



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

June 21, 2024

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

In Reply Refer To:
HSST-1/WZ-463

Todd Fronckowiak
Cavnue, LLC
1100 Wilson Blvd
Arlington, VA 22209
USA

Dear Mr. Fronckowiak:

We received your initial correspondence on February 22, 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. On March 6, 2024, we received a complete set of files needed to initiate our review. We write to inform you that the device Dynamic Delineator System is eligible for Federal-aid reimbursement. This letter is assigned Federal Highway Administration (FHWA) control number WZ-463.

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: Dynamic Delineator System
Type of system: Work Zone Delineator
Test Level: Test Level 3
Testing conducted by: Texas A&M Transportation Institute
Date of request: February 22, 2024

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-463 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 Federal-aid eligibility letter is assigned FHWA control number WZ-463. 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 Aimee Zhang at Aimee.Zhang@dot.gov.

Sincerely,

A handwritten signature in blue ink that reads "Amy S. Fox". The signature is written in a cursive, flowing style.

Amy S. Fox
Acting Director
Office of Safety Technologies
Office of Safety

Enclosures

Request for Federal Aid Reimbursement Eligibility of Highway Safety Hardware

Submitter	Date of Request:	February 22, 2024	<input checked="" type="radio"/> New <input type="radio"/> Resubmission
	Name:	Todd Fronckowiak	
	Company:	Cavnue LLC	
	Address:	1100 Wilson Blvd, Arlington, VA 22209	
	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	<input checked="" type="radio"/> Physical Crash Testing <input type="radio"/> Engineering Analysis	Dynamic Delineator System	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:	Todd Fronckowiak	Same as Submitter <input checked="" type="checkbox"/>
Company Name	Cavnue LLC	Same As Submitter <input checked="" type="checkbox"/>
Address:	1100 Wilson Blvd, Arlington, VA 22209	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.

Texas A&M Transportation Institute (TTI) was contracted by Cavnue, LLC to perform full-scale crash testing of the Dynamic Delineator System. There are no shared financial interests in the Dynamic Delineator System by TTI, or between Cavnue and TTI, other than costs involved in the actual crash tests of the Dynamic Delineator System to established MASH protocols and reports for this submission to FHWA.

PRODUCT DESCRIPTION

New Hardware or Significant Modification
 Modification to Existing Hardware

The installation consisted of 48-inch tall round flexible delineator posts mounted on 30-inch long by 12-inch wide rubber delineator base assemblies. There were three delineator assemblies connected end to end placed between the bases with flexible delineator posts, which made the spacing between the flexible delineator posts 120 inches center-to-center. The overall length of the installation was 213 feet 7 inches. The delineator base assemblies were free standing and were not anchored to the concrete surface.

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:	Nathan Schulz	
Engineer Signature:	Nathan D. Schulz	Digitally signed by Nathan D. Schulz Date: 2024.01.26 09:22:30 -06'00'
Address:	1254 Avenue A, Bldg 7091, Bryan, Texas 77807	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
3-90 (1100C)	<p>The results of the test conducted on November 15, 2023, are found in TTI Test Report No. 690900-CVN1&2. The test vehicle was traveling at a speed of 62.4 mi/h as it made contact with the dynamic delineator system 10 ft (target was 10 ft) upstream of the centerline of Post #11 and at an impact angle of 15.1°.</p> <p>The system allowed for controlled penetration.</p> <p>The systems maximum dynamic deflection was 5.1 inches, 44 inches upstream of post 11.</p> <p>No detached elements, fragments, or other debris were present to penetrate, or to show potential for penetrating, the occupant compartment, or to present undue hazard for others in the area.</p> <p>The vehicle remained upright during and after the test. Maximum roll and pitch angles were 4.1° and 1.9°, respectively.</p> <p>Longitudinal OIV was 12.1 ft/s and lateral OIV was 2.8 ft/s. Maximum longitudinal occupant ridedown acceleration was 0.4 g, and maximum lateral occupant ridedown acceleration was 0.9 g. Occupant risk factors were within the preferred limits specified in MASH.</p> <p>There was no occupant compartment deformation.</p> <p>The Dynamic Delineator System performed acceptably for MASH test 3-90.</p>	PASS

Required Test Number	Narrative Description	Evaluation Results
3-91 (2270P)	<p>The results of the test conducted on November 15, 2023, are found in TTI Test Report No. 690900-CVN1&2. The test vehicle was traveling at a speed of 62.0 mi/h as it made contact with the dynamic delineator system 12.5 ft (target was 12.5 ft) upstream of the centerline of Post #11 and at an impact angle of 16.1°.</p> <p>The system allowed for controlled penetration.</p> <p>The system maximum dynamic deflection was 8.8 inches, 15 inches upstream of post 11.</p> <p>No detached elements, fragments, or other debris were present to penetrate, or to show potential for penetrating, the occupant compartment, or to present undue hazard for others in the area.</p> <p>The vehicle remained upright during and after the test. Maximum roll and pitch angles were 3.3° and 0.6°, respectively.</p> <p>Longitudinal OIV was 1.5 ft/s and lateral OIV was 2.5 ft/s. Maximum longitudinal occupant ridedown acceleration was 0.2 g, and maximum lateral occupant ridedown acceleration was 0.6 g. Occupant risk factors were within the preferred limits specified in MASH.</p> <p>There was no occupant compartment deformation.</p> <p>The Dynamic Delineator System performed acceptably for MASH test 3-91.</p>	PASS
		Non-Relevant Test, not conducted

Full Scale Crash Testing was done in compliance with MASH by the following accredited crash test laboratory (cite the laboratory's accreditation status as noted in the crash test reports.):

Laboratory Name:	Texas AM Transportation Institute	
Laboratory Signature:	Bill Griffith	Digitally signed by Bill Griffith Date: 2024.01.29 14:54:57 -06'00'
Address:	1254 Avenue A, Bldg 7091, Bryan, Texas 77807	Same as Submitter <input type="checkbox"/>
Country:	USA	Same as Submitter <input type="checkbox"/>
Accreditation Certificate Number and Dates of current Accreditation period :	ISO 17025-2017 Laboratory A2LA Certificate Number: 2821.01 Valid to April 30, 2025	

Submitter Signature*: Todd Fronckowiak

Digitally signed by Todd Fronckowiak
Date: 2024.02.23 13:28:19 -05'00'

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

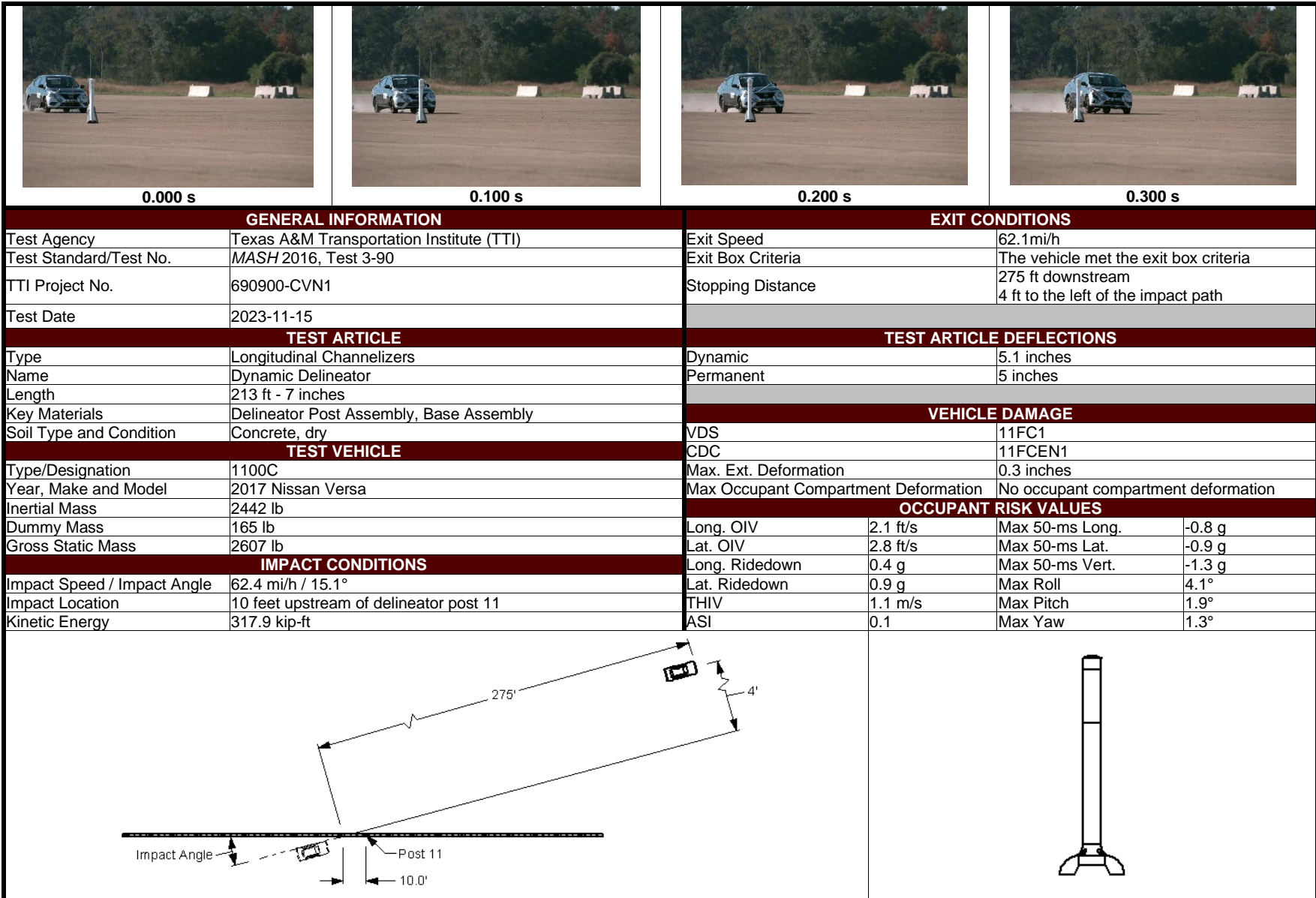


Figure 5.11. Summary of Results for MASH Test 3-90 on Dynamic Delineator.

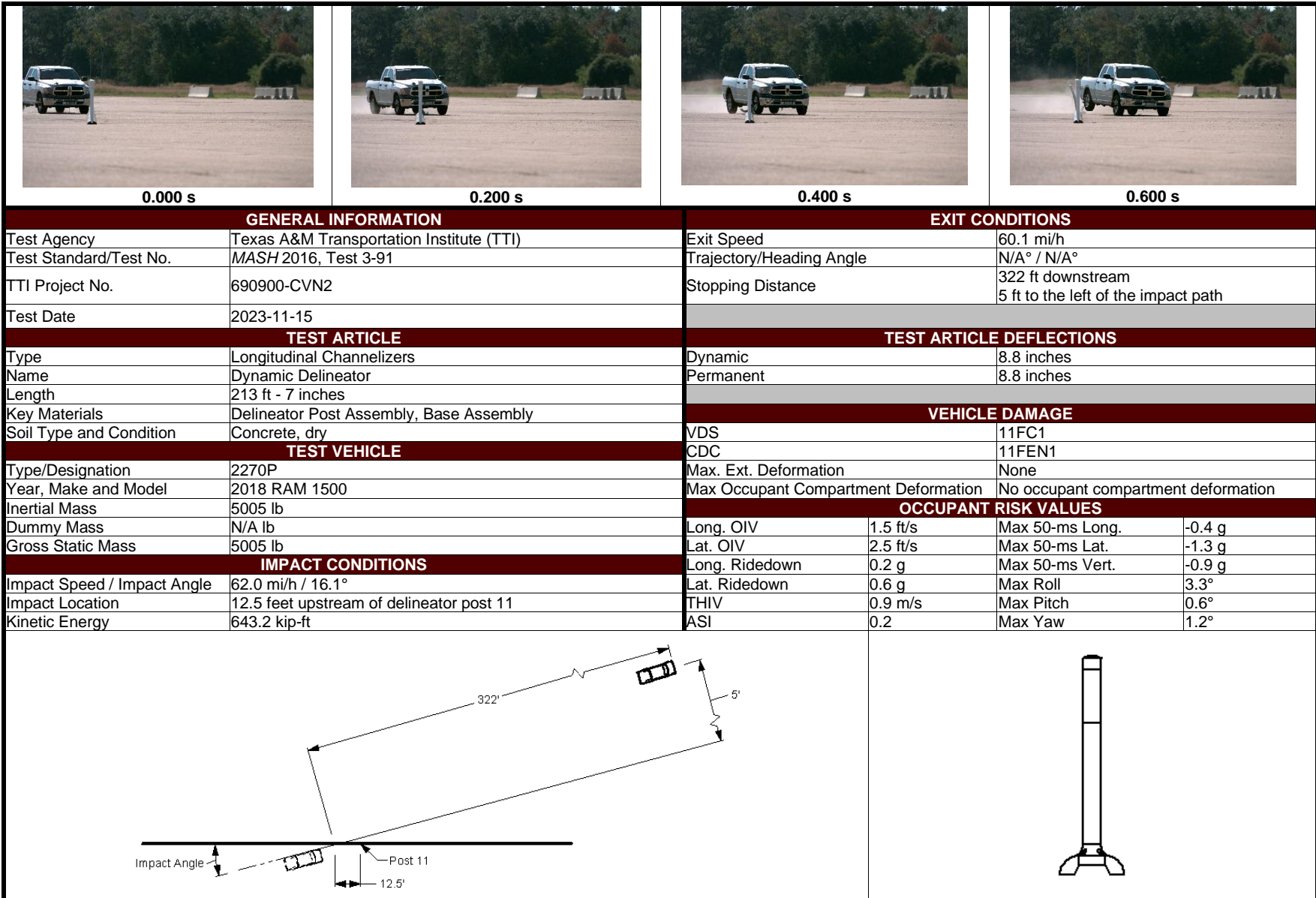
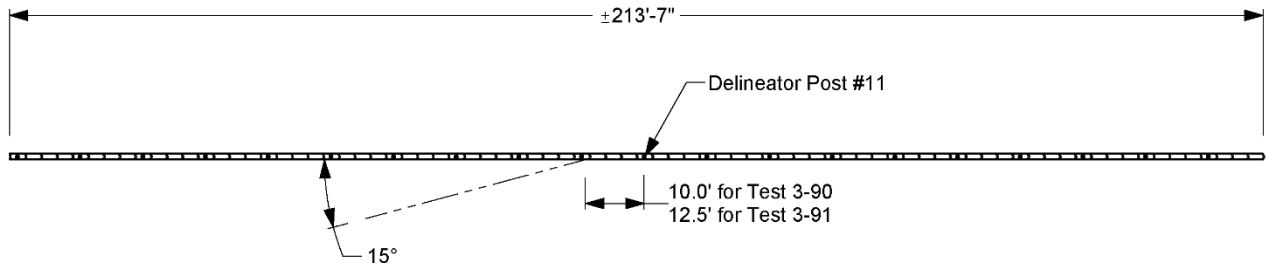

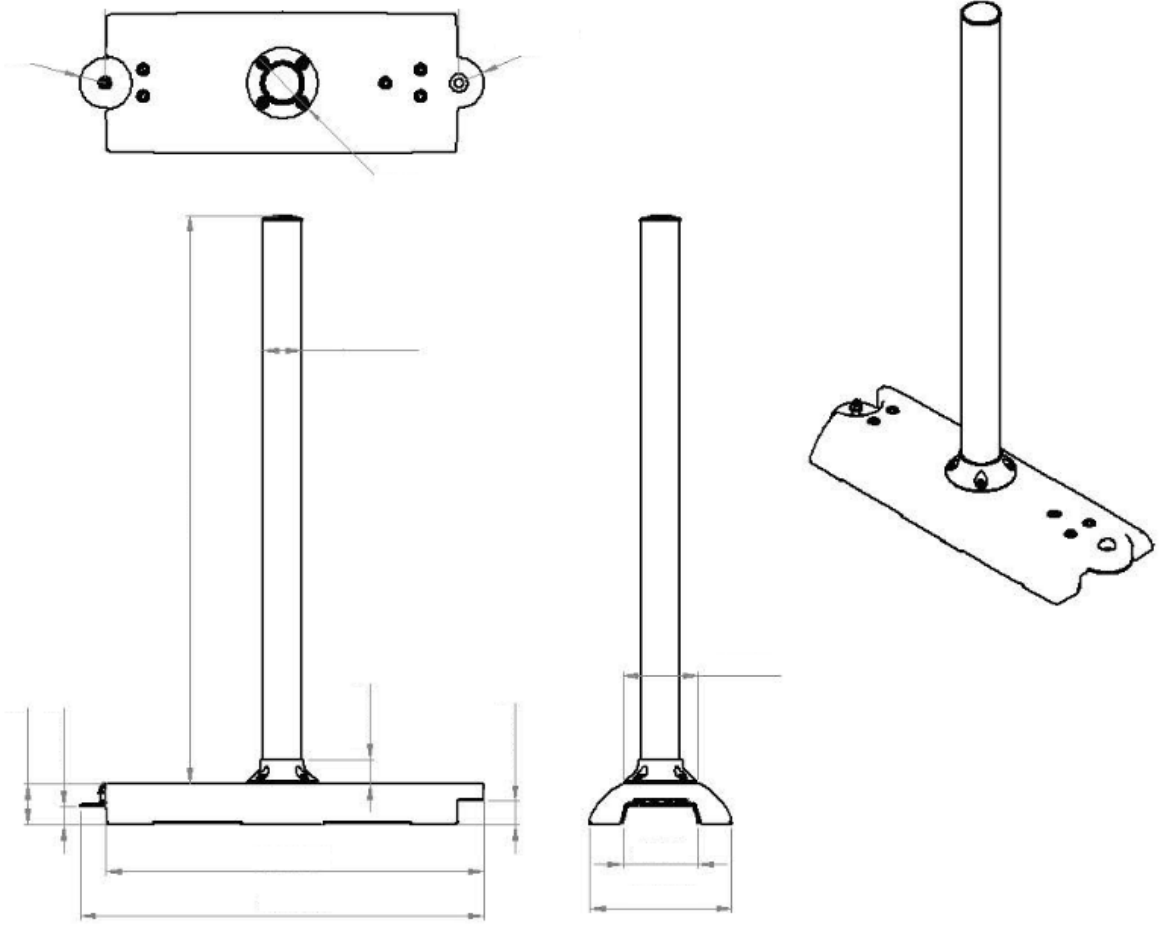


Figure 6.11. Summary of Results for MASH Test 3-91 on Dynamic Delineator.

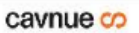


	Roadside Safety and Physical Security Division - Proving Ground
	Project #690900-CVN 1-2
Drawn by GES	Sheet 1 of 1 Impact



Cavnue Proprietary Information

REVISIONS						
NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY



NO SCALE

TITLE
DYNAMIC DELINEATOR DELINEATOR BASE ASSEMBLY - LAYOUT

DRAWING	SHEET
	889