



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

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

September 7, 2016

In Reply Refer To:
HSST-1/CC-103C

Mr. Gerrit Dyke, P.E.
Lindsay Transportation Solutions
180 River Road
Rio Vista, CA 94571

Dear Mr. Dyke:

This letter is in response to your December 23, 2015 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-103C 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:

- UMAD TTMA Modifications

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 Devices.

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: UMAD TTMA Modifications

Type of system: Crash Cushion

Date of original request: March 21, 2008

Date of original FHWA eligibility letter: October 6, 2008

FHWA Control number: CC-103

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

1. Modified Logo
2. Substituted hydraulic cylinder from a different manufacturer
3. Alternative electrical plug between lights and support vehicle

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-103C 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
Director, Office of Safety Technologies
Office of Safety

Enclosures

Request for Federal Aid Reimbursement Eligibility of Highway Safety Hardware

Submitter	Date of Request:	December 23, 2015	<input type="radio"/> New <input checked="" type="radio"/> Resubmission
	Name:	Gerrit Dyke, P.E.	
	Company:	Lindsay Transportation Solutions	
	Address:	180 River Road, Rio Vista, CA, 94571	
	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
'CC': Truck-Mounted Attenuators (TMA)	<input type="radio"/> Physical Crash Testing <input checked="" type="radio"/> Engineering Analysis	UMAD TTMA	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.

Individual or Organization responsible for the product:

Contact Name:	Gerrit Dyke, P.E.	Same as Submitter <input checked="" type="checkbox"/>
Company Name:	Lindsay Transportation Solutions	Same as Submitter <input checked="" type="checkbox"/>
Address:	180 River Road, Rio Vista, CA, 94571	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.

Safe Technologies, Inc. (STI) performs testing and analysis services for Lindsay Transportation Solutions, Inc. (LTS). STI is a wholly owned subsidiary of LTS. STI is a fully accredited crash test facility by A2LA to ISO 17025 and recognized by the US Federal Highway Administration (FHWA) to perform full scale crash tests per NCHRP Report 350 and MASH criteria. STI also performs crash tests per the European EN1317 criteria in conjunction with an independent Notified Body. An Advisory Board includes third party industry experts and provides oversight and guidance to the laboratory management.

The STI laboratory manager, technicians, and laborers are compensated by LTS for salaries and wages. The STI staff does not receive any incentive, compensation, commissions, or professional fees corresponding to the outcome of any testing or analysis. The third party members of the Advisory Board are typically paid consultants. STI or staff does not receive any research funding or other research support from LTS. STI and staff also do not have any financial interest in patents, copyrights, or other intellectual property associated with the products they perform testing or analysis on.

PRODUCT DESCRIPTION

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

The U-MAD Trailer Mounted Crash Cushion is currently eligible for use under FHWA letter HSSD/CC-99 and subsequently HSSD/CC-103.

1) The first proposed modification is a change to the Logo on the Serial Number label identifying the product. The existing label depicts the old "BARRIER SYSTEMS" logo. Over the last few years Lindsay Transportation Solutions has been updating their logos on all internal and external documents as well as many of their nameplates. This change is consistent with that internal requirement.

The label size, material, installation, location on the product and contents is not changing except for the company name and logo. Therefore, the modification represents no change to the function, capacity or performance of the component and system.

2) The second request has to do with the hydraulic cylinder used as a dampener in the tow assembly of the trailer. The existing supplier, Bailey, is discontinuing production of this cylinder. As a result, LTS is forced to source an equivalent alternative. Dalton produces a cylinder with identical performance ratings. Both cylinders have the same length, attachment features, port sizes, bore size and piston size. Both cylinders have the same working pressure rating of 2,500 psi. The only noticeable difference is found in their testing. Bailey claims to have tested their cylinders up to 3,750 psi while Dalton tests their cylinders at the rated specification of 2,500 psi. The U-MAD TTMA was designed based on the rated pressure of 2,500 psi hence the excess capacity demonstrated by the Bailey does not affect the impact performance of the trailer. The trailer is equipped with two anti rotation arms that bear against the rear bumper of the support vehicle. As the impacting vehicle compresses the cylinder these anti rotation arms prevent the cylinder from reaching a fully retracted state hence never exercising the cylinder to it's full capacity. Therefore, the replacement cylinder represents no change to the function, capacity or performance of the TTMA.

3) The third request is to allow for the use of an alternative electrical plug that connects the trailer lights to the support vehicle. The cable harness does not come into play during crash testing henceforth an alternative plug represents no change to the function, capacity or performance of the TTMA.

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 Report 350 Criteria.

Engineer Name:	Joseph Nagy	
Engineer Signature:	Joseph Nagy	Digitally signed by Joseph Nagy Date: 2016.08.15 11:11:32 -07'00'
Address:	170 River Road, Rio Vista, CA 94571	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
3-50 (820C)	This test was considered irrelevant and not critical at the time of testing since the UMAD cartridge has already been tested while mounted directly to a support vehicle and the trailer has been tested in conjunction with another crash cushion. The proposed modifications represents no change to the function, capacity or performance of the UMAD Trailer system.	Non-Relevant Test, not conducted
S3-50 (700C)	Optional test, was not run. The proposed modifications represents no change to the function, capacity or performance of the UMAD Trailer system.	Non-Relevant Test, not conducted
3-51 (2000P)	This test was originally run to support eligibility letter HSSD/CC-103. The proposed modifications represents no change to the function, capacity or performance of the UMAD Trailer system.	Modification has no effect on crashworthiness
3-52 (2000P)	This test was originally run to support eligibility letter HSSD/CC-99. The proposed modifications represents no change to the function, capacity or performance of the UMAD Trailer system.	Modification has no effect on crashworthiness
3-53 (2000P)	Optional test, was not run. The proposed modifications represents no change to the function, capacity or performance of the UMAD Trailer system.	Non-Relevant Test, not conducted

Testing Laboratory's signature concurs that these modifications are considered Non-Significant.		
Laboratory Name:	Safe Technologies, Inc.	
Laboratory Signature:	Joseph Nagy	 Digitally signed by Joseph Nagy Date: 2016.08.15 11:20:25 -07'00'
Address:	170 River Road, Rio Vista, CA 94571	Same as Submitter <input type="checkbox"/>
Country:	USA	Same as Submitter <input type="checkbox"/>
Accreditation Certificate Number and Dates of current Accreditation period :	1851.01, Valid through March 31, 2018	

Submitter Signature*: **Gerrit Dyke**  Digitally signed by Gerrit Dyke
Date: 2016.08.15 11:21:21 -07'00'

Submit Form

ATTACHMENTS

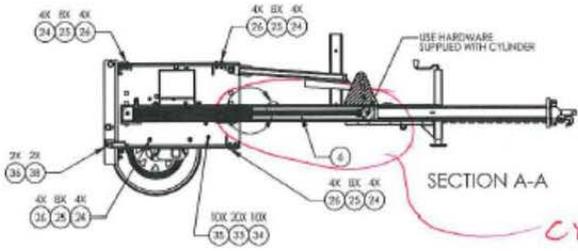
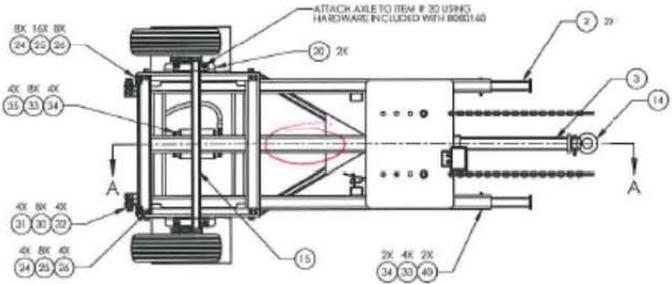
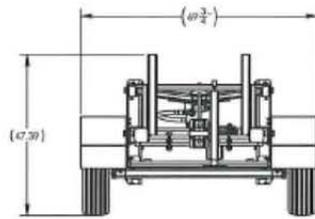
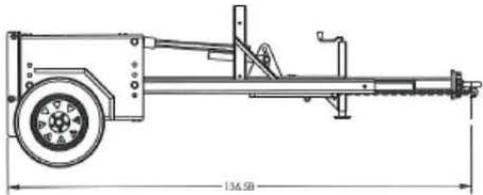
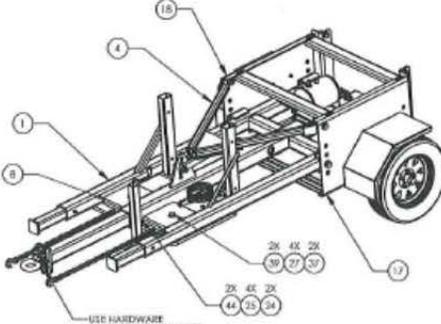
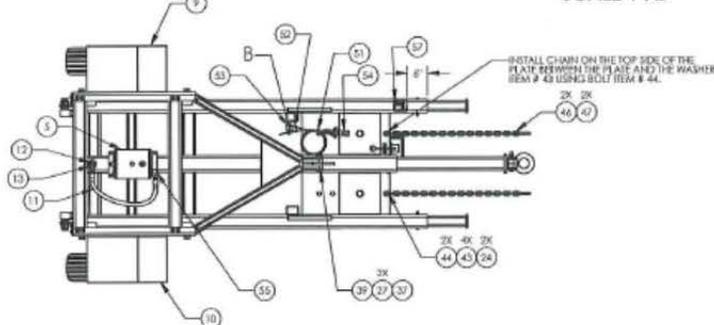
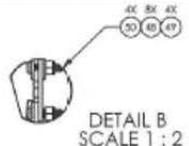
Attach to this form:

- 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.

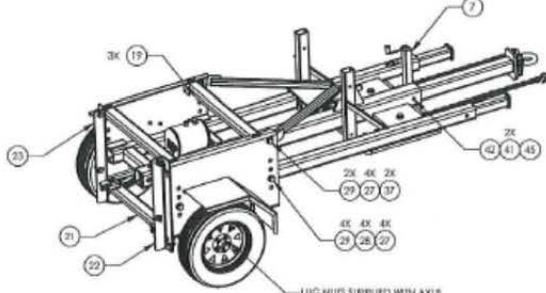
FHWA Official Business Only:

Eligibility Letter		
Number	Date	Key Words

NOTES: UNLESS OTHERWISE SPECIFIED,
1. TORQUE PER TO 980328 REV.2



CYLINDER INSIDE THIS TUBE



ITEM NO.	PART NO.	DESCRIPTION	QTY.	UOM
1	800407	Trailer Frame Weldment	1	EA
2	980147	Anti-Rotation Brake Tube	2	EA
3	980154	Brake Tube Weldment, Trailer	1	EA
4	900120	Adjustable Arm Weldment	1	EA
5	900129	TOW ASSEY TMA	1	EA
6	900091	Cylinder 2 1/4-144	1	EA
7	900510	Jack Weldment	1	EA
8	900159	BALLAST WEIGHT, 41 LBS	4	EA
9	900118	WHEEL FENDER	1	EA
10	900100	Wheel Fender	1	EA
11	900412	HOSE ASSY, HYDRAULIC, TRAILER	1	EA
12	900049	Hyd. PUMP PG 0001-0-8	1	EA
13	900048	Hyd. PUMP PG 12-R-GTX	1	EA
14	400033	Tow Eye Heavy Duty E-63	1	EA
15	900140	Axis Assembly, Trailer TMA	1	EA
17	900114	PANEL, BEAR PANEL	1	EA
18	900109	Panel, Rear Flight Side	1	EA
19	900119	CHANNEL, FRONT TOP	3	EA
20	900124	Axis Mount	2	EA
21	900124	Rear Channel Weldment	1	EA
22	900138	Cushion Bracket	1	EA
23	900137	Cushion Bracket	1	EA
24	900244	Nut Nylok 1/2-13 PH	32	EA
25	900219	Wdr SAE 1/2 HD PH	60	EA
26	900037	C-Scr HH 1/2-13x1 3/4 Gr5 PHd	28	EA
27	900120	Wdr SAE 1/2 PH	14	EA
28	900240	Wdr S, 1 PH	4	EA
29	900082	C-Scr HH 1-8x2 1/4 Gr5 PH	6	EA
30	900234	Wdr 7/8 SAE HD PH	8	EA
31	900126	C-Scr HH 7/8-9x2 1/2 Gr5 PH	4	EA
32	900125	Nut Nylok 7/8-8 PH	4	EA
33	900021	Wdr H SAE 3/8-13 PHd	32	EA
34	900098	Nut Nylok 3/8-13 PHd	16	EA
35	900049	C-Scr HH 3/8-14x1 1/4 Gr5 PHd	14	EA
36	900180	Nut HH 3/8-10 Wdr Gr2 PH	2	EA
37	900093	Nut Nylok 1-8 PHd	5	EA
38	900244	C-Scr HH 3/4-10x4 Gr5 PH	2	EA
39	900166	C-Scr HH 1-8x2 1/2 PH	3	EA
40	900191	C-Scr HH 3/8-10x5 Gr2 PH	2	EA
41	900391	Wdr 5/16 Flat Hd SS	2	EA
42	900113	Nut Nylok 5/16-18 PH	1	EA
43	900236	Wdr SS 7/8 1/2 PH	4	EA
44	900024	C-Scr HH 1/2-13x2 1/2 Gr5 PHd	4	EA
45	900090	C-Scr HH 5/16-18x2 1/2 Gr5 PH	1	EA
46	400243	Proof Coil Steel Chain Gr30	10.40	FT
47	400291	Clevis Safety Hook 5/16	2	EA
48	900221	Wdr 1/4 Flat Hd SS	8	EA
49	900113	Nut Nylok 1/4-20 SS	4	EA
50	900152	C-Scr HH 1/4-20x1 SS	4	EA
51	1000241	7 conductor wire blk	8	FT
52	1000240	Socket Foot 7/8-9002	1	EA
53	1000238	7-way Socket 15-220	1	EA
54	1000239	7-way Socket 15-220	1	EA
55	900091	Hrod Flt Mount SL 12-C-05	1	EA
56	900047	Hrod Bracket 1/2 1/8T, 983901	1	EA
57	90-143007-00	LABEL, VEH. UMAD TRAILER	1	EA

<p>APPROVALS</p> <p>DESIGNED BY: CC</p> <p>DATE: 11/10/10</p>		<p>DESIGNED BY: E</p> <p>DATE: 01/09/11</p>		<p>DESIGNED BY: D</p> <p>DATE: 01/09/11</p>		<p>DESIGNED BY: C</p> <p>DATE: 02/15/12</p>		<p>DESIGNED BY: B</p> <p>DATE: 11/10/10</p>		<p>DESIGNED BY: A</p> <p>DATE: 06/07/07</p>		<p>DESIGNED BY: D</p> <p>DATE: 01/18</p>		<p>DESIGNED BY: F</p> <p>DATE: 10/11</p>	
<p>REV: 1</p> <p>DATE: 11/10/10</p>		<p>REV: 2</p> <p>DATE: 01/09/11</p>		<p>REV: 3</p> <p>DATE: 01/09/11</p>		<p>REV: 4</p> <p>DATE: 02/15/12</p>		<p>REV: 5</p> <p>DATE: 11/10/10</p>		<p>REV: 6</p> <p>DATE: 06/07/07</p>		<p>REV: 7</p> <p>DATE: 01/18</p>		<p>REV: 8</p> <p>DATE: 10/11</p>	

LINDSAY

TRAILER, UMAD TRAILER MOUNTED CRASH CUSHION

REV: 8

DATE: 10/11

REV: 7

DATE: 01/18

REV: 6

DATE: 06/07/07

REV: 5

DATE: 11/10/10

REV: 4

DATE: 02/15/12

REV: 3

DATE: 01/09/11

REV: 2

DATE: 01/09/11

REV: 1

DATE: 11/10/10