



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-302

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-302 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 Minimum Deflection (MDS)

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 Minimum Deflection
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.

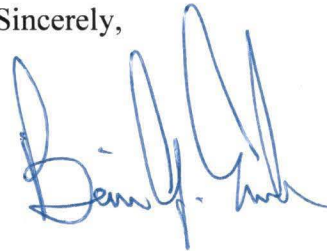
You are expected to certify to potential users that the hardware furnished has the same chemistry, mechanical properties, and geometry as that submitted for review, and that it will meet the test and evaluation criteria of AASHTO's MASH.

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-302 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:	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 Minimum Deflection	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 (0.916 m (3 ft) including T-top) 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 126 kg/m or 84 lbs/ft. For the MASH TL-3 Minimum Deflection setup, four (4) different types of barrier sections were lined up on asphalt, forming a 42.0 m (137.8 ft) string. The upstream end of the installation consisted of a 12 m (39.4 ft) Male Full Height End Section. This was followed by a standard 12 m (39.4 ft) section which in turn was followed by a 6 m (19.7 ft) male and female assembly. The system was terminated downstream by a 12 m (39.4 ft) Female Full Height End Section. These sections are positively connected with male to female pin joints and then locked together with a single security nut. The system is equipped with a T-Top fabrication that runs along the top of each section and terminated at both end sections with a transition panel. The system was anchored at the ends using two Flag Top pins at each end. In addition, the system was anchored every 6.0 m (19.7 ft) using Intermediate Anchor assemblies and M24 x 300, Grade 8.8, galvanized threaded rods (0.30 m (11.8 in) long and 0.030 m (1.18 in) diameter) epoxied into the asphalt. All anchors were epoxied in asphalt. The dynamic deflection of the MASH TL3-11 Minimum Deflection test was 0.47 m (18.5 in) and the permanent deflection was 0.22 m (8.6 in). The dynamic working width was 1.01 m (39.8 in) and the permanent working width was 0.76 m (29.9 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 15:09:48 +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. 18829. Test report nr. 11717-3021/18829 performed 03 November 2017 by Crashtest-Service.com GmbH. The 0.92 (36.2 in) high longitudinal barrier contained and redirected the 1100C vehicle. The vehicle did not penetrate, underride or override the installation. Maximum dynamic working width during the test was 0.88m (34.6 in) (please see statement Crashtest-Service.com GmbH). 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. BG1615 Test report nr. 110416 performed August 2016 by Safe Technologies, Inc. The 0.92m (36.2 in) high longitudinal barrier contained and redirected the 2270P vehicle. The vehicle did not penetrate, underride or override the installation. Maximum dynamic working width during the test was 1.01 m (39.7 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:	Peter Schimmelpfennig	Digital unterschrieben von Peter Schimmelpfennig Datum: 2017.12.15 15:10:19 +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 18:04:40
+01'00'

Submit Form

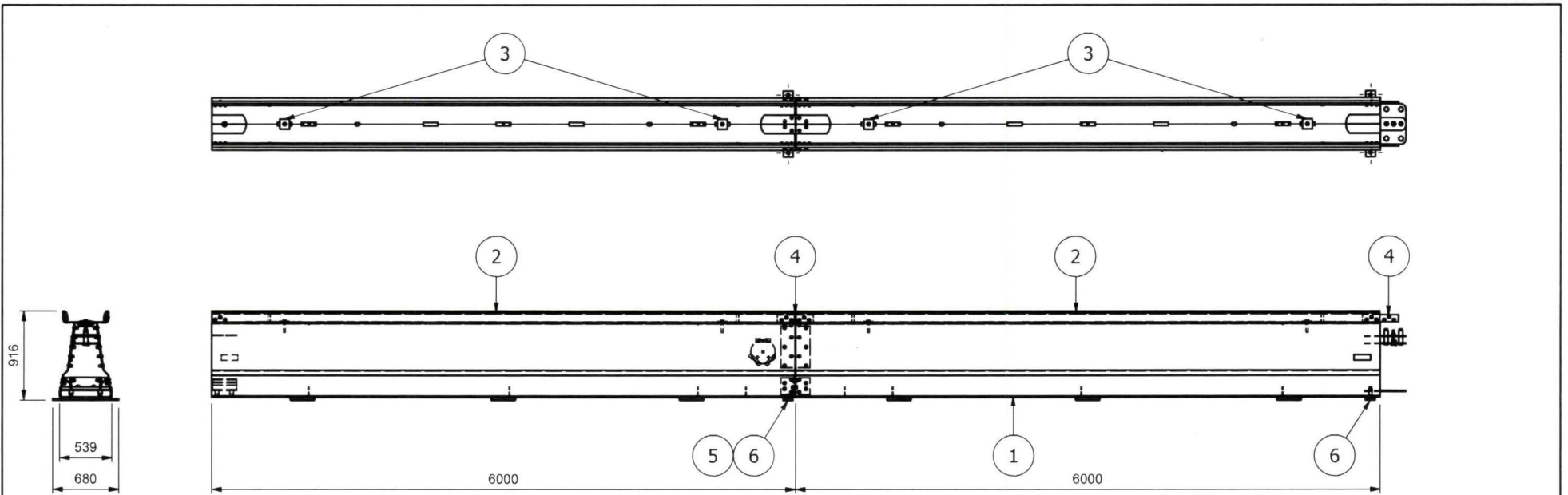
ATTACHMENTS

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



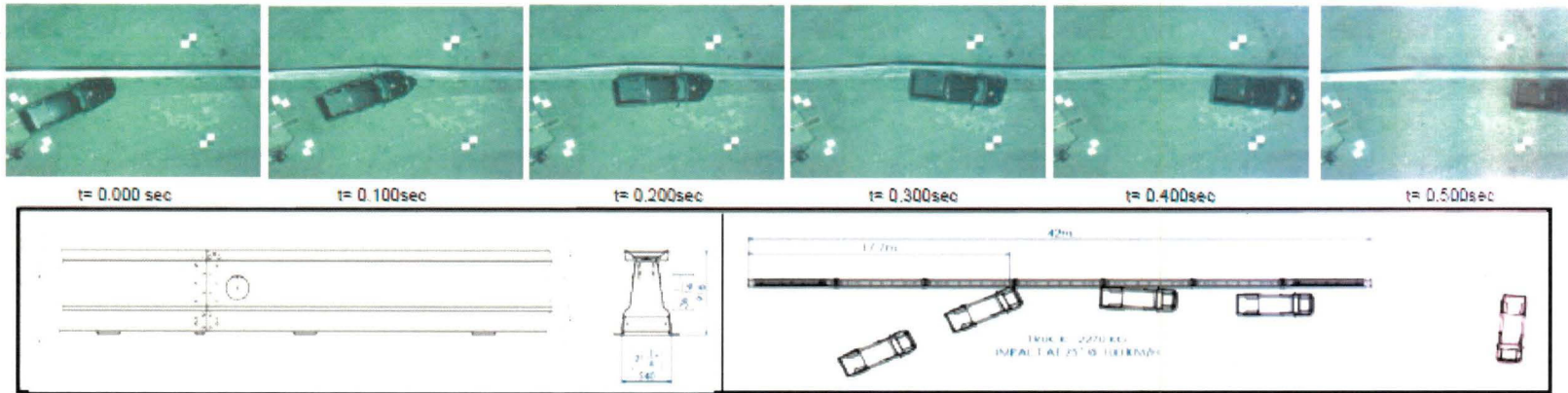
Isometrisch aanzicht (1 : 50)



11	6	KE31998505	M24x40 + ring	M24x40 + ring	
10	8	KE31970300	Zeskantmoer Din934	M24	Klasse 8 THV
9	2	KE31980300	Veerring Din 127	M24	ST 10
8	2	KE31998150	Zeskantbout Din 933	M24x120	Klasse 8.8 THV
7	24	KE31998900	Bolkopbout + moer + ring	M16x45	
6	2	AS31642942	Single intermediate anchor (dog bone)	intermediate anchor	
5	1	EP313625-0024	Bracket, intermediate anchor	323,85 x 283,5 x 10	S235JRG2
4	4	EP31640305	Koppelplaat T-top	370x75x8	S235JRG2
3	4	AS31640301	Bevestiging T-top	BG800 Gate	
2	2	AS31640331	BG800 T-top l=5990		
1	1	AS31642510	BG800 met snelkoppeling l=12000 mm	BG800	

Pos	Aant.	Artikelnummer	Titel	Omschrijving	Materiaal
		Materiaal:		Algemene maattoleranties	Toleranties lasconstructie
		Massa: 1532,15 kg		NEN-ISO 2768-c	NEN-EN-ISO 13920-C
		Amerikaanse projectie:		Lassen	Thermisch snijden
				Artikelnummer:	Revisie:
Tekenaar: M.Coerver	Getekend: 14-7-2017	Maateenheid:	Titel:	Schaal:	
Controle:	Gecontroleerd:	mm	BG800 MDS (N2W2)	1:40	
Opmerking:			Omschrijving:	Formaat:	
Het auteursrecht van deze tekening wordt door ons voorbehouden. Zij blijft ons eigendom en mag zonder toestemming noch gereproduceerd noch aan derden getoond worden.			Aantallen per 12 meter systeemplengte	A3	

Verankering met 2 ankers per 6 meter M24 draadstangen met chemische ankers of keilbouten.



General Information

Test Agency..... **SAFE TECHNOLOGIES, INC.**
 Test Number..... **BG1615**
 Test Designation **MASH 3-11**
 Date..... **8/3/2016**

Test Article

Name **Highway Care Ltd. - BarrierGuard 800**
 Type **Steel Longitudinal Barrier**
 Installation Length **137.8 ft (42m)**
 Segment Length **39.4 ft (12m)**
 Width **21.3 in (540mm)**
 Height **36.1 in (916mm)**

Test Vehicle

Type / Designation **2270P**
 Make and Model **2010 Dodge Ram 1500 Quad Cab Pickup**
 Curb Weight **4843.3 lbs (2196.5 kg)**
 Test Inertial Weight **4767.2 lbs (2162.0 kg)**
 Gross Static Weight **4972.3 lbs (2254.5 kg)**

Impact Conditions

Speed **63.1 mph (101.6 km/h)**
 Angle **25.0 deg**
 Location / Orientation **midpoint, 58.1 ft (17.7m) downstream**

Exit Conditions

Speed (mph)..... **46.8 (75.3 km/h)**
 Angle (deg)..... **8**
 Exit Box Criterion **Pass**

Post Impact Trajectory

Vehicle Stability **Satisfactory**
 Stopping Distance **NA - captured**
 Vehicle Snagging/Pocketing **None**

Occupant risk Values

Longitudinal OIV **17.1 ft/s (6.2 m/s)**
 Lateral OIV **20.3 ft/s (6.2 m/s)**
 Longitudinal ORA **6.4 g's**
 Lateral ORA **9.3 g's**
 THIV **26.6 ft/s (8.1 m/s)**
 PHD **10.5 g's**
 ASI **1.1**

Test Article Damage:

Moderate

Test Article Deflections

Permanent **0.72 ft (0.22m)**
 Dynamic **1.54 ft (0.47m)**
 At Base **0.43 ft (0.13m)**
 Working Width **3.31 ft (1.01m)**

Vehicle Damage

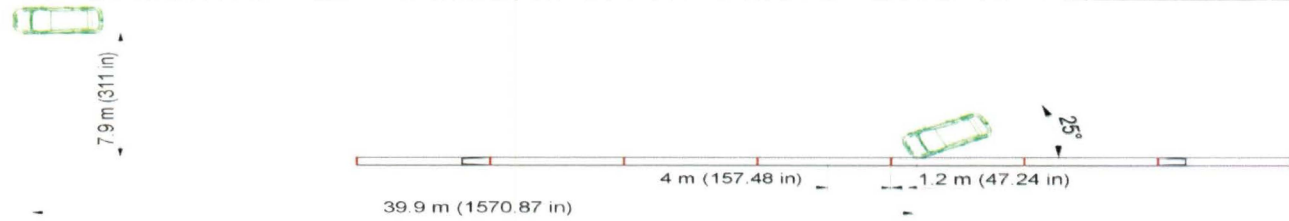
VDS..... **11-LFQ-4**
 CDC..... **11FLYA3**
 Maximum Deformation **No interior damage**

Figure 4 (Summary of Results)

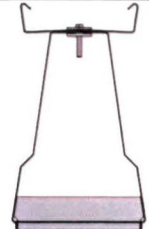
1. Sequential Photographs



2. Plan View



3. Cross-Sectional View



4. General Information	
Test Agency	crashtest-service.com GmbH (CTS)
Test Standard	MASH Test TL3-10
CTS-Test No.	18829
Date	November 03, 2017
5. Test Article	
Type	Barrier
Name	BarrierGuard 800 MDS
Installation Length	42.00 m (1653.5 in)
Key Elements - Barrier	Length: 6.00 m (236.2 in) Base Width: 0.54 m (21.3 in) Height: 0.92 m (36.2 in)
6. Soil Type and Condition	
Type of Soil	Asphalt
Soil strength	/
Condition	dry, overcast, 12.5° C (54.5° F)
7. Test Vehicle	
Type/Designation	1100C
Make and Model	2012 KIA Rio
Curb	1114 kg (2456 lb)
Test Inertial	1125 kg (2480 lb)
Dummy	75 kg (165 lb)
Gross Static	1200 kg (2646 lb)

8. Impact Conditions		
Speed	100.0	km/h (62.0 mph)
Angle	25	degrees
Location/Orientation	1.19	m (46.9 in) before transition of elements 3 & 4
9. Exit Conditions		
Speed	69	km/h (43 mph)
Angle	15	degrees
10. Post-Impact Trajectory		
Vehicle Stability	Satisfactory	
Stopping Distance	39.9	m (1571 in) downstream
	7.9	m (311 in) laterally in front
Vehicle Snagging	None	
Vehicle Pocketing	None	
11. Occupant Risk		
Impact Velocity		
Longitudinal	8.12	m/s (26.64 ft/s)
Lateral	7.16	m/s (23.49 ft/s)
Ridedown Accelerations (10 msec avg.)		
Longitudinal	-7.13	g
Lateral	-9.08	g

THIV	11	m/s (37 ft/s)
PHD	26.17	g
ASI	1.6	
12. Test Article Damage		
Classification	Moderate	
particularities	None	
13. Test Article Deflections		
Dynamic Deflection	Not obtainable	m (in)
Permanent Deflection	0.04	m (1.4 in)
Dynamic Working Width	0.88	m (34.6 in)
Permanent Working Width	0.70	m (27.6 in)
14. Vehicle Damage		
Classification	Moderate	
VDS	11LFQ4	
CDC	11FDEW4	
Max. Exterior Deformation	133 mm (5.24 in)	
Max. Interior Deformation	24 mm (0.94 in)	
OCDI	LF0001000	