



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

March 8, 2023

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

In Reply Refer To:
HSST-1/CC-172

Bret R. Eckert
Trinity Highway Products, LLC
15601 Dallas Parkway, Suite 525
Addison, TX 75001
USA

Dear Mr. Eckert:

We received your correspondence of April 21, 2022 requesting issuance of a reimbursement eligibility letter under the Federal-aid highway program for the roadside safety system, device, design, product, or hardware (collectively “device”) described below. This letter is assigned Federal Highway Administration (FHWA) control number CC-172.

ELIGIBILITY LETTERS

The FHWA issues Federal-aid reimbursement eligibility letters for new roadside safety devices that are crash tested in accordance with the industry standard of the American Association of State Highway and Transportation Officials (AASHTO) Manual for Assessing Safety Hardware (MASH).

FHWA, the Department of Transportation, and the United States (government) do not regulate roadside safety devices, crash test facilities, or the manufacturing industry. Issuance of eligibility letters is discretionary and provided only as a service to the states. FHWA may, at its discretion, decline to issue, revise, or rescind an eligibility letter. Eligibility letters are only issued by the FHWA headquarters Office of Safety.

Eligibility letters are issued only as notice to the states that a device is eligible for reimbursement under the Federal-aid highway program. They do not establish approval or certification for any other purpose. Issuance of an eligibility letter is not a prerequisite or requirement for state transportation agencies seeking to use Federal-aid funds for roadside safety devices. State agencies may use a device for which an eligibility letter has not been issued and seek Federal-aid reimbursement.

FEDERAL-AID REIMBURSEMENT

The request for issuance of this letter certified the device was crash tested in accordance with the industry standard of AASHTO’s MASH. This eligibility letter is based on that certification and the material offered in support of its issuance. The device described below is eligible for reimbursement under the Federal-aid highway program.

Name of system: VORTEQ M
Type of system: Truck-Mounted Attenuator
Test Level: Test Level 3
Testing conducted by: Applus IDIADA KARCO Engineering, LLC
Date of request: April 21, 2022

Information about the device, including material such as the eligibility request, crash test reports, drawings, or images are included in one or more attachment(s) to this letter.

Eligibility letter CC-172 is inapplicable to devices, optional equipment, alternate materials, or other features that were not crash tested in accordance with AASHTO's MASH.

This letter is issued only for the subject device as crash tested under AASHTO's MASH. Later modification(s) of the device are not eligible for Federal-aid reimbursement under this letter. Notice of later modification(s) should be given to transportation agencies, facility owners, and operators (collectively "agencies").

Agencies should be provided appropriate information about the device's design, installation, maintenance, materials, and mechanical properties.

Issuance of this letter is discretionary, and it may be revised or rescinded at FHWA's discretion. This letter is not a determination of compliance with the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) or ownership of any intellectual property rights.

This eligibility letter is not a determination by the government that a crash involving the subject device will result in any particular outcome. It is limited to only the device's eligibility for Federal-aid reimbursement.

INTELLECTUAL PROPERTY

Issuance of this eligibility letter does not convey property rights of any sort nor any exclusive privilege. This letter is not authorization or consent by the government for the use, manufacture, or sale of any patented or proprietary system, device, design, product, or hardware for which the requester is not the patent owner. Eligibility letters are not an expression of any view, position, or determination by the government as to the validity, scope, or ownership of any intellectual property rights to a specific device. These letters do not grant, impute, suggest, or otherwise establish any ownership, distribution, or licensing rights to the requester. The government expresses no opinion about the intellectual property rights relating to any device for which this or any other eligibility letter is issued.

PUBLIC DISCLOSURE

To prevent any misunderstanding, and as discussed above, this eligibility letter is assigned FHWA control number CC-172. It should only be reproduced in full with its attachment(s). This letter and the material offered by the requester supporting its issuance is public information. All eligibility letters and supporting material are subject to public disclosure under the Freedom

of Information Act (FOIA). Eligibility letters are available to the public at https://safety.fhwa.dot.gov/roadway_dept/countermeasures/reduce_crash_severity/.

If you have any questions please contact Aimee Zhang at Aimee.Zhang@dot.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Amy Jackson-Grove". The signature is fluid and cursive, with the first name "Amy" being particularly prominent.

Amy Jackson-Grove
Acting Director, Office of Safety
Technologies
Office of Safety

Enclosures

Request for Federal Aid Reimbursement Eligibility of Highway Safety Hardware

Submitter	Date of Request:	November 17, 2022	<input checked="" type="radio"/> New <input type="radio"/> Resubmission
	Name:	Bret R. Eckert, P.E.	
	Company:	Trinity Highway Products, LLC	
	Address:	15601 Dallas Parkway, Suite 525, Addison, TX 75001	
	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
'CC': Truck-Mounted Attenuators (TMA)	<input checked="" type="radio"/> Physical Crash Testing <input type="radio"/> Engineering Analysis	VORTEQ® M	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 J. Buehler, P.E.	Same as Submitter <input type="checkbox"/>
Company Name:	Trinity Highway Products, LLC	Same as Submitter <input checked="" type="checkbox"/>
Address:	15601 Dallas Parkway, Suite 525, Addison, TX 75001	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.

The VORTEQ® M Trailer Mounted Attenuator ("VORTEQ® M") system technology is the commercial embodiment of intellectual property that is protected by patents assigned to Energy Absorption Systems, Inc. (a subsidiary of Trinity Highway Products, LLC ("THP")). THP does not pay royalties for sales of the VORTEQ® M. The VORTEQ® M system was designed and developed by engineers and employees at THP. The patent holder of record for the VORTEQ technology are John F. Laturner, P.E., Michael J. Buehler, P.E., and Brent S. Sindorf; and all are or were employed by THP. The associated United States patent numbers are 8,074,761 (Dated Dec. 13, 2011) and 8,464,825 (Dated Jun. 18, 2013).

Applus IDIADA Karco Engineering, LLC (KARCO) conducted the certification tests of the VORTEQ® M system. KARCO is an internationally accredited third party crash testing laboratory. Full-scale crash testing on the VORTEQ® M system was performed in accordance with testing criteria, as set forth by the American Association of State Highway and Transportation Officials (AASHTO) in the Manual for Assessing Safety Hardware ("MASH") (2016), with 2020 Errata. Other than fees paid to KARCO to conduct the tests and then analyze and report the test results, KARCO and THP do not share financial interests. The fees paid to KARCO were not dependent or contingent on the results of the tests.

PRODUCT DESCRIPTION

- New Hardware or Significant Modification
 Modification to Existing Hardware

The VORTEQ® M is a mobile crash cushion attached to the rear of a support vehicle. It is a towable system designed to be used on shadow or advanced warning vehicles upstream of moving operations or as a barrier vehicle for stationary work zones. The VORTEQ® M is designed to be used on support vehicles with a minimum weight of 12,200 lbm and no maximum weight limit. The VORTEQ® M consists of a tongue assembly, shaper rail assembly, x-brace assembly, impact head assembly, axle assembly, lighting, optional spare tire, and optional arrow board. The energy absorbing and structural portions of the VORTEQ® M consist of the tongue assembly, x-brace, shaper rails and impact head. The spare tire, arrow board, and battery box were present during testing. The tongue, x-brace and impact head assemblies are structural steel bolted together with the shaper rail assembly. There is also a flanged lunette ring that bolts into location on the front of the system. The frame is galvanized coated and has factory installed decals, name-plate, and VIN tag.

The VORTEQ® M is 294" long by 91" wide. The system is 34" high, including the nominal height above the ground of 14" at the rear of the system. A system without the optional arrow board weighs approximately 1690 lbs. The axle is a torsion axle with hubs fitted with 14" trailer wheels and tires. The axle fastens to the bottom of the left and right impact collars in four locations using 5/8-11 bolts and nuts. The wheels and tires are shrouded by fenders. There are four energy absorbing shaper rails (two per side) that are steel tube-in-tube design that deform during an impact event absorbing energy. Standard lighting consists of LED stop, turn, tail, and clearance/marker lights. The aluminum impact face plate is a light-weight assembly designed to cover the rear of the system and improve driver visibility. The VORTEQ® M was tested with a painted and striped impact face plate.

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:	Antonio Reyes	
Engineer Signature:	Antonio Reyes	Digitally signed by Antonio Reyes DN: cn=Antonio Reyes, o=Applus Idiada, ou, email=Antonio.Reyes@idiada.com, c=US Date: 2022.11.17 09:50:07 -08'00'
Address:	9270 Holly Road, Adelanto, CA 92301	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
3-50 (1100C)	<p>Applus IDIADA KARCO Test No. P41364-01. Test Date December 22, 2021. Crash Test Report No. TR-P41364-01 for MASH Test 3-50 Crash Test of Trinity Highway Products VORTEQ® M.</p> <p>The Trailer Mounted Attenuator (TMA) was impacted by a 2016 Kia Rio 4-door sedan. The test vehicle impacted the VORTEQ® M TMA at a velocity of 61.62 mph (99.16 km/h) and an impact angle of 0.7°. The VORTEQ® M brought the vehicle to a controlled stop. The maximum dynamic deflection of the system was 7.2 ft. (2.2 m). The impact was absorbed by the VORTEQ® M and the support truck remained stationary since it was blocked from forward movement. The vehicle experienced a maximum occupant impact velocity (OIV) of 39.7 ft/s (12.1 m/s) and a maximum ridedown acceleration of -14.9 g. The occupant compartment was not penetrated and the deformation limits were not exceeded. The Trinity Highway Products VORTEQ® M Trailer Mounted Attenuator met all the requirements for MASH 2016 Test 3-50.</p>	PASS
3-51 (2270P)	<p>Applus IDIADA KARCO Test No. P41365-01. Test Date December 22, 2021. Crash Test Report No. TR-P41365-01 for MASH Test 3-51 Crash Test of Trinity Highway Products VORTEQ® M.</p> <p>The Trailer-Mounted Attenuator (TMA) was impacted by a 2016 RAM 1500 4-door pickup truck. The test vehicle impacted the VORTEQ® M TMA at a velocity of 60.39 mph (97.19 km/h) and an impact angle of 0.6°. The VORTEQ® M TMA brought the vehicle to a controlled stop. The maximum dynamic deflection of the system was 13.1 ft. (4.0 m). The impact was absorbed by the VORTEQ® M and the support truck remained stationary since it was blocked from forward movement. The vehicle experienced a maximum occupant impact velocity (OIV) of 29.2 ft/s (8.9 m/s) and a maximum ridedown acceleration of -14.9 g. The occupant compartment was not penetrated and the deformation limits were not exceeded. The Trinity Highway Products VORTEQ® M Trailer Mounted Attenuator met all the requirements for MASH 2016 Test 3-51.</p>	PASS

Required Test Number	Narrative Description	Evaluation Results
3-52 (2270P)	<p>Applus IDIADA KARCO Test No. P42016-02. Test Date February 21, 2022. Crash Test Report No. TR-P42016-02 for MASH Test 3-52 Crash Test of Trinity Highway Products VORTEQ® M.</p> <p>The Trailer Mounted Attenuator (TMA) was impacted by a 2016 Ram 1500 4-door pick-up truck. The test vehicle impacted the VORTEQ® M TMA at a velocity of 61.63 mph (99.19 km/h) and an impact angle of 0.5°. The VORTEQ® M brought the vehicle to a controlled stop. The maximum dynamic deflection of the system was 11.3 ft. (3.5 m). The impact was absorbed by the VORTEQ® M and the support truck remained stationary since it was blocked from movement. The vehicle experienced a maximum occupant impact velocity (OIV) of 32.8 ft/s (10.0 m/s) and a maximum ridedown acceleration of -19.4 g. The occupant compartment was not penetrated and the deformation limits were not exceeded. The Trinity Highway Products VORTEQ® M Trailer Mounted Attenuator met all the requirements for MASH 2016 Test 3-52.</p>	PASS
3-53 (2270P)	<p>Applus IDIADA KARCO Test No. P42052-01. Test Date March 04, 2022. Crash Test Report No. TR-P42052-01 for MASH Test 3-53 Crash Test of Trinity Highway Products VORTEQ® M.</p> <p>The Trailer-Mounted Attenuator (TMA) was impacted by a 2016 RAM 1500 4-door pickup truck. The test vehicle impacted the VORTEQ® M TMA at a velocity of 65.30 mph (105.09 km/h) and an impact angle of 9.8°. The VORTEQ® M brought the vehicle to a controlled stop. The maximum dynamic deflection of the system was 13.1 ft (4.0m). The vehicle experienced a maximum occupant impact velocity (OIV) of 31.8 ft/s (9.7 m/s) and a maximum ridedown acceleration of -12.1 g. The occupant compartment was not penetrated and the deformation limits were not exceeded. The Trinity Highway Products VORTEQ® M Trailer Mounted Attenuator met all the requirements for MASH 2016 Test 3-53.</p>	PASS

3-54 (1500A)	<p>The results of the Occupant Risk Estimation for a 1500A Vehicle found in MASH 2016 Appendix G was conducted utilizing the accelerometer data from Test 3-51 on the Trinity Highway's VORTEQ®M.</p> <p>The estimated OIV and RA values of -11.94 ft/s and -16.81 g were found to comply with the evaluation criteria set forth in Chapter 5 of the Manual for Assessing Safety Hardware (MASH 2016). Reference Appendix E in all Test Reports.</p>	Non-Relevant Test, not conducted
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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:	KARCO Engineering, INC	
Laboratory Signature:	Antonio Reyes <small>Digitally signed by Antonio Reyes DN: cn=Antonio Reyes, o=Applus Idiada, ou, email=Antonio.Reyes@idiada.com, c=US Date: 2022.11.17 09:52:44 -08'00'</small>	
Address:	9270 Holly Road, Adelanto, CA 92301	Same as Submitter <input type="checkbox"/>
Country:	USA	Same as Submitter <input type="checkbox"/>
Accreditation Certificate Number and Dates of current Accreditation period :	International Accreditation Services (IAS) ISO 17025 Accreditation Certificate #TL-371 Expires July 1, 2022	

Submitter Signature*: **Bret Eckert**
Digitally signed by Bret Eckert
Date: 2022.11.17 10:16:02
-08'00'

Submit Form

ATTACHMENTS

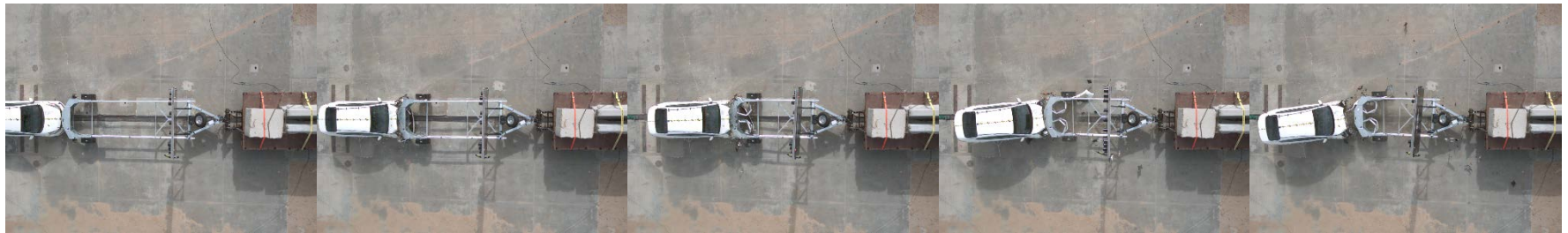
Attach to this form:

- 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

MASH 2016 Test 3-50 Summary



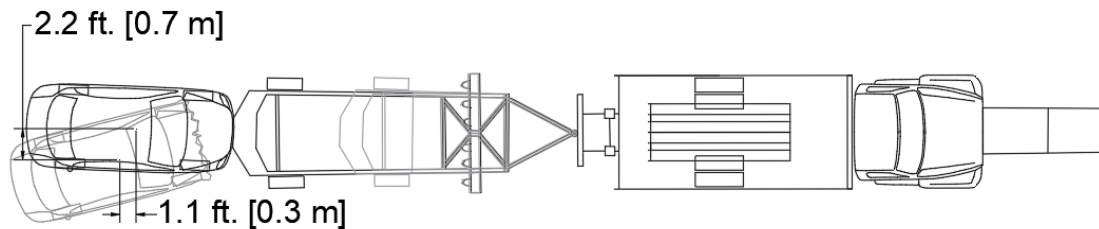
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GENERAL INFORMATION		Impact Conditions		Occupant Risk	
Test Agency.....	Applus IDIADA KARCO	Impact Velocity.....	61.62 mph (99.16 km/h)	Longitudinal OIV.....	39.7 ft/s (12.1 m/s)
Test Number.....	P41364-01	Impact Angle.....	0.7°	Lateral OIV.....	-0.3 ft/s (-0.1 m/s)
Test Designation.....	3-50	Location / Orientation.....	1.1 in (28 mm) Right of Trailer Mounted Attenuator Centerline	Longitudinal RA.....	14.9 g
Test Date.....	12/22/21	Kinetic Energy.....	308.0 kip-feet (417.7 Kilojoules)	Lateral RA.....	-2.9 g
TEST ARTICLE		Minimum KE.....	288.0 kip-feet (390.0 Kilojoules)	THIV.....	39.7 ft/s (12.1 m/s)
Name / Model.....	VORTEQ® M Trailer Mounted Attenuator	Exit Conditions		PHD.....	14.9 g
Type.....	Trailer Mounted Attenuator	Exit Velocity.....	Not Applicable	ASI.....	1.78
Support Vehicle Length.....	28.2 ft. (8.6 m)	Exit Angle.....	Not Applicable	Test Article Deflections	
TMA Length.....	24.5 ft. (7.5 m)	Final Vehicle Position.....	1.1 ft. (0.3 m) Upstream 2.2 ft. (0.7 m) Right	Static.....	7.1 ft. (2.2 m)
Road Surface.....	Smooth, Clean Concrete	Support Vehicle Roll Ahead..	None	Dynamic.....	7.2 ft. (2.2 m)
Support Vehicle Restraint....	Blocked for Infinite Weight	Vehicle Snagging.....	None	Working Width.....	Not Applicable
TEST VEHICLE		Vehicle Pocketing.....	None	Debris Field.....	Not Applicable
Type / Designation.....	1100C	Vehicle Stability.....	Satisfactory	Vehicle Damage	
Year, Make, and Model....	2016 Kia Rio	Maximum Roll Angle.....	-4.8 °	Vehicle Damage Scale.....	12-FD-5
Curb Mass.....	2,575.0 lbs (1,168.0 kg)	Maximum Pitch Angle.....	-12.0 °	CDC.....	12FDEW3
Test Inertial Mass.....	2,427.2 lbs (1,101.0 kg)	Maximum Yaw Angle.....	-8.2 °	Maximum Intrusion.....	0.0 in. (0 mm)
Gross Static Mass.....	2,572.8 lbs (1,167.0 kg)				

Figure 3 Summary of Test 3-50

MASH 2016 Test 3-51 Summary



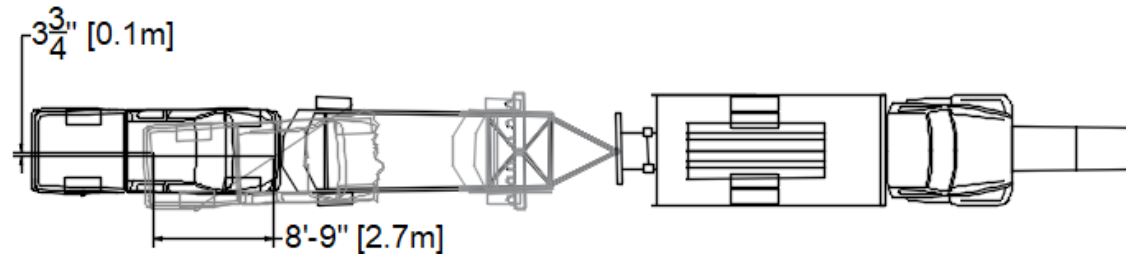
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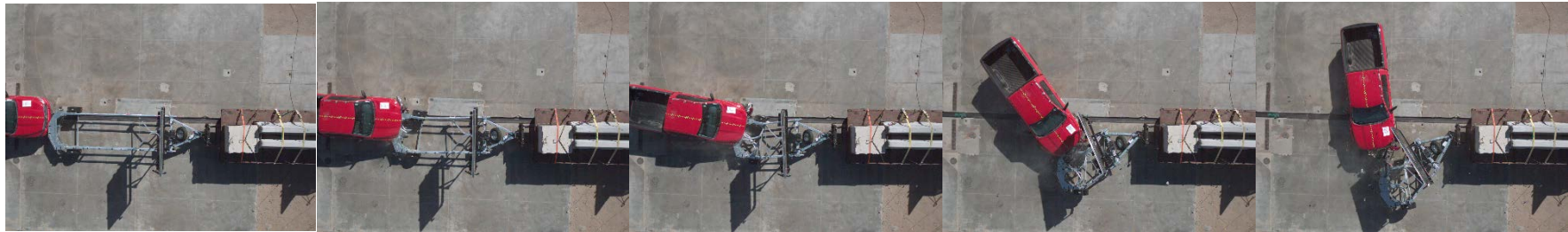
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<p>GENERAL INFORMATION</p>	<p>Impact Conditions</p>	<p>Occupant Risk</p>
<p>Test Agency..... Applus IDIADA KARCO Test Number..... P41365-01 Test Designation..... 3-51 Test Date..... 12/22/21</p>	<p>Impact Velocity..... 60.39 mph (97.19 km/h) Impact Angle..... 0.6° Location / Orientation..... 3.2 in. (81 mm) Right of Trailer Mounted Attenuator Centerline Kinetic Energy..... 612.6 kip-feet (830.5 Kilojoules) Minimum KE..... 594.0 kip-feet (806.0 Kilojoules)</p>	<p>Longitudinal OIV..... 29.2 ft/s (8.9 m/s) Lateral OIV..... 0.3 ft/s (0.1 m/s) Longitudinal RA..... -14.9 g Lateral RA..... 1.4 g THIV..... 29.2 ft/s (8.9 m/s) PHD..... 14.9 g ASI..... 1.08</p>
<p>TEST ARTICLE</p>	<p>Exit Conditions</p>	<p>Test Article Deflections</p>
<p>Name / Model..... VORTEQ®M Trailer Mounted Attenuator Type..... Trailer Mounted Attenuator Support Vehicle Length..... 28.2 ft. (8.6 m) TMA Length..... 24.5 ft. (7.5 m) Road Surface..... Smooth, Clean Concrete Support Vehicle Restraint.... Blocked for Infinite Weight</p>	<p>Exit Velocity..... Not Applicable Exit Angle..... Not Applicable Final Vehicle Position..... 8.8 ft. (2.7 m) Downstream 0.3 ft. (0.1 m) Right</p>	<p>Static..... 13.1 ft. (4.0 m) Dynamic..... 13.1 ft. (4.0 m) Working Width..... Not Applicable Debris Field..... Not Applicable</p>
<p>TEST VEHICLE</p>	<p>Support Vehicle Roll Ahead.. None Vehicle Snagging..... None Vehicle Pocketing..... None Vehicle Stability..... Satisfactory Maximum Roll Angle..... 5.2 ° Maximum Pitch Angle..... -7.3 ° Maximum Yaw Angle..... 3.6 °</p>	<p>Vehicle Damage</p> <p>Vehicle Damage Scale..... 12-FD-1 CDC..... 12FDEW1 Maximum Intrusion..... 0.0 in. (0 mm)</p>
<p>Type / Designation..... 2270P Year, Make, and Model.... 2016 Ram 1500 Curb Mass..... 5,084.9 lbs (2,306.5 kg) Test Inertial Mass..... 5,024.3 lbs (2,279.0 kg) Gross Static Mass..... 5,024.3 lbs (2,279.0 kg)</p>		

Figure 3 Summary of Test 3-51

MASH 2016 Test 3-52 Summary



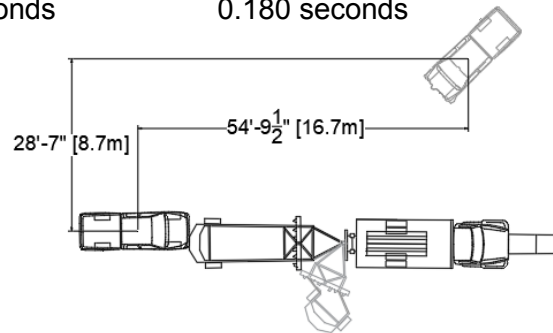
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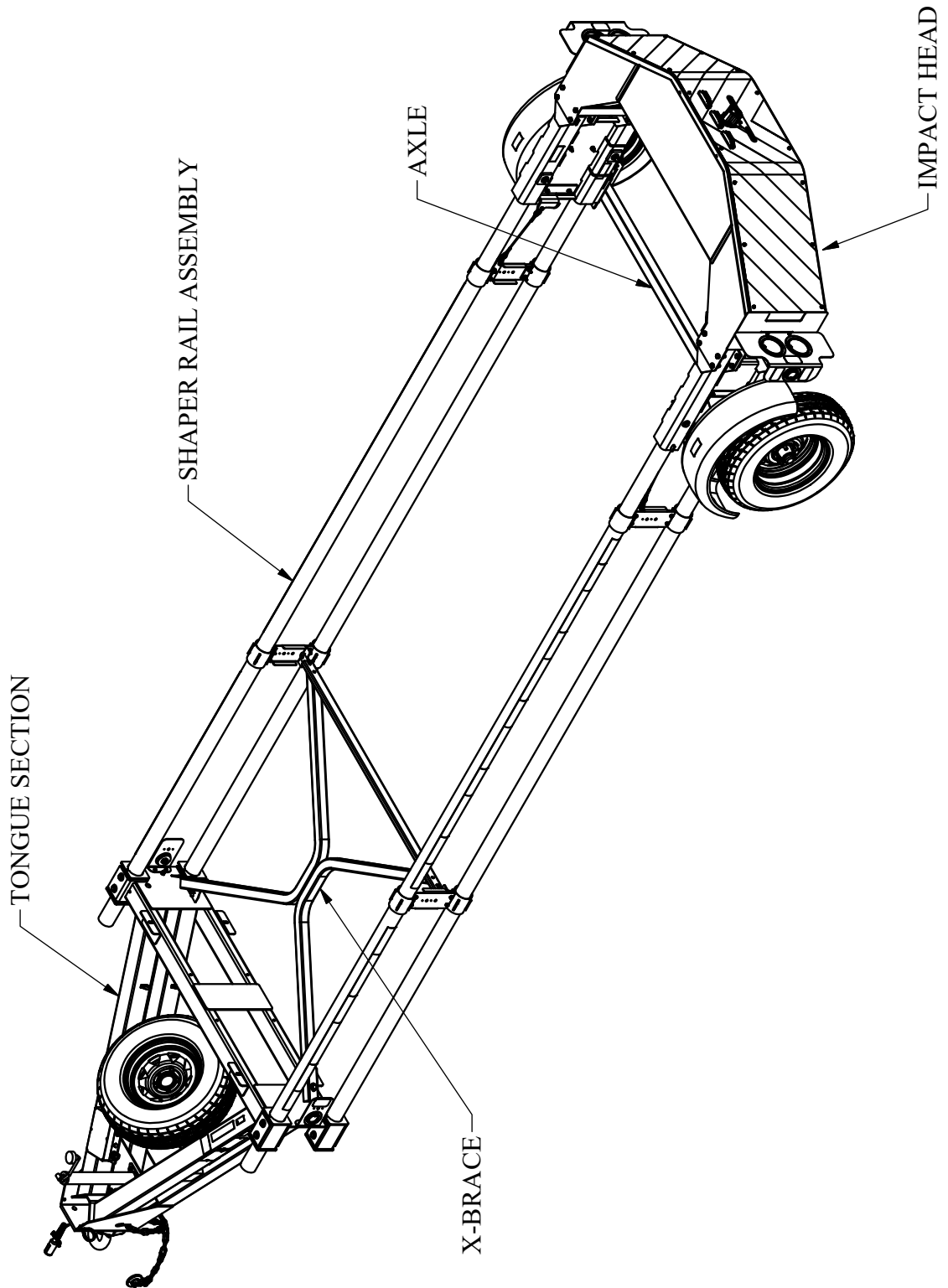


GENERAL INFORMATION	
Test Agency.....	Applus IDIADA KARCO
Test Number.....	P42016-02
Test Designation.....	3-52
Test Date.....	02/21/22
TEST ARTICLE	
Name / Model.....	VORTEQ [®] M Trailer Mounted Attenuator
Type.....	Trailer Mounted Attenuator
Support Vehicle Length.....	28.2 ft. (8.6 m)
TMA Length.....	24.5 ft. (7.5 m)
Road Surface.....	Smooth, Clean Concrete
Support Vehicle Restraint....	Blocked for Infinite Weight
TEST VEHICLE	
Type / Designation.....	2270P
Year, Make, and Model....	2016 Ram 1500
Curb Mass.....	5,057.3 lbs (2,294.0 kg)
Test Inertial Mass.....	5,013.2 lbs (2,274.0 kg)
Gross Static Mass.....	5,013.2 lbs (2,274.0 kg)

Impact Conditions	
Impact Velocity.....	61.63 mph (99.19 km/h)
Impact Angle.....	0.5°
Location / Orientation.....	3.6 in. (91 mm) Driver Side of Trailer Mounted Attenuator Centerline
Kinetic Energy.....	636.6 kip-feet (863.2 Kilojoules)
Minimum KE.....	594.0 kip-feet (806.0 Kilojoules)
Exit Conditions	
Exit Velocity.....	Not Applicable
Exit Angle.....	Not Applicable
Final Vehicle Position.....	54.8 ft. (16.7 m) Downstream 28.6 ft. (8.7 m) Left
Support Vehicle Roll Ahead..	None
Vehicle Snagging.....	None
Vehicle Pocketing.....	None
Vehicle Stability.....	Satisfactory
Maximum Roll Angle.....	-1.5 °
Maximum Pitch Angle.....	-8.3 °
Maximum Yaw Angle.....	60.5 °

Occupant Risk	
Longitudinal OIV.....	32.8 ft/s (10.0 m/s)
Lateral OIV.....	0.3 ft/s (0.1 m/s)
Longitudinal RA.....	19.4 g
Lateral RA.....	4.8 g
THIV.....	32.8 ft/s (10.0 m/s)
PHD.....	19.5 g
ASI.....	1.35
Test Article Deflections	
Static.....	11.3 ft. (3.5 m)
Dynamic.....	11.3 ft. (3.5 m)
Working Width.....	Not Applicable
Debris Field.....	Not Applicable
Vehicle Damage	
Vehicle Damage Scale.....	12-FD-2
CDC.....	12FDEW2
Maximum Intrusion.....	0.0 in. (0 mm)

Figure 3 Summary of Test 3-52



2023

VORTEQ® M TRAILER MOUNTED ATTENUATOR



TRINITY
HIGHWAY

SWTxx

SHEET NO.

DATE

1 of 2

2/6/2023

INTENDED USE

The VORTEQ®M is a mobile crash cushion attached to the rear of a support vehicle. It is a towable system designed to be used on shadow or advanced warning vehicles upstream of moving operations or as a barrier vehicle for stationary work zones. The VORTEQ®M is designed to be used on support vehicles with a minimum weight of 12,200 lb. and an infinite maximum weight.

FEATURES

The VORTEQ®M consists of a tongue section, energy absorbing shaper rails, an axle, lighting, and an impact head with face plate, optional spare tire, and optional arrow board/message board. All major components are manufactured from steel and have a galvanized coating. There is also a flanged pintle lunette ring that bolts into location on the front of the system.

SPECIFICATIONS

- The VORTEQ®M is 294" long.
- Width is 91" wide.
- Height is 33" high.
- A system without options weighs approximately 1700 lbs.

ELIGIBILITY

The VORTEQ®M TMA has been tested in conformance to MASH 2nd Edition (2016) with 2020 Errata Test Level 3 and is eligible for Federal-aid reimbursement by FHWA.

FHWA Eligibility Letter(s): CC-##### dated _____ for MASH 2016 Test Level 3

REFERENCES

American Association of State Highway and Transportation Officials (AASHTO), Manual for Assessing Safety Hardware (MASH), 2nd Edition (2016) with 2020 Errata.

CONTACT INFORMATION

15601 Dallas Parkway, Suite 525 Addison, TX 75001
Telephone: (888) 356-2363 Fax: (800) 770-6755
<http://www.trinityhighway.com>

VORTEQ® M TRAILER MOUNTED ATTENUATOR

SWTxx

SHEET NO.

DATE

2 of 2

2/6/2023



TRINITY
HIGHWAY