



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

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

April 8, 2026

In Reply Refer To:
HSST-1/WZ-480

Kevin Harrison
Eastern Metal Signs and Safety
1430 Sullivan Street
Elmira, NY 14901

Dear Mr. Harrison:

We received your correspondence on May 31, 2024, requesting issuance of a Federal-aid reimbursement eligibility letter under the Federal-aid highway program for the roadside safety system, device, design, product, or hardware (collectively “device”) described below. We write to inform you that the device Apex Dual Recoil is eligible for Federal-aid reimbursement. This letter is assigned Federal Highway Administration (FHWA) control number WZ-480.

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 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 documentation offered in support of its issuance. The device described below is eligible for reimbursement under the Federal-aid highway program.

Name of system: Apex Dual Recoil
Type of system: Work Zone
Test Level: TL-3
Testing conducted by: Calspan LLC
Date of request: 5/31/2024

The device and as-tested condition(s) is described as follows:

The Eastern Metal Signs & Safety Apex Dual Recoil is a 48" x 48" aluminum sign attached to a collapsible sign stand where the two members can be disassembled and folded-up into a compact package for storage and transport. The sign attaches to the vertical 13/16" galvanized steel mast assembly and extends another 24" above the sign with a flag holder at the top for a bottom height of 18" and a top height of 108". The sign is affixed to the vertical mast assembly with zinc plated steel rigid brackets with an L-pin for ease of use. The vertical mast assembly consists of an upper half and a lower half which are attached with a beveled snap release button.

The Apex Dual Recoil sign stand features dual orange powder coated steel springs made of 0.393" diameter wire wrapped around steel castings that connect the bottom of the vertical mast assembly to the black powder coated steel base bracket. The 1" galvanized steel legs are attached to the base bracket with standard nuts and bolts and also feature kick levers to allow the legs to rotate vertically for storage or transportation. The open dimensions are 34" x 84" x 108" (W x L x H) and the sign holder weighs 41 lbs. without the aluminum sign attached.

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 WZ-480 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 Build America Buy America Act, 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.

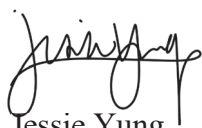
PUBLIC DISCLOSURE

To prevent any misunderstanding, and as discussed above, this Federal-aid eligibility letter is assigned FHWA control number WZ-480. It should only be reproduced in full with its attachment(s). This Federal-aid eligibility 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 Paul LaFleur at Paul.LaFleur@dot.gov.

Sincerely,



Jessie Yung

Director, Office of Safety Technologies
Office of Safety

Enclosures

Request for Federal Aid Reimbursement Eligibility of Highway Safety Hardware

Submitter	Date of Request:	May 30, 2024	☒ New ☐ Resubmission
	Name:	Benjamin Metzger	
	Company:	Eastern Metal Signs and Safety	
	Address:	1430 Sullivan Street Elmira, NY 14901	
	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
'WZ': Crash Worthy Work Zone Traffic Control Devices	☒ Physical Crash Testing ☐ Engineering Analysis	Apex Dual Recoil	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:	Kevin Harrison	Same as Submitter ☒
Company Name:	Easter Metal Signs and Safety	Same as Submitter ☒
Address:	1430 Sullivan Street Elmira, NY 14901	Same as Submitter ☒
Country:	USA	Same as Submitter ☒
Enter below all disclosures of financial interests as required by the FHWA 'Federal-Aid Reimbursement Eligibility Process for Safety Hardware Devices' document.		
Easter Metal Signs and Safety and Calspan LLC, share no financial interests between the two organizations. This includes no shared financial interest but not limited to: i. Compensation including wages, salaries , commissions, professional fees, or fees for business referrals iii. Research funding or other forms of research support; iv. Patents, copyrights , licenses, and other intellectual property interests; vi. Business ownership and investment interest s;		

PRODUCT DESCRIPTION

- ☒ New Hardware or
Significant Modification ☐ Modification to
Existing Hardware

The Eastern Metal Apex Dual Recoil is a 48" x 48" aluminum sign attached to a collapsible sign stand where the two members can be disassembled and folded-up into a compact package for storage and transport. The sign attaches to the vertical 13/16" galvanized steel mast assembly and extends another 24" above the sign with a flag holder at the top for a bottom height of 18" and a top height of 108". The sign is affixed to the vertical mast assembly with zinc plated steel rigid brackets with an L-pin for ease of use. The vertical mast assembly consists of an upper half and a lower half which are attached with a beveled snap release button.

The Apex Dual Recoil sign stand features dual orange powder coated steel springs made of 0.393" diameter wire wrapped around steel castings that connect the bottom of the vertical mast assembly to the black powder coated steel base bracket. The 1" galvanized steel legs are attached to the base bracket with standard nuts and bolts and also feature kick levers to allow the legs to rotate vertically for storage or transportation. The open dimensions are 34" x 84" x 108" (W x L x H) and the sign holder weighs 41 lbs. without the aluminum sign attached.

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:	Benjamin Metzger	
Engineer Signature:	Benjamin Metzger Digitally signed by Benjamin Metzger Date: 2024.05.30 16:17:17 -04'00'	
Address:	4455 Genesee Street, Cheektowaga, NY 14225	Same as Submitter ☐
Country:	USA	Same as Submitter ☐

A brief description of each crash test and its result:

Required Test Number	Narrative Description	Evaluation Results
3-70 (1100C)	Per MASH 2016 Table 2-5, Test 70 is designed to evaluate the ability of small vehicles to activate and breakaway, fracture, or yielding mechanism associated with the work zone feature during low-speed impacts. For free-standing and lightweight test articles velocity changes during low-speed impacts will be within acceptable limits, even when a breakaway, frangible or yielding designs are not utilized. Therefore, Test 70 is considered optional and non-critical for work zone traffic control devices weighing less than 220 lb (100 kg). Thus, Test 3-70 on OGSSAL412 was not performed because this particular work zone device weighed less than 220 lb (100 kg).	

Required Test Number	Narrative Description	Evaluation Results
3-71 (1100C)	For this test, two Apex Dual Recoil road signs were impacted. The first test article was aligned at 0° and the second test article was aligned at 90° to the impacting vehicle's direction of travel. This test is intended to evaluate the sign stand's behavior when impacted. The primary evaluation is based on intrusion into the occupant compartment, windshield damage, and vehicle stability. Lightweight devices such as the Apex sign cannot cause sufficient velocity change that would result in exceeding occupant risk criteria limits. Therefore Test 71 was conducted without instrumentation for evaluating occupant risk values OIV and RA per MASH test description. The test was conducted using a commercially available 2017 Nissan Versa 4 door sedan with a test inertia mass of 2,409.7 lbs (1093 kg). The test vehicle impacted the first sign stand (orientated at 0°) at a velocity of 61.0 mph (98.2 km/hr). Upon impact, the aluminum sign released from the sign support and traveled over the roof of the vehicle. The bottom of the aluminum sign impacted top of the windshield, cracking it but not penetrating. The rest of the sign stand was run over by the vehicle. The test vehicle continued along its path and impacted the second sign stand (oriented at 90°) at a velocity of 60.1 mph (96.7 km/hr). Upon impact, the sign released from the sign support due to impact with the front end of the vehicle. The corner of the sign impacts the lower part of the windshield. This cracked the windshield but did not lead to penetration. The test vehicle's occupant compartment was not penetrated by the test articles and there was NO cab deformation. Debris from the test articles did not block the driver's vision. The vehicle remained upright and did not exceed 75° roll and pitch throughout the test. The vehicle did not leave its lane and its trajectory was stable after both sign stands were impacted. TEST RESULT = PASS	

3-72 (2270P)	For this test, two Apex Dual Recoil road signs were impacted. The first test article was aligned at 0° and the second test article was aligned at 90° to the impacting vehicle's direction of travel. This test is intended to evaluate the sign stand's behavior when impacted. The primary evaluation is based on intrusion into the occupant compartment, windshield damage, and vehicle stability. Lightweight devices such as the Apex sign cannot cause sufficient velocity change that would result in exceeding occupant risk criteria limits. Therefore Test 71 was conducted without instrumentation for evaluating occupant risk values OIV and RA per MASH test description. The test was conducted using a commercially available 2018 Dodge Ram 1500 pickup truck with a test inertia mass of 5,005.4 lbs (2,270.4 kg). The test vehicle impacted the first sign stand (orientated at 0°) at a velocity of 61.6 mph (99.1 km/hr). Upon impact, the aluminum sign released from the sign support and makes contact with the front end and hood of the vehicle. It was then pushed off to the side of the vehicle without further damage to the vehicle. The rest of the sign stand was run over by the vehicle. The test vehicle continued along its path and impacted the second sign stand (oriented at 90°) at a velocity of 60.9 mph (98.0 km/hr). Upon impact, the sign released from the sign support due to impact with the front end of the vehicle. The side of the sign impacts the front of the vehicle and then is pushed away from the test vehicle. The test vehicle's occupant compartment was not penetrated by the test articles and there was NO cab deformation. Debris from the test articles did not block the driver's vision. The vehicle remained upright and did not exceed 75° roll and pitch throughout the test. The vehicle did not leave its lane and its trajectory was stable after both sign stands were impacted. TEST RESULT = PASS	
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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:	Calspan LLC	
Laboratory Signature:	Benjamin Metzger Digitally signed by Benjamin Metzger Date: 2024.05.30 16:13:44 -04'00'	
Address:	4455 Genesee Street Cheektowaga, NY 14225	Same as Submitter ☐
Country:	USA	Same as Submitter ☐
Accreditation Certificate Number and Dates of current Accreditation period :	L20-602 December 31, 2022	

Submitter Signature*: Kevin J Harrison Digitally signed by Kevin J Harrison
Date: 2024.05.31 09:09:43 -04'00'

Submit Form

ATTACHMENTS

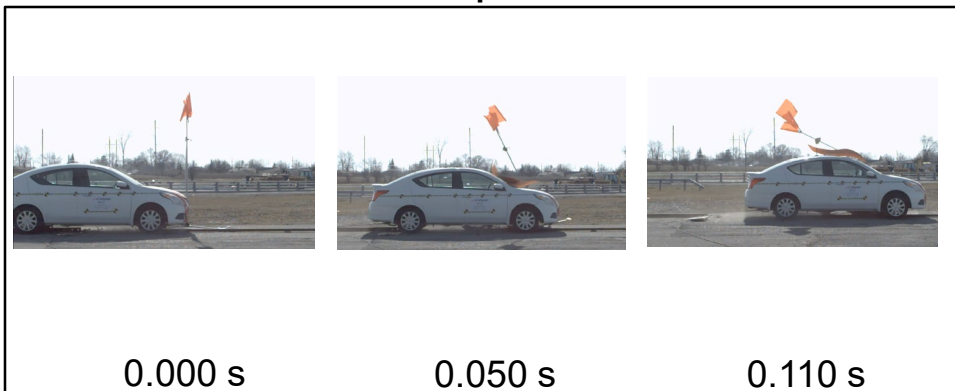
Attach to this form:

- 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.

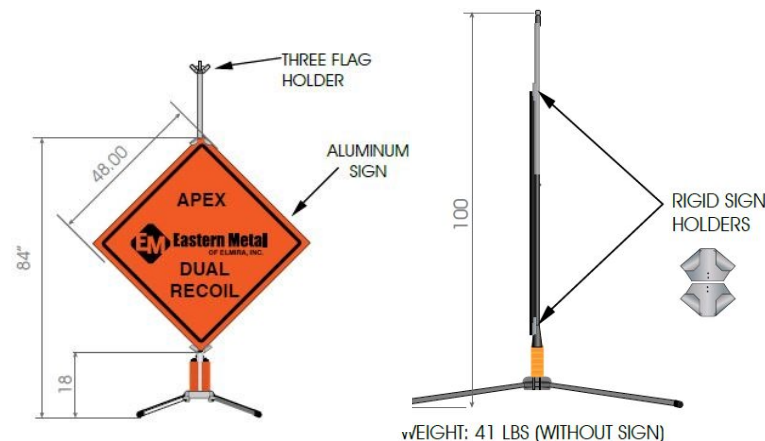
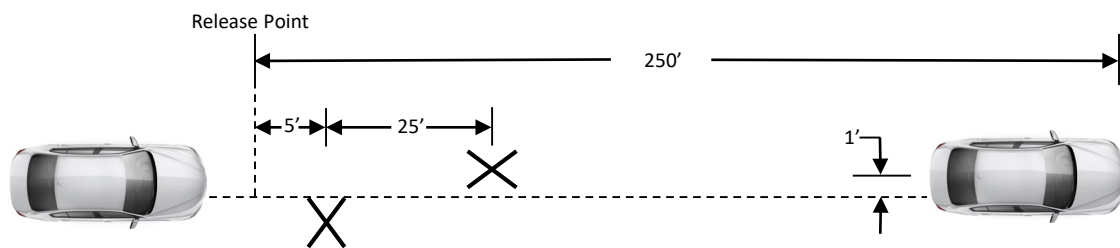
FHWA Official Business Only:

Eligibility Letter		
Number	Date	Key Words

0° Impact



90° Impact



General Information

Test Agency Calspan LLC
Test Standard Test No. MASH Test 3-71
Calspan Test No. BR0223
Test Date..... 2024-02-26

Test Article

Type Work-Zone Traffic Control Device
Name..... Apex Dual Recoil
Device Dimensions..... 48" x 48" Aluminum sign. 84" L x 34" W x 108" T base support structure
Material or Key Elements Free standing sign stand with 4 galvanized steel legs that drop down to support the sign
Flag holder mounted on top mast that supports three flags

Soil Type/Road Surface

Asphalt

Vehicle Dynamics

Pitch..... 0°
Role..... 0°
Yaw..... 0°

Maximum Test Debris Scatter

Longitudinal..... 250 ft [76.2 m] downstream
Lateral..... 13 ft [4.0 m] right of centerline

Test Vehicle

Type/Designation 1100C
Make and Model..... 2017 Nissan Versa
Curb 2,363 lb (1,072 kg)
Test Inertial 2,392 lb (1,085 kg)
Dummy..... N/A
Gross Static..... 2,392 lb (1,085 kg)

Impact Conditions 0°

Speed 61.0 mph (98.2 kph)
Location..... Left Quarter point

Impact Severity

327.58 kip-ft (444.15 kJ)

Impact Conditions 90°

Speed 60.1 mph (96.7 km/h)
Location/Orientation..... Right Quarter point

Impact Severity

288.70 kip-ft (391.42 kJ)

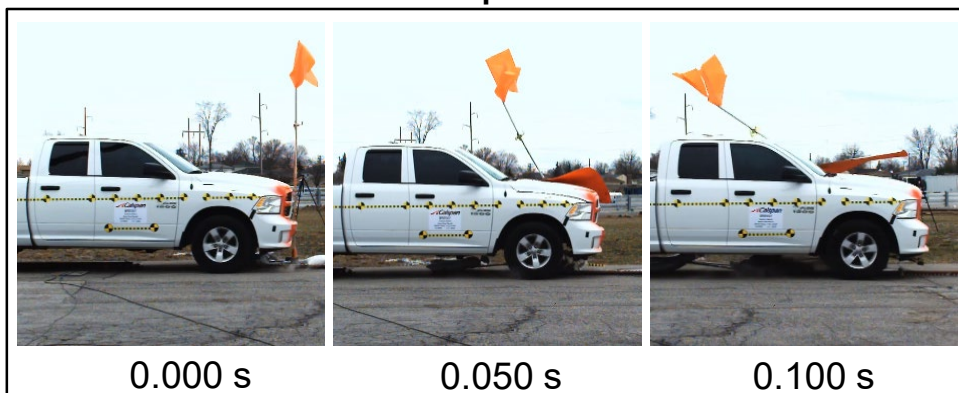
Exit Conditions

Trajectory/Heading Angle < 1°
Vehicle Stability..... Satisfactory

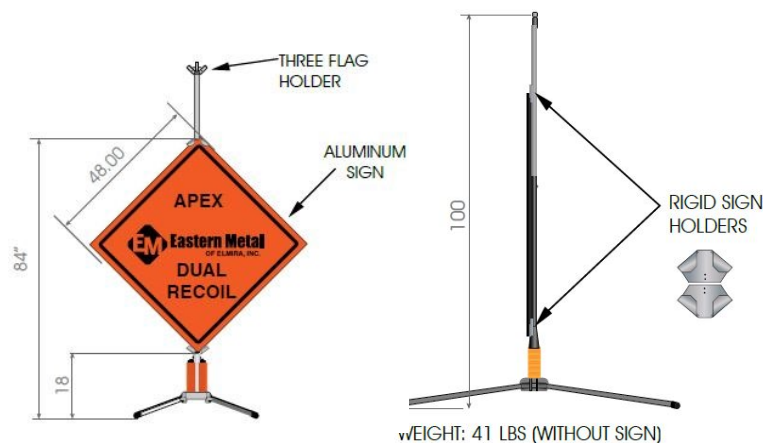
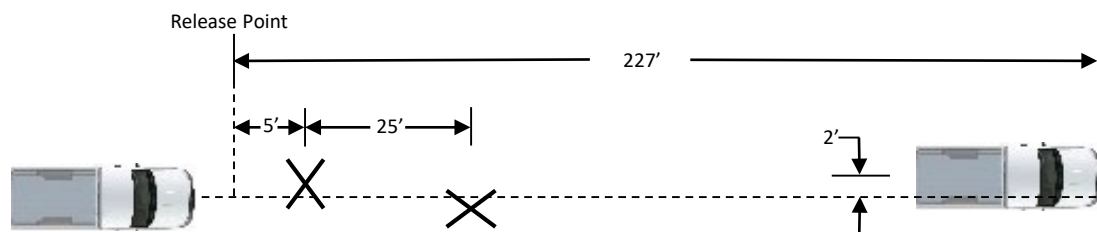
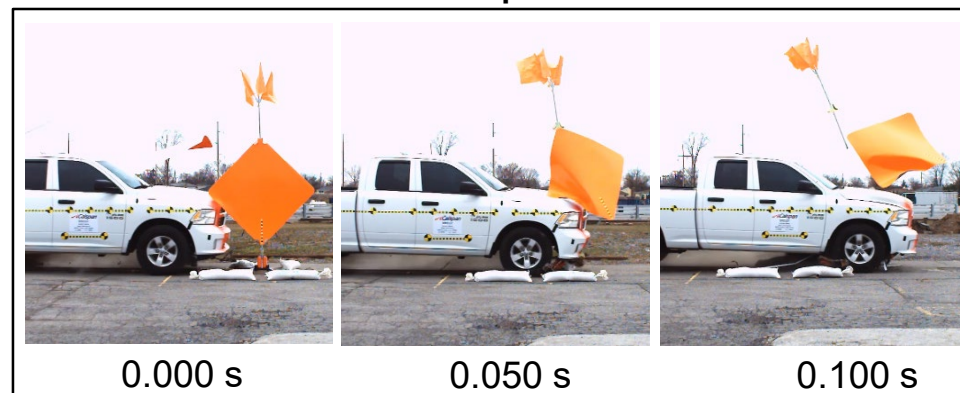
Post-Impact Trajectory

Stopping Distance 250 ft down range after initial impact
1 ft right of center

0° Impact



90° Impact



General Information

Test Agency Calspan Corporation
Test Standard Test No. MASH Test 3-72
Calspan Test No. BR0167
Test Date..... 2023-04-04

Test Article

Type Work-Zone Traffic Control Device
Name..... Apex Dual Recoil
Device Dimensions..... 48" x 48" Aluminum sign. 84" L x 34" W
x 108" T base support structure

Material or Key Elements Free standing sign stand with 4 galvanized steel legs that drop down to support the sign
Flag holder mounted on top mast that supports three flags

Soil Type/Road Surface Asphalt

Vehicle Dynamics

Pitch.....0°
Roll.....0°
Yaw.....0°

Maximum Test Debris Scatter

Longitudinal..... 143 ft downstream
Lateral..... 39 ft right of centerline

Test Vehicle

Type/Designation 2270P
Make and Model..... 2018 Dodge Ram 1500
Curb 4,670.3 lb. [2,118.4 kg]
Test Inertial 5,005.4 lb [2,270.4 kg]
Dummy..... N/A
Gross Static..... 5,005.4 lb [2,270.4 kg]

Impact Conditions 0°

Speed 61.6 mph (99.1 km/h)
Location..... Driver Side Quarter Panel

Impact Severity

634 kip-ft (860 kJ)

Impact Conditions 90°

Speed 60.9 mph [98.0 kph].
Location/Orientation..... Passenger Side Quarter Panel

Impact Severity

620.4 kip-ft (841.1 kJ)

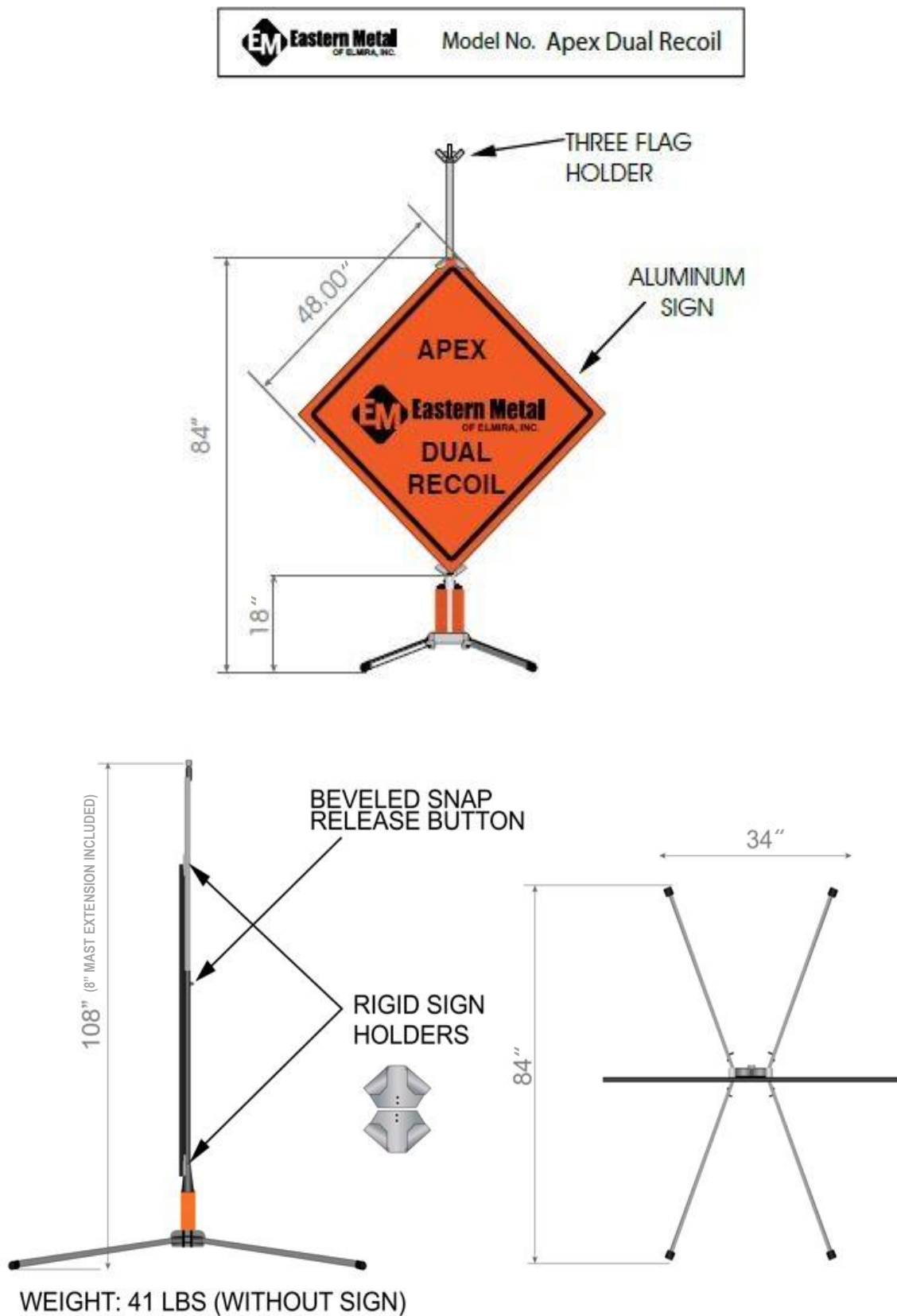
Exit Conditions

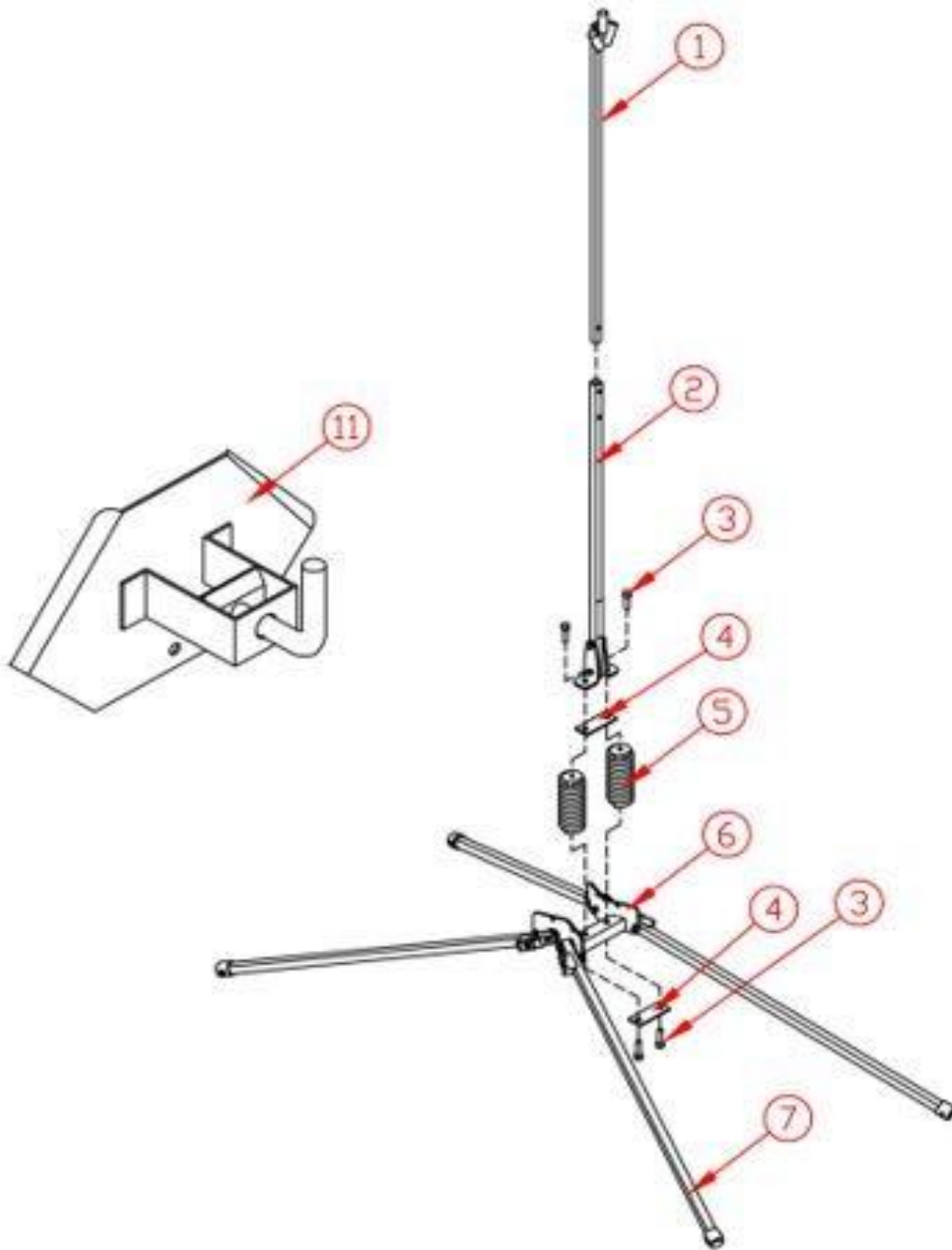
Trajectory/Heading Angle < 1 °
Vehicle Stability..... Satisfactory

Post-Impact Trajectory

Stopping Distance 227 ft (69.2 m) downstream
2 ft (0.61 m) left of centerline

JPEG of TEST ARTICLE DRAWINGS: APEX DUAL RECOIL







Model No. Apex Dual Recoil

Apex Dual Recoil

Item	Part Number	Description	Material	Finish	Quantity
1	0230-93986	X-550 TOP MAST ASSEMBLY	13/16" Tubing	Galvanized	1
1A	0140-68014	RIVET 1/4x1.082x7/16	Hardware	Zinc Plate	2
1B	FH	Flag Holder	14 GA Steel	Zinc Plate	1
		1" OD x 2-1/2" Round Tube	15 GA Steel	Zinc Plate	3
1C	0140-04580	Button Snap Ramp .375 ramp diameter	Steel	Zinc Plate	1
1D	0180-78150	TUBE 13/16"sq x 60"	Steel Tube	Galvanized	1
2	0230-94006	X-550 BTM MST ASSM W/L-BRKTS			1
2A	0140-04009	BOLT 3/8-16x2 HEX HD CAP	Hardware	Zinc Plate	2
2B	0140-52010	NUT 3/8 TWO-WAY LOCK	Hardware	Zinc Plate	2
2C	0225-04700	Fabricated L-Bracket, 2x7x1/4	Steel	Yellow Plate	2
2D	0180-78188	TUBE 1"sqx16ga x 46"	Steel	Galvanized	1
3	0140-72043	SCREW 1/2-13x1-1/2	Hardware	Zinc Plate	4
4	0226-93000	SPRING SUPPORT 3/16x4-1/2 x 1.75"	Steel	Zinc Plate	2
5	0230-94005	OrgPwd Ctd X-550 Spring Assmbly		Org Powder Coat	2
5A	0140-52065	NUT 1/2-13 STOVER LOCK NUT	Hardware	Org Powder Coat	2
5B	0140-07100-0115	X-550 Castings	Steel Cast	Org Powder Coat	2
5C	0230-94005-0135	X-550 Springs	.393 Dia Wire	Org Powder Coat	1
6	0223-94000	X-550/600 BASE	Steel	Blk Powder Coat	1
6A	0220-04902	STRIP 1/4x3-1/2x7-3/4	Steel	Blk Powder Coat	2
6B	0220-06029	STRIP 11GAx4-3/4x7-1/8	Steel	Blk Powder Coat	1
7	0230-94011	X-550 Leg w/ Kick Lever	Steel	Galvanized	4
7A	0227-96039	TUBE 1"sqx16gax42	Steel	Galvanized	1
7B	0140-76016	TIP 1" MOLDED	Rubber	Black	1
7C	0140-88015	WASHER 1/4 SAE	Steel	Zinc Plate	1
7D	0140-68009	RIVET 1/4x1.710x7/16	Hardware	Zinc Plate	1
7E	0140-88075	WASHER 3/8" FENDER 1-1/2"OD	Hardware	Zinc Plate	1
7F	0180-72080	STRIP 11ga x 3-1/2" x 2"	Steel	Zinc Plate	1
7G	0140-04009	BOLT 3/8-16x2 HEX HD	Hardware	Zinc Plate	1
7H	0140-88020	WASHER 3/8" SAE	Hardware	Zinc Plate	1
7I	0140-52063	NUT 3/8-16 STOVER LOCK NUT	Hardware	Zinc Plate	1
11	X-550-RGB	X-550 Series Rigid Bracket	14 GA Steel	Zinc Plate	2