



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

SEP 17 2018

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

In Reply Refer To:
HSST-1 / B-308

Mr. Casey McMaster
Saferoads Pty Ltd
22 Commercial Drive Pakenham 3810 Victoria
Australia

Dear Mr. McMaster:

This letter is in response to your June 25, 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-308 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:

- HV2 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: HV2 Barrier
Type of system: Longitudinal Barrier
Test Level: MASH Test Level 4 (TL4)
Testing conducted by: Holmes Solutions LP
Date of request: June 25, 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-308 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 28, 2018 | <input checked="" type="radio"/> New <input type="radio"/> Resubmission |
| | Name: | Casey McMaster | |
| | Company: | Saferoads Pty Ltd | |
| | Address: | 22 Commercial Drive Pankenham 3810 Victoria | |
| | Country: | Australia | |
| | 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 | HV2 | AASHTO MASH | TL4 |

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: | Casey McMaster | Same as Submitter <input checked="" type="checkbox"/> |
| Company Name: | Saferoads Pty Ltd | Same as Submitter <input checked="" type="checkbox"/> |
| Address: | 22 Commercial Drive Pankenham 3810 Victoria | Same as Submitter <input checked="" type="checkbox"/> |
| Country: | Australia | 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. | | |
| Saferoads Pty. Ltd. and Texas A&M Transportation Institute share no financial interests in the HV2 Barrier either by TTI or between the two organizations, other than the costs involved in the actual crash tests and reports for this submission to FHWA. | | |
| This includes no shared financial interests but not limited to: | | |
| i. Compensation included wages, salaries, commissions, professional fees, or fees for business referrals | | |
| ii. Research funding or other forms of research support | | |
| iii. Patents, copyrights, licenses, and other intellectual property interests | | |
| iv. Business ownership and investment interest. | | |

PRODUCT DESCRIPTION

New Hardware or Significant Modification
 Modification to Existing Hardware

The HV2 Steel Barrier is a longitudinal barrier designed to contain, redirect, and shield vehicles from roadside obstacles while providing positive protection and separation between the traveling public and the personnel in the work zone. The HV2 Steel Barrier was designed and tested at TL4 (90km/h-56m/h) and TL-3 (100 km/h-62 m/h) impact speeds and can be used for lower speed applications. The HV2 Steel Barrier is a free-standing system that does not require anchoring to the road surface and can be used on concrete, asphalt, Sprayed Seal, unsealed compacted pavements and natural surfaces, the HV2 Barriers were installed on Concrete for all tests. The HV2 system consists of a series of individual barrier segments that connect to adjacent barrier segments to create continuous steel barrier wall of unlimited maximum length. When installed as a completely freestanding system, the HV2 Barrier can be used at a minimum length of 29m/95.1 feet, plus end terminals as required, to unlimited infinite length. When installed with pinned redirective crash cushions, the min length is one barrier (5.8m/19 feet) plus the crash cushions. Each barrier segment has an effective length of 5.8m (19ft 3/8inch), is 900mm (35-7/16inch) High, 450mm (17-11/16inch) Wide at the base and 200mm (7-7/8inch) wide at the top. Each segment is joined with a pair of proprietary dual finger and knuckle connectors that are welded into the top beam that stretches the full length of the barrier. The top beam is a 200mm (7-7/8inch) Square Hollow Section (SHS). The single slope steel plate body is fully welded to the lower section of the SHS top Beam and capped with a steel plates at each end. The end plates have 270mm (10-5/8inch) x 130mm (5-1/8inch) openings to enable the filling of the concrete Ballast. The Concrete Ballast is 20 MPa (2900 psi) minimum and is filled to a depth of 300mm (11-13/16inch) in the bottom of the lower body, the top 2/3 of the barrier are hollow. Two 150mm (5-29/32inch) x 100mm (3-15/16inch) x 20mm (25/32inch) thick steel plates are welded to the outer face on the lower half of the end plates to tighten the joint between 2 barriers. Four steel block feet are welded to the base of the barrier, each 75mm (3inch) x 75mm (3inch) x 25mm (3inch) thick. The HV2 barrier segments are hot dip galvanized. Each barrier segment weighs approximately 2,100 kg (4,630 lbs).

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: 2018.06.28 09:40:38 -05'00' |
| Address: | 3100 SH 47, Bryan, 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 |
|----------------------|---|--------------------|
| 4-10 (1100C) | <p>MASH 4-10 (TTI) Test No. 690902-SFR7 Test Date - January 4th, 2018 Test Report No. 690902-SFR6,7&8 The test installation comprised of 48 connected, freestanding HV2 barriers, each 5.8m (19ft-3/8inch) long, totaling 278.4m (913ft-4.63inches). The 1,102kg (2,430lb) 2010 model Kia Rio was traveling at an impact speed of 99.1km/h (61.6mph) as it contacted the HV2 Barrier 1.03m (3.36ft) upstream of the joint between segments 24 and 25 at an impact angle of 24.4°. The HV2 Barrier contained and redirected the test vehicle with a Dynamic deflection of 0.75m (2.45ft). The vehicle did not penetrate, underride or override the installation. No detached elements, fragments, or other debris were present to penetrate or show potential for penetrating the occupant compartment, or to present undue hazard to others in the area. Maximum occupant compartment deformation was 102mm (4.0inches). The vehicle remained upright during and after the collision event. Maximum roll and pitch angles were 15° and 4° respectively. Occupant Risk factors were all well within the preferred limits specified in MASH.</p> | PASS |

| Required Test Number | Narrative Description | Evaluation Results |
|----------------------|---|--------------------|
| 4-11 (2270P) | <p>MASH 4-11 (TTI) Test No. 690902-SFR6 Test Date - January 3rd, 2018 Test Report No. 690902-SFR6,7&8 The test installation comprised of 48 connected, freestanding HV2 barriers, each 5.8m (19ft-3/8inch) long, totaling 278.4m (913ft-4.63inches). The 2,275kg (5,015lb) 2012 model Dodge Ram 1500 was traveling at an impact speed of 101.5km/h (63.1mph) as it contacted the HV2 Barrier 1.34m (4.41ft) upstream of the joint between segments 24 and 25 at an impact angle of 25°. The HV2 Barrier contained and redirected the test vehicle with a Dynamic deflection of 1.47m (4.83ft). The vehicle did not penetrate, underride or override the installation. No detached elements, fragments, or other debris were present to penetrate or show potential for penetrating the occupant compartment, or to present undue hazard to others in the area. Maximum occupant compartment deformation was 140mm (5.5inches). The vehicle remained upright during and after the collision event. Maximum roll and pitch angles were 14° and 6° respectively. Occupant Risk factors were all well within the preferred limits specified in MASH.</p> | PASS |
| 4-12 (10000S) | <p>MASH 4-12 (TTI) Test No. 690902-SFR8 Test Date - January 5th, 2018 Test Report No. 690902-SFR6,7&8 The test installation comprised of 48 connected, freestanding HV2 barriers, each 5.8m (19ft-3/8inch) long, totaling 278.4m (913ft-4.63inches). The 10,074kg (22,210lb) 2007 model Freightliner single-unit box-van truck was traveling at an impact speed of 91.6km/h (56.9mph) as it contacted the HV2 Barrier 1.70m (5.58ft) upstream of the joint between segments 24 and 25 at an impact angle of 15.3°. The HV2 Barrier contained and redirected the test vehicle with a Dynamic deflection of 2.37m (7.77ft). The vehicle did not penetrate, underride or override the installation. No detached elements, fragments, or other debris were 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 occurred. The vehicle remained upright during and after the collision event. Maximum roll and pitch angles were 16° and 6° respectively.</p> | PASS |

| | | |
|---------------|--|----------------------------------|
| 4-20 (1100C) | Transition test is not applicable for the HV2 Barrier. | Non-Relevant Test, not conducted |
| 4-21 (2270P) | Transition test is not applicable for the HV2 Barrier. | Non-Relevant Test, not conducted |
| 4-22 (10000S) | Transition test is not applicable for the HV2 Barrier. | 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 (TTI) | |
| Laboratory Signature: | Matt Robinson | <small>Digitally signed by Matt Robinson DN: cn=Matt Robinson, o, ou, email=m-robinson@tti.tamu.edu, c=US Date: 2018.06.28 10:02:47 -05'00'</small> |
| 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*: Casey McMaster Digitally signed by Casey McMaster
Date: 2018.06.29 09:04:23 -10'00'

Submit Form

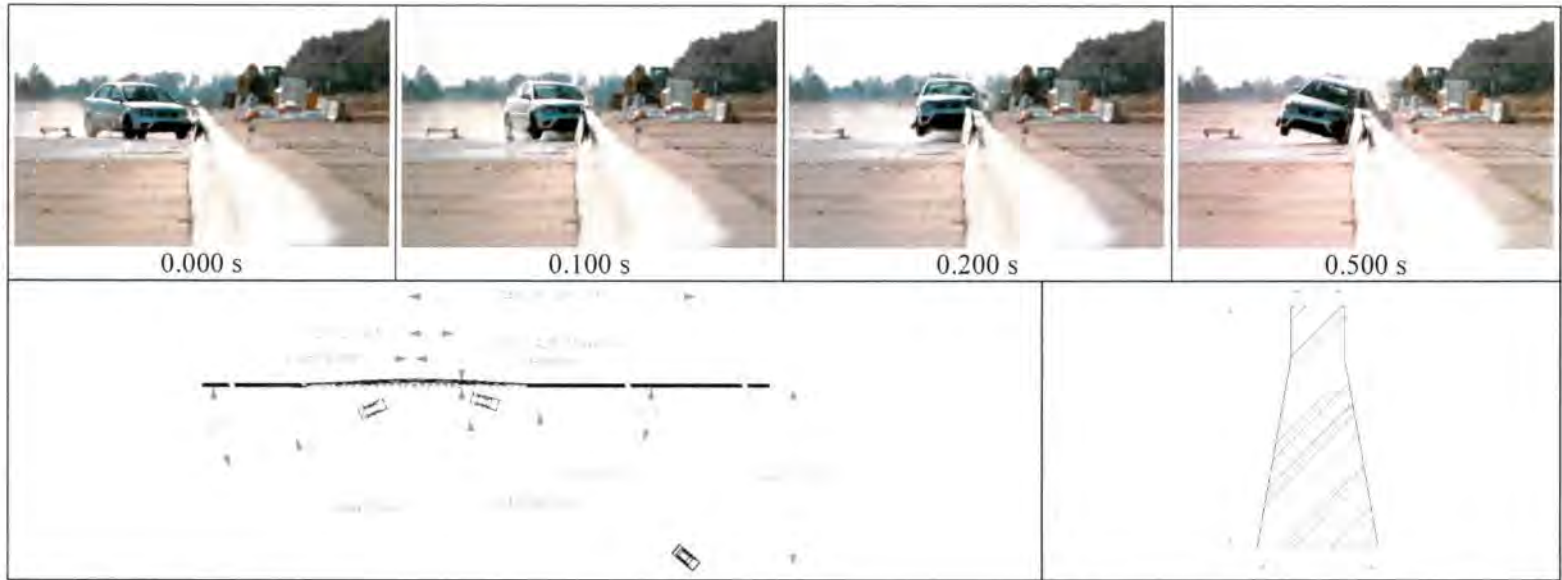
ATTACHMENTS

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 | | Key Words |
|--------------------|------|-----------|
| Number | Date | |
| | | |



General Information

Test Agency..... Texas A&M Transportation Institute (TTI)
 Test Standard Test No. MASH Test 4-10
 TTI Test No. 690902-SFR7
 Test Date..... 2017-01-04

Test Article

Type Portable Barrier
 Name..... HV2 Barrier
 Installation Length..... 278.4 m (913.4 ft)
 Material or Key Elements... 48 barrier units, each 5.8 m (19 ft- $\frac{3}{4}$ inch) in length, connected with proprietary dual finger-and-knuckle connector welded into the ends

Soil Type and Condition Concrete Pavement, Damp

Test Vehicle

Type/Designation..... 1100C
 Make and Model 2010 Kia Rio
 Curb..... 1128 kg (2486 lb)
 Test Inertial..... 1102 kg (2430 lb)
 Dummy 75 kg (165 lb)
 Gross Static..... 1177 kg (2595 lb)

Impact Conditions

Speed..... 99.1 km/h (61.6 mi/h)
 Angle..... 24.4°
 Location/Orientation 1.03 m (3.36 ft) upstream of joint 24-25

Impact Severity

..... 71 kJ (53 kip-ft)

Exit Conditions

Speed..... 75.7 km/h (47.0 mi/h)
 Angle..... 16.1°

Occupant Risk Values

Longitudinal OIV 5.2 m/s (17.1 ft/s)
 Lateral OIV 6.2 m/s (20.3 ft/s)
 Longitudinal Ridedown 4.8 g
 Lateral Ridedown 7.9 g
 THIV 28.5 km/h
 PHD 8.8 g
 ASI 1.78

Max. 0.050-s Average

Longitudinal..... -10.3 g
 Lateral..... 13.0 g
 Vertical..... -3.8 g

Post-Impact Trajectory

Stopping Distance 75 m (246 ft) dnstnm
 27 m (90 ft) twd traffic

Vehicle Stability

Maximum Yaw Angle..... 48°
 Maximum Pitch Angle..... 4°
 Maximum Roll Angle..... 15°
 Vehicle Snagging..... Slight
 Vehicle Pocketing..... No

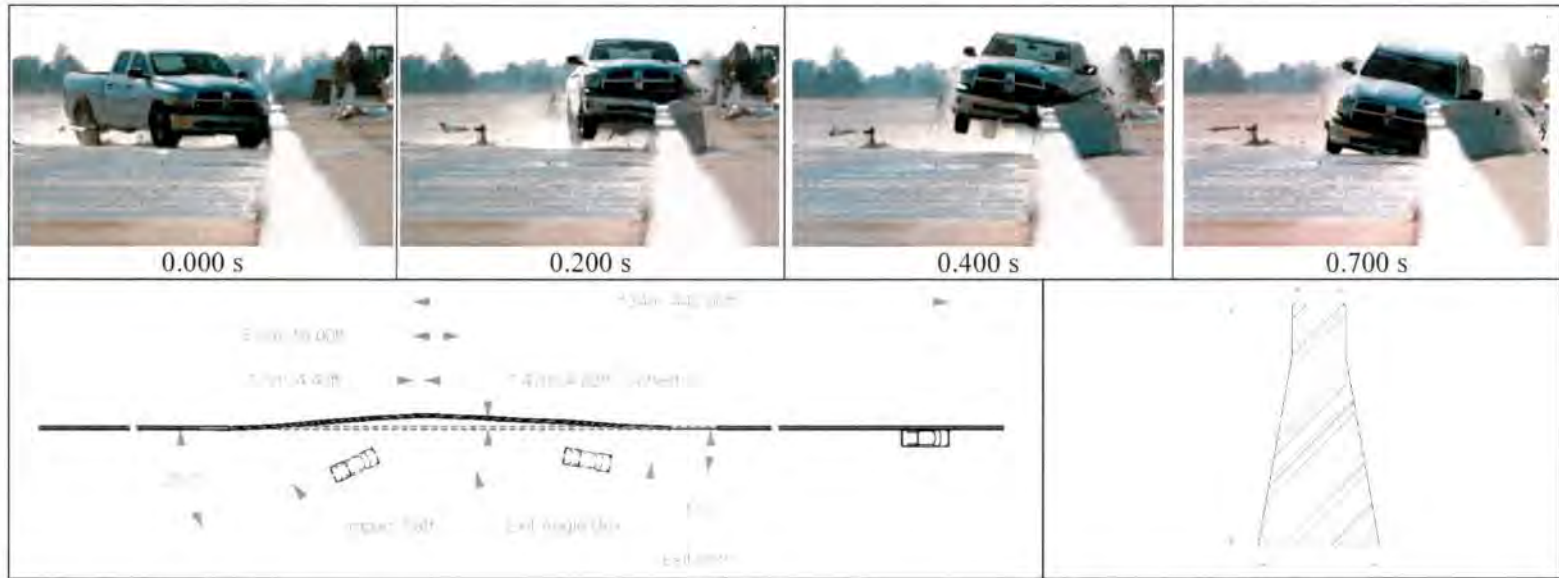
Test Article Deflections

Dynamic 0.75 m (2.45 ft)
 Permanent..... 0.74 m (2.42 ft)
 Working Width 1.05 m (3.45 ft)
 Height of Working Width..... 0.90 m (2.95 ft)

Vehicle Damage

VDS..... 11LFQ5
 CDC 11FLEW4
 Max. Exterior Deformation 203 mm (8.0 inches)
 OCDI LF0020000
 Max. Occupant Compartment Deformation..... 102 mm (4.0 inches)

Figure 5.6. Summary of Results for MASH Test 4-10 on HV2 Barrier.



General Information

Test Agency..... Texas A&M Transportation Institute (TTI)
 Test Standard Test No..... MASH Test 4-11
 TTI Test No. 690902-SFR6
 Test Date 2017-01-03

Test Article

Type Portable Barrier
 Name..... HV2 Barrier
 Installation Length..... 278.4 m (913.4 ft)
 Material or Key Elements... 48 barrier units, each 5.8 mm (19 ft-3/4 inch) in length, connected with proprietary dual finger-and-knuckle connector welded into the ends
 Soil Type and Condition Concrete Pavement, Damp

Test Vehicle

Type/Designation..... 2270P
 Make and Model 2012 Dodge RAM 1500 Pickup
 Curb..... 2218 kg (4890 lb)
 Test Inertial..... 2275 kg (5015 lb)
 Dummy 75 kg (165 lb)
 Gross Static..... 2350 kg (5180 lb)

Impact Conditions

Speed..... 101.5 km/h (63.1 mi/h)
 Angle 25.0°
 Location/Orientation 1.34 m (4.41 ft) upstream of joint 24-25

Impact Severity

..... 144 kJ (106 kip-ft)

Exit Conditions

Speed, est'd 87 km/h (54 mi/h)
 Angle, est'd Out of view (~10°)

Occupant Risk Values

Longitudinal OIV 4.1 m/s (13.4 ft/s)
 Lateral OIV 4.8 m/s (15.8 ft/s)
 Longitudinal Ridedown 5.0 g
 Lateral Ridedown 10.3 g
 THIV 22.7 km/h
 PHD 10.5 g
 ASI 1.17
 Max. 0.050-s Average
 Longitudinal..... -6.9 g
 Lateral..... 9.2 g
 Vertical..... -3.8 g

Post-Impact Trajectory

Stopping Distance 134 m (440 ft) downstream

Vehicle Stability

Maximum Yaw Angle 33°
 Maximum Pitch Angle..... 6°
 Maximum Roll Angle..... 14°
 Vehicle Snagging..... Minimal
 Vehicle Pocketing No

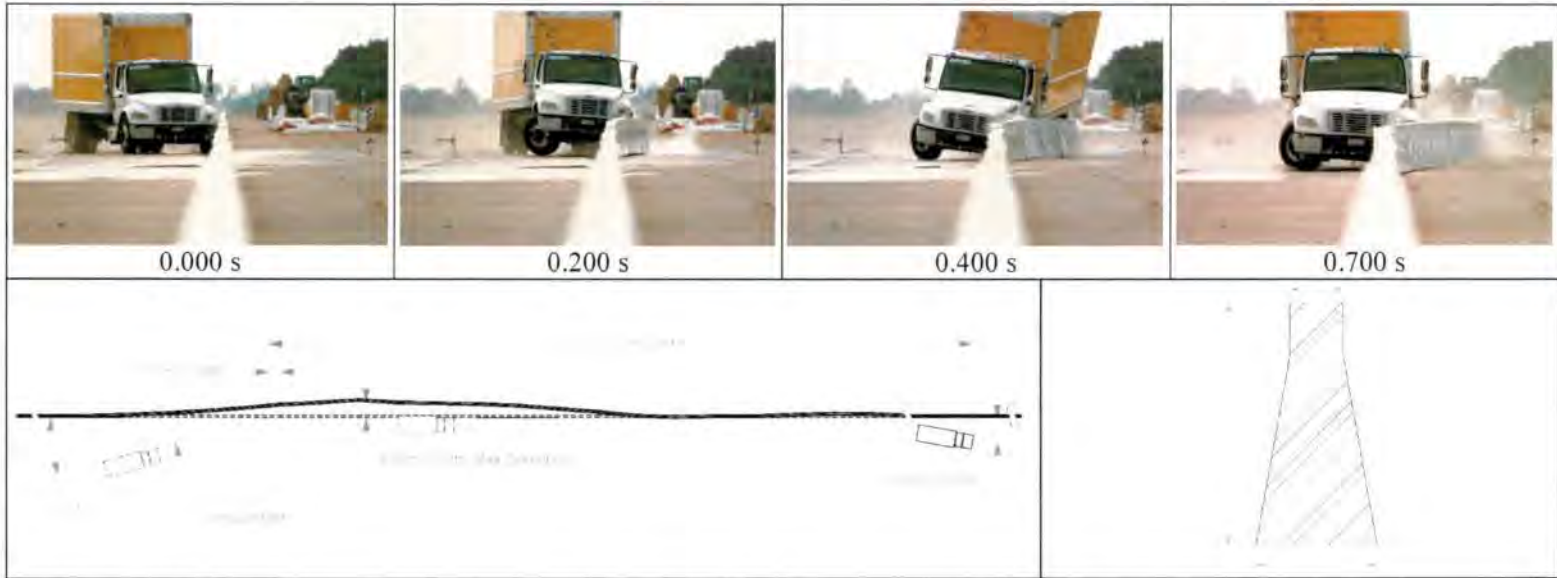
Test Article Deflections

Dynamic..... 1.47 m (4.83 ft)
 Permanent..... 1.47 m (4.83 ft)
 Working Width 1.81 m (5.94 ft)
 Height of Working Width..... 0.90 m (2.95 ft)

Vehicle Damage

VDS..... 11LFQ5
 CDC 11FLEW4
 Max. Exterior Deformation 305 mm (12.0 inches)
 OCCDI LF0030000
 Max. Occupant Compartment Deformation..... 140 mm (5.5 inches)

Figure 6.8. Summary of Results for MASH Test 4-11 on HV2 Barrier.



General Information

Test Agency..... Texas A&M Transportation Institute (TTI)
 Test Standard Test No..... MASH Test 4-12
 TTI Test No. 690902-SFR8
 Test Date 2017-01-05

Test Article

Type Portable Barrier
 Name..... HV2 Barrier
 Installation Length..... 278.4 m (913.4 ft)
 Material or Key Elements... 48 barrier units, each 5.8 m
 (19 ft-3/4 inch) in length, connected with
 proprietary dual finger-and-knuckle
 connector welded into the ends

Soil Type and Condition

Concrete Pavement, Damp

Test Vehicle
 Type/Designation..... 10000S
 Make and Model 2007 Freightliner M2106
 Curb..... 6169 kg (13,600 lb)
 Test Inertial..... 10 074 kg (22,210 lb)
 Dummy..... No dummy
 Gross Static..... 10 074 kg (22,210 lb)

Impact Conditions

Speed..... 91.6 km/h (56.9 mi/h)
 Angle 15.3°
 Location/Orientation 1.70 m (5.58 ft)
 upstream of joint 24-25

Impact Severity

..... 227 kJ (167 kip-ft)

Exit Conditions

Speed..... Out of view
 Angle Out of view

Occupant Risk Values

Longitudinal OIV..... 1.6 m/s (5.2 ft/s)
 Lateral OIV 2.0 m/s (6.6 ft/s)
 Longitudinal Ridedown 2.0 g
 Lateral Ridedown 4.0 g
 THIV 9.4 km/h
 PHD 4.0 g
 ASI 0.39

Max. 0.050-s Average

Longitudinal..... -1.5 g
 Lateral..... 2.5 g
 Vertical..... -3.1 g

Post-Impact Trajectory

Stopping Distance 128 m (419 ft) dnwnstrm
 3.7 m (12 ft) twd traffic

Vehicle Stability

Maximum Yaw Angle..... 29°
 Maximum Pitch Angle..... 6°
 Maximum Roll Angle..... 16°
 Vehicle Snagging..... No
 Vehicle Pocketing No

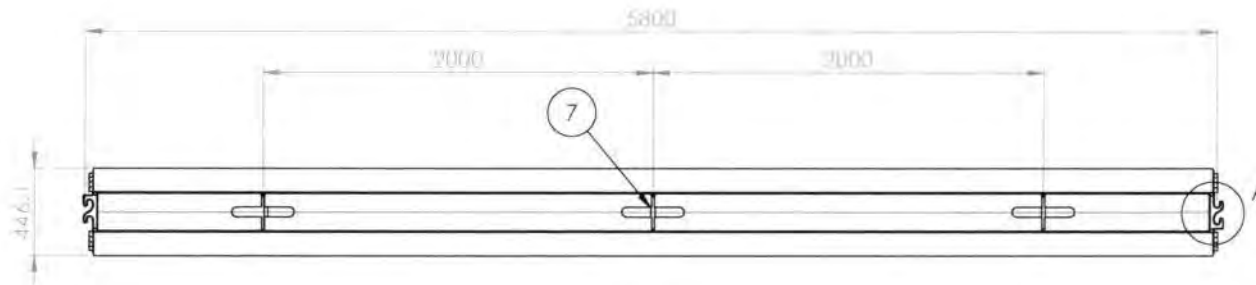
Test Article Deflections

Dynamic..... 2.37 m (7.77 ft)
 Permanent..... 2.11 m (6.92 ft)
 Working Width 3.74 m (12.28 ft)
 Height of Working Width..... 4.08 m (13.40 ft)

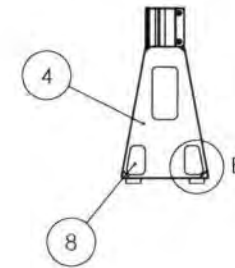
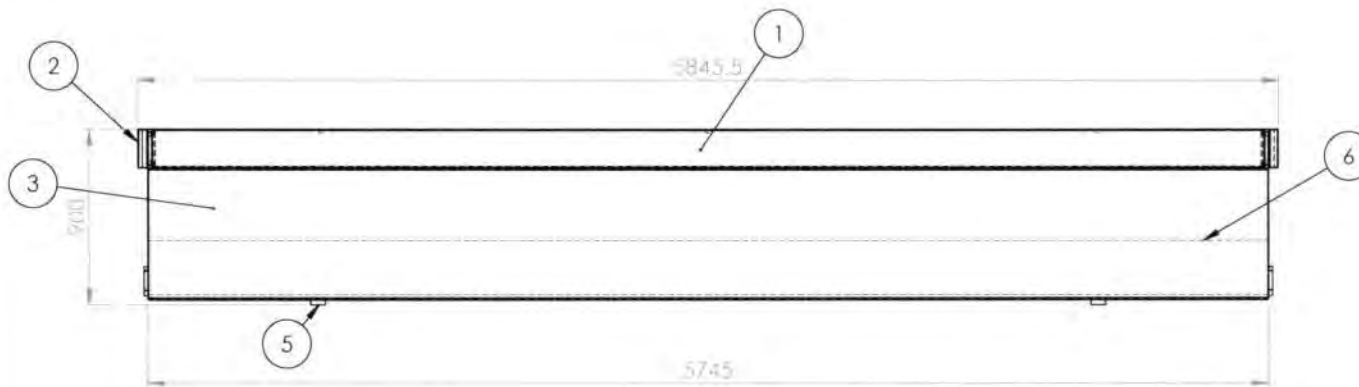
Vehicle Damage

VDS..... NA
 CDC..... NA
 Max. Exterior Deformation 406 mm (16.0 inches)
 OCDI NA
 Max. Occupant Compartment
 Deformation..... None

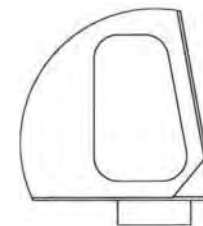
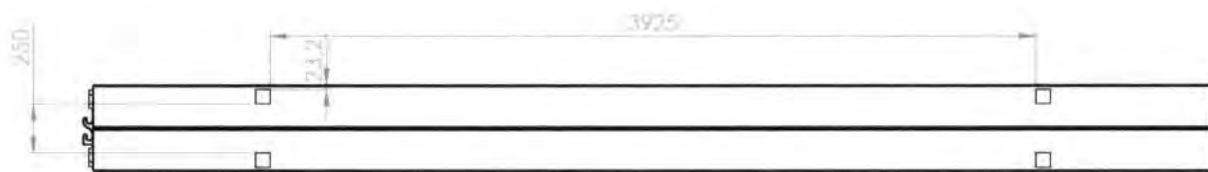
Figure 7.7. Summary of Results for MASH Test 4-12 on HV2 Barrier.



DETAIL A
SCALE 2 : 25



DETAIL B
SCALE 1 : 5



| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|----------|-------------|------------------|------|
| 1 | SRP000036 | Square Top Rail | 1 |
| 2 | SRP000037 | Connector | 2 |
| 3 | SRP000038 | Skin | 2 |
| 4 | SRP000039 | End | 2 |
| 5 | SRP000040 | Feet | 4 |
| 6 | SRP000041 | Concrete Ballast | 1 |
| 7 | SRP000043 | Lifting Bar | 3 |
| 8 | SRP000048 | Spacer | 4 |

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OSTENOO Code

| | | | | |
|-------|---------------|----------|----------|----|
| Drawn | Tom Haskin | 30/02/17 | Material | |
| App'd | Casey McMaier | 14/06/17 | Finish | |
| | | | Weight | kg |

THIRD ANGLE PROJECTION



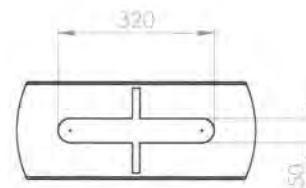
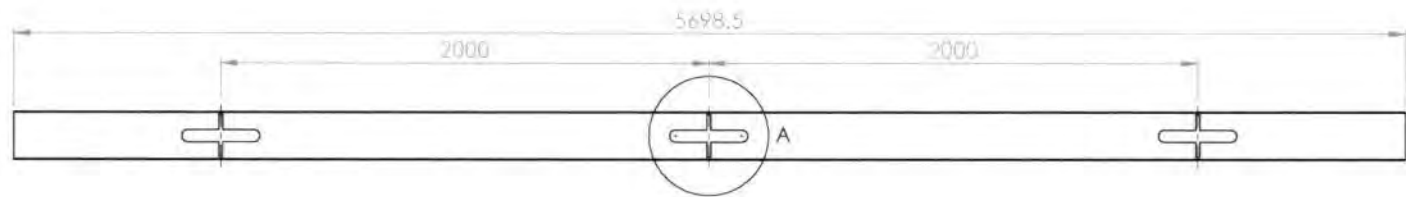
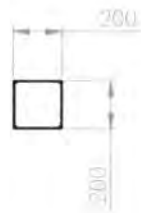
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SCALE: 1:25

SHEET 1 of 1

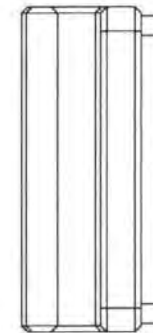
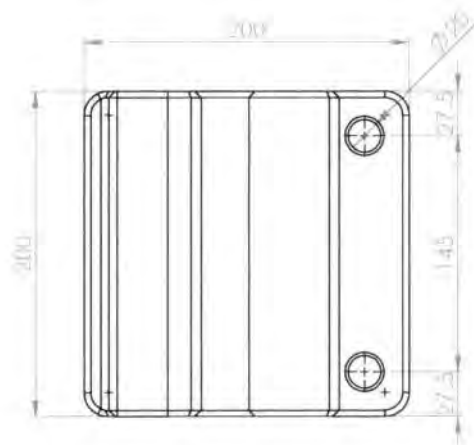
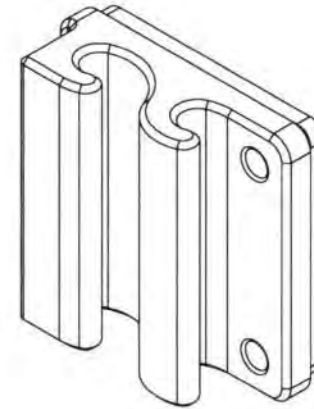
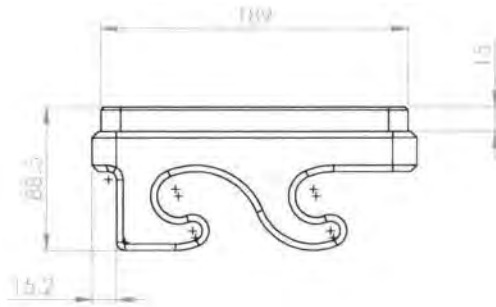


| | | | |
|----------------|-----------|-------------|---|
| Title | | HV2 Barrier | |
| Drawing number | SRA000015 | Revision | C |



DETAIL A
SCALE 1 : 10

| | | | | | | |
|--|--|--|------------------------|------------------------|-------------|--|
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| CUSTOMER: Drawn: Tom Hutchkin 21/01/18 Material: App'd: Casey McMaster 21/02/17 Finish: Weight: kg | | | | Title: Square Top Rail | | Drawing Number: SRP000036 Revision: A |



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THIRD ANGLE PROJECTION



A3

SCALE: 1:3

SHEET 1 of 1

Customer Code

Drawn Tom Heston 21/11/16

Material

App'd Casey McMaster 14/02/17

Finish

Weight

kg



Title

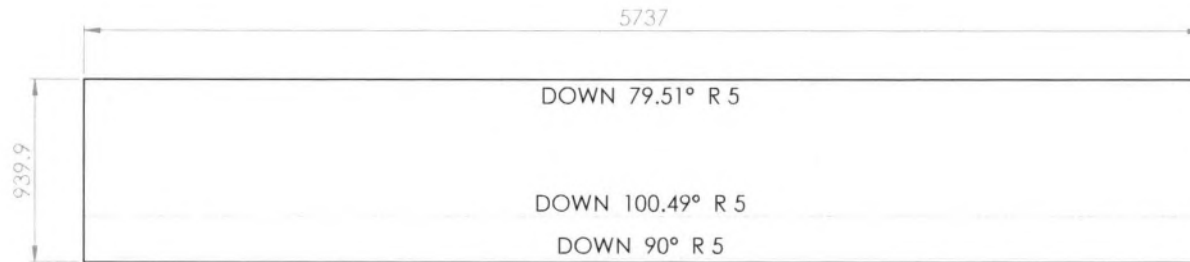
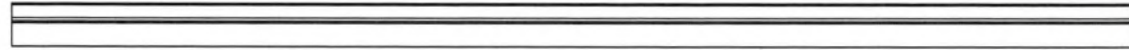
Connector

Drawing Number

SRP000037

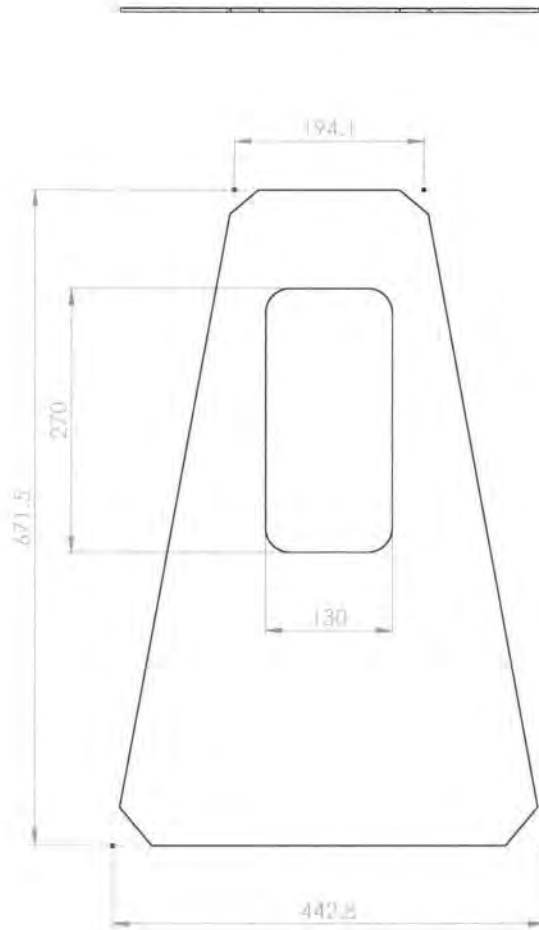
Revision

A



Flat Layout

| | | | | | | | |
|---|----------|--------------|------------------------|--|-----------------------------|---------------|--------------|
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| OSTENDO Code | | | | | Title Skin | | |
| Drawn Tom Holchkin | 20/02/17 | Material | | | Drawing Number SRP000038 | Revision B | |
| App'd Casey McMaster | 14/06/17 | Weight kg | | | | | |



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THIRD ANGLE PROJECTION



A3

SCALE: 1:5

SHEET 1 of 1

OSTENDO Code

Title

End

| | | | |
|-------|----------------|----------|----------|
| Drawn | Tom Hetchin | 21/11/18 | Material |
| App'd | Casey McMaster | 14/06/17 | Finish |
| | | | Weight |



| | | | |
|----------------|-----------|----------|---|
| Drawing Number | SRP000039 | Revision | B |
|----------------|-----------|----------|---|

