



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

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

March 10, 2026

In Reply Refer To:
HSST-1/B-394

Pretred
Vincent Powell
3700 Salida St. Unit 20
Aurora, CO 80011

Dear Mr. Powell:

We received your correspondence on September 16, 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 Pretred, 8ft TL2, Sustainable Rubber Barrier is eligible for Federal-aid reimbursement. This letter is assigned Federal Highway Administration (FHWA) control number B-394.

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

Name of system: Pretred, 8ft TL2, Sustainable Rubber Barrier
Type of system: Barrier
Test Level: TL-2
Testing conducted by: Calspan
Date of request: September 11, 2024

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

The Pretred, 8ft TL2, Sustainable Rubber Barrier is a free standing rubber longitudinal barrier which measures 8 ft (2.4 m) long, 34.5 in (876.3 mm) tall, 22.5 in (571.5 mm) wide at the base, and 20 in (508 mm) wide at top. Each barrier has three #5 A706 grade 60 looped rebar at both ends of each block which are connected to the other barriers using a 1-1/4 in (31.7 mm) diameter x 25 in (635 mm) long dropped pins. Each of the barriers was constructed using a proprietary rubber blend which was molded around the rebar to give each of the barriers their shape. Each barrier weighs approximately 2,400 lbs.

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 B-394 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,

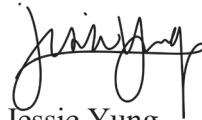
or determination by the government as to the validity, scope, or ownership of any intellectual property rights to a specific device. These letters do not grant, impute, suggest, or otherwise establish any ownership, distribution, or licensing rights to the requester. The government expresses no opinion 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 B-394. 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:	September 11, 2024	<input checked="" type="radio"/> New <input type="radio"/> Resubmission
	Name:	Vincent Powell	
	Company:	Pretred	
	Address:	3700 Salida St. Unit 20 Aurora, Colorado, 80011	
	Country:	USA	
	To:	Michael S. Griffith, Director FHWA, Office of Safety Technologies	

I request the following devices be considered eligible for reimbursement under the Federal-aid highway program.

Device & Testing Criterion - Enter from right to left starting with Test Level

!-!-!

System Type	Submission Type	Device Name / Variant	Testing Criterion	Test Level
'B': Rigid/Semi-Rigid Barriers (Roadside, Median, Bridge Railings)	<input checked="" type="radio"/> Physical Crash Testing <input type="radio"/> Engineering Analysis	Pretred, 8ft TL2, Sustainable Rubber Barrier	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:	Vincent Powell	Same as Submitter <input checked="" type="checkbox"/>
Company Name:	Pretred	Same as Submitter <input checked="" type="checkbox"/>
Address:	3700 Salida St. Unit 20 Aurora, Colorado, 80011	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.

Pretred 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 Pretred, 8ft TL2, Sustainable Rubber Barrier is a free standing rubber longitudinal barrier which measures 8 ft (2.4 m) long, 34.5 in (876.3 mm) tall, 22.5 in (571.5 mm) wide at the base, and 20 in (508 mm) wide at top. Each barrier has three #5 A706 grade 60 looped rebar at both ends of each block which are connected to the other barriers using a 1-1/4 in (31.7 mm) diameter x 25 in (635 mm) long dropped pins. Each of the barriers was constructed using a proprietary rubber blend which was molded around the rebar to give each of the barriers their shape. Each barrier weighs approximately 2,400 lbs.

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: 2024.09.11 09:43:44 -04'00'
Address:	4455 Genesee Street, Cheektowaga, NY 14225	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
2-10 (1100C)	<p>For this test, 27 barriers (216 ft) were lined up so that they would be impacted at a 25° by the test vehicle on July 18, 2024. The vehicle was set to impact 3.6 ft upstream from the 5th and 6th barrier in the line. This test is intended to evaluate the longitudinal barrier's ability to successfully contain and redirect small passenger vehicles impacting within the length-of-need. For small cars, the primary concerns are the potential for vehicle under-ride, wheel snag, rollover, and head-slap. The primary evaluation is based on intrusion into the occupant compartment, vehicle stability, and occupant risk values.</p> <p>The test was conducted using a commercially available 2018 Nissan Versa with a test inertia mass of 2,381 lbs (1,080 kg). A 165 lbs standard test dummy was included in the vehicle as per the MASH 3-10 requirements which brought the Gross Static Mass up to 2,546 lbs (1155 kg).</p> <p>The test vehicle impacted 3.6 ft (1,097mm) upstream of the joint of barrier 5 and 6 of the system setup at a velocity of 62.0 mph (99.8 km/hr). Upon impact, the barrier began deflecting as it redirected the vehicle along the direction of its installation until reaching a maximum deflection of 10.2" (259.1 mm).</p> <p>The test vehicle was redirected from the barrier so that it eventually came to a rest due to the vehicles on board brakes 202' downstream from the point of impact and 54' to the left of the barrier line. The vehicle stayed within the required exit box conditions as it was redirected and disengaged from the barrier.</p> <p>The test vehicle's occupant compartment was not penetrated by the test articles and there was a maximum deformation of 4.5" (114.3 mm) in the occupant compartment. No major debris from the impact was noted on either the protected side of the barrier or along the impact area. The vehicle remained upright and did not exceed 75° roll and pitch throughout the test and its final trajectory was stable.</p> <p>TEST RESULT = PASS</p>	

Required Test Number	Narrative Description	Evaluation Results
2-11 (2270P)	<p>For this test, 27 barriers (216 ft) were lined up so that they would be impacted at a 25° by the test vehicle on July 16, 2024. The vehicle was set to impact 6.5 ft (2 m) upstream of the 13th joint in the system. This impact was chosen through multiple FEA tests as it was shown to have the greatest risk of the vehicle traversing over the top of the barrier and entering into the protected side of the test area as well as having the vehicle roll over. This test is intended to evaluate the longitudinal barrier's maximum strength and verify a barriers performance for impacts involving light trucks and SUVs due to the high rollover frequencies observed in crash data and during historical full-scale crash testing with light truck vehicles. The primary concerns are the potential for vehicle override, rollover, and head-slap. The primary evaluation is based on barrier maximum strength and vehicle stability while still having to meet occupant risk values. The test was conducted using a commercially available 2018 Dodge Ram 1500 with a test inertia mass of 4,930 lb (2,236 kg).</p> <p>The test vehicle impacted 6.5 ft (2 m) upstream of the 13th joint in the system at a velocity of 45.4 mph (73.1 km/h) and 26.2 degrees. After impact, the vehicle was allowed to continue on its normal path until the the impact side of the vehicle landed on top of the barrier without any part touching the ground on the protected side, thus not breaching the override condition. The vehicle came to a stop 22.5 ft (6.9 m) downstream of the initial impact point. The maximum dynamic deflection of the barrier was 79.9 in (2,030.3 mm) towards the field side of the barrier and a total of 6 barrier segments deformed laterally forming a smooth curve. No connection failure is observed between barrier segments.</p> <p>The test vehicle's occupant compartment was not penetrated by the test article and there was no deformation in the occupant compartment. No major debris from the impact was noted on either the protected side of the barrier or along the impact area. The vehicle remained upright and did not exceed 75° roll and pitch throughout the test and its final trajectory was stable.</p> <p>TEST RESULT = PASS</p>	

2-20 (1100C)	N/A (Not a transition design)	
2-21 (2270P)	N/A (Not a transition design)	

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: 2024.09.11 09:44:00 -04'00'	
Address:	4455 Genesee Street Cheektowaga, NY 14225	Same as Submitter <input type="checkbox"/>
Country:	USA	Same as Submitter <input type="checkbox"/>
Accreditation Certificate Number and Dates of current Accreditation period :	L20-602 December 31, 2022	

Submitter Signature*: **Vincent Powell** Digitally signed by Vincent Powell
Date: 2024.09.10 15:15:10 -06'00'

Submit Form

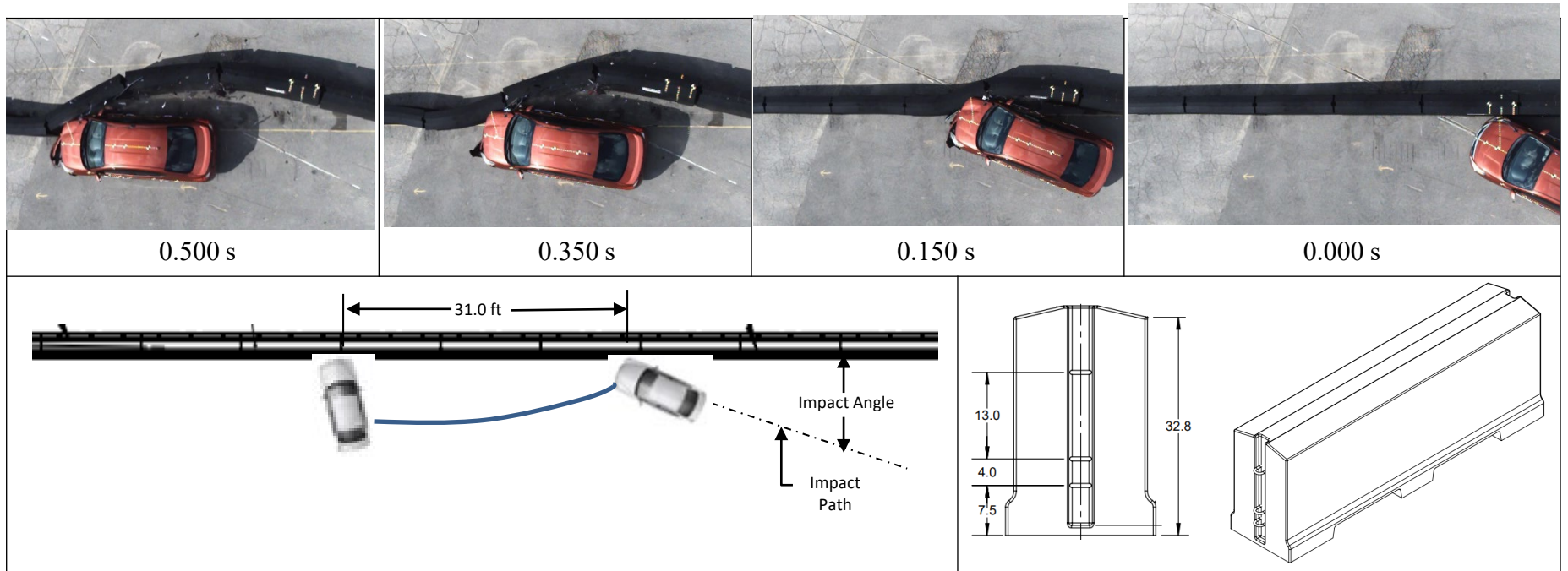
ATTACHMENTS

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



General Information

Test Agency Calspan LLC
 Test Standard Test No. MASH Test 2-10
 Calspan Test No. BR0252
 Test Date2024-07-18

Test Article

Type Longitudinal Barrier
 Name..... Pretred, 8ft TL2, Sustainable Rubber Barrier

Installation Length 216 ft (65.84 m)

Material or Key Elements ... Twenty-seven 8 ft (2.4 m) long sections of barriers manufactured from rubber. 32.8 in (833.1 mm) above pavement x 22.5 in (571.5 mm) wide at the base x 20 in (508 mm) wide at top, containing three #5 A706 grade 60 looped rebar at both ends of each block anchored with A36 steel plates at the open end of loops inside the rubber blocks. Blocks are free standing without any connection to surface below.

Soil Type and Condition Asphalt surface

Test Vehicle

Type/Designation 1100C
 Make and Model..... 2019 Nissan Versa
 Curb 2,302 lb (1,044 kg)
 Test Inertial 2,377 lb (1,078 kg)
 Dummy 165 lb (75 kg)
 Gross Static2,542 lb (1,153 kg)

Impact Conditions

Speed 45.3 mi/h (73.0 km/h)
 Angle..... 25.4°
 Location/Orientation..... 6.5 ft (2,000 mm) Upstream of joint #14

Impact Severity 30.1 kip-ft (40.8 kJ)

Exit Conditions

Speed0 mi/h (0 km/h)
 Trajectory/Heading Angle ... Rested next to barrier

Occupant Risk Values

Longitudinal OIV 21.4 ft/s (6.5 m/s)
 Lateral OIV..... 11.5 ft/s (3.5 m/s)
 Longitudinal Ridedown-6.4 g
 Lateral Ridedown.....-3.6 g
 THIV..... 7.7 m/s
 ASI 1.11
 Max. 0.050-s Average
 Longitudinal 8.9 g
 Lateral..... 6.2 g
 Vertical..... 1.0 g

Post-Impact Trajectory

Stopping Distance..... 31.0 ft (9.4 m) downstream
 0 ft (0 m) of the barrier line

Vehicle Stability

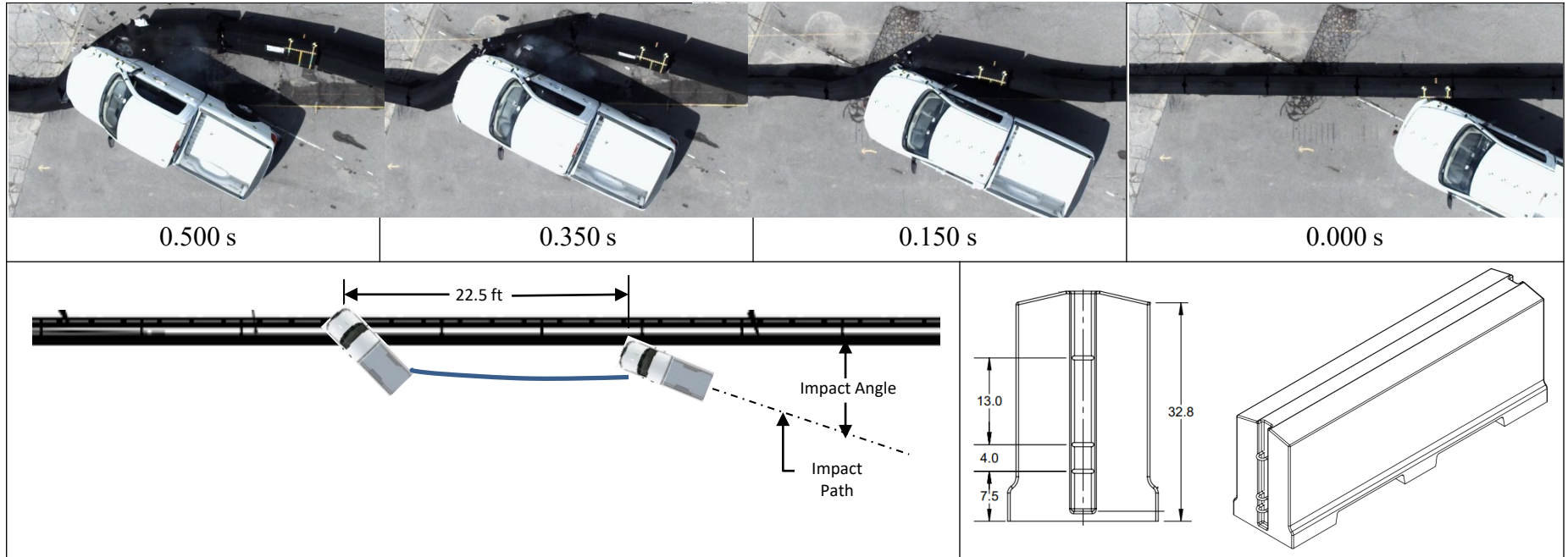
Maximum Yaw Angle23.7°
 Maximum Pitch Angle 2.1°
 Maximum Roll Angle..... 4.6°
 Vehicle Snagging..... No
 Vehicle Pocketing No

Test Article Deflections

Dynamic..... 52.4 in (1,330.2 mm)
 Static..... 46.5 in (1181.1 mm)
 Working Width..... 74.8 in (1,900.2 mm)

Vehicle Damage

VDS 01RFQ2
 CDC 01RFEW2
 Max. Exterior Deformation 5.5 in (139.7 mm)
 Max. Occupant Comp.
 Deformation 0.0 in (0.0 mm)



General Information

Test Agency Calspan LLC
 Test Standard Test No. MASH Test 2-11
 Calspan Test No. BR0251
 Test Date 2024-07-16

Test Article

Type Longitudinal Barrier
 Name..... Pretred, 8ft TL2, Sustainable Rubber Barrier

Installation Length 216 ft (65.84 m)

Material or Key Elements ... Twenty-seven 8 ft (2.4 m) long sections of barriers manufactured from rubber. 32.8 in (833.1 mm) above pavement x 22.5 in (571.5 mm) wide at the base x 20 in (508 mm) wide at top, containing three #5 A706 grade 60 looped rebar at both ends of each block anchored with A36 steel plates at the open end of loops inside the rubber blocks. Blocks are free standing without any connection to surface below.

Soil Type and Condition Asphalt surface

Test Vehicle

Type/Designation 2270P
 Make and Model..... 2018 Dodge Ram
 Curb 4,824 lb (2,188 kg)
 Test Inertial 4,930 lb (2,236 kg)
 Dummy N / A
 Gross Static 4,930 lb (2,236 kg)

Impact Conditions

Speed 45.4 mi/h (73.1 km/h)
 Angle..... 26.2°
 Location/Orientation..... 6.5 ft (2,000 mm) Upstream of joint #14

Impact Severity 66.3 kip-ft (89.9 kJ)

Exit Conditions

Speed 0 mi/h (0 km/h)
 Trajectory/Heading Angle ... Rested on the barrier

Occupant Risk Values

Longitudinal OIV 23.1 ft/s (7.0 m/s)
 Lateral OIV..... 7.6 ft/s (2.3 m/s)
 Longitudinal Ridedown -5.3 g
 Lateral Ridedown..... 4.2 g
 THIV..... 7.4 m/s
 ASI 0.84

Max. 0.050-s Average

Longitudinal 8.5 g
 Lateral..... 4.9 g
 Vertical..... 2.1 g

Post-Impact Trajectory

Stopping Distance..... 22.5 ft (6.9 m) downstream
 0 ft (0 m) of the barrier line

Vehicle Stability

Maximum Yaw Angle 54.9°
 Maximum Pitch Angle 38.2°
 Maximum Roll Angle..... 43.2°
 Vehicle Snagging..... No
 Vehicle Pocketing No

Test Article Deflections

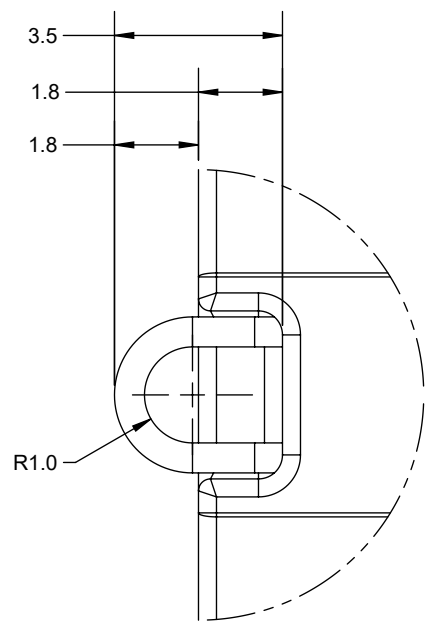
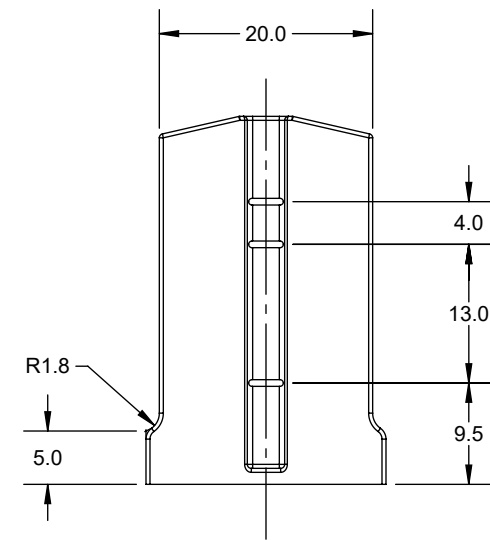
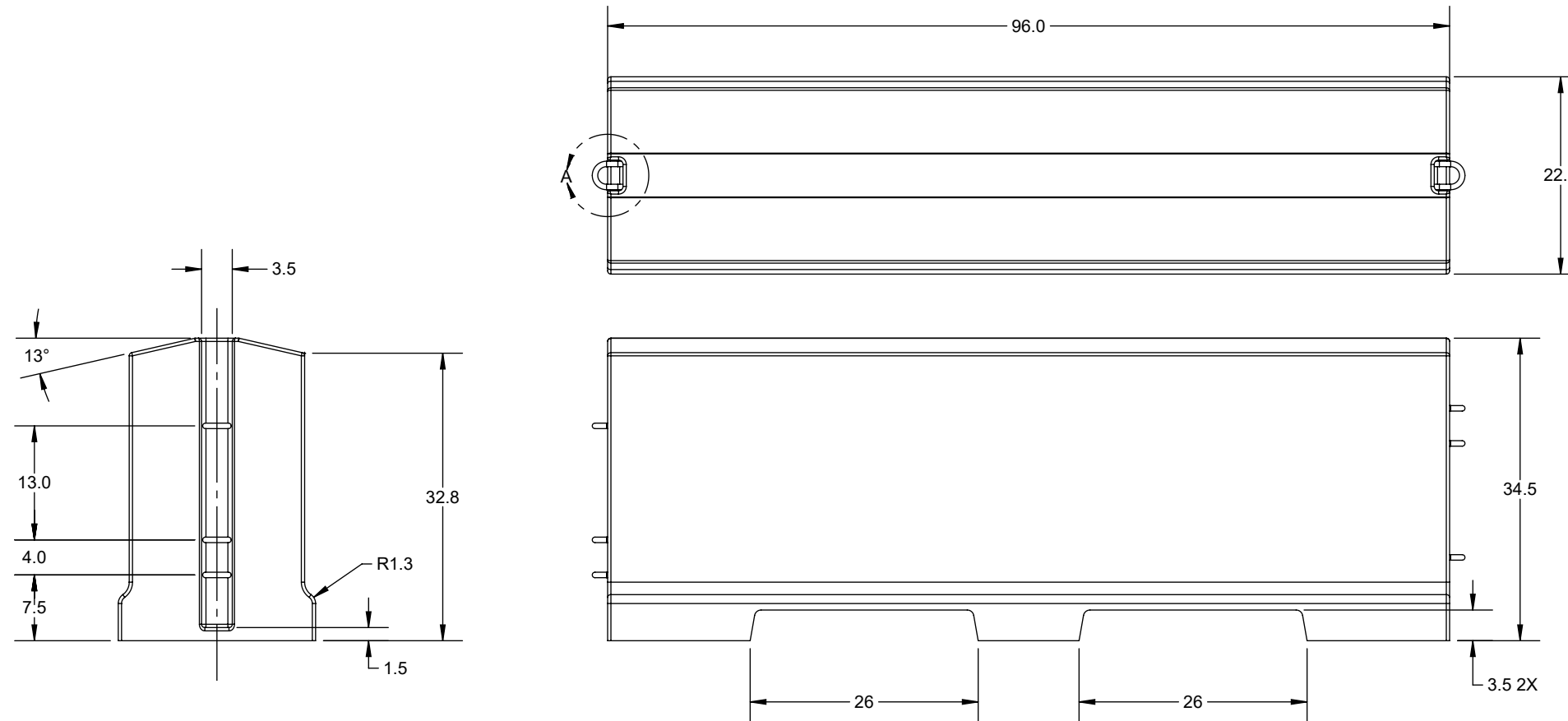
Dynamic..... 79.9 in (2,030.3 mm)
 Static..... 59.0 in (1,498.5 mm)
 Working Width..... 124.8 in (3,170.1 mm)

Vehicle Damage

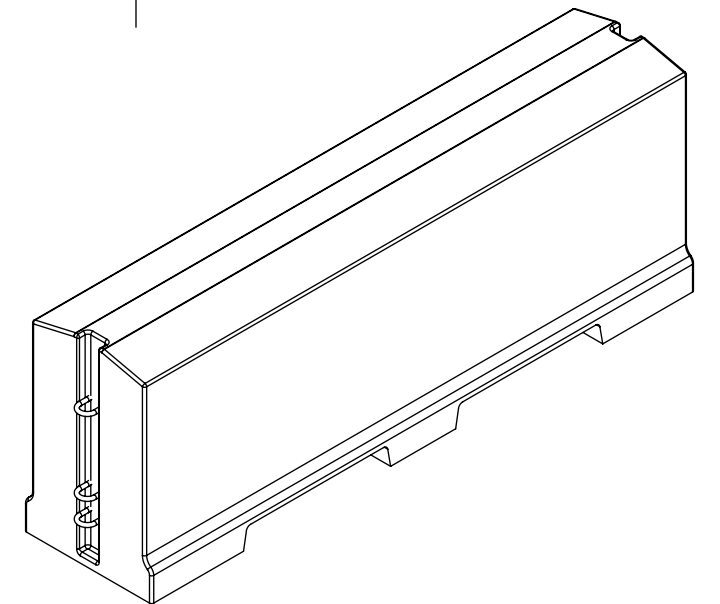
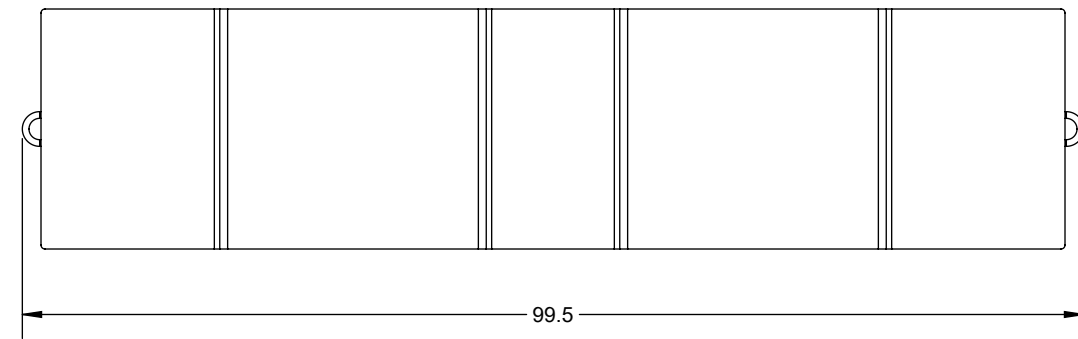
VDS 01RFQ1
 CDC 01RFEW1
 Max. Exterior Deformation 1.2 in (30.5 mm)
 Max. Occupant Comp. Deformation 0.0 in (0.0 mm)


- NOTES:
 1. MANUFACTURE ACCORDING TO ELECTRONIC PROFILE UNLESS OTHERWISE SPECIFIED. DIMENSIONS INDICATED ARE FOR REFERENCE OR QA ONLY.
 2. WEIGHT: 2400 LBS.
 3. MATERIAL:
 1. PRETRED PROPRIETARY RUBBER MIX
 2. REBAR: #5 A706 GRADE 60 MINIMUM
 3. PLATE: A36 STEEL MINIMUM

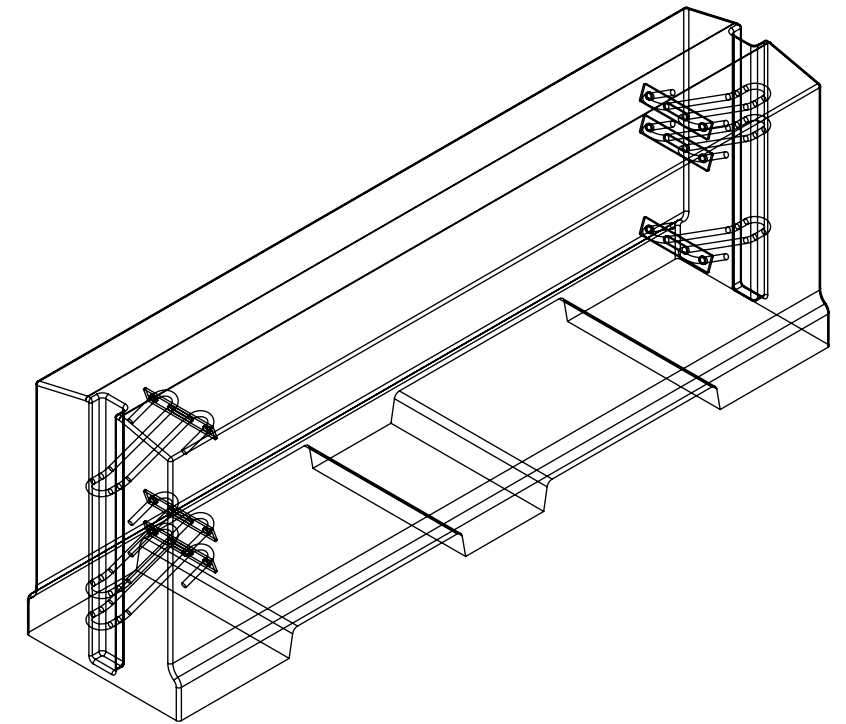
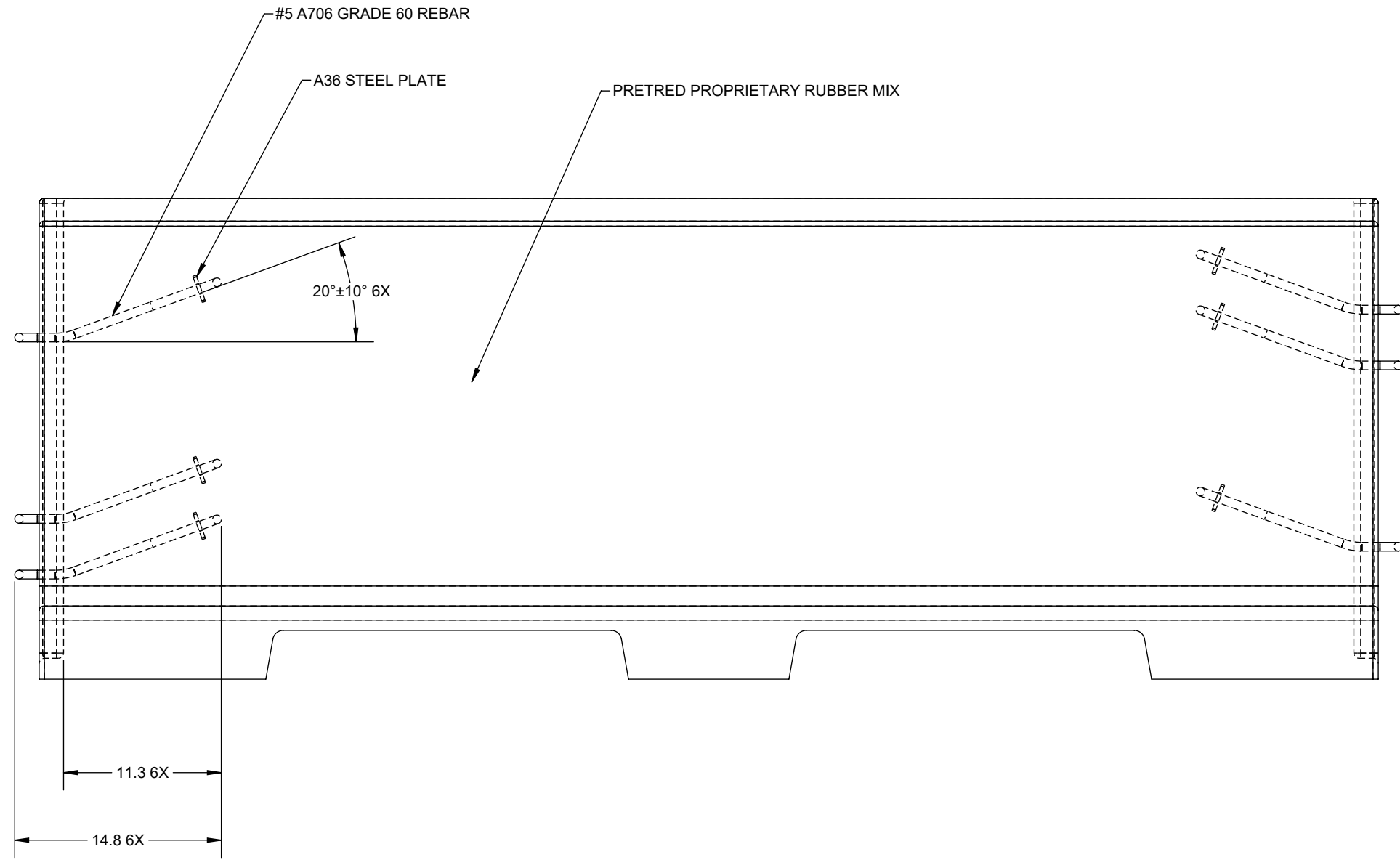
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
IR	INITIAL RELEASE	7/11/2024	VPOWELL
A	PRODUCTION RELEASE	9/4/2024	VPOWELL
B	ADDED DETAIL VIEW AND LOOP END DIMS	12/17/2024	GRQ



DETAIL A
SCALE 1 : 4



 <p>PRETRED BUILD A BETTER WAY</p>	TOLERANCES UNLESS OTHERWISE NOTED DIM MM INCH .X ±6.35 ±.25 .XX ±3.175 ±.125	PRIMARY UNITS: INCHES SECONDARY UNITS: [MM]	PROJECT COLORADO BARRIER	DESCRIPTION Pretred, 8ft TL2, Sustainable Rubber Barrier
	PROPRIETARY AND CONFIDENTIAL The information in this drawing is the sole property of Pretred Inc. Any reproduction in part or as a whole without written permission from Pretred Inc. is prohibited.	THIRD ANGLE PROJECTION ANGLES ± 1.0°	DRAWN BY: GRQ DRAWN DATE: 7/8/2024 SCALE: DO NOT SCALE	PART NUMBER: RW-10-DOT-9622345-BK-FS PAGE 1 OF 2 REV. B



SEE PAGE (1) FOR NOTES, REVISIONS & MATERIALS.

	TOLERANCES UNLESS OTHERWISE NOTED		PRIMARY UNITS: INCHES	 THIRD ANGLE PROJECTION	PROJECT	DESCRIPTION							
	DIM	MM	INCH						SECONDARY UNITS: [MM]	COLORADO BARRIER	Pretred, 8ft TL2, Sustainable Rubber Barrier		
	.X	±6.35	±.25										
.XX	±3.175	±.125	ANGLES ± 1.0°	DRAWN DATE: 7/8/2024	RW-10-DOT-9622345-BK-FS								
PROPRIETARY AND CONFIDENTIAL The information in this drawing is the sole property of Pretred Inc. Any reproduction in part or as a whole without written permission from Pretred Inc. is prohibited.						SCALE: DO NOT SCALE	PAGE 2 OF 2	REV. B					