



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

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

May 13, 2013

In Reply Refer To:
HSST/ B-242

Mr. Wayne Frankhauser
Maine Department of Transportation
16 State House Station
Augusta, ME 04333-0016

Dear Mr. Frankhauser:

This letter is in response to your request for the Federal Highway Administration (FHWA) to review a roadside safety system for eligibility for reimbursement under the Federal-aid highway program.

Name of system: Maine Department of Transportation (MEDOT)
36-inch 3-Tube TL4 Bridge Rail

Type of system: Permanent Bridge Rail

Test Level: National Cooperative Highway Research Program (NCHRP) Report 350 TL-4

Testing conducted: 'n/a'

Date of request: November 27, 2012

Date of completed package: May 8, 2013

Task Force 13 Designator: SBB45d

Decision

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

- MEDOT 36-inch 3-Tube TL4 Bridge Rail

Based on a review of original crash test results submitted by the State DOT certifying the device described herein meets the crash test and evaluation criteria of the National Cooperative Highway Research Program (NCHRP) Report 350, the subject modified 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.

FHWA: HSST: WLongstreet: sf: x60087:5/9/13

File: h://directory folder/HSST/B242_MEDOT_350TL4_3-Tube Bridge
Rail.docx

cc: HSST Will Longstreet

Requirements

To be found eligible for Federal-aid funding, roadside safety devices should meet the crash test and evaluation criteria contained in the National Cooperative Highway Research Program (NCHRP) Report 350 or 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 NCHRP Report 350 criteria 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 crash test and evaluation criteria of the NCHRP Report 350.
- To prevent misunderstanding by others, this letter of eligibility is designated as number B-242 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.

Sincerely yours,

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

Enclosures



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Sincerely yours,

A handwritten signature in blue ink that reads "Michael S. Griffith". The signature is written in a cursive style with a large, stylized "M" and "G".

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:	May 3, 2013	<input checked="" type="radio"/> New <input type="radio"/> Resubmission
	Name:	Wayne Frankhauser	Signature: <i>Wayne Frankhauser</i>
	Company:	Maine Department of transportation (Maine DOT)	
	Address:	16 State House Station, Augusta, ME 04333-0016	
	Country:	United States	
	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.

Help

System Type	Submission Type	Device Name / Variant	Testing Criterion	Test Level
'B': Barrlers (Roadside, Median, Bridge Railings)	<input checked="" type="radio"/> Physical Crash Testing <input type="radio"/> FEA & V&V Analysis	Maine 3-BAR CURB-MOUNTED BRIDGE RAILING	NCHRP Report 350	TL4

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 NCHRP Report 350 (Report 350) and that the evaluation results meet the appropriate evaluation criteria in the Report 350.

Identification of the individual or organization responsible for the product:

Contact Name:	Brian Reeves	Same as Submitter <input type="checkbox"/>
Company Name:	Maine Department of transportation (Maine DOT)	Same as Submitter <input checked="" type="checkbox"/>
Address:	16 State House Station, Augusta, ME 04333-0016	Same as Submitter <input checked="" type="checkbox"/>
Country:	United States	Same as Submitter <input checked="" type="checkbox"/>

PRODUCT DESCRIPTION

<input type="radio"/> New Hardware	<input checked="" type="radio"/> Modification to Existing Hardware	Non-Significant - Effect Is positive or Inconsequential
<p>The proposed Maine 3-Bar Curb-Mounted Bridge Railing is a New England Transportation Consortium (NETC) NETC 4-Bar Sidewalk-Mounted Bridge Railing modified with 9-inch reinforced concrete curb in replacement of the bottom TS 4-inch x 4-inch x 1/4-inch tube rail. The proposed combined curb and bridge railing height is 3'-8". This proposed bridge railing is comparable to the existing NETC 4-Bar Sidewalk-Mounted Bridge Railing with a height of 3'-6" successfully crash tested to NCHRP350 TL4 as per FHWA Eligibility Letter B-50 dated March 11, 1999, and is currently specified by Maine DOT.</p>		

CRASH TESTING

A brief description of each crash test and its result:

Request for Federal Aid Reimbursement Eligibility Of Highway Safety Hardware

Submitter	Date of Request:	February 21, 2013	<input checked="" type="radio"/> New <input type="radio"/> Resubmission
	Name:	Wayne Frankhauser	
	Company:	Maine Department of transportation (Maine DOT)	
	Address:	16 State House Station, Augusta, ME 04333-0016	
	Country:	United States	
	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
'B': Barriers (Roadside, Media)	<input checked="" type="radio"/> Physical Crash Testing <input type="radio"/> FEA & V&V Analysis	Maine 3-BAR CURB-MOUNTED BRIDGE RAILING	NCHRP Report 350	TL4

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Company Name:	Maine Department of transportation (Maine DOT)	Same as Submitter <input checked="" type="checkbox"/>
Address:	16 State House Station, Augusta, ME 04333-0016	Same as Submitter <input checked="" type="checkbox"/>
Country:	United States	Same as Submitter <input checked="" type="checkbox"/>

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CRASH TESTING

A brief description of each crash test and its result:

Required Test Number	Narrative Description	Evaluation Results
4-10 (820C)	Southwest Research Institute Report No. NETCR14 (test report); SwRI test number NETC-1; Pass. Proposed modified detail provides combined curb and metal railing height of 3'-6". Metal railing is anchored to a 9" reinforced concrete curb . All other details of the modified railing shall maintain all other existing component details as per eligibility letter B-50 and test report, i.e., W6 x 25 steel posts welded to 1-inch x 10-inch x 14-inch base plate anchored in reinforced concrete with 1-inch diameter anchor bolts and post spacing of 8 feet center-to-center of posts.	WAIVER REQUES
S4-10 (700C)	N/A	
4-11 (2000P)	Southwest Research Institute Report No. NETCR14 (test report); SwRI test number NETC-2; Pass. Proposed modified detail provides combined curb and metal railing height of 3'-6". Metal railing is anchored to a 9" reinforced concrete curb . All other details of the modified railing shall maintain all other existing component details as per eligibility letter B-50 and test report, i.e., W6 x 25 steel posts welded to 1-inch x 10-inch x 14-inch base plate anchored in reinforced concrete with 1-inch diameter anchor bolts and post spacing of 8 feet center-to-center of posts.	WAIVER REQUES
4-12 (8000S)	Southwest Research Institute Report No. NETCR14 (test report); SwRI test number NETC-3; Pass. Proposed modified detail provides combined curb and metal railing height of 3'-6". Metal railing is anchored to a 9" reinforced concrete curb . All other details of the modified railing shall maintain all other existing component details as per eligibility letter B-50 and test report, i.e., W6 x 25 steel posts welded to 1-inch x 10-inch x 14-inch base plate anchored in reinforced concrete with 1-inch diameter anchor bolts and post spacing of 8 feet center-to-center of posts.	WAIVER REQUES
4-20 (820C)	N/A	
S4-20 (700C)	N/A	
4-21 (2000P)	N/A	
4-22 (8000S)	N/A	

Full Scale Crash Testing was done in compliance with ~~MASH~~ ^{NCHRP - 5/12/13} by the following accredited crash test laboratory (cite the laboratory's accreditation status as noted in the crash test reports.):

Laboratory Name:	Southwest Research Institute	
Laboratory Contact:	Oliver Harrison	Same as Submitter <input type="checkbox"/>
Address:	6220 Culebra Dr., San Antonio, TX 78238-5166	Same as Submitter <input type="checkbox"/>
Country:	USA	Same as Submitter <input type="checkbox"/>
Accreditation Certificate Number and Date:	ISO/IEC 17025:2005; A2LA Certificate Number: 1110.02	

ATTACHMENTS

Attach to this form:

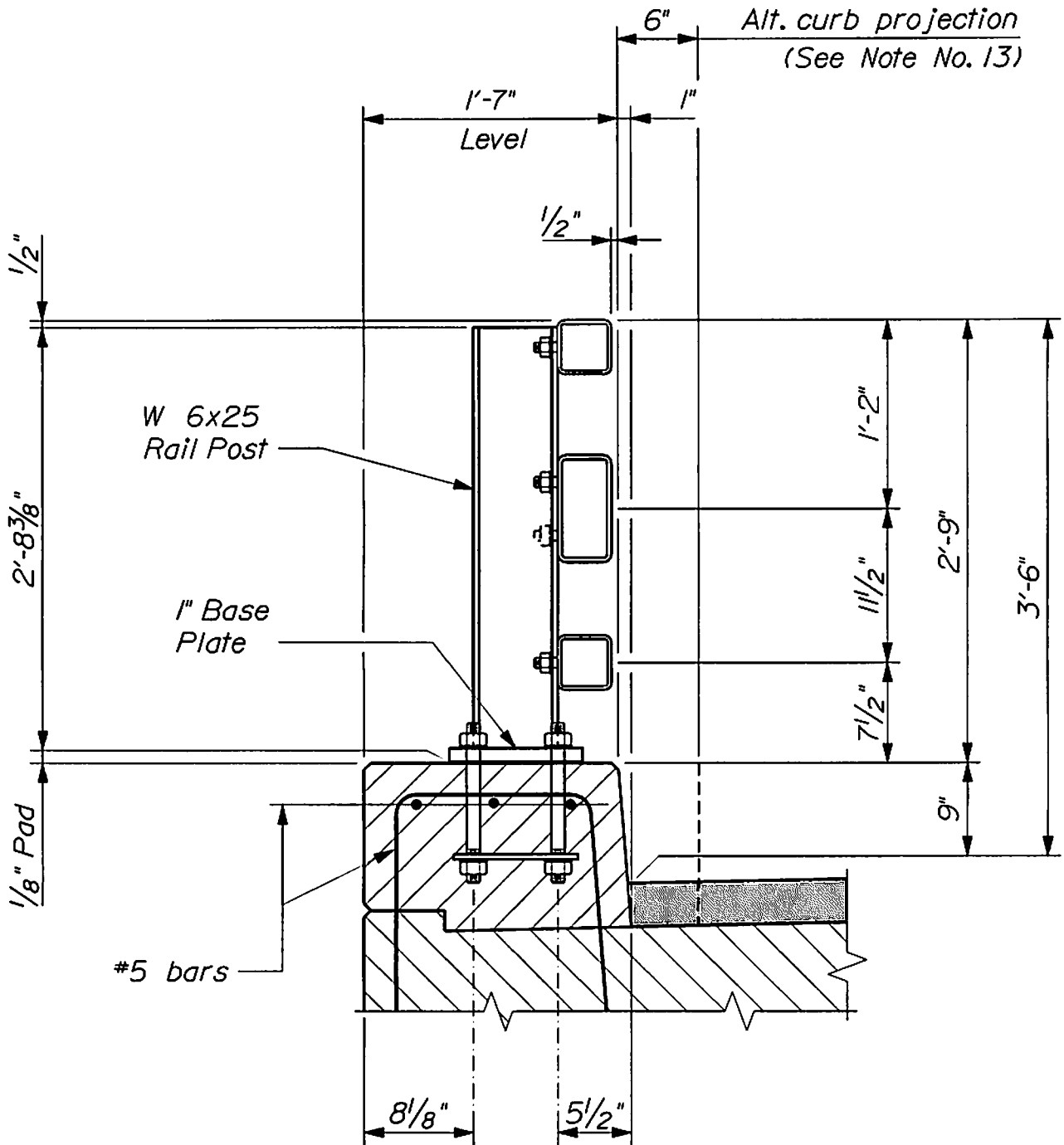
- 1) A copy of the full test report, video, and a Test Data Summary Sheet for each test conducted in support of this request.
- 2) A drawing or drawings of the device(s) that conform to the Task Force-13 Drawing Specifications [Hardware Guide Drawing Standards]. For proprietary products, a single isometric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

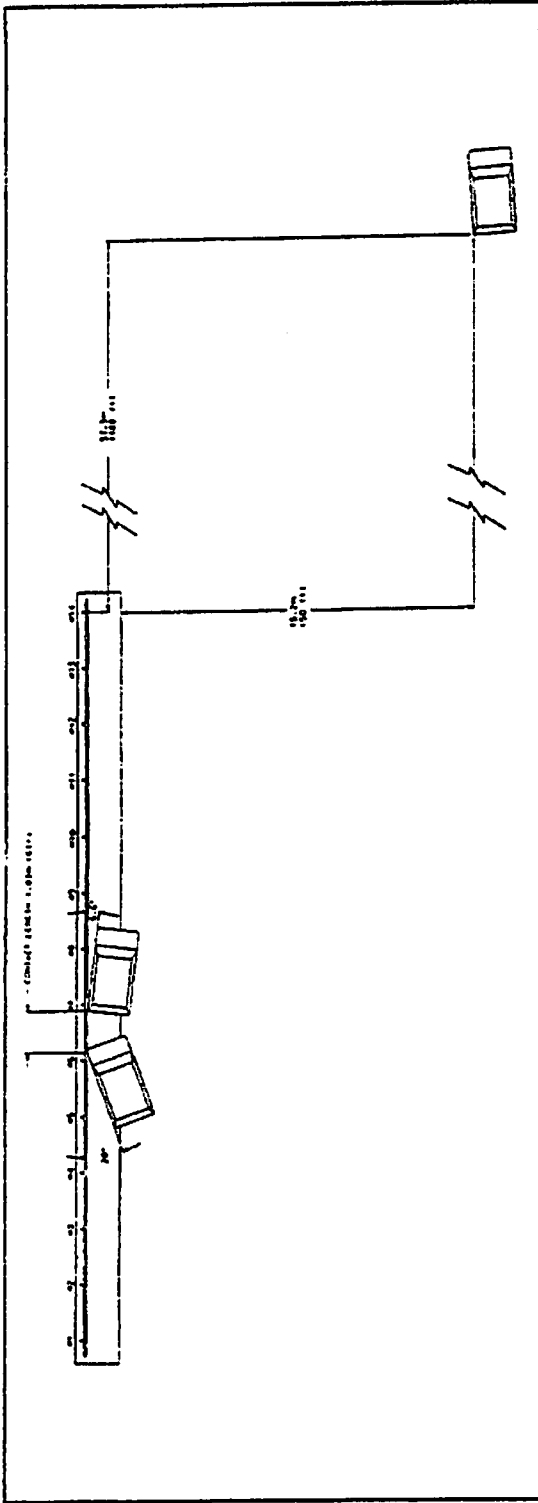
FHWA Official Business Only:

Eligibility Letter		AASHTO TF13	
Number	Date	Designator	Key Words
B-242	May 09, 2013	SBB45d	Curb-Mounted Bridge Railing; TL4; W6 x 25 steel posts; TS 4-inch x 4-inch x ¼-inch tube rail

Rail Bars:
 1 ~ TS 8x4x⁵/₁₆
 2 ~ TS 4x4x¹/₄



~ TYPICAL RAILING SECTION ~
 (3 - Bar Traffic / Bicycle Railing)



4. General Information	7. Test Vehicle (Continued)	10. Rollover Acceleration (g's)
Test Agency	Southwest Research Institute	y-direction
Test Number	NETC-1	
Test Date	11/18/97	
5. Test Article	Bridge Rail	11. Test Article Deflection (in)
Type	32.9	Dynamic
Installation Length (m)	4 Street Rails	Permanent
Barrier	N/A	12. Vehicle Damage
6. Soil Type and Condition		Exterior
7. Test Vehicle		VDS
Type	Production	CDC
Designation	820C	Interior
Model	1991 Ford Festiva	OCDI
Mass (kg) Curb	827	13. Post-Impact Vehicular Behavior
Mass (kg) Test Inertia	827	Maximum Roll Angle (deg)
		Maximum Pitch Angle (deg)
		Maximum Yaw Angle (deg)

*No occupant risk data - lateral accelerometer malfunctioned during test.

Figure 8. Impact sequence and summary of test conditions and results - Test NETC-1.

Figure 11. Impact sequence and summary of test conditions and results - Test NETC-2.

*No data - vehicle lateral accelerometer malfunctioned during test.

4. General Information	7. Test Vehicle (Continued)				
Test Agency	Southwest Research Institute	Mass (kg) (kg) Dummy(s)	75	y-direction	.
Test Number	NETC-2	Mass (kg) (kg) Gross Static	2,109	11. Test Article Deflection (mm)	
Test Date	11/20/97	8. Impact Conditions		Dynamic	25 (est.)
5. Test Article		Speed (km/h)	100.0	Termination	13
Type	Bridge Rail	Angle (deg)	25.0	12. Vehicle Damage	
Insulation Length (m)	34.1	9. Exit Conditions		Rearward	
Barrier	4 Bar, Side-walk-Mounted	Speed (km/h)	17	VIS	11-FL-3
6. Soil Type and Condition	N/A	Angle (deg)	8.2	CDC	11FLRB3
7. Test Vehicle		10. Occupant Risk Values		Instructor	
Type	Production	Impact Velocity (m/s)		OKMI	LF0000000
Designation	2000P	x-direction	3.99	13. Post-Impact Vehicular Behavior	
Model	1991 Ford F-250	y-direction	.	Maximum Roll Angle (deg)	20 Approximate
Mass (kg) (kg) Cab	2,034	Ridown Acceleration (g's)		Maximum Pitch Angle (deg)	15 Approximate
Mass (kg) (kg) Test Inertial	2,034	X-direction	-2.55	Maximum Yaw Angle (deg)	N/A

