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

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

May 6, 2016

In Reply Refer To:
HSST-1/CC-86C

Mr. Matthew Harriman
Hill and Smith Ltd
61 Foskew Way
Springvale Business and Industrial Park, Bilston
West Midlands, WV140QL
United Kingdom

Dear Mr. Harriman:

This letter is in response to your January 6, 2016 request for the Federal Highway Administration (FHWA) to review a roadside safety device, hardware, or system for eligibility for reimbursement under the Federal-aid highway program. This FHWA letter of eligibility is assigned FHWA control number CC-86C and is valid until a subsequent letter is issued by FHWA that expressly references this device.

Decision

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

- Brifen WRGT systems

Scope of this Letter

To be found eligible for Federal-aid funding, modified roadside safety devices should meet the crash test and evaluation criteria contained in the National Cooperative Highway Research Program (NCHRP) Report 350. However, the FHWA, the Department of Transportation, and the United States Government do not regulate the manufacture of roadside safety devices. Eligibility for reimbursement under the Federal-aid highway program does not establish approval, certification or endorsement of the device for any particular purpose or use.

This letter is not a determination by the FHWA, the Department of Transportation, or the United States Government that a vehicle crash involving the device will result in any particular outcome, nor is it a guarantee of the in-service performance of this device. Proper manufacturing, installation, and maintenance are required in order for this device to function as tested.

This finding of eligibility is limited to the crashworthiness of the system and does not cover other structural features, nor conformity with the Manual on Uniform Traffic Control.

Eligibility for Reimbursement

FHWA previously issued an eligibility letter for the roadside safety system described in your pending request. Your pending request now identifies a modification to that roadside safety system.

The original roadside safety device information is provided here:

Name of system: BRIFEN Wire Rope Safety Fence End Terminal
Type of system: End Terminal
Date of original request: December 29, 2006
Date of original FHWA eligibility letter: January 5, 2007
FHWA Control number: HSSD/CC86B

The pending modification(s) consists of the following changes:

1. Component; cable end attachment sleeve

FHWA concurs with the recommendation of the accredited crash testing laboratory as stated within the attached form.

Full Description of the Eligible Device

The device and supporting documentation, including reports of the crash tests or other testing done, videos of any crash testing, and/or drawings of the device, are described in the attached form.

Notice

If a manufacturer makes any modification to any of their roadside safety hardware that has an existing eligibility letter from FHWA, the manufacturer must notify FHWA of such modification with a request for continued eligibility for reimbursement. The notice of all modifications to a device must be accompanied by:

- Significant modifications – For these modifications, crash test results must be submitted with accompanying documentation and videos.

- Non-signification modifications – For these modifications, a statement from the crash test laboratory on the potential effect of the modification on the ability of the device to meet the relevant crash test criteria.

FHWA's determination of continued eligibility for the modified hardware will be based on whether the modified hardware will continue to meet the relevant crash test criteria.

You are expected to supply potential users with sufficient information on design, installation and maintenance 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 NCHRP Report 350.

Issuance of this letter does not convey property rights of any sort or any exclusive privilege. This letter is based on the premise that information and reports submitted by you are accurate and correct. We reserve the right to modify or revoke this letter if: (1) there are any inaccuracies in the information submitted in support of your request for this letter, (2) the qualification testing was flawed, (3) in-service performance or other information reveals safety problems, (4) the system is significantly different from the version that was crash tested, or (5) any other information indicates that the letter was issued in error or otherwise does not reflect full and complete information about the crashworthiness of the system.

Standard Provisions

- To prevent misunderstanding by others, this letter of eligibility designated as FHWA control number CC-86C 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 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.

- If the subject device is a patented product it may be considered to be 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

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:	1-6-16	(•) New ( ) Resubmission
	Name:	Matthew Harriman	
	Company:	Hill and Smith Ltd	
	Address:	Springvale Business and Industrial Park, Bilston, West Midlands, WV14OQL	
	Country:	UK	
	To:	Michael S. Griffith, Director FHWA, Office of Safet y Technologies	

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

1-1-1

System Type	Submission Type	Device Name / Variant	Testing Criterion	Test Level
'CC': Crash Cushions, Attenuators, & Terminals	( ) Physical Crash Testing (•) Engineering Analysis	Brifen WRGT systems	NCHRP Report 350	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 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:	Matthew Harriman	Same as Submitter ☒
Company Name:	Hill and Smith Ltd	Same as Submitter ☒
Address:	Springvale Business and Industrial Park, Bilston, West Midlands, [redacted]	Same as Submitter ☒
Country:	UK	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.

No test house or any employee of a test house has any financial interests in the products being submitted for approval. All of the Brifen system is proprietary and is wholly owned by Hill and Smith Ltd.
(Signed disclosure attached)

PRODUCT DESCRIPTION

○ New Hardware or Significant Modification ◉ Modification to Existing Hardware Non-Significant

Brifen has developed a new cable end attachment sleeve for use with its End Terminal Rope Connectors. Design drawing of the new cable end attachment sleeve is included in Attachment A. This new component is introduced to simplify the end of cable to anchor installation procedure. This will reduce the time needed to anchor the cables, decrease the chances of improperly joining the cables in the sleeves, and help assure adequate anchorage for all installations. This component is essentially the same length and radius as the previous design and provides the same functionality. Therefore, this modification is considered "non-significant" with "positive" effect. The attached analyses and documents offer what we believe are conclusive justifications that the new cable end attachment sleeve will provide equivalent performance while offering considerably easier installation compared to the original component. This memo respectfully requests your acceptance of this new sleeve as a replacement to the one previously used for Brifen TL3 and TL4 cable barrier designs (FHWA acceptance letters: CC-86, CC-86a, and CC-86b).

CRASH TESTING

By signature below, the Engineer affiliated with the testing laboratory, agrees in support of this submission that the Modification to Existing Hardware is deemed Non-significant for the device listed above to meet the NCHRP Report 350 criteria.

Engineer Name:	Oliver Harrison	
Engineer Signature:	Oliver Harrison 3/28/2016	
Address:	6220 Culebra Road, San Antonio, TX 78238-5116	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
3-30 (820C)	Non-significant, no effect (see justification letter), performed by MIRA, PASS (WRGT, see CC-86), performed by SwRI, PASS (WRGT-FL, see CC-86b)	Modification has no effect on crashworthiness
S3-30 (700C	non-critical; NCHRP 350 optional test	Non-Critical, not conducted
3-31 (2000P)	non-critical; waived based on terminal design and no concerns with other tests (see CC-86)	Non-Critical, not conducted

Required Test Number	Narrative Description	Evaluation Results
3-32 (820C)	non-critical; waived based on terminal design and no concerns with other tests (see CC-86)	Non-Critical, not conducted
S3-32 (700C)	non-critical; NCHRP 350 optional test	Non-Critical, not conducted
3-33 (2000P)	non-critical; waived based on terminal design and no concerns with other tests (see CC-86)	Non-Critical, not conducted
3-34 (820C)	Non-significant, no effect (see justification letter), performed by MIRA, PASS (WRGT, see CC-86)	Modification has no effect on crashworthiness
S3-34 (700C)	non-critical; NCHRP 350 optional test	Non-Critical, not conducted
3-35 (2000P)	Non-significant, no effect (see justification letter), performed by MIRA, PASS (WRGT, see CC-86)	Modification has no effect on crashworthiness
3-36 (820C)	test does not apply to a gating terminal	Non-Relevant Test, not conducted
S3-36 (700C)	non-critical; NCHRP 350 optional test	Non-Critical, not conducted
3-37 (2000P)	test does not apply to a gating terminal	Non-Relevant Test, not conducted
3-38 (2000P)	test does not apply to a gating terminal	Non-Relevant Test, not conducted
3-39 (2000P)	Non-significant, no effect (see justification letter), performed by MIRA, PASS (WRGT, see CC-86)	Modification has no effect on crashworthiness
3-40 (2000P)	test does not apply to a re-directive terminal	Non-Relevant Test, not conducted
S3-40 (700C)	non-critical; NCHRP 350 optional test	Non-Critical, not conducted
3-41 (2000P)	test does not apply to a re-directive terminal	Non-Relevant Test, not conducted
3-42 (820C)	test does not apply to a re-directive terminal	Non-Relevant Test, not conducted
S3-42 (700C)	non-critical; NCHRP 350 optional test	Non-Critical, not conducted
3-43 (2000P)	test does not apply to a re-directive terminal	Non-Relevant Test, not conducted
3-44 (2000P)	test does not apply to a re-directive terminal	Non-Relevant Test, not conducted

By signature below, the Laboratory agrees in support of this submission that the Modification to Existing Hardware is deemed Non-significant for the device listed above to meet the NCHRP 350 criteria.

Testing Laboratory's signature concurs that these modifications are considered Non-Significant.		
Laboratory Name:	Southwest Research Institute	
Laboratory Signature:	Jenny Ferren — Digitally signed by Jenny Ferren DN: cn=Jenny Ferren, o=Southwest Research Institute, ou=Structural Engineering Department, email=jferren@swri.org, c=US Date: 2016.03.25 11:51:31 -05'00'	
Address:	6220 Culebra Road, San Antonio, TX 78238-5116	Same as Submitter ☐
Country:	USA	Same as Submitter ☐
Accreditation Certificate Number and Dates of current Accreditation period :	A2LA Accredited Testing Laboratory, Certificate 1110.02, Valid to 3/31/16	

Submitter Signature*: Matt Harriman — Digitally signed by Matt Harriman DN: cn=Matt Harriman, o=MB and Smith, ou=Sales UK, email=matt.harriman@mbsmith.co.uk, c=US Date: 2016.03.27 22:33:26 -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

SOUTHWEST RESEARCH INSTITUTE®

6220 CULEBRA ROAD 78238-5166 • P.O. DRAWER 28510 78228-0510 • SAN ANTONIO, TEXAS, USA • (210) 684-5111 • WWW.SWRI.ORG

MECHANICAL ENGINEERING DIVISION

January 8, 2016

Safety Design Team, Room E71-322
Office of Safety Technologies – HSST
Federal Highway Administration
1200 New Jersey Avenue, SE
Washington DC 20590

Subject: SwRI® Concurrence with Request for FHWA Acceptance of a New End Terminal Rope Connector

Reference: Completed "Form to Request Eligibility for Federal Aid Reimbursement"
Hill & Smith Letter Disclosing Financial Interests, "Reference: Mechanical fitting submission"
Hill & Smith Letter of Supporting Documentation, Dated June 10, 2015

To Whom It May Concern:

Southwest Research Institute (SwRI) is providing this letter stating our concurrence that modifications to the Brifen WRSF systems new cable end attachment sleeve for use with its End Terminal Rope Connectors are non-significant. This conclusion is based on review of the referenced supporting documentation letter and the following supplemental documentation:

- UKAS ISO 17025 accreditation certificate for Rotech Laboratories Limited with schedule of accreditation identifying tensile mechanical testing (regarding most recent testing of new design)
- Bureau Veritas ISO 9001 certificate for Certex USA management system with accompanying verification report of equipment used for proof testing of original design
- A2LA ISO 17025 accreditation certificate for Midwest Roadside Safety Facility with scope of accreditation identifying mechanical (crash) testing (regarding comparative test data of cable tension during a crash event)

The overall size of the component has not changed, and based on the information above it provides the same functionality but with improved ease-of-use; therefore, SwRI concurs with the justification presented by Hill & Smith that this modification is non-significant.

Thank you for your consideration of this submittal. If you have any questions, or if we may be of further assistance, please do not hesitate to call me. I can be reached at (210) 522-2577 or e-mail at oliver.harrison@swri.org.

Best Regards,

Oliver Harrison

Oliver Harrison, Research Engineer
Structural Dynamics and Product Assurance

Reviewed and Approved by:

Jenny Ferren

Jenny Ferren, Manager
Structural Dynamics and Product Assurance

REV	DESCRIPTION	ECR	DATE	BY	CHK
A	Issued for Manufacture		19/04/2016	AP	MH

REVISION HISTORY

Drawn by	Date	Scale
Andy Pardoe	19/04/2016	NTS

Springvale Business & Industrial Park
Bilston, Wolverhampton, WV14 0QL.
Tel: 01902 499 400
Fax: 01902 499 419
www.hill-smith.co.uk
www.flexbeam.co.uk

Mechanical Fitting with Threaded Adaptor

Revision	Sheet	Drawing No:
A	1/1	WR3000