



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

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

MAR 06 2019

In Reply Refer To:
HSST-1/WZ-378

Mr. Matthew Schindler
QWICK KURB, INC.
1916 US Highway 41 South
Ruskin, FL. 33570

Dear Mr. Schindler:

This letter is in response to your January 2, 2019 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 WZ-378 and is valid until a subsequent letter is issued by FHWA that expressly references this device.

Decision

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

- QWICK KURB Stand Alone Long Base with L104 MEGA-MARKER, freestanding (SlenderBender) Longitudinal Channelizer

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: QWICK KURB Stand Alone Long Base with L104 MEGA-MARKER,
freestanding (SlenderBender) Longitudinal Channelizer

Type of system: Work Zone

Test Level: MASH Test Level 1 (TL1)

Testing conducted by: Transportation Research Center, Inc. (TRC)

Date of request: January 10, 2019

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 WZ-378 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.
- 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,



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:	January 02, 2019	<input type="radio"/> New <input checked="" type="radio"/> Resubmission
	Name:	Matthew Schindler	
	Company:	Cloverleaf Corporation	
	Address:	1916 US Highway 41 South, Ruskin, FL 33570	
	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
'WZ': Crash Worthy Work Zone Traffic Control Devices	<input checked="" type="radio"/> Physical Crash Testing <input type="radio"/> Engineering Analysis	QWICK KURB Stand Alone Long Base with L104 MEGA-MARKER, freestanding (SlenderBender) / Longitudinal Channelizer	AASHTO MASH	TL1

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:	Matthew Schindler	Same as Submitter <input checked="" type="checkbox"/>
Company Name:	Cloverleaf Corporation	Same as Submitter <input checked="" type="checkbox"/>
Address:	1916 US Highway 41 South, Ruskin, FL 33570	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.		
<p>QWICK KURB®, INC. sponsored and fully paid for testing of its longitudinal channelizing system by TRC. No other financial exchange with TRC or its employees, including consultants, was made. There is no patent, license, copyright, investment or other intellectual property interest between QWICK KURB®, INC. and TRC. There are no consulting, research funding or other compensation included wages, salaries, commissions, professional fees for business referrals.</p>		

PRODUCT DESCRIPTION


<input checked="" type="radio"/> New Hardware or Significant Modification	<input type="radio"/> Modification to Existing Hardware	
<p>The QWICK KURB Longitudinal Channelizer's Long Base is a 34 lbs base, approx 1 meter in length that can hold a single vertical channelizing device. The L104 MEGA-MARKER vertical channelizing device is plastic, weighs approximately 5 lbs and is 43 inches tall when mounted in the L54 Long Base. The L104 MEGA-MARKER mounted on the L54 Long Base is sometimes offered as a product called the "SlenderBender".</p>		
<h3>CRASH TESTING</h3>		
<p>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.</p>		
Engineer Name:	Jason Jenkins	
Engineer Signature:	<h2 style="margin: 0;">Jason Jenkins</h2>	Digitally signed by Jason Jenkins DN: cn=Jason Jenkins, o=Transportation Research Center Inc., ou=Impact Laboratory, email=jenkinj@trcpg.com, c=US Date: 2019.01.03 08:15:00 -05'00'
Address:	10820 State Route 347 East Liberty, OH 43319	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
1-90 (1100C)	Transportation Research Center, Test# 171017-14, 10/17/17. The L54 Long Base was positioned by itself and the center front of the impacting 1100C vehicle struck the approximate center face of the channelizing device. Test 3-90 met all conditions of MASH16 and is considered a pass.	PASS
1-91 (2270P)	Transportation Research Center, Test# 181004-15, 10/4/18. The L54 Long Base was positioned by itself and the center front of the impacting 2270P vehicle struck the approximate center face of the channelizing device. Test 3-91 met all conditions of MASH16 and is considered a pass.	PASS

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:	Transportation Research Center, Inc.	
Laboratory Signature:	Jason Jenkins	<small>Digitally signed by Jason Jenkins DN: cn=Jason Jenkins, o=Transportation Research Center Inc., ou=Impact Laboratory, email=jenkinj@trcpg.com, c=US Date: 2019.01.03 08:16:55 -05'00'</small>
Address:	10820 State Route 347 East Liberty, OH 43319	Same as Submitter <input type="checkbox"/>
Country:	USA	Same as Submitter <input type="checkbox"/>
Accreditation Certificate Number and Dates of current Accreditation period :	Certificate Number: L2187 01/17/2018-01/26/2021	

Submitter Signature*:  Matthew Schindler
2019.01.02 15:02:13
-05'00'

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






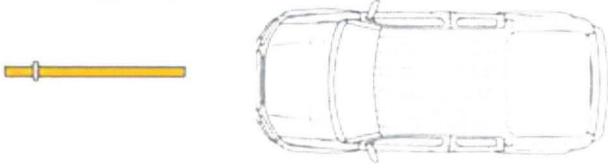
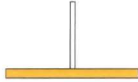
1. Sequential photographs			
			
0.000 s	0.50 s	0.100 s	0.150 s
			0.200 s
2. Plan View		3. Cross-Sectional View	
			
4. General Information:		9. Exit Conditions:	
Test Agency	Transportation Research Center Inc.	Speed	Not Applicable
Test Number	171017-14	Angle	0 degrees (estimated)
Date	October 17, 2017	Exit Box Criterion	Not Applicable
5. Test Article:		10. Post-Impact Trajectory:	
Type	Type-III Longitudinal Channelizer	Vehicle Stability	Satisfactory
Installation Length	3.0 Feet	Stopping Distance	Not Applicable
Key Elements	L54 base/L104 post/No anchors	11. Occupant Risk:	
		Longitudinal OIV	3.97 ft/s (1.21 m/s)
6. Soil Conditions:		Lateral OIV	-2.1 ft/s (-5.09 m/s)
Type of Soil	Not Applicable	Longitudinal RA	0.37 G
Soil Strength	Not Applicable	Lateral RA	0.45 G
7. Test Vehicle:		12. Test Article Damage:	
Type/Designation	Production Model 1100C	L104 post detached and L54 base remained intact.	
Make and Model	2011 Chevrolet Aveo LT	13. Test Article Deflections:	
Test Inertial	1172.6 kg	Permanent Set	2362 mm longitudinally/0 mm laterally.
Gross Static	1172.6 kg	Dynamic	Not Applicable
8. Impact Conditions:		Working Width	Not Applicable
Speed	48.41 km/h	14. Vehicle Damage:	
Angle	0 degrees	VDS	No additional damage
Location/Orientation	Center front of vehicle to the center of face	CDC	Not Applicable

Figure 118 Summary of results for test 171017-14






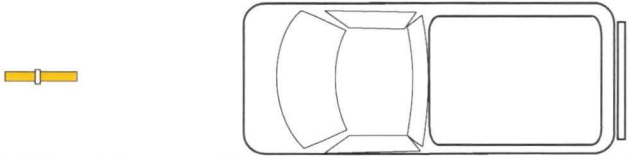
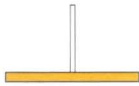
1. Sequential photographs	
	
0.000 s	0.50 s
	
0.100 s	0.150 s
	
0.200 s	
2. Plan View	
	
3. Cross-Sectional View	
	
4. General Information:	
Test Agency	Transportation Research Center Inc.
Test Number	181004-15
Date	October 4, 2018
5. Test Article:	
Type	Type-III Longitudinal Channelizer
Installation Length	3.0 Feet
Key Elements	L54 base/L104 post/No anchors
6. Soil Conditions:	
Type of Soil	Not Applicable
Soil Strength	Not Applicable
7. Test Vehicle:	
Type/Designation	Production Model 2270P
Make and Model	2018 Dodge Ram 1500
Test Inertial	2310.8 kg
Gross Static	2402.4 kg
8. Impact Conditions:	
Speed	48.28 km/h
Angle	0 degrees
Location/Orientation	Center front of vehicle to the center of face
9. Exit Conditions:	
Speed	Not Applicable
Angle	0 degrees (estimated)
Exit Box Criterion	Not Applicable
10. Post-Impact Trajectory:	
Vehicle Stability	Satisfactory
Stopping Distance	Not Applicable
11. Occupant Risk:	
Longitudinal OIV	0.03 ft/s (0.01 m/s)
Lateral OIV	0.56 ft/s (0.17 m/s)
Longitudinal RA	0.00 G
Lateral RA	0.00 G
12. Test Article Damage:	
	The L104 and the L54 Longitudinal Channelizer remained intact.
13. Test Article Deflections:	
	1785 mm longitudinally/173 mm laterally
Permanent Set	Not Applicable
Dynamic	Not Applicable
Working Width	Not Applicable
14. Vehicle Damage:	
	No significant deformation
VDS	Not Applicable
CDC	Not Applicable

Figure 136 Summary of results for test 181004-15

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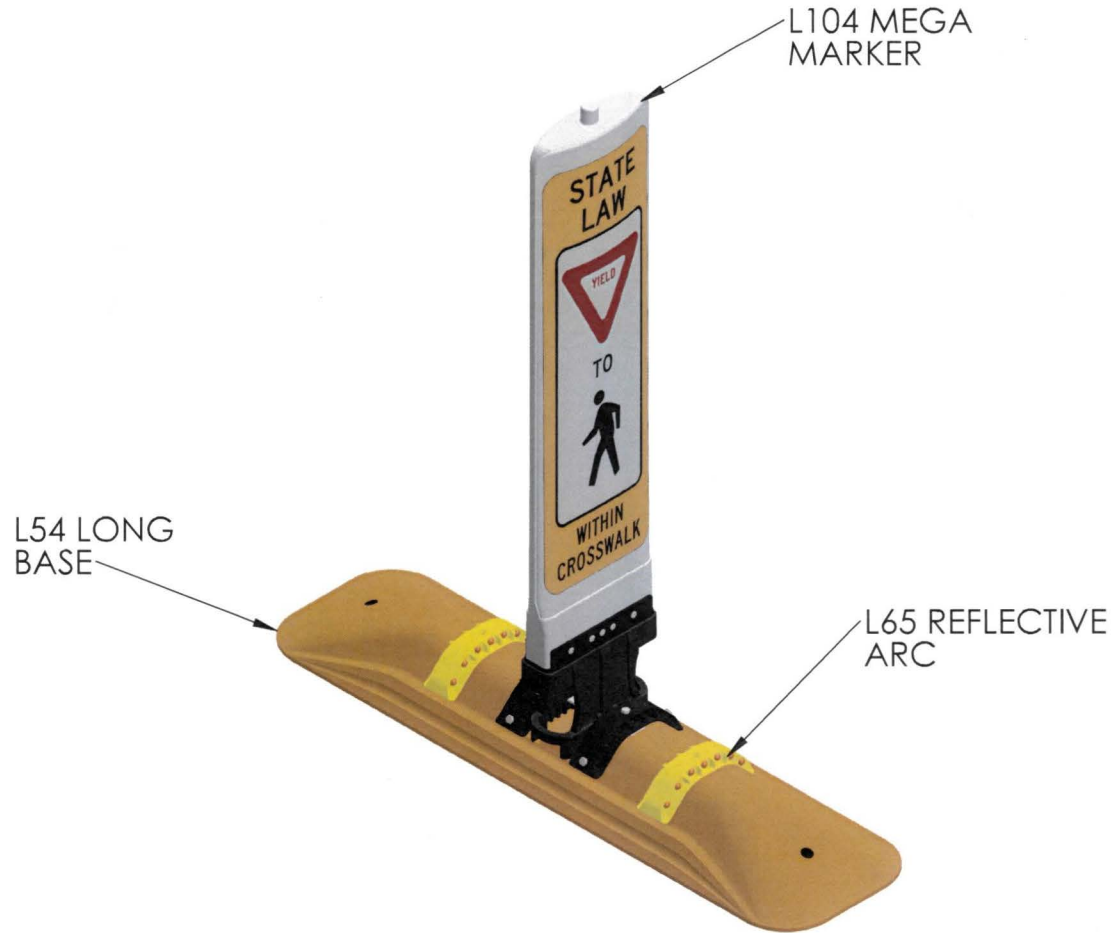
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-L104 MEGA MARKER depicted with In Street Pedestrian Crossing decal. Other decals available.
 -L54 available in white or yellow.

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