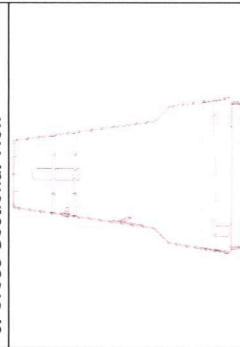
### 1. Sequential Photographs

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### 2. Plan View



### 3. Cross-Sectional View



### 4. General Information

Test Agency	crashtest-service.com GmbH (CTS)
Test Standard	MASH Test TL 3-10
CTS-Test No	18760
Date	29.05.17
<b>5. Test Article</b>	
Type	Barrier
Name	BarrierGuard 800
Installation Length	72.00 m (2834.7 in)
Key Elements - Barrier	Length: 6.00 m (236.2 in) Base Width: 0.54 m (21.3 in) Height: 0.80 m (31.5 in)
<b>6. Soil Type and Condition</b>	
Type of Soil	Asphalt
Soil strength	/
Condition	dry, sunny, 35.9° C (96.62° F)
<b>7. Test Vehicle</b>	
Type/Designation	1100C
Make and Model	2014 KIA Rio
Curb	1076 kg (2372 lb)
Test Inertial	1090 kg (2403 lb)
Dummy	75 kg (165 lb)
Gross Static	1165 kg (2568 lb)

### 8. Impact Conditions



Speed	100.7	km/h (62.6 mph)
Angle	25	degrees
Location/Orientation	0.84	m (33.1 in) before transition of barrier 5 & 6
<b>9. Exit Conditions</b>		
Speed	not obtainable	km/h ( mph)
Angle	not obtainable	degrees
<b>10. Post-Impact Trajectory</b>		
Vehicle Stability	(Satisfactory)	
Stopping Distance	65.7	m (2587 in) downstream
	0.95	m (37 in) laterally in front
Vehicle Snagging	No	
Vehicle Pocketing	No	
<b>11. Occupant Risk</b>		
Impact Velocity		
Longitudinal	1.32	m/s (4.33 ft/s)
Lateral	7.37	m/s (24.18 ft/s)
Ridedown Accelerations (10 msec avg.)		
Longitudinal	3.47	g
Lateral	16.30	g

### THIV

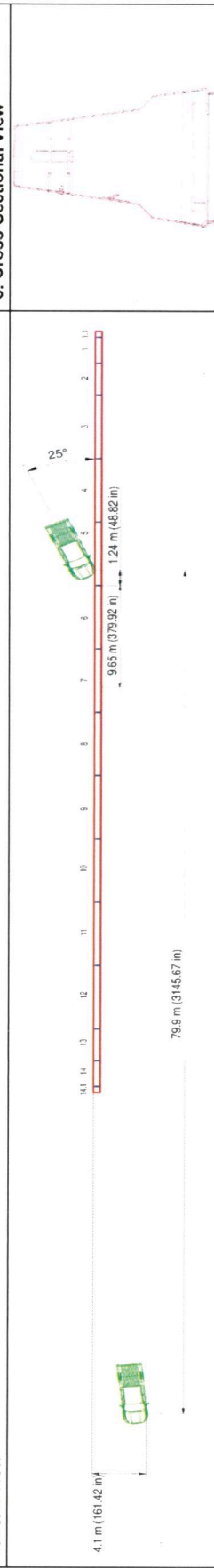
PHD	8	m/s (25 ft/s)
ASI	21.34	g
	1.1	
<b>12. Test Article Damage</b>		
Classification		Moderate
particularities		None
<b>13. Test Article Deflections</b>		
Dynamic Deflection	1.18	m (64.5 in)
Permanent Deflection	1.14	m (64.5 in)
Dynamic Working Width	1.74	m (68.5 in)
Permanent Working Width	1.66	m (65.4 in)
<b>14. Vehicle Damage</b>		
Classification		Moderate
VDS		11LFO3
CDC		11FDEW3
Max. Exterior Deformation		97 mm (3.82 in)
Max. Interior Deformation		39 mm (1.54 in)
OCDI		LF0000000



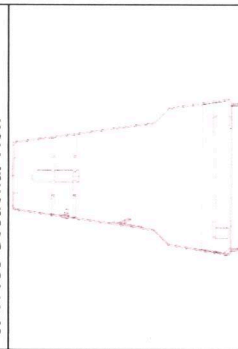
### 1. Sequential Photographs

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### 2. Plan View



### 3. Cross-Sectional View



### 4. General Information

Test Agency	crashtest-service.com GmbH (CTS)		
Test Standard	MASH Test TL 3-11		
CTS-Test No	18761		
Date	May 30, 2017		
<b>5. Test Article</b>			
Type	Barrier		
Name	BarrierGuard 800		
Installation Length	72.00 m (2834.7 in)		
Key Elements - Barrier	Length:	6.00 m (236.2 in)	
	Base Width:	0.54 m (21.3 in)	
	Height:	0.80 m (31.5 in)	
<b>6. Soil Type and Condition</b>			
Type of Soil	Asphalt		
Soil strength	/		
Condition	dry, cloudy, 24.9° C (76.82° F)		
<b>7. Test Vehicle</b>			
Type/Designation	2270P		
Make and Model	2011 Dodge Ram Pickup		
Curb	2370	kg (5225 lb)	
Test Inertial	2258	kg (4978 lb)	
Dummy	/	kg (lb)	
Gross Static	2258	kg (4978 lb)	

### 8. Impact Conditions

Speed	103.2	km/h (64.1 mph)
Angle	25	degrees
Location/Orientation	1.24	m (48.8 in) before transition of barriers 5 & 6
<b>9. Exit Conditions</b>		
Speed	87.2	km/h (54 mph)
Angle	not obtainable	degrees
<b>10. Post-Impact Trajectory</b>		
Vehicle Stability	Satisfactory	
Stopping Distance	79.9	m (3146 in) downstream
	4.1	m (161 in) laterally behind
Vehicle Snagging	None	
Vehicle Pocketing	None	
<b>11. Occupant Risk</b>		
Impact Velocity		
Longitudinal	-3.16	m/s (-10.37 ft/s)
Lateral	-4.97	m/s (-16.31 ft/s)
Ridedown Accelerations (10 msec avg.)		
Longitudinal	-2.52	g
Lateral	-7.94	g

### 12. Test Article Damage

Classification	Moderate		
particularities	None		
<b>13. Test Article Deflections</b>			
Dynamic Deflection	1.69	m (66.5 in)	
Permanent Deflection	1.60	m (63.0 in)	
Dynamic Working Width	2.22	m (87.4 in)	
Permanent Working Width	2.14	m (84.3 in)	
<b>14. Vehicle Damage</b>			
Classification	Moderate		
VDS	11LFO3		
CDC	11FDEW3		
Max. Exterior Deformation	194 mm (7.64 in)		
Max. Interior Deformation	26 mm (1.02 in)		
OCDI	LF0000000		

### THIV

PHD	7	m/s (21 ft/s)
ASI	8.56	g
	0.8	

