U.S. Department of Transportation
Federal Highway Administration

May 10, 2022

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

In Reply Refer To:
HSST-1/B-364

Mathias Redlberger
REBLOC GmbH
Ziegelofen-Straβe 736
3571 Gars am Kamp
Austria

Dear Mr. Redlberger:

This letter is in response to your September 9, 2021 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 B-364 and is valid until a subsequent letter is issued by FHWA that expressly references this device.

Decision

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

- REBLOC 120FA_6_SF, TL-5

Scope of this Letter

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

Based solely on a review of crash test results and certifications submitted by the manufacturer, and the crash test laboratory, FHWA agrees that the device described herein meets the crash test and evaluation criteria of the AASHTO's MASH. Therefore, the device is eligible for reimbursement under the Federal-aid highway program if installed under the range of tested conditions.

- Name of system: REBLOC 120FA_6_SF
  Type of system: Barrier
  Test Level: Test Level 5
  Testing conducted by: Crashtest-service.com GmbH
  Date of request: September 9, 2021

FHWA concurs with the recommendation of the accredited crash testing laboratory on 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

This eligibility letter is issued for the subject device as tested. Modifications made to the device are not covered by this letter. Any modifications to this device should be submitted to the user (i.e., state DOT) as per their requirements.

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 AASHTO's MASH.

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 B-364 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.

- This FHWA eligibility letter is not an expression of any Agency view, position, or determination of validity, scope, or ownership of any intellectual property rights to a specific device or design. Further, this letter does not impute any distribution or licensing rights to the requester. This FHWA eligibility letter determination is made based solely on the crash-testing information submitted by the requester. The FHWA reserves the right to review and revoke an earlier eligibility determination after receipt of subsequent information related to crash testing.

Sincerely,

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:	September 09, 2021	◉ New ○ Resubmission
	Name:	Mathias Redlberger	
	Company:	REBLOC	
	Address:	Ziegelofen-Straße 736, 3571 Gars am Kamp	
	Country:	Austria	
	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
'B': Rigid/Semi-Rigid Barriers (Roadside, Median, Bridge Railings)	◉ Physical Crash Testing ○ Engineering Analysis	REBLOC 120FA_6_SF	AASHTO MASH	TL5

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.

Individual or Organization responsible for the product:

Contact Name:	Mathias Redlberger	Same as Submitter ☒
Company Name:	REBLOC	Same as Submitter ☒
Address:	Ziegelofen-Straße 736, 3571 Gars am Kamp	Same as Submitter ☒
Country:	Austria	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.

Crashtest-service.com GmbH (CTS) was contracted by REBLOC GmbH to perform full-scale testing of the REBLOC 120FA_6_SF barrier. There are no shared financial interests in the REBLOC 120FA_6_SF barrier by CTS, or between REBLOC GmbH and CTS, other than costs involved in the actual crash tests and reports for this submission to FHWA.

PRODUCT DESCRIPTION

(●) New Hardware or Significant Modification ( ) Modification to Existing Hardware

The longitudinal barrier REBLOC 120FA_6_SF consists of precast concrete elements. Each element is 6.0 m (236.2 in) long , 0.62 m (24.4 in) wide and 1.20 m (47.2 in) high. The elements are connected on-site utilizing steel couplings protruding from each element. Steel beams are situated at the element joints to make the barrier more rigid. The beams are placed in recesses at the bottom of each element. The first and the last element of the continuous installation length must be anchored to the asphalt surface using six screw bolts.

CRASH TESTING

By signature below, the Engineer affiliated with the testing laboratory, agrees in support of this submission that all of the critical and relevant crash tests for this device listed above were conducted to meet the MASH test criteria. The Engineer has determined that no other crash tests are necessary to determine the device meets the MASH criteria.

Engineer Name:	Peter Schimmelpfennig	
Engineer Signature:	Peter Schimmelpfennig Digital unterschrieben von Peter Schimmelpfennig Datum: 2022.05.10 14:23:14 +02'00'	
Address:	Amelunxenstraße 30, 48167 Münster	Same as Submitter ☐
Country:	Germany	Same as Submitter ☐

A brief description of each crash test and its result:

Required Test Number	Narrative Description	Evaluation Results
5-10 (1100C)	Test no. 19508. Test report no. 12184-3272-19508-2-EN performed 18-FEB-2021 by crashtest-service.com GmbH. The longitudinal concrete barrier contained and redirected the 1100C vehicle. The vehicle did not penetrate, underride or override the installation. Maximum dynamic deflection during the test was 0.23 m (9.06 in.). No significant parts separated neither from the vehicle nor the barrier. No occupant compartment, deformation or intrusion occured. The vehicle remained upright during and after the impact.	PASS
5-11 (2270P)	Test no. 19509. Test report no. 12184-3272-19509-2-EN performed 18-FEB-2021 by crashtest-service.com GmbH. The longitudinal concrete barrier contained and redirected the 2270P vehicle. The vehicle did not penetrate, underride or override the installation. Maximum dynamic deflection during the test was 0.40 m (15.75 in.). No significant parts separated neither from the vehicle nor the barrier. No occupant compartment, deformation or intrusion occured. The vehicle remained upright during and after the impact.	PASS

Required Test Number	Narrative Description	Evaluation Results
5-12 (36000V)	Test no. 19510. Test report no. 12184-3272-19510-2-EN performed 16-FEB-2021 by crashtest-service.com GmbH. The longitudinal concrete barrier contained and redirected the 36000V vehicle. The vehicle did not penetrate, underride or override the installation. Maximum dynamic deflection during the test was 1.58 m (62.20 in.). No significant parts separated neither from the vehicle nor the barrier. Some detached concrete fragments in the area of impact. No occupant compartment, deformation or intrusion occured. The vehicle remained upright during and after the impact.	PASS
5-20 (1100C)		Non-Relevant Test, not conducted
5-21 (2270P)		Non-Relevant Test, not conducted
5-22 (36000V)		Non-Relevant Test, not conducted

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:	crashtest-service.com GmbH	
Laboratory Signature:	Peter Schimmelpfennig Digital unterschrieben von Peter Schimmelpfennig Datum: 2022.05.10 14:23:39 +02'00'	
Address:	Amelunxenstraße 30, 48167 Münster	Same as Submitter ☐
Country:	Germany	Same as Submitter ☐
Accreditation Certificate Number and Dates of current Accreditation period :	D-PL-17359-01-00, 10-FEB-2021	

Submitter Signature*: RE BLOC Concrete Barriers Rebloc GmbH 2022.05.10 14:55:27 +02'00'

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:

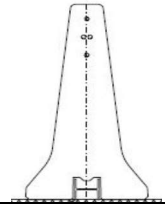
Eligibility Letter		
Number	Date	Key Words

1. Sequential Photographs

0.000 s	0.215 s	0.430 s	0.860 s	1.075 s

2. Plan View

3. Cross-Sectional View



4. General Information			
Test Agency	crashtest-service.com GmbH (CTS)		
Test Standard	MASH Test TL 5-10		
CTS-Test No	19508		
Date	18-FEB-2021		
5. Test Article			
Type	Precast Concrete Barrier		
Name	„REBLOC 120FA_6_SF“		
Installation Length	102 m (4015.8 in)		
Key Elements - Barrier	Length: Base Width: Height:	6.00 m 0.62 m 1.20 m	(236.2 in) (24.4 in) (47.2 in)
6. Soil Type and Condition			
Type of Soil	Asphalt		
Soil Strength	---		
Condition	Cloudy, dry, 12.5 °C		
7. Test Vehicle			
Type/Designation	1100C		
Make and Model	KIA Rio		
Curb	1029	kg (2269 lb)	
Test Inertial	1091	kg (2405 lb)	
Dummy	75	kg (165 lb)	
Gross Static	1168	kg (2575 lb)	

8. Impact Conditions		
Speed	99.0	km/h (61.5 mph)
Angle	25.0	degrees
Location/Orientation	1.1	m (43 in) before transition of 8/9
9. Exit Conditions		
Speed	84	km/h (52 mph)
Angle	2.0	degrees
10. Post-Impact Trajectory		
Vehicle Stability	Satisfactory	
Stopping Distance	65	m (2559 in) downstream
	1	m (39 in) laterally in behind
Vehicle Snagging	No	
Vehicle Pocketing	No	
11. Occupant Risk		
Impact Velocity		
Longitudinal	- 5.47	m/s (- 17.95 ft/s)
Lateral	7.16	m/s (23.49 ft/s)
Ridedown Accelerations (10 msec avg.)		
Longitudinal	- 3.28	g
Lateral	16.18	g

THIV	7.92	m/s (25.98 ft/s)
PHD	27.09	g
ASI	2.01	
12. Test Article Damage		
Classification	Moderate	
particularities	None	
13. Test Article Deflections		
Dynamic Deflection	0.23	m (9.06 in)
Permanent Deflection	0.20	m (7.87 in)
Dynamic Working Width	0.82	m (32.28 in)
Height of Working Width	0.00	m (0.00 in)
14. Vehicle Damage		
Classification	Moderate	
VDS	11-LFQ-4	
CDC	11FDEW3	
Max. Exterior Deformation	834 mm (32.8 in)	
Max. Interior Deformation	24 mm (0.95 in)	
OCDI	ND0000000	

1. Sequential Photographs

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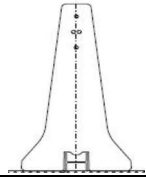
2. Plan View

3. Cross-Sectional View



4. General Information			
Test Agency	crashtest-service.com GmbH (CTS)		
Test Standard	MASH Test TL 5-11		
CTS-Test No	19509		
Date	18-FEB-2021		
5. Test Article			
Type	Precast Concrete Barrier		
Name	„REBLOC 120FA_6_SF“		
Installation Length	102 m (4015.8 in)		
Key Elements - Barrier	Length: Base Width: Height:	6.00 m 0.62 m 1.20 m	(236.2 in) (24.2 in) (47.2 in)
6. Soil Type and Condition			
Type of Soil	Asphalt		
Soil Strength	---		
Condition	Cloudy, Dry, 8.8 °C		
7. Test Vehicle			
Type/Designation	2270P		
Make and Model	DODGE RAM 1500		
Curb	2279	kg (5024 lb)	
Test Inertial	2301	kg (5073 lb)	
Dummy	75	kg (165 lb)	
Gross Static	2378	kg (5243 lb)	

8. Impact Conditions		
Speed	99.1	km/h (61.6 mph)
Angle	25.0	degrees
Location/Orientation	1.3	m (51 in) before transition of 8/9
9. Exit Conditions		
Speed	84	km/h (52 mph)
Angle	6.0	degrees
10. Post-Impact Trajectory		
Vehicle Stability	Satisfactory	
Stopping Distance	64	m (2559 in) downstream
	1	m (39 in) laterally in behind
Vehicle Snagging	No	
Vehicle Pocketing	No	
11. Occupant Risk		
Impact Velocity		
Longitudinal	- 4.48	m/s (14.70 ft/s)
Lateral	6.71	m/s (22.01 ft/s)
Ridedown Accelerations (10 msec avg.)		
Longitudinal	- 6.37	g
Lateral	12.79	g

THIV	8.16	m/s (26.77 ft/s)
PHD	17.69	g
ASI	1.47	
12. Test Article Damage		
Classification	Moderate	
particularities	None	
13. Test Article Deflections		
Dynamic Deflection	0.40	m (15.75 in)
Permanent Deflection	0.39	m (15.35 in)
Dynamic Working Width	1.00	m (39.37 in)
Height of Working Width	0.00	m (0.00 in)
14. Vehicle Damage		
Classification	Moderate	
VDS	11-LFQ-4	
CDC	11FDEW3	
Max. Exterior Deformation	311 mm (12.24 in)	
Max. Interior Deformation	71 mm (2.80 in)	
OCDI	LF0100000	

1. Sequential Photographs

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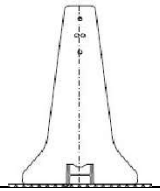
2. Plan View

3. Cross-Sectional View



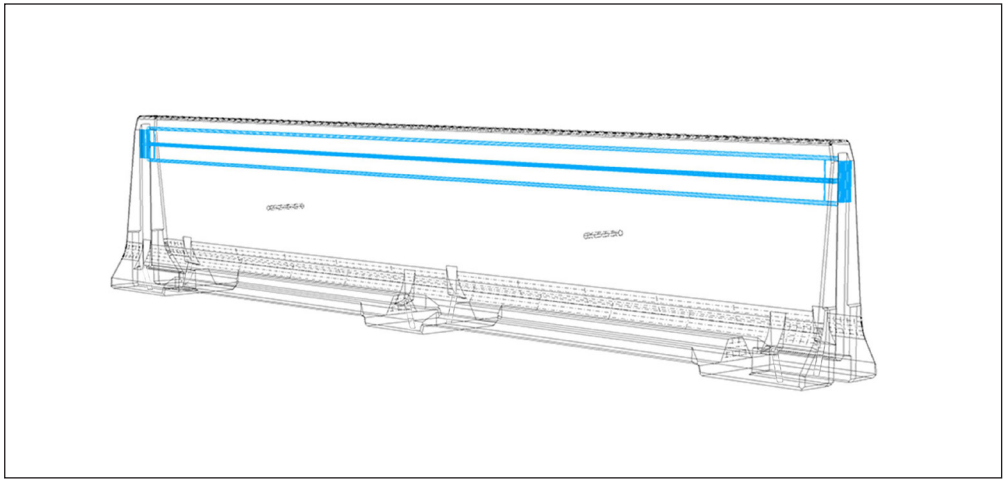
4. General Information			
Test Agency	crashtest-service.com GmbH (CTS)		
Test Standard	MASH Test TL 5-12		
CTS-Test No	19510		
Date	16-FEB-2021		
5. Test Article			
Type	Precast Concrete Barrier		
Name	„REBLOC 120FA_6_SF“		
Installation Length	102 m (4015.8 in)		
Key Elements - Barrier	Length: Base Width: Height:	6.00 m 0.62 m 1.20 m	(236.2 in) (24.2 in) (47.2 in)
6. Soil Type and Condition			
Type of Soil	Asphalt		
Soil Strength	---		
Condition	Cloudy, dry, 9.7 °C		
7. Test Vehicle			
Type/Designation	36000V		
Make and Model	International ProStar+ and Happy Tailer BV		
Curb	14402	kg (31751 lb)	
Test Inertial	35602	kg (78489 lb)	
Dummy	---	kg (--- lb)	
Gross Static	35602	kg (78489 lb)	

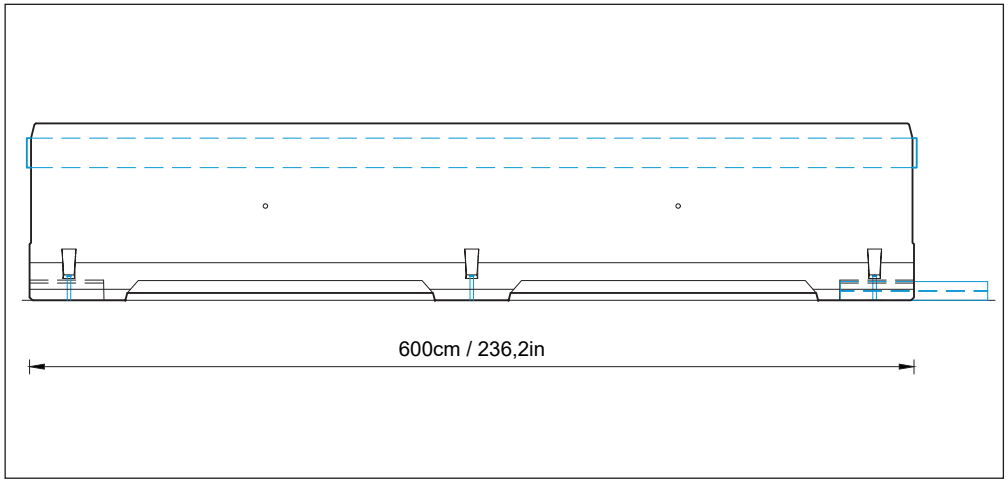
8. Impact Conditions		
Speed	79.2	km/h (49.2 mph)
Angle	15.0	degrees
Location/Orientation	0.11	m (4.33 in) after transition of 8/9
9. Exit Conditions		
Speed	67	km/h (42 mph)
Angle	N/A	degrees
10. Post-Impact Trajectory		
Vehicle Stability	Satisfactory	
Stopping Distance	98	m (3858 in) downstream
	3	m (118 in) laterally in front
Vehicle Snagging	No	
Vehicle Pocketing	No	
11. Occupant Risk		
Impact Velocity		
Longitudinal	---	m/s (--- ft/s)
Lateral	---	m/s (--- ft/s)
Ridedown Accelerations (10 msec avg.)		
Longitudinal	---	g
Lateral	---	g

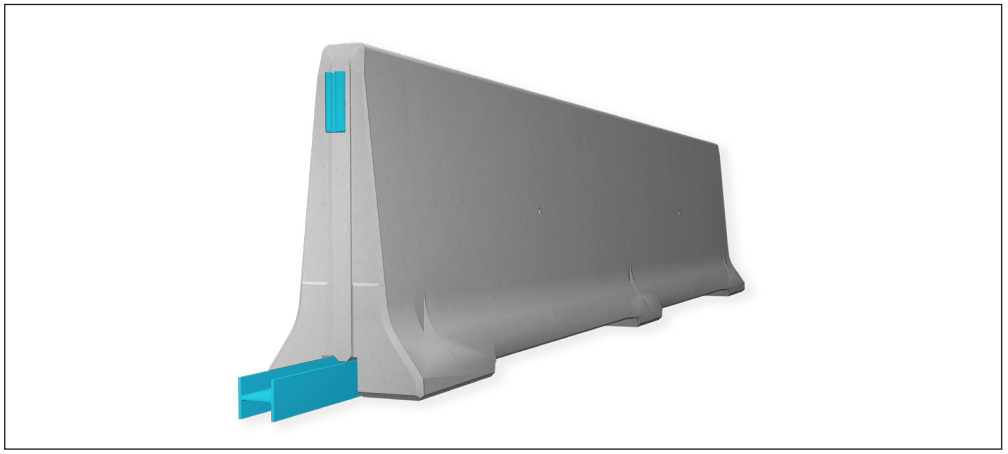
THIV	---	m/s (--- ft/s)
PHD	---	g
ASI	---	
12. Test Article Damage		
Classification	Moderate	
particularities	None	
13. Test Article Deflections		
Dynamic Deflection	1.58	m (62.2 in)
Permanent Deflection	1.45	m (57.1 in)
Dynamic Working Width	2.29	m (90.2 in)
Height of Working Width	3.65	m (143.7 in)
14. Vehicle Damage		
Classification	Moderate	
VDS	11-LFQ-4	
CDC	11LFEW4	
Max. Exterior Deformation	N/A	
Max. Interior Deformation	N/A	
OCDI	---	
Remark: For further details regarding the deformation and test vehicle damage, see test report 12184-3272-19510-EN.		

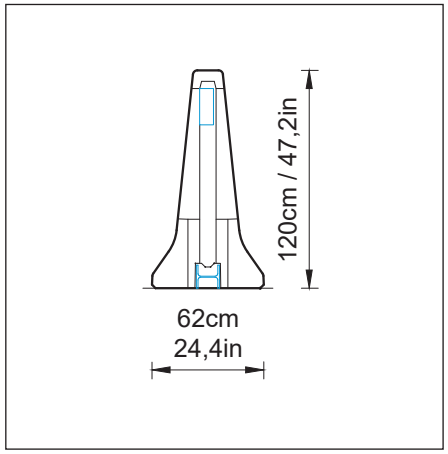
REBLOC 120FA_6_SF

REBLOC®
Concrete Barriers









The element is connected by the integrated coupling, located at the face of the element.

Element	120FA_6_SF
Dimensions	236.2 x 24.4 x 47.2 in (600 x 62 x 120 cm)
Weight/element	11023 lb (5000 kg)
Date	2021-09-09

REBLOC GmbH
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