



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

March 29, 2023

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

In Reply Refer To:
HSST-1/CC-173

Don Pyde
Valtir, LLC
15601 Dallas Parkway, Suite 525
Addison, TX 75001
USA

Dear Mr. Pyde:

We received your correspondence of August 4, 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-173.

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: ALPHA DXM Truck Mounted Attenuator
Type of system: Truck Mounted Attenuator
Test Level: Test Level 2
Testing conducted by: IDIADA Karco
Date of request: August 4, 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-173 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.

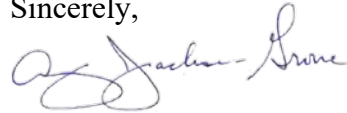
PUBLIC DISCLOSURE

To prevent any misunderstanding, and as discussed above, this eligibility letter is assigned FHWA control number CC-173. 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

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 that reads "Amy Jackson-Grove". The signature is cursive and stylized, 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:	August 04, 2022	<input checked="" type="radio"/> New <input type="radio"/> Resubmission
	Name:	Bret R. Eckert, P.E.	
	Company:	VALTIR, 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	ALPHA™ DXM	AASHTO MASH	TL2

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:	Don Pyde	Same as Submitter <input type="checkbox"/>
Company Name:	VALTIR, LLC	Same as Submitter <input type="checkbox"/>
Address:	15601 Dallas Parkway, Suite 525, Addison, TX 75001	Same as Submitter <input type="checkbox"/>
Country:	USA	Same as Submitter <input 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 ALPHA™ DXM Truck Mounted Attenuator ("ALPHA™ DXM") system technology is the commercial embodiment of intellectual property that was assigned to Energy Absorption Systems, a subsidiary of Valtir, LLC ("Valtir"). Valtir does not pay royalties for sales of the ALPHA™ DXM. The ALPHA™ DXM system was designed and developed by engineers and employees at Valtir. The patent holders of record for the ALPHA™ technology are David C. Gertz and Owen S Denman, P.E.; and all are or were employed by Energy Absorption Systems.

Applus IDIADA Karco Engineering, LLC (KARCO) conducted the certification tests of the ALPHA™ DXM system. KARCO is an internationally accredited third party crash testing laboratory. Full-scale crash testing on the ALPHA™ DXM 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 Valtir 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 ALPHA™ DXM is a mobile crash cushion attached to the rear of a support vehicle. It is attached on shadow or advanced warning vehicles upstream of moving operations or as a barrier vehicle for stationary work zones. The ALPHA™ DXM is designed to be used on support vehicles with a minimum weight of 12,200 lbs and a maximum weight of 26,500 lbs. The ALPHA™ DXM consists of a backup and support assembly and the DXM cartridge assembly with LED lighting. The energy absorbing and structural portions of the ALPHA™ DXM cartridge assembly consist of a fabricated aluminum cell structure with a powder coated exterior finish. The ALPHA™ DXM cartridge assembly bolts to the backup and support assembly that attaches to the rear frame of the support vehicle with quick release pins. The backup and support structure is fabricated from powder coated, structural steel.

The ALPHA™ DXM is 132" long by 94" wide. The system in its deployed orientation is 34.5" high, including the nominal height above the ground of 12" ± 1" at the rear of the system. A complete ALPHA™ DXM system weighs approximately 1160 lbs with the DXM cartridge contributing 390 lbs of the total weight. Lighting consists of LED stop, tail, turn, ICC and marker lights in addition to clearance and marker reflectors. The plastic Durashell nose covers the rear of the system and striped with reflective tape.

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:	<h2 style="margin: 0;">Antonio Reyes</h2>	Digitally signed by Antonio Reyes DN: cn=Antonio Reyes, o=Applus Idiada, ou, email=Antonio.Reyes@idiada.com, c=US Date: 2022.08.03 12:02:10 -07'00'
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
2-50 (1100C)	<p>Applus IDIADA KARCO Test No. P41361-01. Test Date December 15, 2021. Crash Test Report No. TR-P41361-01-A for MASH Test 2-50 Crash Test of the Valtir ALPHA™ DXM Truck Mounted Attenuator.</p> <p>The Truck Mounted Attenuator (TMA) was impacted by a 2015 Kia Rio 4-door sedan. The test vehicle impacted the ALPHA™ DXM TMA at a velocity of 42.46 mph (68.34 km/h) and an impact angle of -0.3°. The ALPHA™ DXM brought the vehicle to a controlled stop. The maximum dynamic deflection of the system was 5.7 ft. (1.7 m). The impact was absorbed by the ALPHA™ DXM and the support truck moved forward in a controlled manner. The vehicle experienced a maximum occupant impact velocity (OIV) of 36.1 ft/s (11.0 m/s) and a maximum ridedown acceleration (RA) of -18.1 g. The occupant compartment was not penetrated and the deformation limits were not exceeded. The Valtir ALPHA™ DXM Truck Mounted Attenuator met all the requirements for MASH 2016 Test 2-50.</p>	PASS
2-51 (2270P)	<p>Applus IDIADA KARCO Test No. P42056-01. Test Date March 11, 2022. Crash Test Report No. TR-P42056-01-NC for MASH Test 2-51 Crash Test of the Valtir ALPHA™ DXM Truck Mounted Attenuator.</p> <p>The Truck Mounted Attenuator (TMA) was impacted by a 2016 RAM 1500 4-door pickup truck. The test vehicle impacted the ALPHA™ DXM TMA at a velocity of 45.53 mph (73.27 km/h) and an impact angle of 1.1°. The ALPHA™ DXM brought the vehicle to a controlled stop. The maximum dynamic deflection of the system was 7.3 ft. (2.2 m). The impact was absorbed by the ALPHA™ DXM and the support truck moved forward in a controlled manner. The vehicle experienced a maximum occupant impact velocity (OIV) of 33.5 ft/s (10.2 m/s) and a maximum ridedown acceleration (RA) of -17.9 g. The occupant compartment was not penetrated and the deformation limits were not exceeded. The Valtir ALPHA™ DXM Truck Mounted Attenuator met all the requirements for MASH 2016 Test 2-51.</p>	PASS

Required Test Number	Narrative Description	Evaluation Results
2-52 (2270P)	<p>Applus IDIADA KARCO Test No. P42028-01. Test Date March 23, 2022. Crash Test Report No. TR-P42028-01-NC for MASH Test 2-52 Crash Test of the Valtir ALPHA™ DXM Truck Mounted Attenuator.</p> <p>The Truck Mounted Attenuator (TMA) was impacted by a 2016 RAM 1500 4-door pickup truck. The test vehicle impacted the ALPHA™ DXM TMA at a velocity of 45.27 mph (72.86 km/h) and an impact angle of 0.4°. The ALPHA™ DXM brought the vehicle to a controlled stop. The maximum dynamic deflection of the system was 7.3 ft. (2.2 m). The impact was absorbed by the ALPHA™ DXM and the support truck moved forward in a controlled manner. The vehicle experienced a maximum occupant impact velocity (OIV) of 32.5 ft/s (9.9 m/s) and a maximum ridedown acceleration (RA) of -16.4 g. The occupant compartment was not penetrated and the deformation limits were not exceeded. The Valtir ALPHA™ DXM Truck Mounted Attenuator met all the requirements for MASH 2016 Test 2-52.</p>	PASS
2-53 (2270P)	<p>Applus IDIADA KARCO Test No. P42018-01. Test Date February 2, 2022. Crash Test Report No. TR-P42018-01-NC for MASH Test 2-53 Crash Test of the Valtir ALPHA™ DXM Truck Mounted Attenuator.</p> <p>The Truck Mounted Attenuator (TMA) was impacted by a 2017 RAM 1500 4-door pickup truck. The test vehicle impacted the ALPHA™ DXM TMA at a velocity of 44.84 mph (72.17 km/h) and an impact angle of 9.7°. The ALPHA™ DXM brought the vehicle to a controlled stop. The maximum dynamic deflection of the system was 7.8 ft. (2.4 m). The impact was absorbed by the ALPHA™ DXM and the support truck moved forward in a controlled manner. The vehicle experienced a maximum occupant impact velocity (OIV) of 31.2 ft/s (9.5 m/s) and a maximum ridedown acceleration (RA) of -12.0 g. The occupant compartment was not penetrated and the deformation limits were not exceeded. The Valtir ALPHA™ DXM Truck Mounted Attenuator met all the requirements for MASH 2016 Test 2-53.</p>	PASS

2-54 (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 2-51 on the Valtir ALPHA™ DXM.</p> <p>The estimated OIV and RA values were found to comply with the evaluation criteria set forth in Chapter 5 of the Manual for Assessing Safety Hardware (MASH 2016).</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: 2022.08.03 12:01:37 -07'00'</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 April 27, 2024	

Submitter Signature*: **Bret Eckert**
Digitally signed by Bret Eckert
Date: 2022.08.04 16:14:36
-07'00'

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 2-50 Summary



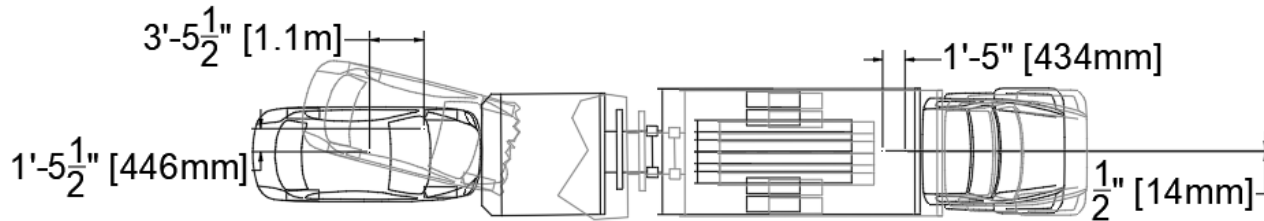
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GENERAL INFORMATION		Impact Conditions		Occupant Risk	
Test Agency.....	Applus IDIADA KARCO	Impact Velocity.....	42.46 mph (68.34 km/h)	Longitudinal OIV.....	36.1 ft/s (11.0 m/s)
Test Number.....	P41361-01	Impact Angle.....	-0.3°	Lateral OIV.....	2.3 ft/s (0.7 m/s)
Test Designation.....	2-50	Location / Orientation.....	0.2 in. (5 mm) Right of Truck Mounted Attenuator Centerline	Longitudinal RA.....	-18.1 g
Test Date.....	12/15/21	Kinetic Energy.....	146.9 kip-feet (199.2 Kilojoules)	Lateral RA.....	-2.2 g
		Minimum KE.....	141.0 kip-feet (191.0 Kilojoules)	THIV.....	36.1 ft/s (11.0 m/s)
				PHD.....	18.2 g
				ASI.....	1.42
TEST ARTICLE		Exit Conditions		Test Article Deflections	
Name / Model.....	ALPHA™ DXM Truck Mounted Attenuator	Exit Velocity.....	Not Applicable	Static.....	5.7 ft. (1.7 m)
Type.....	Truck Mounted Attenuator	Exit Angle.....	Not Applicable	Dynamic.....	5.7 ft. (1.7 m)
Support Vehicle Length.....	28.2 ft. (8.6 m)	Final Vehicle Position.....	3.5 ft. (1.1 m) Upstream 1.5 ft. (0.5 m) Driver Side	Working Width.....	Not Applicable
TMA Length.....	11.0 ft. (3.35 m)	Support Vehicle Roll Ahead..	1.4 ft. (0.4 m) Downstream	Debris Field.....	Not Applicable
Road Surface.....	Smooth, Clean Concrete	Vehicle Snagging.....	None		
Support Vehicle Restraint....	None	Vehicle Pocketing.....	None		
		Vehicle Stability.....	Satisfactory		
		Maximum Roll Angle.....	-1.5 °		
		Maximum Pitch Angle.....	2.0 °		
		Maximum Yaw Angle.....	10.4 °		
TEST VEHICLE		Vehicle Damage			
Type / Designation.....	1100C	Vehicle Damage Scale.....	12FD-2		
Year, Make, and Model....	2015 Kia Rio	CDC.....	12FCMW1		
Curb Mass.....	2,561.7 lbs (1,162.0 kg)	Maximum Intrusion.....	0.0 in. (0 mm)		
Test Inertial Mass.....	2,437.2 lbs (1,105.5 kg)				
Gross Static Mass.....	2,621.3 lbs (1,189.0 kg)				

Figure 3 Summary of Test 2-50

MASH 2016 Test 2-51 Summary



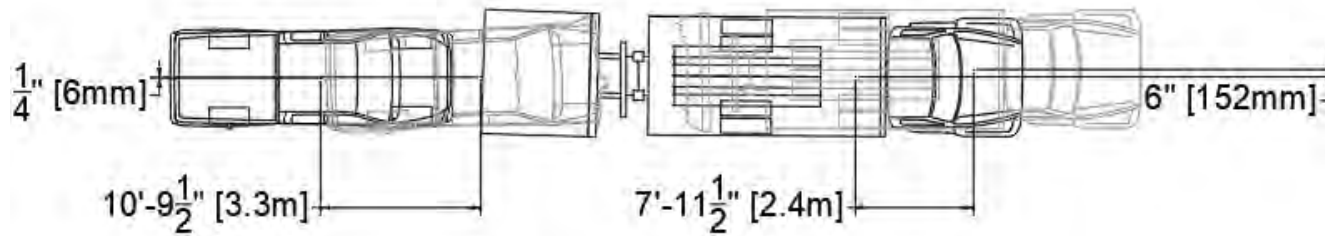
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GENERAL INFORMATION		Impact Conditions		Occupant Risk	
Test Agency.....	Applus IDIADA KARCO	Impact Velocity.....	45.53 mph (73.27 km/h)	Longitudinal OIV.....	33.5 ft/s (10.2 m/s)
Test Number.....	P42056-01	Impact Angle.....	1.1°	Lateral OIV.....	1.6 ft/s (-0.5 m/s)
Test Designation.....	2-51	Location / Orientation.....	0.6 in. (15 mm) Passenger Side of Truck Mounted Attenuator Centerline	Longitudinal RA.....	17.9 g
Test Date.....	03/11/22	Kinetic Energy.....	502.0 kip-feet (473.5 Kilojoules)	Lateral RA.....	1.6 g
		Minimum KE.....	291.0 kip-feet (395.0 Kilojoules)	THIV.....	33.5 ft/s (10.2 m/s)
				PHD.....	17.9 g
				ASI.....	1.31
TEST ARTICLE		Exit Conditions		Test Article Deflections	
Name / Model.....	ALPHA™ DXM	Exit Velocity.....	Not Applicable	Static.....	7.3 ft. (2.2 m)
Type.....	Truck Mounted Attenuator	Exit Angle.....	Not Applicable	Dynamic.....	7.3 ft. (2.2 m)
Support Vehicle Length.....	28.2 ft. (8.6 m)	Final Vehicle Position.....	10.8 ft. (3.3 m) Downstream	Working Width.....	Not Applicable
TMA Length.....	11.0 ft. (3.35 m)		0.3 in. (6 mm) Driver Side	Debris Field.....	Not Applicable
Road Surface.....	Smooth, Clean Concrete	Support Vehicle Roll Ahead..	8.0 ft. (2.4 m) Downstream		
Support Vehicle Restraint....	None	Vehicle Snagging.....	None		
		Vehicle Pocketing.....	None		
		Vehicle Stability.....	Satisfactory		
		Maximum Roll Angle.....	-2.2 °		
		Maximum Pitch Angle.....	-5.2 °		
		Maximum Yaw Angle.....	1.1 °		
TEST VEHICLE		Vehicle Damage			
Type / Designation.....	2270P	Vehicle Damage Scale.....	12-FD-1		
Year, Make, and Model....	2016 Ram 1500	CDC.....	12FDLW1		
Curb Mass.....	5,080.5 lbs (2,304.5 kg)	Maximum Intrusion.....	0.0 in. (0 mm)		
Test Inertial Mass.....	5,035.3 lbs (2,284.0 kg)				
Gross Static Mass.....	5,035.3 lbs (2,284.0 kg)				

Figure 3 Summary of Test 2-51

MASH 2016 Test 2-52 Summary



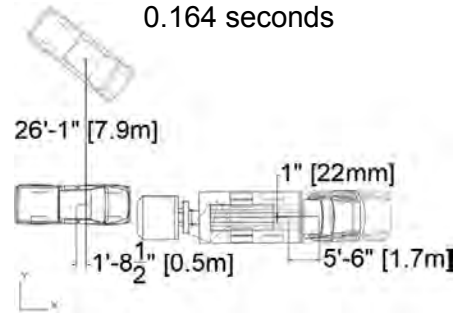
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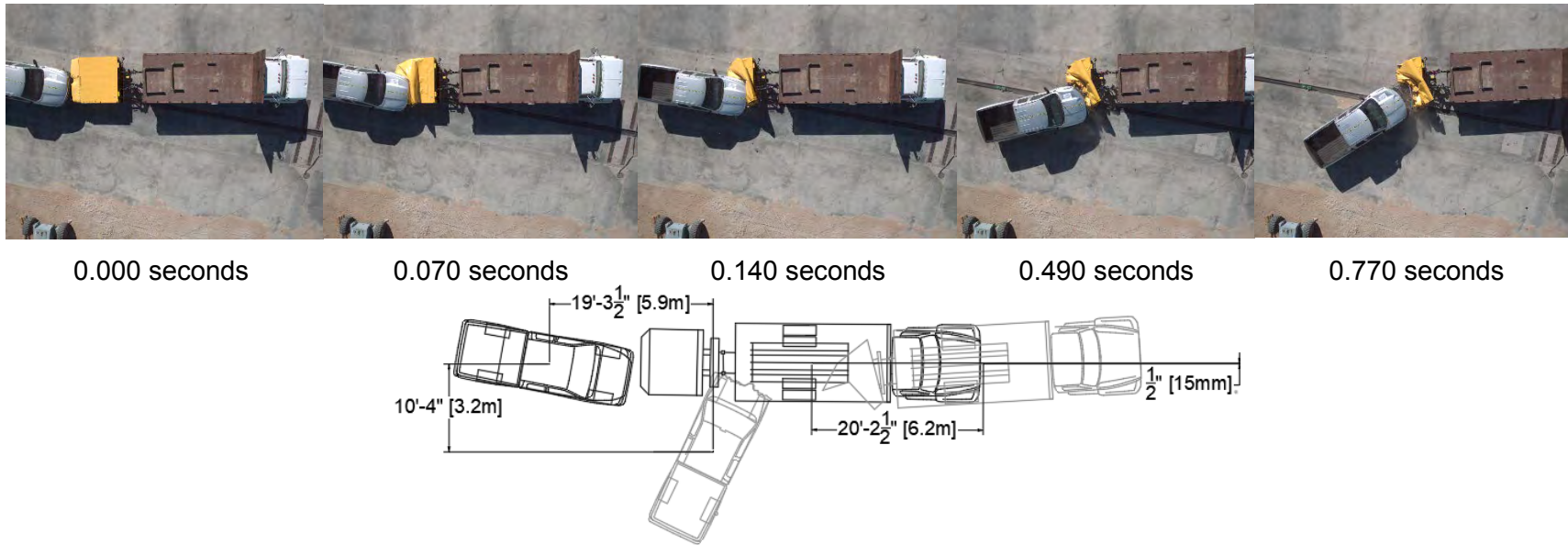
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GENERAL INFORMATION		Impact Conditions		Occupant Risk	
Test Agency.....	Applus IDIADA KARCO	Impact Velocity.....	45.27 mph (72.86 km/h)	Longitudinal OIV.....	32.5 ft/s (9.9 m/s)
Test Number.....	P42028-01	Impact Angle.....	0.4°	Lateral OIV.....	1.6 ft/s (0.5 m/s)
Test Designation.....	2-52	Location / Orientation.....	0.4 in. (10 mm) 1/3 the Vehicle Width Truck Mounted Attenuator Centerline	Longitudinal RA.....	-16.4 g
Test Date.....	03/23/22	Kinetic Energy.....	344.6 kip-feet (467.2 Kilojoules)	Lateral RA.....	-3.2 g
		Minimum KE.....	291.0 kip-feet (395.0 Kilojoules)	THIV.....	32.5 ft/s (9.9 m/s)
TEST ARTICLE				PHD.....	16.5 g
Name / Model.....	ALPHA™ DXM	Exit Conditions		ASI.....	1.17
Type.....	Truck Mounted Attenuator	Exit Velocity.....	Not Applicable		
Support Vehicle Length.....	28.2 ft. (8.6 m)	Exit Angle.....	Not Applicable	Test Article Deflections	
TMA Length.....	11.0 ft. (3.35 m)	Final Vehicle Position.....	26.1 ft. (7.9 m) Driver Side	Static.....	7.3 ft. (2.2 m)
Road Surface.....	Smooth, Clean Concrete	Support Vehicle Roll Ahead..	1.7 ft. (0.5 m) Downstream	Dynamic.....	7.3 ft. (2.2 m)
Support Vehicle Restraint....	None	Vehicle Snagging.....	None	Working Width.....	Not Applicable
		Vehicle Pocketing.....	None	Debris Field.....	Not Applicable
TEST VEHICLE		Vehicle Stability.....	Satisfactory		
Type / Designation.....	2270P	Maximum Roll Angle.....	-4.7°	Vehicle Damage	
Year, Make, and Model....	2016 Ram 1500	Maximum Pitch Angle.....	-8.5°	Vehicle Damage Scale.....	12-FR-2
Curb Mass.....	5,087.1 lbs (2,307.5 kg)	Maximum Yaw Angle.....	21.3°	CDC.....	12FZLN1
Test Inertial Mass.....	5,028.7 lbs (2,281.0 kg)			Maximum Intrusion.....	0.0 in. (0 mm)
Gross Static Mass.....	5,028.7 lbs (2,281.0 kg)				

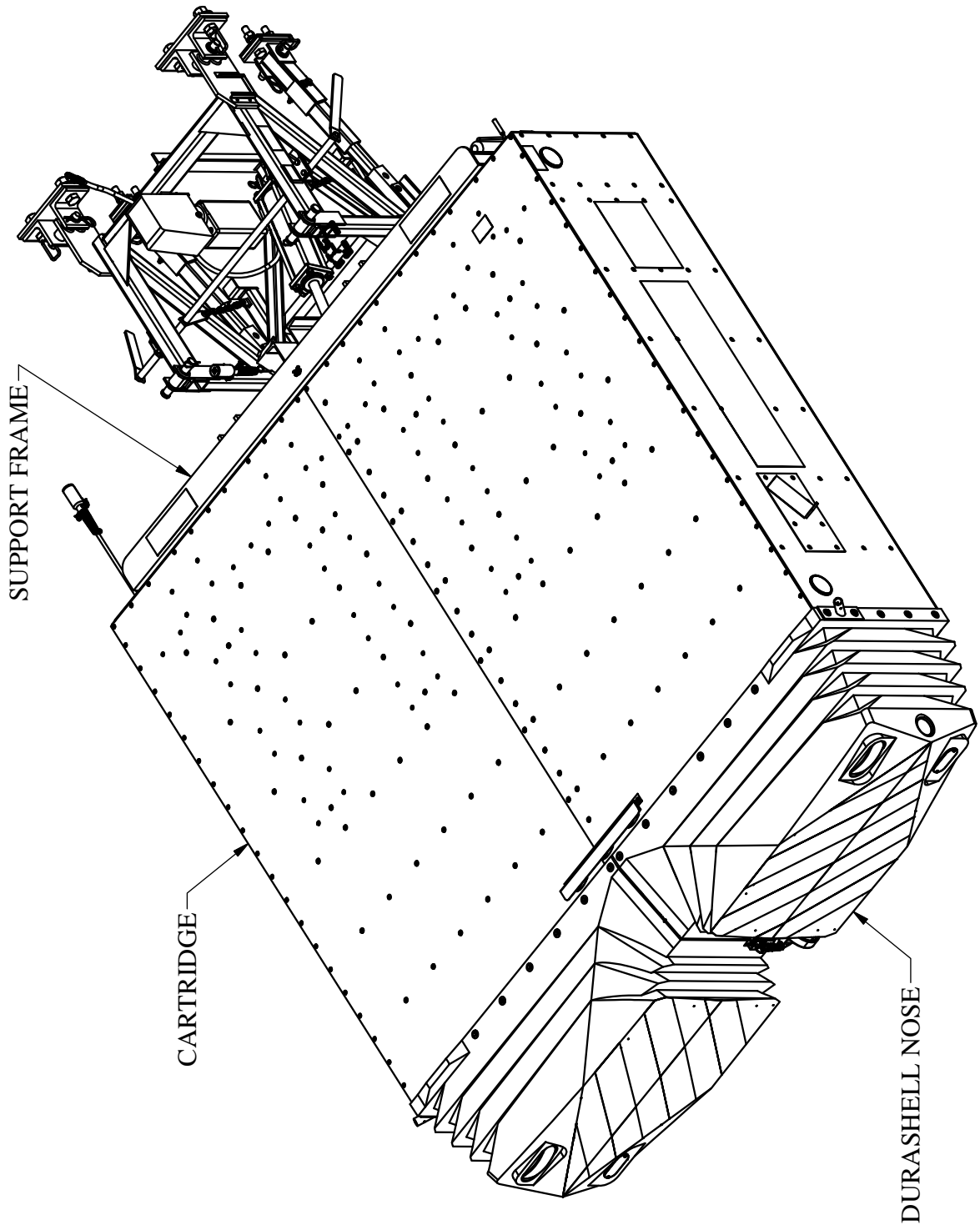
Figure 3 Summary of Test 2-52

MASH 2016 Test 2-53 Summary



<p>GENERAL INFORMATION</p> <p>Test Agency..... Applus IDIADA KARCO Test Number..... P42018-01 Test Designation..... 2-53 Test Date..... 02/02/22</p>	<p>Impact Conditions</p> <p>Impact Velocity..... 44.84 mph (72.17 km/h) Impact Angle..... 9.7° Location / Orientation..... 0.87 in. (22 mm) An angle of 10°, 1/4 the Vehicle Width to the Truck Mounted Attenuator Centerline</p> <p>Kinetic Energy..... 336.7 kip-feet (456.5 Kilojoules) Minimum KE..... 291.0 kip-feet (395.0 Kilojoules)</p>	<p>Occupant Risk</p> <p>Longitudinal OIV..... 31.2 ft/s (9.5 m/s) Lateral OIV..... -4.6 ft/s (-1.4 m/s) Longitudinal RA..... -12.0 g Lateral RA..... 4.3 g THIV..... 31.5 ft/s (9.6 m/s) PHD..... 12.3 g ASI..... 0.97</p>
<p>TEST ARTICLE</p> <p>Name / Model..... ALPHA™ DXM Truck Mounted Attenuator</p> <p>Type..... Truck Mounted Attenuator</p> <p>Support Vehicle Length..... 28.2 ft. (8.6 m) TMA Length..... 11.0 ft. (3.35 m) Road Surface..... Smooth, Clean Concrete Support Vehicle Restraint.... None</p>	<p>Exit Conditions</p> <p>Exit Velocity..... Not Applicable Exit Angle..... Not Applicable Final Vehicle Position..... 19.3 ft. (5.9 m) Downstream 10.3 ft. (3.2 m) Passenger Side</p> <p>Support Vehicle Roll Ahead.. 20.2 ft. (6.2 m) Downstream Side</p> <p>Vehicle Snagging..... None Vehicle Pocketing..... None Vehicle Stability..... Satisfactory</p> <p>Maximum Roll Angle..... 5.8° Maximum Pitch Angle..... -7.3° Maximum Yaw Angle..... -57.0°</p>	<p>Test Article Deflections</p> <p>Static..... 7.8 ft. (2.4 m) Dynamic..... 7.8 ft. (2.4 m) Working Width..... Not Applicable Debris Field..... 12.75 in. (326 mm) Downstream 10.75 in. (271 mm) Passenger Side</p> <p>Vehicle Damage</p> <p>Vehicle Damage Scale..... 11-FL-3 CDC..... 11FLEW6 Maximum Intrusion..... 0.0 in. (0 mm)</p>
<p>TEST VEHICLE</p> <p>Type / Designation..... 2270P Year, Make, and Model.... 2017 RAM 1500 Curb Mass..... 5,226.0 lbs (2,370.5 kg) Test Inertial Mass..... 5,008.8 lbs (2,272.0 kg) Gross Static Mass..... 5,008.8 lbs (2,272.0 kg)</p>		

Figure 3 Summary of Test 2-53



2022

ALPHA DXM TRUCK MOUNTED ATTENUATOR



SWTxx

SHEET NO.

DATE

1 of 2

6/30/2022

INTENDED USE

The ALPHA™ DXM is a Truck-Mounted Attenuator (TMA) for use on stationary or moving shadow support vehicles. The ALPHA™ DXM TMA is comprised of an aluminum cartridge attached to a steel support frame. The ALPHA™ DXM is designed to be used on support vehicles with a minimum weight of 12,200 lbs [5,534 kg] and a maximum weight of 26,500 lbs [12,020 kg].

FEATURES

The ALPHA™ DXM consists of a support frame and an energy absorbing cartridge fitted with a Durashell nose for additional protection from nuisance impacts. The support frame secures the cartridge to the support vehicle and utilizes a 90° tilt feature to move the system upright, so the cartridge is vertical enabling support vehicle transportation.

SPECIFICATIONS

In its deployed state, the ALPHA™ DXM TMA measures 11.0 ft [3.4 m] long by 7.8 ft [2.4 m] wide and has a ground clearance of 12.0 in ± 1.0 in [305 mm ± 25 mm]. The total system length is 11.0 ft [3.4 m] long from the hitches of the support vehicle to the end of the cartridge and when the cartridge is stored in the upright position, it stands 11.3 ft [3.4 m] from the ground.

Cartridge Dimensions:
Length: 8.3 ft [2.5 m]
Width: 7.8 ft [2.4 m]
Height: 22.5 in [572 mm]

ELIGIBILITY

The ALPHA™ DXM has been tested in conformance to MASH 2nd Edition (2016) and is eligible for Federal-aid reimbursement by FHWA.

FHWA Eligibility Letter(s): CC-_____ dated _____ for MASH 2016 Test Level 2

REFERENCES

American Association of State Highway and Transportation Officials (AASHTO), Manual for Assessing Safety Hardware (MASH), 2nd Edition (2016) with 2022 Errata.

CONTACT INFORMATION

15601 Dallas Parkway, Suite 525 Addison, TX 75001
Telephone: (888) 323-6374
www.valtir.com

ALPHA DXM TRUCK MOUNTED ATTENUATOR

SWTxx

SHEET NO.

DATE

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6/30/2022

