U.S. Department of Transportation
Federal Highway Administration

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

July 29, 2013

In Reply Refer To:
HSST/B-39C

Ms. Maggie Ellis
General Manager
Mondo Polymer Technologies
27620 State Route 7
P.O. Box 250
Reno, Ohio 45773

Dear Ms. Ellis:

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: Mondo Polymer Blockout for Midwest Guardrail System (MGS)
Type of system: Strong Steel Post W-beam guardrail
Test Level: MASH Test Level 3
Testing conducted by: Midwest Roadside Safety Facility
Task Force 13 Designator: PPB02
Date of request: June 4, 2013

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

- Mondo Polymer Blockout for Midwest Guardrail System (MGS) Strong Steel Post W-Beam Guardrail

Based on a review of "bogie vehicle" component crash test results 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.

FHWA:HSST:NArtimovich:sf:x61331:7/8/13
File: s://directory folder/hsst/nartimovich/B39C_Mondo_MGS_MASH_Blockout_FIN.docx
cc: HSST (Reader, HSA; Chron File, HSST; NArtimovich, HSST), BFouch, HSST

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 B-39C 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 Mondo Polymer blockouts are patented products 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

U.S. Department
of Transportation
Federal Highway Administration

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

July 29, 2013

In Reply Refer To:
HSST/B-39C

Ms. Maggie Ellis
General Manager
Mondo Polymer Technologies
27620 State Route 7
P.O. Box 250
Reno, Ohio 45773

Dear Ms. Ellis:

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:	Mondo Polymer Blockout for Midwest Guardrail System (MGS)
Type of system:	Strong Steel Post W-beam guardrail
Test Level:	MASH Test Level 3
Testing conducted by:	Midwest Roadside Safety Facility
Task Force 13 Designator:	PPB02
Date of request:	June 4, 2013

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

- Mondo Polymer Blockout for Midwest Guardrail System (MGS) Strong Steel Post W-Beam Guardrail

Based on a review of "bogie vehicle" component crash test results 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 B-39C 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 Mondo Polymer blockouts are patented products 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

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:	June 04, 2013	◉ New ○ Resubmission
	Name:	Maggie Ellis	Signature:
	Company:	Mondo Polymer Technologies, Inc.	
	Address:	P.O. Box 250 Reno, OH 45773	
	Country:	United States of America	
	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, Median, Bridge Railings)	◉ Physical Crash Testing ○ FEA & V&V Analysis	Mondo Polymer Blockout for Midwest Guardrail System	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:	Maggie Ellis	Same as Submitter ☒
Company Name:	Mondo Polymer Technologies, Inc.	Same as Submitter ☒
Address:	P.O. Box 250 Reno, OH 45773	Same as Submitter ☒
Country:	United States of America	Same as Submitter ☒

PRODUCT DESCRIPTION

Modification to Existing Hardware Non-Significant - Effect is positive or Inconsequential
The Midwest Guardrail System (MGS) utilizes 6 ft. long, W6x9 steel guardrail posts with 12 inch deep, southern yellow pine wood blockouts. The MGS has previously met the safety performance criteria set forth in the AASHTO "Manual for Assessing Safety Hardware (MASH) [1] Test Level (TL-3) safety performance criteria [2-4]. The Mondo Polymer composite blockout is an alternative choice to be used in conjunction with the MGS. The dimensions of the Mondo Polymer blockout are 356 mm long by 102 mm wide at the block/guardrail interface and remain constant for 263 mm before flaring out to 130 mm at the post/block interface. A 10 mm deep by 108 mm wide recess accommodates the post flange, making the effective block depth 295 mm. In addition, the block has two rectangular openings that taper from 64 mm by 114 mm at the guardrail/block interface to 76 mm by 127 mm at the post/block interface. There are two boltholes that are 19 mm at the guardrail/block interface and 27 mm at the post/block interface. The Mondo Polymer MGS Composite blockout is manufactured from approximately 95% recycled Polyethylene and 5% trace materials and weighs approximately 10 lbs.

CRASH TESTING

A brief description of each crash test and its result:

Required Test Number	Narrative Description	Evaluation Results
3-10 (1100C)	On February 5, 2013, University of Nebraska Midwest Roadside Safety Facility conducted two dynamic component tests in lieu of full scale crash tests. MwRSF Research Report No. TRP-03-289-13 included the setup of both Mondo Polymer Tech., plastic blockout (Test no. MONDO-1) and a standard, 12-in. SYP wood blockout (Test no. MONDO-2) both on a standard W6x8.5 (W152x12.6) steel posts. Both tests were conducted with a bogie vehicle impacting at target impact conditions of a speed of 20 mph (32.2 km/h) and an angle of 0 degrees, creating a classic "head-on" or full frontal impact and strong axis bending. Based on the results of the two crash tests, no significant differences were observed between the performance of the wood and plastic spacer blocks. Both blocks displayed similar levels of permanent damage after impact. Analysis showed that the plastic block remained firmly attached to the post during the impact event. No concerns were observed with regards to the dynamic performance or the structural integrity of the plastic blockout when compared with the wood blockout.	WAIVER REQUESTED
3-11 (2270P)	On February 5, 2013, University of Nebraska Midwest Roadside Safety Facility conducted two dynamic component tests in lieu of full scale crash tests. MwRSF Research Report No. TRP-03-289-13 included the setup of both Mondo Polymer Tech., plastic blockout (Test no. MONDO-1) and a standard, 12-in. SYP wood blockout (Test no. MONDO-2) both on a standard W6x8.5 (W152x12.6) steel posts. Both tests were conducted with a bogie vehicle impacting at target impact conditions of a speed of 20 mph (32.2 km/h) and an angle of 0 degrees, creating a classic "head-on" or full frontal impact and strong axis bending. Based on the results of the two crash tests, no significant differences were observed between the performance of the wood and plastic spacer blocks. Both blocks displayed similar levels of permanent damage after impact. Analysis showed that the plastic block remained firmly attached to the post during the impact event. No concerns were observed with regards to the dynamic performance or the structural integrity of the plastic blockout when compared with the wood blockout.	WAIVER REQUESTED
3-20 (1100C)	Not applicable	
3-21 (2270P)	Not applicable	

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:	Midwest Roadside Safety Facility	
Laboratory Contact:	Karla Lechtenberg, M.S.M.E., E.I.T.	Same as Submitter ☐
Address:	Nebraska Transportation Center University of Nebraska-Lincoln 130 Whittier Research Center 220 Vine Street Lincoln, Nebraska 68583-0853	Same as Submitter ☐
Country:	United States	Same as Submitter ☐
Accreditation Certificate Number and Date:	2937.01	

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:

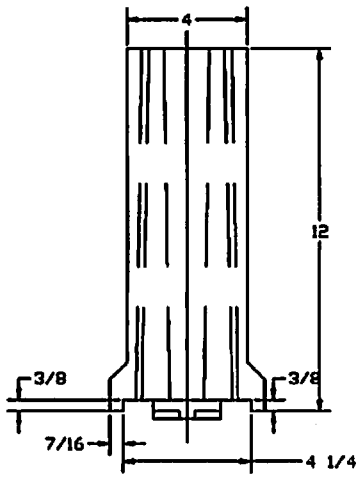
Eligibility Letter		AASHTO TF13	
Number	Date	Designator	Key Words
B-39C	July 8, 2013	PPB02	Blockout, Offset Block, MGS, Midwest Guardrail System, Polymer Blockout

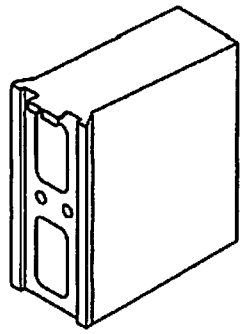
MONDO POLYMER TECHNOLOGIES

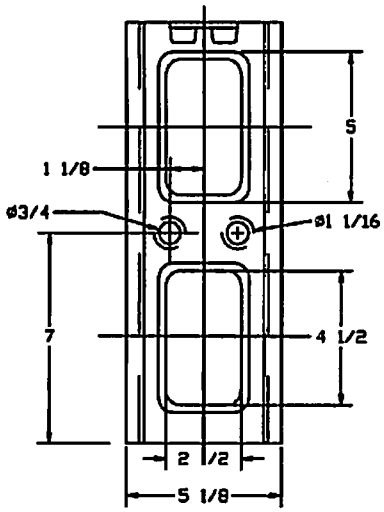
RECYCLED POLYMER OFFSET BLOCK

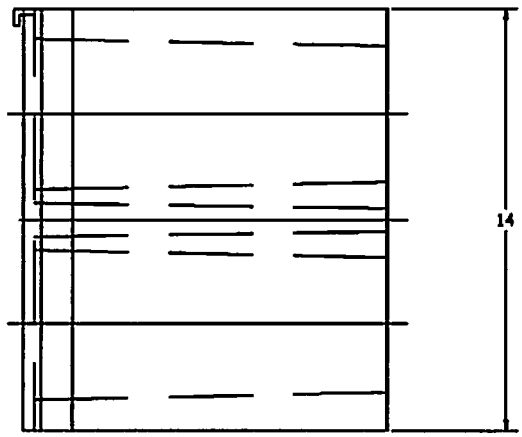
STEEL POST MODEL MGS14SH

P.O. BOX 250 RENO, OH 45773









tolerance on bolt holes
+/-1/8"
all others +/-1/4"

Director, Office of Safety Technologies
Office of Safety

Enclosures?

Request for Federal Aid Reimbursement Eligibility Of Highway Safety Hardware

Submitter	Date of Request:	June 04, 2013	◉ New ○ Resubmission
	Name:	Maggie Ellis	Signature: Maggie Ellis
	Company:	Mondo Polymer Technologies, Inc.	
	Address:	P.O. Box 250 Reno, OH 45773	
	Country:	United States of America	
	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': Barriers (Roadside, Median, Bridge Railings)	◉ Physical Crash Testing ○ FEA & V&V Analysis	Mondo Polymer Blockout for Midwest Guardrail System	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:	Maggie Ellis	Same as Submitter ☒
Company Name:	Mondo Polymer Technologies, Inc.	Same as Submitter ☒
Address:	P.O. Box 250 Reno, OH 45773	Same as Submitter ☒
Country:	United States of America	Same as Submitter ☒

PRODUCT DESCRIPTION

○ New Hardware	◉ Modification to Existing Hardware	Non-Significant - Effect is positive or Inconsequential

The Midwest Guardrail System (MGS) utilizes 6 ft. long, W6x9 steel guardrail posts with 12 inch deep, southern yellow pine wood blockouts. The MGS has previously met the safety performance criteria set forth in the AASHTO "Manual for Assessing Safety Hardware (MASH) [1] Test Level (TL-3) safety performance criteria [2-4]. The Mondo Polymer composite blockout is an alternative choice to be used in conjunction with the MGS.

The dimensions of the Mondo Polymer blockout are 356 mm long by 102 mm wide at the block/guardrail interface and remain constant for 263 mm before flaring out to 130 mm at the post/block interface. A 10 mm deep by 108 mm wide recess accommodates the post flange, making the effective block depth 295 mm. In addition, the block has two rectangular openings that taper from 64 mm by 114 mm at the guardrail/block interface to 76 mm by 127 mm at the post/block interface. There are two boltholes that are 19 mm at the guardrail/block interface and 27 mm at the post/block interface. The Mondo Polymer MGS Composite blockout is manufactured from approximately 95% recycled Polyethylene and 5% trace materials and weighs approximately 10 lbs.

CRASH TESTING

A brief description of each crash test and its result:

Required Test Number	Narrative Description	Evaluation Results
3-10 (1100C)	On February 5, 2013, University of Nebraska Midwest Roadside Safety Facility conducted two dynamic component tests in lieu of full scale crash tests. MwRSF Research Report No. TRP-03-289-13 included the setup of both Mondo Polymer Tech., plastic blockout (Test no. MONDO-1) and a standard, 12-in. SYP wood blockout (Test no. MONDO-2) both on a standard W6x8.5 (W152x12.6) steel posts. Both tests were conducted with a bogie vehicle impacting at target impact conditions of a speed of 20 mph (32.2 km/h) and an angle of 0 degrees, creating a classic "head-on" or full frontal impact and strong axis bending. Based on the results of the two crash tests, no significant differences were observed between the performance of the wood and plastic spacer blocks. Both blocks displayed similar levels of permanent damage after impact. Analysis showed that the plastic block remained firmly attached to the post during the impact event. No concerns were observed with regards to the dynamic performance or the structural integrity of the plastic blockout when compared with the wood blockout.	WAIVER REQUESTED
3-11 (2270P)	On February 5, 2013, University of Nebraska Midwest Roadside Safety Facility conducted two dynamic component tests in lieu of full scale crash tests. MwRSF Research Report No. TRP-03-289-13 included the setup of both Mondo Polymer Tech., plastic blockout (Test no. MONDO-1) and a standard, 12-in. SYP wood blockout (Test no. MONDO-2) both on a standard W6x8.5 (W152x12.6) steel posts. Both tests were conducted with a bogie vehicle impacting at target impact conditions of a speed of 20 mph (32.2 km/h) and an angle of 0 degrees, creating a classic "head-on" or full frontal impact and strong axis bending. Based on the results of the two crash tests, no significant differences were observed between the performance of the wood and plastic spacer blocks. Both blocks displayed similar levels of permanent damage after impact. Analysis showed that the plastic block remained firmly attached to the post during the impact event. No concerns were observed with regards to the dynamic performance or the structural integrity of the plastic blockout when compared with the wood blockout.	WAIVER REQUESTED
3-20 (1100C)	Not applicable	
3-21 (2270P)	Not applicable	

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:	Midwest Roadside Safety Facility	
Laboratory Contact:	Karla Lechtenberg, M.S.M.E., E.I.T.	Same as Submitter ☐
Address:	Nebraska Transportation Center University of Nebraska-Lincoln 130 Whittier Research Center 220 Vine Street Lincoln, Nebraska 68583-0853	Same as Submitter ☐
Country:	United States	Same as Submitter ☐
Accreditation Certificate Number and Date:	2937.01	

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