



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-307

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

Dear Mr. Reese:

This letter is in response to your July 17, 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-307 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:

- 12" J-J Hooks Free Standing 19-8 1/4ft 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: 12" J-J Hooks Free Standing 19-8 1/4ft Barrier

Type of system: Longitudinal Barrier

Test Level: MASH Test Level 3 (TL3)

Testing conducted by: Holmes Solutions LP

Date of request: July 17, 2018

Date initially acknowledged: July 18, 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-307 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,

A handwritten signature in blue ink that reads "Michael S. Griffith". The signature is written in a cursive style.

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:	July 09, 2018	<input checked="" type="radio"/> New <input type="radio"/> Resubmission
	Name:	Chris Reese	
	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	12" J-J Hooks free Standing 19-8 1/4ft 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:	Chris Reese	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.		
Holmes Solutions LP was contracted by Easi-Set Worldwide to perform full-scale crash testing on the J-J Hooks Free Standing 19-8 1/4 ft. MASH Barrier with 12" connector plate. There are no shared financial interests in the J-J Hooks Free Standing 19-8 1/4 ft. MASH Barrier with 12" connector plate by Holmes Solutions LP, or between Easi-Set Worldwide and Holmes Solutions LP other than the costs involved in the actual crash tests, and reports for this submission to FHWA.		

PRODUCT DESCRIPTION

New Hardware or Significant Modification
 Modification to Existing Hardware

The J-J Hooks F shape free standing barrier system used in this test series consists of 11 barrier lengths of 6000 mm (19'-8 1/4"ft.) Long, utilizing reinforcing bars connecting the proprietary connector plates at each end. The barrier system was placed on asphalt concrete along its length. The barrier system is connected together via proprietary with 12" connector plate connector plates. The connector plates were installed with an approximate 16.0 mm overlap between adjacent connector plates, along the length of the entire barrier installation. This equates to an approximate 28 mm (1.1") gap between adjacent concrete barrier faces. Barrier width measures 606 mm (23.8") x 810.0 mm (31.8") high.

In the bottom center section of the barrier there is a drain hole for water relief. Located on both faces of the barrier at the top of the sloped face are six M16 ferrules used to attach anti-gawk screens if required. No gawk screens were fitted for this testing programme. At the top of the barrier there are two 5 tonne anchors used for lifting and handling. The overall barrier installation length was approximately 66.0 m, and total weight of each barrier is approximately 4.3 Tonnes.

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:	Emerson Ryder	
Engineer Signature:	Emerson Ryder	Digitally signed by Emerson Ryder Date: 2018.07.04 11:59:14 +12'00'
Address:	254 Montreal Street, Christchurch	Same as Submitter <input type="checkbox"/>
Country:	New Zealand	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>The test vehicle impacted the test installation 1050 mm (41.3") upstream from concrete barrier segment joint 5B and 6A at an angle of 25.1 degrees, and a velocity of 98.0 km/h(60.9 mph). The impact point was chosen to increase the chances of occupant ride down accelerations and head slap when impacting test article. The barrier contained and redirected the 1100C test vehicle. The vehicle did not underride, override or penetrate the installation. Vehicle deformations, exit trajectory, ride down accelerations, occupant impact velocities were acceptable in accordance with MASH 2016 criteria.</p> <p>The maximum roll of the vehicle was recorded as -9.2 degrees during the impact, maximum pitch was -19.3 degrees. The maximum working width of the system was recorded as 1.42 m (4'.65"), measured from the impact face of the test article.</p> <p>Crash test report 135780.01 is attached for this test.</p>	PASS
3-11 (2270P)	<p>The test vehicle impacted the test installation 1340 mm (52.75") upstream from concrete barrier segment joint 5B and 6A at an angle of 25.1 degrees, and a velocity of 98.0 km/h(60.9 mph). The impact point was chosen to load the joint connection and increase the chances of test vehicle roll over when impacting test article. The barrier contained and redirected the 2270P test vehicle. The vehicle did not underride, override or penetrate the installation. Vehicle deformations, exit trajectory, ride down accelerations, occupant impact velocities were acceptable in accordance with MASH 2016 criteria.</p> <p>The maximum roll of the vehicle was recorded as -19.1 degrees during the impact, with the maximum pitch of the vehicle being - 13.5 degrees. The maximum working width of the system was recorded as 2.20 m (7.21 ft.), measured from the impact face of the test article. The maximum dynamic deflection of the system was recorded as 1.60 m (5.24').</p> <p>Crash test report 135780.01 is attached for this test.</p>	PASS
3-20 (1100C)		Non-Relevant Test, not conducted
3-21 (2270P)		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:	Holmes Solutions LP	
Laboratory Signature:	Emerson Ryder	Digitally signed by Emerson Ryder Date: 2018.07.04 12:05:23 +12'00'
Address:	254 Montreal Street, Christchurch	Same as Submitter <input type="checkbox"/>
Country:	New Zealand	Same as Submitter <input type="checkbox"/>
Accreditation Certificate Number and Dates of current Accreditation period :	ISO/IEc 17025:2005;IANZ Certificate Number;1022 23 July 2009 to Present Day	

Submitter Signature*: **Chris Reese**

Digitally signed by Chris Reese
DN: cn=Chris Reese, o=Easi-Set, ou,
email=creeese@easiset.com, c=US
Date: 2018.07.06 14:54:03 -04'00'

Submit Form

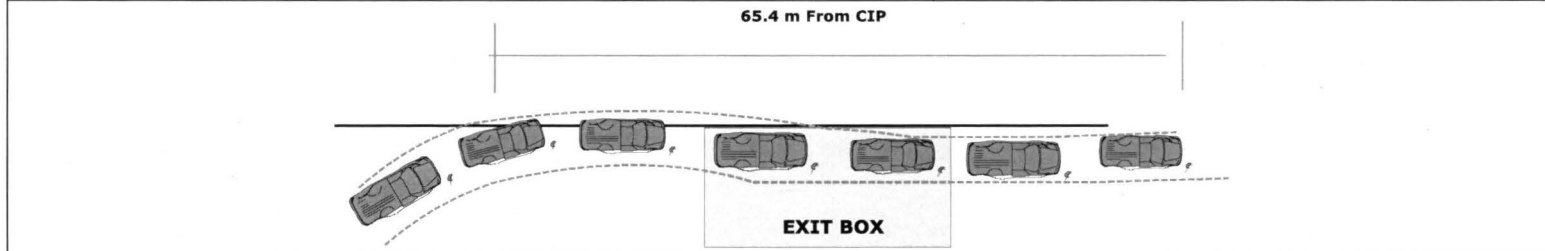
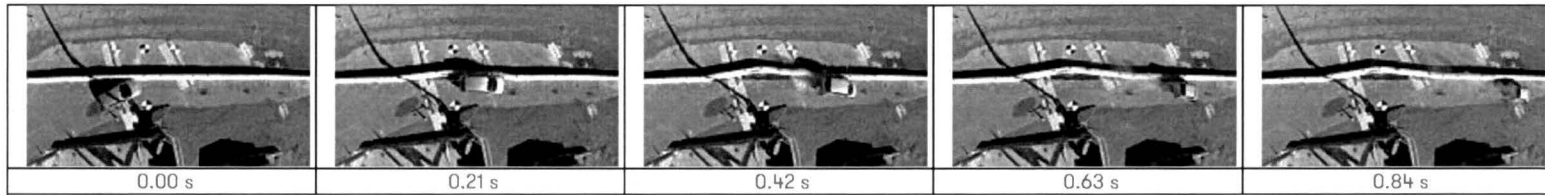
ATTACHMENTS

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.

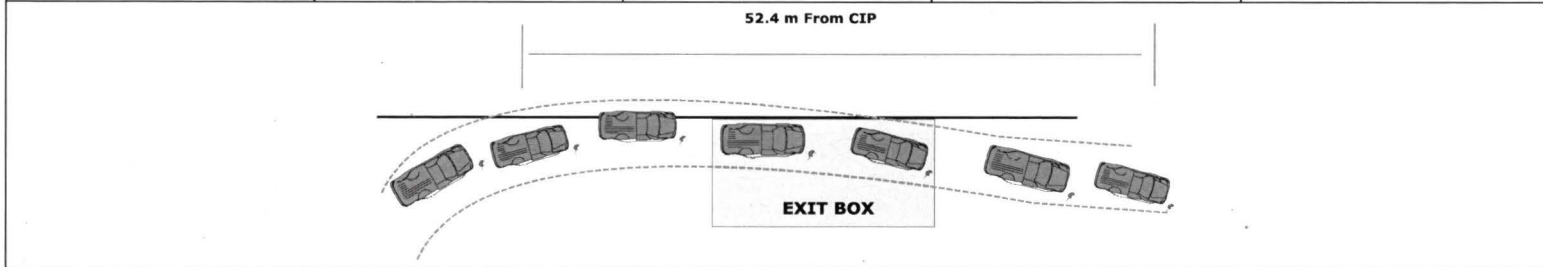
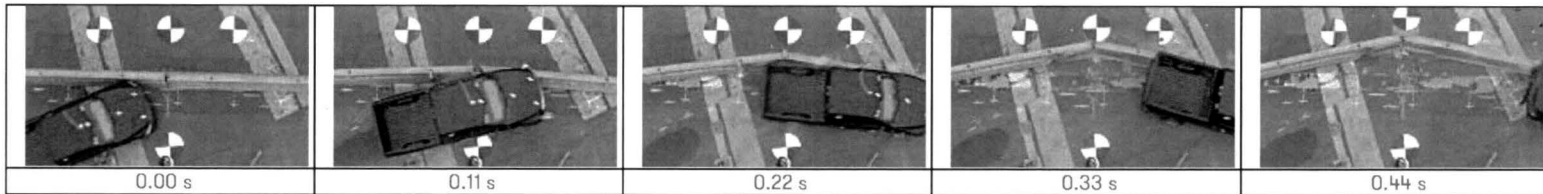
FHWA Official Business Only:

Eligibility Letter		Key Words
Number	Date	



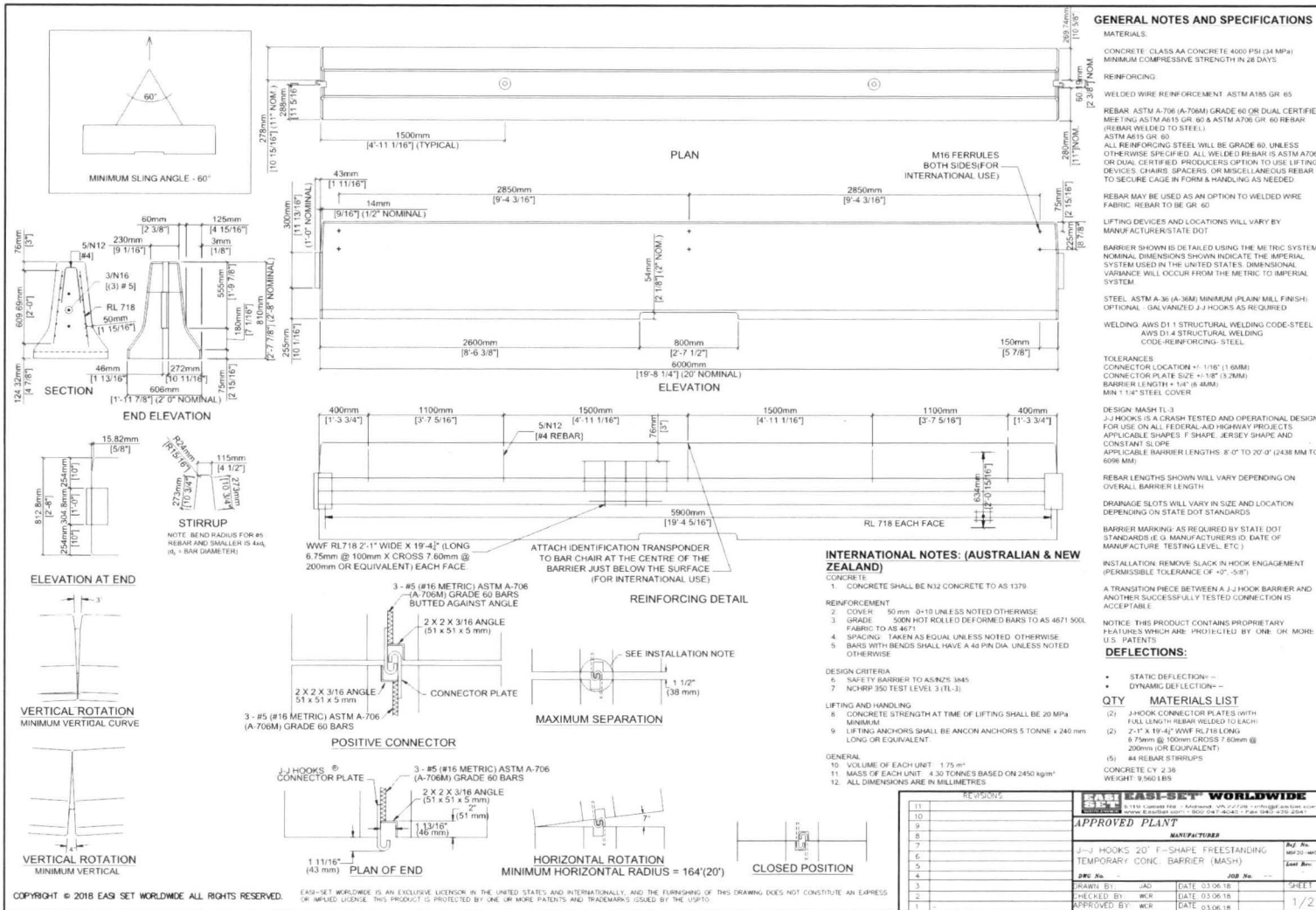
Test Article:	Easi-Set J-J Hooks 19'-8 1/4"ft. Concrete Barrier Mash 3-10	Post Impact Vehicle Behaviour	
Total Length	66.0 m	Vehicle Stability	Good
Key Elements - Barrier	12" connector plate	Stopping Distance	65.4 m (214.5 ft.)
Description	Temporary Concrete Barrier System	Vehicle Snagging	None
Length of Barrier Installation	66.0 m length of need	Vehicle Pocketing	None
Barrier Height	0.81 m (2.65 ft.)	Occupant Impact Velocity (m/s)	0.0890 seconds left side of interior
Barrier Length	6.0 m (19'-8 1/4"ft)	Longitudinal	4.4
Test Vehicle		Lateral (optional)	-7.5
Designation	1100C	Occupant Ride-down Deceleration	
Make/Model	Nissan Tiida	X-direction (g)	-3.8 (0.5635 - 0.5735 seconds)
Dimensions mm (inches) (LxWxH)	4230 (167.3")L x 1695 (66.7")W x 1530 (60.2")H	Y-direction (g)	8.3 (0.2037 - 0.2137 seconds)
Curb Wt	1112.5 kg (2452.6 lbs)	THIV (optional) (m/s)	9.3
Test Inertial Wt	1092.0 kg (2407.4 lbs)	PHD (optional) (g)	9.1 (0.2037 - 0.2137 seconds)
Gross Static	1167.0 kg (2572.8 lbs)	ASI (optional)	1.85 (0.0249 - 0.0749 seconds)
Impact Conditions		Test Article Damage	Moderate
Speed	98.0 km /h (60.9 mph)	Test Article Deflections	
Angle	25.1 degrees	Dynamic	0.82 m (2.69 ft.)
Impact Point	1050 mm (41.3") Upstream of Joint 5B and 6A	Permanent	0.82 m (2.69 ft.)
Exit Conditions		Working Width	1.42 m (4.65 ft.)
Exit Speed:	65 km/h Est (40.4 mph)	Vehicle Damage Exterior	
Exit Angle:	7.0° Est	VDS	11FL-3
Test Number	135780.3-10	CDC	11LFEE3
Test Date	1st May 2018	Maximum Deformation	110 mm (4.3")

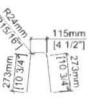
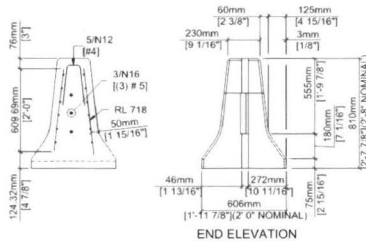
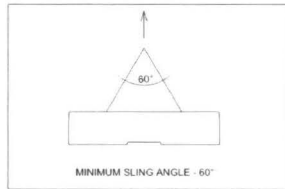




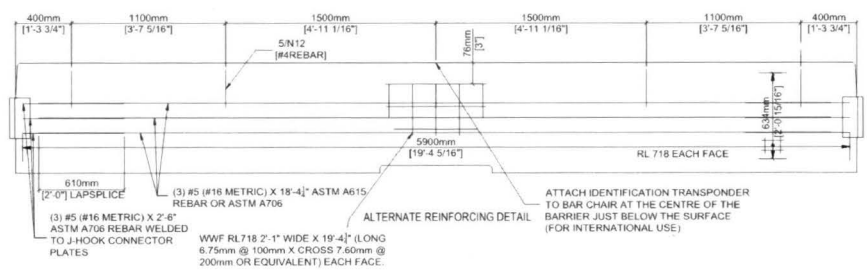
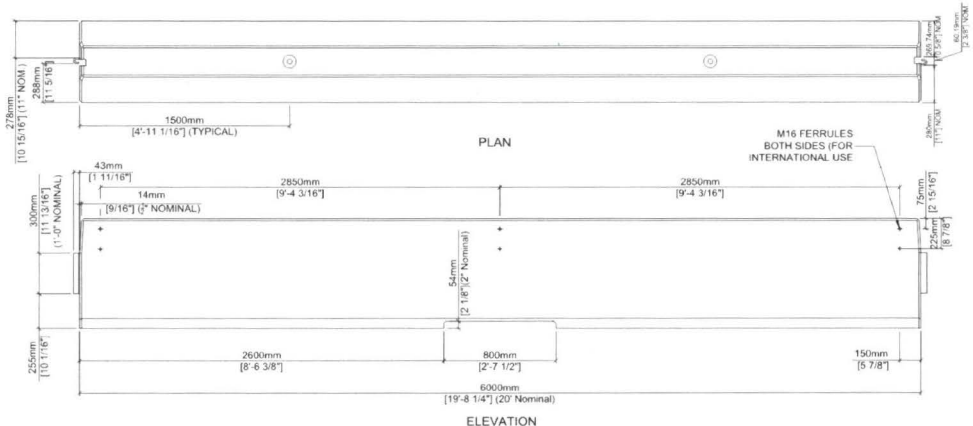
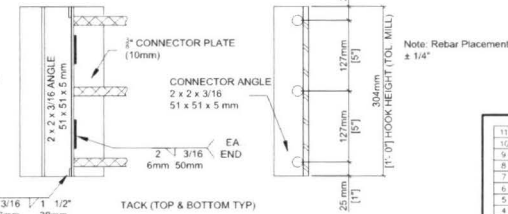
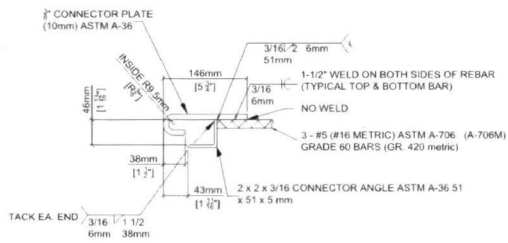
Test Article:	Easi-Set J-J Hooks 19'-8 1/4" ft. Concrete Barrier Mash 3-11	Post Impact Vehicle Behaviour	
Total Length	66.0 m	Vehicle Stability	Below Average
Key Elements - Barrier	12" connector plate	Stopping Distance	52.4 m (171.9 ft.)
Description	Temporary Concrete Barrier System	Vehicle Snagging	None
Length of Barrier Installation	66.0 m length of need	Vehicle Pocketing	None
Rail Height	0.81 m (2.65 ft.)	Occupant Impact Velocity (m/s)	0.1033 seconds left side of interior
Post Spacing	6.0 m (19'-8 1/4" ft)	Longitudinal	3.9
Test Vehicle		Lateral (optional)	-6.6
Designation	2270P	Occupant Ride-down Deceleration	
Make/Model	Dodge Ram 1500 Quad Cab	X-direction (g)	-3.4 (0.1033 - 0.1133 seconds)
Dimensions mm (inches) (LxWxH)	5790 (228") x 2030 (79.9") x 1890 (74.4")	Y-direction (g)	10.7 (0.2363 - 0.2463 seconds)
Curb Wt	2179 kg (4803 lbs)	THIV (optional) (m/s)	8.4
Test Inertial Wt	2300 kg (5070 lbs)	PHD (optional) (g)	10.8 (0.2363 - 0.2463 seconds)
Gross Static	2300 kg (5070 lbs)	ASI (optional)	1.48 (0.0247 - 0.0747 seconds)
Impact Conditions		Test Article Damage	Moderate
Speed	99.0 km /h (61.5 mph)	Test Article Deflections	
Angle	24.7 degrees	Dynamic	1.60 m (5.24 ft.)
Impact Point	1340 mm (52.7") Upstream barrier 5B and 6A	Permanent	1.60 m (5.24 ft.)
Exit Conditions		Working Width	2.20 m (7.21 ft.)
Exit Speed:	65 km/h est (40.38 mph)	Vehicle Damage Exterior	
Exit Angle:	15°	VDS	11FL-3
Test Number	135780.3-11	CDC	11LFEE3
Test Date	30 April 2018	Maximum Deformation	195 mm (7.67")







STIRRUP
NOTE: BEND RADIUS FOR #5 REBAR AND SMALLER IS 4d, (#5 = BAR DIAMETER)



- QTY MATERIALS LIST**
- (2) J-HOOK CONNECTOR PLATES (WITH 2" REBAR WELDED TO EACH)
 - (2) 2" X 19'-4" WWF RL 718 LONG 6.75mm @ 100mm CROSS 7.60mm @ 200mm (OR EQUIVALENT)
 - (3) #5 REBAR 18'-4"
 - (5) #4 REBAR STIRRUPS
 - CONCRETE CY: 2.36
 - WEIGHT: 9.560 LBS

REVISIONS		EAS-SET WORLDWIDE	
11		DATE	03.06.18
10		DATE	03.06.18
9		DATE	03.06.18
8		DATE	03.06.18
7		DATE	03.06.18
6		DATE	03.06.18
5		DATE	03.06.18
4		DATE	03.06.18
3		DATE	03.06.18
2		DATE	03.06.18
1		DATE	03.06.18

APPROVED PLANT			
MANUFACTURER			
J-J HOOKS 20' F-SHAPE FREESTANDING	Ref. No.		
TEMPORARY CONC. BARRIER (MASH)	Leaf No.		
DWG No.	JOB No.		
DRAWN BY: JAD	DATE: 03.06.18	SHEET	
CHECKED BY: WCP	DATE: 03.06.18	2/2	
APPROVED BY: WCP	DATE: 03.06.18		

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