Mathias Redlberger  
REBLOC GmbH  
Wiener Straße 662  
3571 Gars am Kamp  
Austria  

Dear Mr. Redlberger:

This letter is in response to your December 2, 2020 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-361 and is valid until a subsequent letter is issued by FHWA that expressly references this device.

**Decision**

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

- **REBLOC 80SAH_12_8B**

**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 80SAH_12_8B
Type of system: Longitudinal Barrier
Test Level: Test Level 3
Testing conducted by: crashtest-service.com GmbH
Date of request: December 2, 2020

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-361 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
Director, Office of Safety Technologies
Office of Safety

Enclosures
Request for Federal Aid Reimbursement Eligibility of Highway Safety Hardware

<table>
<thead>
<tr>
<th>Date of Request:</th>
<th>December 02, 2020</th>
<th>New</th>
<th>Resubmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>Mathias Redlberger</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company:</td>
<td>REBLOCGmbH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Address:</td>
<td>Wiener Straße 662, 3571 Gars am Kamp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country:</td>
<td>Austria</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>System Type</th>
<th>Submission Type</th>
<th>Device Name / Variant</th>
<th>Testing Criterion</th>
<th>Test Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;B&quot;: Rigid/Semi-Rigid Barriers (Roadside, Median, Bridge Railings)</td>
<td>Physical Crash Testing, Engineering Analysis</td>
<td>REBLOC 80SAH_12_8B</td>
<td>AASHTO MASH</td>
<td>TL3</td>
</tr>
</tbody>
</table>

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:**

<table>
<thead>
<tr>
<th>Contact Name:</th>
<th>Mathias Redlberger</th>
<th>Same as Submitter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Name:</td>
<td>REBLOCGmbH</td>
<td>Same as Submitter</td>
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<tr>
<td>Country:</td>
<td>Austria</td>
<td>Same as Submitter</td>
</tr>
</tbody>
</table>

Enter below all disclosures of financial interests as required by the FHWA 'Federal-Aid Reimbursement Eligibility Process for Safety Hardware Devices' document.

Crash-test-service.com GmbH (CTS) was contracted by REBLOCGmbH to perform full-scale crash testing of the REBLOC 80SAH_12_8B barrier. There are no shared financial interests in the REBLOC 80SAH_12_8B barrier by CTS, or between REBLOCGmbH 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

The vehicle restraint system with the system name REBLOC 805AH_12_88 consists of factory produced precast elements. Each element is 12.0m (472.4 in) long, 0.3m (11.8 in) wide and 0.8m (31.5 in) high. The precast concrete elements have a cross section similar to an H-beam profile.

The safety barriers are anchored to the ground with 8 screwbolts. Additionally the restraint function is achieved by connecting the individual elements to form a continuous chain. The connection between the elements is by the integrated tension bars, whose couplings, situated on the face side of each element, interlock. Steel shoes which are an integrated part of the element, have mating projections and indentations that form a double tongue/groove system. The concrete barriers stand on four support feet with integrated elastomer pads on the underside. Situated at the top side of each element there are two galvanised lifting anchors.

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

Address: Amelunxenstraße 30, 48167 Münster

Country: Germany

A brief description of each crash test and its result:

<table>
<thead>
<tr>
<th>Required Test Number</th>
<th>Narrative Description</th>
<th>Evaluation Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-10 (1100C)</td>
<td>Test nr. 19444. Test report nr. 12184-3272-19444-EN performed 26-AUG-2020 by crasheservice.com. 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 0.07 m (2.8 in). No significant parts separated neither from the vehicle nor the barrier. No occupant compartment deformation or intrusion occurred. The vehicle remained upright during and after the impact.</td>
<td>PASS</td>
</tr>
</tbody>
</table>

REBLOC

REBLOC GMBH
Weinstraße 062 • A-3571 Gars am Kamp
Tel. +43 (0) 66 272 50 00 • Fax +43 (0) 66 272 50 09 00
office@rebloc.com • www.rebloc.com
Test report nr. 19415-3272-19415-EN performed 16-JULY-2020 by crashtest-Service.com. 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 0.28 m (11.8 in). No significant parts separated neither from the vehicle nor the barrier. No occupant compartment deformation or intrusion occurred. The vehicle remained upright during and after the impact.

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):

<table>
<thead>
<tr>
<th>Required Test Number</th>
<th>Narrative Description</th>
<th>Evaluation Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-11 (2270P)</td>
<td>Test nr. 19415. Test report nr. 12184-3272-19415-EN performed 16-JULY-2020 by crashtest-Service.com. 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 0.28 m (11.8 in). No significant parts separated neither from the vehicle nor the barrier. No occupant compartment deformation or intrusion occurred. The vehicle remained upright during and after the impact.</td>
<td>PASS</td>
</tr>
<tr>
<td>3-20 (1100C)</td>
<td>Non-Relevant Test, not conducted</td>
<td></td>
</tr>
<tr>
<td>3-21 (2270P)</td>
<td>Non-Relevant Test, not conducted</td>
<td></td>
</tr>
</tbody>
</table>

ATTACHMENTS

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.
1. Sequential Photographs

<table>
<thead>
<tr>
<th>Time</th>
<th>Photograph</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000 s</td>
<td>![Image 1]</td>
</tr>
<tr>
<td>0.315 s</td>
<td>![Image 2]</td>
</tr>
<tr>
<td>0.630 s</td>
<td>![Image 3]</td>
</tr>
<tr>
<td>0.945 s</td>
<td>![Image 4]</td>
</tr>
<tr>
<td>1.260 s</td>
<td>![Image 5]</td>
</tr>
</tbody>
</table>

2. Plan View

3. Cross-Sectional View

4. General Information

- Test Agency: crashtest-service.com GmbH (CTS)
- Test Standard: MASH Test TL 3-10
- CTS-Test No: 19444
- Date: 26-AUG-2020

5. Test Article

- Type: Concrete barrier
- Name: "REBLOC 80SAH_12_8B"
- Installation Length: 60.00 m (2362.2 in)
- Key Elements - Barrier: Length: 12.0 m (472 in), Height: 0.8 m (12 in), Base Width: 0.3 m (31 in)

6. Soil Type and Condition

- Type of Soil: Asphalt
- Soil Strength: ---
- Condition: Rainy, cloudy, 16.3 °C

7. Test Vehicle

- Type/Designation: 1100C
- Make and Model: KIA Rio III
- Curb: 1055 kg (2326 lb)
- Test Inertial: 1080 kg (2381 lb)
- Dummy: 75 kg (165 lb)
- Gross Static: 1720 kg (3792 lb)

8. Impact Conditions

- Speed: 100.7 km/h (62.6 mph)
- Angle: 25.0 degrees
- Location/Orientation: 1.1 m (43.3 in) before transition of 2/3

9. Exit Conditions

- Speed: 74 km/h (46 mph)
- Angle: 8 degrees

10. Post-Impact Trajectory

- Vehicle Stability: Satisfactory
- Stopping Distance: 59 m (2329 in) downstream, 12 m (472 in) laterally in behind
- Vehicle Snagging: No
- Vehicle Pocketing: No

11. Occupant Risk

- Impact Velocity:
  - Longitudinal: - 6.55 m/s (21.7 ft/s)
  - Lateral: 8.54 m/s (28.9 ft/s)
- Ridedown Accelerations (10 msec avg.):
  - Longitudinal: - 4.58 g
  - Lateral: 9.54 g
- THIV: 10.2 m/s (33.8 ft/s)
- PHD: 35.84 g
- ASI: 2.26

12. Test Article Damage

- Classification: Moderate
- particularities: None

13. Test Article Deflections

- Dynamic Deflection: 0.07 m (2.8 in)
- Permanent Deflection: 0.00 m (0.0 in)
- Dynamic Working Width: 0.39 m (15.4 in)
- Permanent Working Width: 0.30 m (11.8 in)

14. Vehicle Damage

- Classification: Moderate
- VDS: 11-LFG-4
- CDC: 11FDEW3
- Max. Exterior Deformation: 116 mm (4.6 in)
- Max. Interior Deformation: 20 mm (0.8 in)
- OCDI: LS0010000
1. Sequential Photographs

2. Plan View

3. Cross-Sectional View

4. General Information
   - Test Agency: crashtest-service.com GmbH (CTS)
   - Test Standard: MASH Test TL 3-11
   - CTS-Test No: 19415
   - Date: 16-JULY-2020

5. Test Article
   - Type: Concrete barrier
   - Name: "REBLOC 80SAH_12_8B"
   - Installation Length: 60.00 m (2362.2 in)
   - Key Elements - Barrier:
     - Length: 12.0 m (472 in)
     - Base Width: 0.3 m (12 in)
     - Height: 0.8 m (31 in)

6. Soil Type and Condition
   - Type of Soil: Asphalt
   - Soil Strength: ---
   - Condition: Dry, cloudy, 21.1 °C

7. Test Vehicle
   - Type/Designation: 2270P
   - Make and Model: Dodge Ram 1500 Pickup
   - Curb: 2270 kg (5004 lb)
   - Test Inertial: 2237 kg (4932 lb)
   - Dummy: --- kg (--- lb)
   - Gross Static: 3085 kg (6801 lb)

8. Impact Conditions
   - Speed: 100.7 km/h (62.6 mph)
   - Angle: 25.1 degrees
   - Location/Orientation: 1.3 m (51.2 in) before transition of 2/3

9. Exit Conditions
   - Speed: 78 km/h (48 mph)
   - Angle: 10 degrees

10. Post-Impact Trajectory
    - Vehicle Stability: Satisfactory
    - Stopping Distance:
      - Longitudinal: 69 m (2716.5 in) downstream
      - Lateral: 16 m (629 in) laterally behind
    - Vehicle Snagging: No
    - Vehicle Pocketing: No

11. Occupant Risk
    - Impact Velocity:
      - Longitudinal: 5.82 m/s (19 ft/s)
      - Lateral: 6.97 m/s (23 ft/s)
    - Ridedown Accelerations (10 msec avg.):
      - Longitudinal: 6.47 g
      - Lateral: 8.84 g

12. Test Article Damage
    - Classification: Moderate
    - particularities: None

13. Test Article Deflections
    - Dynamic Deflection: 0.28 m (11.0 in)
    - Permanent Deflection: 0.00 m (0.0 in)
    - Dynamic Working Width: 0.59 m (23.2 in)
    - Permanent Working Width: 0.30 m (11.8 in)

14. Vehicle Damage
    - Classification: Moderate
    - VDS: 11-LFG-4
    - CDC: 11FDEW3
    - Max. Exterior Deformation: 116 mm (4.6 in)
    - Max. Interior Deformation: 20 mm (0.8 in)
    - OCDI: ND000000
REBLOC 80SAH_12_8B
Temporary System - standard element

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

<table>
<thead>
<tr>
<th>Element</th>
<th>80SAH_12_8B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>472 1/2&quot; x 12&quot; x 31 1/2&quot; (1200 x 30 x 80 cm)</td>
</tr>
<tr>
<td>Weight/element</td>
<td>7496 lb (3400 kg)</td>
</tr>
<tr>
<td>Material</td>
<td>Concrete 5000 psi</td>
</tr>
<tr>
<td>Date</td>
<td>2021-03-16</td>
</tr>
</tbody>
</table>