



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

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

May 9, 2014

In Reply Refer To:
HSST/CC-115I

Mr. Gregory A. Neece
Trinity Highway Products, LLC
2525 North Stemmons Freeway
Dallas, Texas 75207

Dear Mr. Neece:

This correspondence is used in conjunction with existing eligibility letters HSST/CC-115D (TL-3), CC-115E (TL-2), and CC-115F (TL-1), all dated May 1, 2013 for the Soft-Stop Terminal, CC-115G (Modified Soft-Stop Head) dated September 5, 2013 and CC-115H (25' rail panels) dated September 23, 2013 and is in response to your request for additional system details for furthered consideration for Federal Highway Administration (FHWA) review of the as-described roadside safety system for eligibility for reimbursement under the Federal-aid highway program.

Name of system: Trinity Soft-Stop Anchor Plate Modification
Type of system: W-Beam Guardrail Terminal
Test Level: MASH Test Level 3 (TL-3), Test Level 2 (TL-2), Test Level 1 (TL-1)
Testing conducted by: Texas Transportation Institute
Task Force 13 Designator: SEW22
Date of request: March 27, 2014

Decision:

The following device is eligible, with details provided in the form which is attached as an integral part of this letter.

- Trinity Soft-Stop Anchor Plate Modification

Based on a review of previous crash tests submitted by the manufacturer certifying the device described herein meets the crash test and evaluation criteria of the American Association of State Highway and Transportation Officials' Manual for Assessing Safety Hardware (MASH), the device is eligible for reimbursement under the Federal-aid highway program. Eligibility for reimbursement under the Federal-aid highway program does not establish approval or endorsement by the FHWA for any particular purpose or use.

The FHWA, the Department of Transportation, and the United States Government do not endorse products or services and the issuance of a reimbursement eligibility letter is not an endorsement of any product or service.

Requirements

To be found eligible for Federal-aid funding, roadside safety devices should meet the crash test and evaluation criteria contained in the American Association of State Highway and Transportation Officials' Manual for Assessing Safety Hardware (MASH).

Description

The device and supporting documentation are described in the attached form.

Summary and Standard Provisions

Therefore, the system described and detailed in the attached form is eligible for reimbursement and may be installed under the range of conditions tested.

Please note the following standard provisions that apply to FHWA eligibility letters:

- This letter provides a AASHTO/ARTBA/AGC Task Force 13 designator that should be used for the purpose of the creation of a new and/or the update of existing Task Force 13 drawing for posting on the on-line 'Guide to Standardized Highway Barrier Hardware' currently referenced in AASHTO Roadside Design Guide.
- This finding of eligibility does not cover other structural features of the systems, nor conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may influence system conformance with MASH will require a new reimbursement eligibility letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals safety problems, or that the system is significantly different from the version that was crash tested, we reserve the right to modify or revoke this letter.
- You are expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.
- You are expected to certify to potential users that the hardware furnished has the same chemistry, mechanical properties, and geometry as that submitted for review, and that it will meet the test and evaluation criteria of the MASH.
- To prevent misunderstanding by others, this letter of eligibility is designated as number CC-115I and shall not be reproduced except in full. This letter and the test documentation upon which it is based are public information. All such letters and documentation may be reviewed at our office upon request.
- This letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented system for which the applicant is not the patent holder. The FHWA does not become involved in issues concerning patent law. Patent issues, if any, are to be resolved by the applicant.
- The Trinity Soft-Stop© Terminal is a patented product and considered proprietary. If proprietary systems are specified by a highway agency for use on Federal-aid projects: (a) they must be supplied through competitive bidding with equally

suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with the existing highway facilities or that no equally suitable alternative exists; or (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411.

Sincerely yours,



Michael S. Griffith
Director, Office of Safety Technologies
Office of Safety

Enclosures

Request for Federal Aid Reimbursement Eligibility Of Highway Safety Hardware

Submitter	Date of Request:	March 27, 2014	<input type="radio"/> New <input checked="" type="radio"/> Resubmission
	Name:	Don Gripne	Signature: <i>Don Gripne</i>
	Company:	Trinity Highway Products, LLC	
	Address:	5216 Brassfield Dr. SE, Olympia, WA 98501	
	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.

System Type	Submission Type	Device Name / Variant	Testing Criterion	Test Level
'CC': Crash Cushions, Attenuator	<input checked="" type="radio"/> Physical Crash Testing <input type="radio"/> FEA & V&V Analysis	SOFT-STOP ANCHOR PLATE MODIFICATION	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.

Identification of the individual or organization responsible for the product:

Contact Name:	Greg Neece	Same as Submitter <input type="checkbox"/>
Company Name:	Trinity Highway Products, LLC	Same as Submitter <input type="checkbox"/>
Address:	2525 Stemmons Freeway, Dallas, TX 75207	Same as Submitter <input type="checkbox"/>
Country:	USA	Same as Submitter <input type="checkbox"/>

Request for Federal Aid Reimbursement Eligibility Of Highway Safety Hardware

Submitter	Date of Request:	March 27, 2014	<input type="radio"/> New <input checked="" type="radio"/> Resubmission
	Name:	Don Gripne	Signature:
	Company:	Trinity Highway Products, LLC	
	Address:	5216 Brassfield Dr. SE, Olympia, WA 98501	
	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.

System Type	Submission Type	Device Name / Variant	Testing Criterion	Test Level
'CC': Crash Cushions, Attenuators, & Terminals	<input checked="" type="radio"/> Physical Crash Testing <input type="radio"/> FEA & V&V Analysis	SOFT-STOP ANCHOR PLATE MODIFICATION	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.

Identification of the individual or organization responsible for the product:

Contact Name:	Greg Neece	Same as Submitter <input type="checkbox"/>
Company Name:	Trinity Highway Products, LLC	Same as Submitter <input type="checkbox"/>
Address:	2525 Stemmons Freeway, Dallas, TX 75207	Same as Submitter <input type="checkbox"/>
Country:	USA	Same as Submitter <input type="checkbox"/>
Modification to Existing Hardware Non-Significant - Effect is positive or Inconsequential		

PRODUCT DESCRIPTION

FHWA issued Eligible for Reimbursement letters CC-115D (TL-3), CC-115E (TL-2), and CC-115F (TL-1), all dated May 1, 2013 for the Soft-Stop Terminal, CC-115G (Modified Soft-Stop Head) dated September 5, 2013 and CC-115H (25' rail panels) dated September 23, 2013. The Anchor Plate that was used for these letters used a 1/2" plate and a 1" threaded notched rod welded to the plate.

A modification to The Anchor Plate is requested to aid installation, fabrication, and shipment. The proposed Anchor Plate increases the plate thickness to 5/8" (from 1/2") and notched the plate to accommodate a 1-1/2" square block, threaded for a 12 inch long, 1" diameter rod. The attached Trinity Drawing No. APC 1 dated November 25, 2013 shows the crash tested Anchor Plate and the proposed enhanced Anchor Plate with the 12 inch long, 1" diameter anchor rod. The attached Trinity Drawing, SS646, dated December 14, 2012, shows the location of the Anchor Plate (Detail A).

To validate that the proposed Anchor Paddle was equal (or better) in strength to the existing Anchor Paddle, the Texas A&M Transportation Institute (TTI) Proving Ground conducted several static tests of the existing and the proposed Anchor Paddles. The results of the tests are documented in the Technical Memorandum for Test Report No. TM510602-55M S1-S3 and S15-S17, dated March 26, 2014. The proposed Square Threaded Block, ASTM A108 and Grade 1018, welded to a 5/8" thick steel Plate ASTM A572 Grade 50 provides the same or better results as the current version Anchor Plate with the welded 1" rod. This Technical Memorandum is on file with the form request.

Additional, a change in the hole locations used to attach the Anchor Paddle to the Anchor Rail is supported by a letter dated December 9, 2013, from Dean Alberson, Texas A&M Transportation Institute (TTI). These hole location changes to the proposed Anchor Plate allows for a 1/2" installation tolerance. The letter indicates these hole changes will enhance the installation and the performance is not degraded. The letter confirming this change is included as an enclosure to this form.

This request is for modified Anchor Plate eligibility for Reimbursement when used with the Soft-Stop systems per FHWA letters CC-115D, CC-115E, CC-115F, CC-115G, and CC-115H.

Required Test Number	Narrative Description	Evaluation Results
3-30 (1100C)	Crash test results covered under FHWA Letter CC-115D (TL-3), CC-115E (TL-2), and CC-115F (TL-1) dated May 1, 2013, FHWA letter CC-115G dated September 5, 2013, and CC-115H dated September 23, 2013. Proposed modification does not adversely effect this original baseline crash test and a wavier is recommended by Laboratory as indicated on this form.	WAIVER REQUESTED
3-31 (2270P)	Crash test results covered under FHWA Letter CC-115D (TL-3), CC-115E (TL-2), and CC-115F (TL-1) dated May 1, 2013, FHWA letter CC-115G dated September 5, 2013, and CC-115H dated September 23, 2013. Proposed modification does not adversely effect this original baseline crash test and a wavier is recommended by Laboratory as indicated on this form.	WAIVER REQUESTED

Required Test Number	Narrative Description	Evaluation Results
3-32 (1100C)	Crash test results covered under FHWA Letter CC-115D (TL-3), CC-115E (TL-2), and CC-115F (TL-1) dated May 1, 2013, FHWA letter CC-115G dated September 5, 2013, and CC-115H dated September 23, 2013. Proposed modification does not adversely effect this original baseline crash test and a wavier is recommended by Laboratory as indicated on this form.	WAIVER REQUESTED
3-33 (2270P)	Crash test results covered under FHWA Letter CC-115D (TL-3), CC-115E (TL-2), and CC-115F (TL-1) dated May 1, 2013, FHWA letter CC-115G dated September 5, 2013, and CC-115H dated September 23, 2013. Proposed modification does not adversely effect this original baseline crash test and a wavier is recommended by Laboratory as indicated on this form.	WAIVER REQUESTED
3-34 (1100C)	Crash test results covered under FHWA Letter CC-115D (TL-3), CC-115E (TL-2), and CC-115F (TL-1) dated May 1, 2013, FHWA letter CC-115G dated September 5, 2013, and CC-115H dated September 23, 2013. Proposed modification does not adversely effect this original baseline crash test and a wavier is recommended by Laboratory as indicated on this form.	WAIVER REQUESTED
3-35 (2270P)	Crash test results covered under FHWA Letter CC-115D (TL-3), CC-115E (TL-2), and CC-115F (TL-1) dated May 1, 2013, FHWA letter CC-115G dated September 5, 2013, and CC-115H dated September 23, 2013. Proposed modification does not adversely effect this original baseline crash test and a wavier is recommended by Laboratory as indicated on this form.	WAIVER REQUESTED
3-36 (2270P)	Crash test results covered under FHWA Letter CC-115D (TL-3), CC-115E (TL-2), and CC-115F (TL-1) dated May 1, 2013, FHWA letter CC-115G dated September 5, 2013, and CC-115H dated September 23, 2013. Proposed modification does not adversely effect this original baseline crash test and a wavier is recommended by Laboratory as indicated on this form.	WAIVER REQUESTED
3-37 (2270P)	Crash test results covered under FHWA Letter CC-115D (TL-3), CC-115E (TL-2), and CC-115F (TL-1) dated May 1, 2013, FHWA letter CC-115G dated September 5, 2013, and CC-115H dated September 23, 2013. Proposed modification does not adversely effect this original baseline crash test and a wavier is recommended by Laboratory as indicated on this form.	WAIVER REQUESTED
3-38 (1500A)	Crash test results covered under FHWA Letter CC-115D (TL-3), CC-115E (TL-2), and CC-115F (TL-1) dated May 1, 2013, FHWA letter CC-115G dated September 5, 2013, and CC-115H dated September 23, 2013. Proposed modification does not adversely effect this original baseline crash test and a wavier is recommended by Laboratory as indicated on this form.	WAIVER REQUESTED
3-40 (1100C)	N/A	
3-41 (2270P)	N/A	
3-42 (1100C)	N/A	
3-43 (2270P)	N/A	

CRASH TESTING

A brief description of each crash test and its result:

3-44 (2270P)	N/A	
3-45 (1500A)	N/A	

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 Transportation Institute	
Laboratory Contact:	Dean Alberson, PhD, P.E.	Same as Submitter <input type="checkbox"/>
Address:	Texas A&M Transportation Institute	Same as Submitter <input type="checkbox"/>
Country:	USA	Same as Submitter <input type="checkbox"/>
Accreditation Certificate Number and Date:	ISO 17025-2005; A2LA Certificate 2821.01	

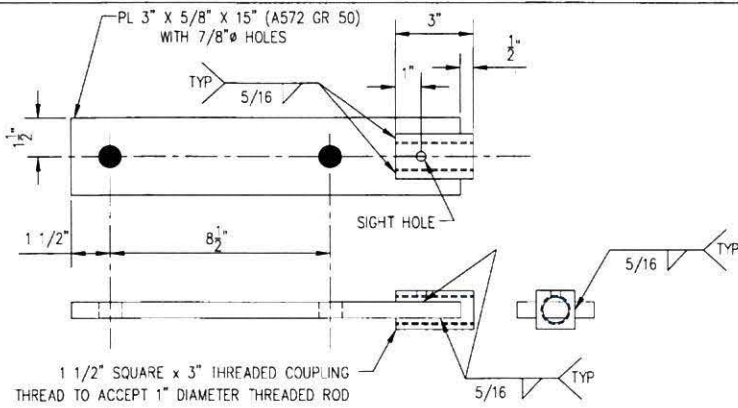
ATTACHMENTS

Attach to this form:

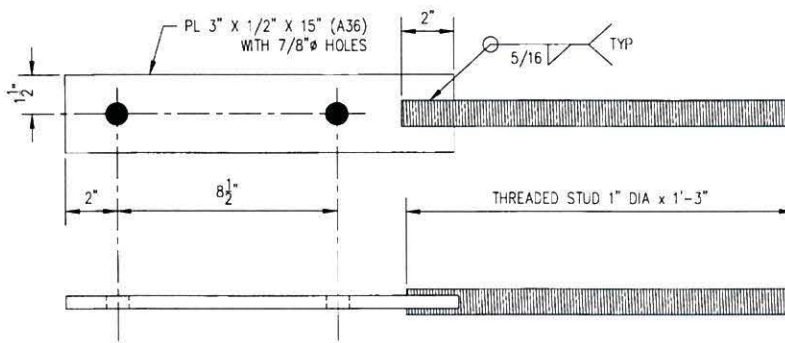
- 1) A copy of the full test report, video, and a Test Data Summary Sheet for each test conducted in support of this request.
- 2) A drawing or drawings of the device(s) that conform to the Task Force-13 Drawing Specifications [[Hardware Guide Drawing Standards](#)]. For proprietary products, a single 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 key to understanding the performance of the device should also be submitted to facilitate our review.

FHWA Official Business Only:

Eligibility Letter		AASHTO TF13	
Number	Date	Designator	Key Words
CC-115I	April 21, 2014	SEW22	Soft Stop anchor plate modification, MASH TL3,



PROPOSED ANCHOR PLATE



ANCHOR PLATE
PER TTI DETAIL & CC-115

F:\R\Share\Engineering\SS\WIP\Soft-Stop\FN and SS
Drawings\Anchor Paddle Plate Comparison.dwg

TRINITY SoftStop TERMINAL
ANCHOR PLATE COMPARISON



TRINITY HIGHWAY PRODUCTS, LLC.
2525 STEMMONS FREEWAY
DALLAS, TX 75207

DRAWN	BT
CHECKED	DG
SCALE	NONE
DATE	11-25-13
ENC. FILE #	
SHT. NO.	1 OF 1
DRAWING NO.	APC 1
REV.	

TECHNICAL MEMORANDUM

Contract No.: P2013207 and P2013361
Test Report No.: TM510602-SSM S1-S3 and S15-S17
Project Name: Static Testing of SoftStop[®] Anchor
Sponsor: Trinity Highway Products LLC

DATE: November 18, 2013

TO: Greg Neece
Trinity Highway Products LLC

COPY TO: Epifania Davila, TTI RDO
D. L. Bullard, Jr., Head, TTI Roadside Safety & Physical Security Systems
Rebecca Heck, TTI Roadside Safety & Physical Security Systems

FROM: Dean C. Alberson, Ph.D., P.E., Research Engineer, Texas A&M
Transportation Institute
Wanda L. Menges, Research Specialist, TTI Proving Ground

FOR MORE INFORMATION:

Name: Dean C. Alberson
Phone: 979-458-3874
Email: d-alberson@tamu.edu

SUMMARY REPORT:

DISCLAIMER

The contents of this report reflect the views of the authors who are solely responsible for the facts and accuracy of the data, findings and conclusions presented herein. The contents do not necessarily reflect the official views or policies of Trinity Highway Products LLC, The Texas A&M University System, or Texas A&M Transportation Institute. This report does not constitute a standard, specification, or regulation. In addition, the above listed agencies assume no liability for its contents or use thereof. The names of specific products or manufacturers listed herein do not imply endorsement of those products or manufacturers. The results reported herein apply only to the article being tested. The test was performed according to TTI Proving Ground quality procedures and according to Quality System Procedure (QSP) 5.4.22.

INTRODUCTION

The objective of the static tests described herein was to document the performance of the original Trinity SoftStop[®] Anchor compared to various design modifications intended to simplify fabrication, shipping and installation. The modified designs were evaluated to assess their ability

A better job done safer and sooner.

TTI Proving Ground
3100 SH 47, Bldg. 7091
Bryan, TX 77807

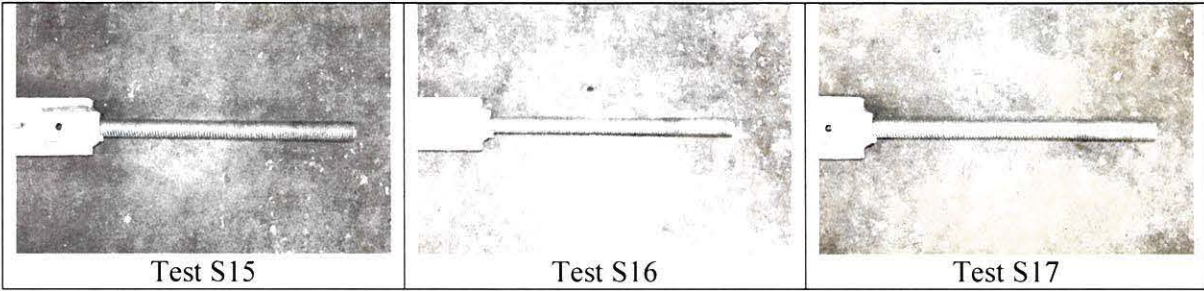


Figure 3. Failure Modes for Static Tests 510602-S15-S17.

SUMMARY AND CONCLUSIONS

The original 1/2-inch thick anchor plate and welded rod had an ultimate load of approximately 80 kips at failure. Any of the 1 1/2-inch threaded couplers used in conjunction with 5/8-inch plate and 3/4-inch ASTM A193 B7 threaded rod generated approximately the same peak loads and would be acceptable substitutes for the original anchor plate and welded rod. The graph for this information is shown below.

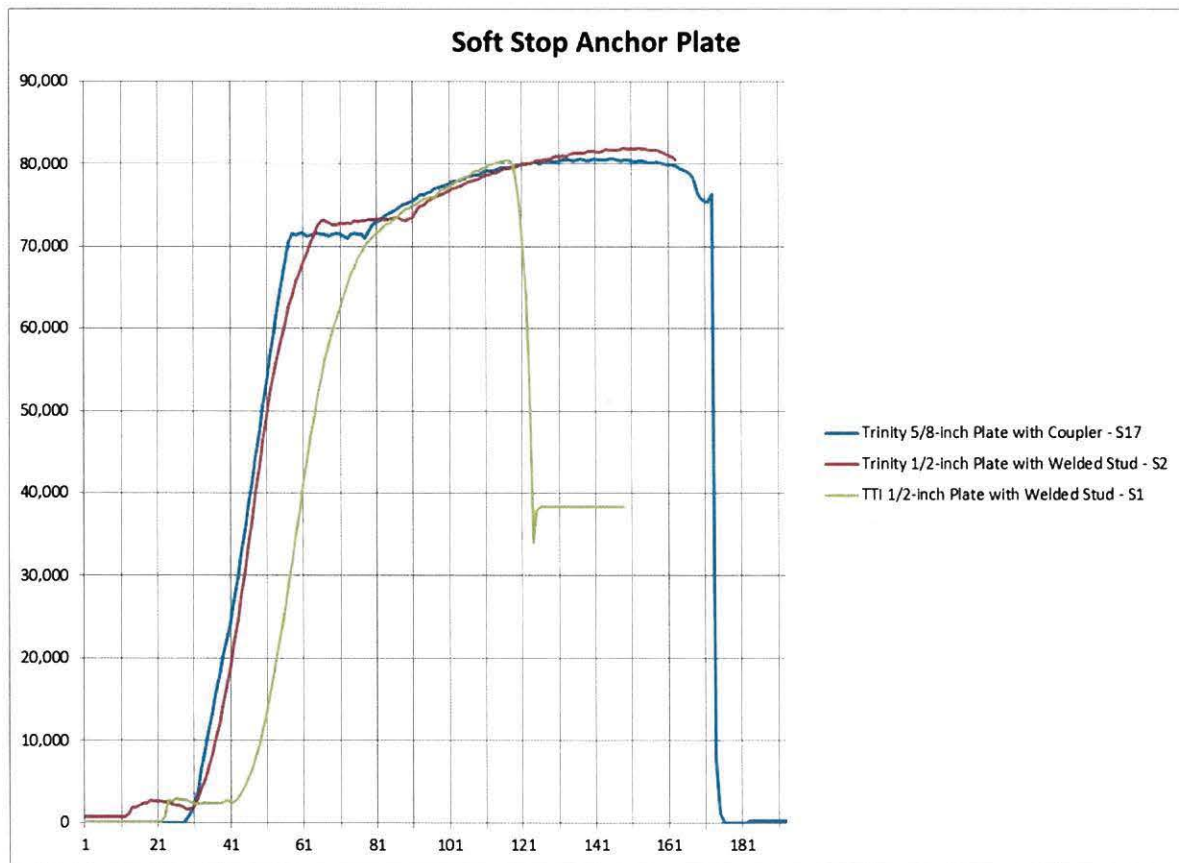


Figure 4. Data from Static Tests S1, S2, and S17.



Texas A&M Transportation Institute
The Texas A&M University System
3135 TAMU
College Station, TX 77843-3135

979-845-6375
Fax: 979-845-6107
<http://tti.tamu.edu>

December 9, 2013

Mr. Gregory A. Neece
Trinity Highway Products, LLC
2525 Stemmons Freeway
Dallas, TX 75207

RE: Proposed Changes to Soft Stop Anchor Paddle

Dear Mr. Neece:

Our Construction Section identified a low tolerance issue on the recently tested (static) Soft Stop Anchor Paddle (TTI510602-SSM S1-S3 and S15-17) Contract #'s P2013207 and P2013361. The coupler is embedded 2.5 inches into the 5/8 inch plate where the original welded stud was only embedded 2.0 inches. When the w-beam is attached to the Soft Stop Anchor Paddle, the clearance between the end of the w-beam plate sections and the back of the coupler is almost zero. By increasing the distance between the back of the coupler and hole in the 5/8 inch plate to 2.5 inches, this tolerance is made acceptable. This moves the bottom hole closer to the end of the Anchor Paddle Plate, however, this hole is the non-critical connection point. The upper hole must fail in conjunction with this hole for the w-beam to release from the Anchor Plate. Therefore we submit the attached drawing for your consideration as installation is enhanced and performance is not degraded.

If you have any questions or if I can be of any assistance to you please do not hesitate to call me at (979) 458-3874 or e-mail d-alberson@tamu.edu.

Sincerely,

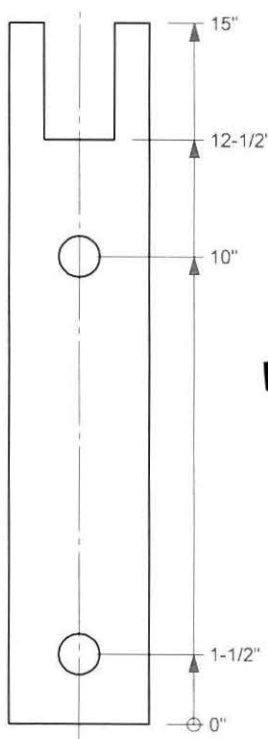
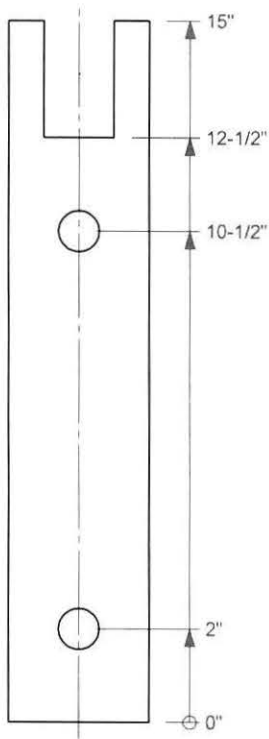
A handwritten signature in blue ink, appearing to read "Dean C. Alberson".

Dean C. Alberson
Research Engineer
Assistant Agency Director

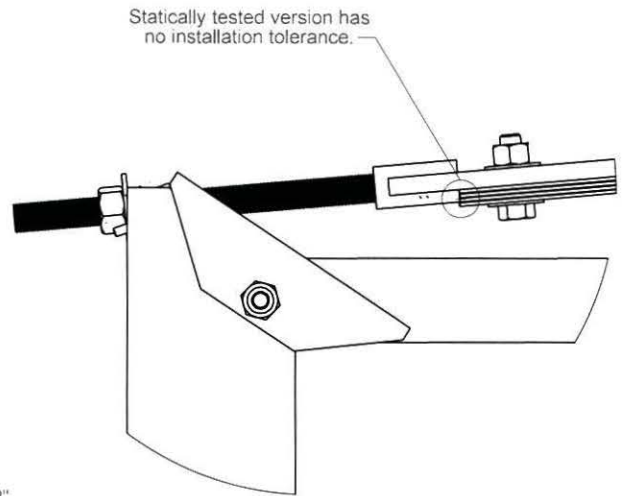
Statically Tested Version

Ref: Tests S10602/SSM S1-S3 and S15 - S17

Proposed Version for Production



Plate, 3" x 5/8"
ASTM A572 Gr. 50
Both Versions



Roadside Safety and Physical
Security Division
Proving Ground -

Project 690900-OSS Optimized Soft Stop

Drawn By GES Scale 1:30 Sheet 1 of 1 Paddle Versions

Approved:

Date:

Engineer Name:

2013-12-09