



U.S. Department  
of Transportation

Federal Highway  
Administration

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

December 18, 2017

In Reply Refer To:  
HSST-1/ B-295

Michael van der Vlist  
Laura Metaal Road Safety  
Rimburgerweg 40, 647 XX Kerkrade  
Netherlands

Dear Mr. van der Vlist:

This letter is in response to your August 23, 2017 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-295 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:

- SafeZone MASH TL-4 Standard

### **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 American Association of State Highway and Transportation Officials' Manual for Assessing Safety Hardware (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: SafeZone MASH TL-4 Standard

Type of system: Rigid/Semi-Rigid Barriers

Test Level: MASH Test Level 4

Testing conducted by: Crashtest-service.com GmbH

Date of request: August 23, 2017

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**

This eligibility letter is issued for the subject device as tested.

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-295 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.

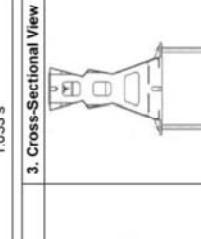
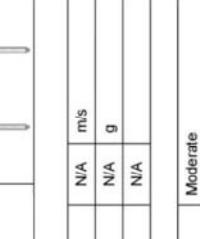
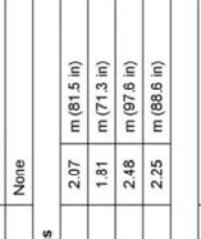
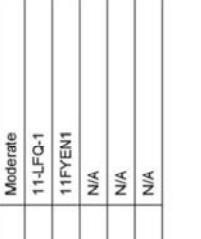
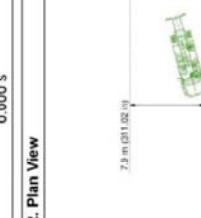
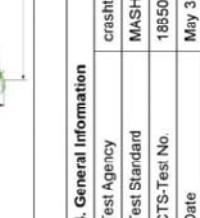
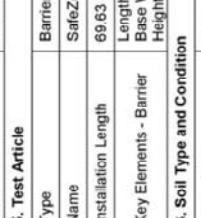
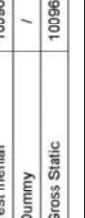
Sincerely,

A handwritten signature in blue ink that reads "Michael S. Griffith". The signature is fluid and cursive, with "Michael" and "S." stacked above "Griffith".

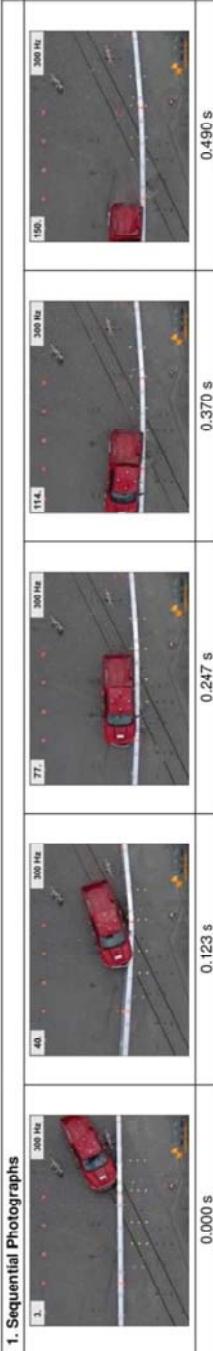
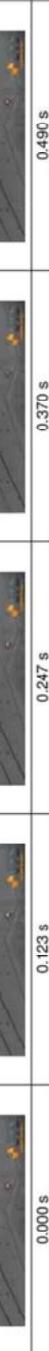
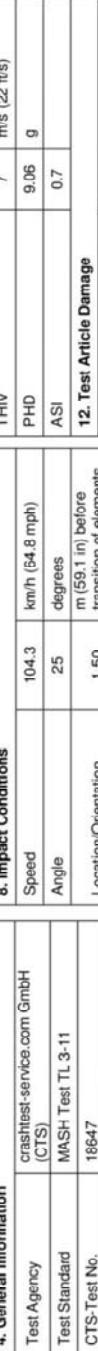
Michael Griffith  
Director, Office of Safety Technologies  
Office of Safety

Enclosures

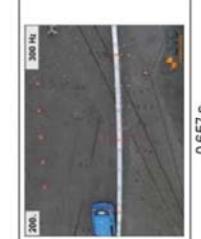
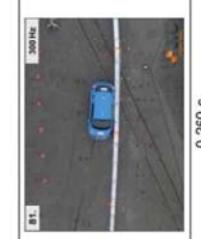
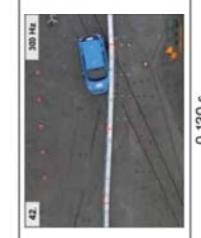
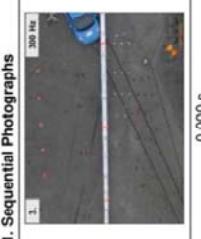
## Summary of Crash Test Results

1. Sequential Photographs		2. Plan View		3. Cross-Sectional View	
0.000 s	0.257 s	0.513 s	0.770 s	1.033 s	1.033 s
					
					
4. General Information		8. Impact Conditions		12. Test Article Damage	
Test Agency	crashtest-service.com GmbH (CTS)	Speed	88.8 km/h (55.2 mph)	THV	N/A
Test Standard	MASH Test TL4-12	Angle	15 degrees	PHD	N/A
CTS-Test No.	18850	Location/Orientation	m (52.0 ft) before transition of elements	ASI	N/A
Date	May 3, 2017	V & VI		Classification	Moderate
5. Test Article		9. Exit Conditions		13. Test Article Deflections	
Type	Barrier	Speed	76.9 km/h (48 mph)	Dynamic Deflection	2.07 m (81.5 in)
Name	SafeZone	Angle	not obtainable	Permanent Deflection	1.81 m (71.3 in)
Installation Length	69.63 m (2741.3 in)	Vehicle Stability	Satisfactory	Dynamic Working Width	2.48 m (97.6 in)
Key Elements - Barrier	Length: 5.80 m (228.3 in) Base Width: 0.45 m (17.7 in) Height: 0.81 m (31.9 in)	Stopping Distance	72.8 m (2866 in) downstream	Permanent Working Width	2.25 m (88.6 in)
6. Soil Type and Condition		Vehicle Snagging	7.9 m (311 in) laterally behind	14. Vehicle Damage	
Type of Soil	Asphalt	Vehicle Pocketing	None	Calibration	Moderate
Soil strength	/		None	VDS	11-LFQ-1
Condition	cloudy, dry, 21.8° C (71.24° F)		None	CDC	11FYEN1
7. Test Vehicle		11. Occupant Risk		Max. Exterior Deformation	
Type/Designation	10000S	Impact Velocity		Max. Interior Deformation	N/A
Make and Model	2005 Freightliner M2	Longitudinal	N/A	OCDI	N/A
Curb	6005 kg (13239 lb)	Lateral	N/A		
Test Inertial	10096 kg (22258 lb)	Ride-down Accelerations (10 msec avg.)			
Dummy	/ kg (lb)	Longitudinal	N/A		
Gross Static	10096 kg (22258 lb)	Lateral	N/A		

## Summary of Crash Test Results

1. Sequential Photographs		2. Plan View		3. Cross-Sectional View	
0.000 s		0.123 s		0.247 s	
0.370 s		0.490 s			
4. General Information					
Test Agency	crashtest-service.com GmbH (CTS)	Test Standard	MASH Test TL 3-11	Location/Orientation	1.50 m (59.1 in) before V & VI
CTS-Test No.	18647	Date	April 24, 2017	9. Exit Conditions	
Type	Barrier	Speed	84 km/h (52 mph)	10. Post-Impact Trajectory	
Name	SafetyZone	Angle	not obtainable	Vehicle Stability	Satisfactory
Installation Length	69.63 m (2741.3 in)	Vehicle Width	m (28.5 in)	Stopping Distance	71.5 m (75 in)
Key Elements - Barrier	Length: 5.80 m (228.3 in) Base Width: 0.45 m (17.7 in) Height: 0.81 m (31.9 in)	Height	m (81.1 in)	Laterally in front	1.9
5. Test Article					
Type	Asphalt	Speed	84 km/h (52 mph)	11. Occupant Risk	
Soil Strength	/	Angle	not obtainable	Impact Velocity	
Condition	cloudy, dry, 15.4° C (59.72° F)	Vehicle Snagging	None	Longitudinal	4.37 m/s (14.34 ft/s)
7. Test Vehicle					
Type/Designation	2270F	Latitude	4.11 m/s (13.48 ft/s)	Rollover Accelerations (10 msec avg.)	
Make and Model	2013 Dodge Ram Pickup	Longitude	4.37 m/s (14.34 ft/s)	Longitudinal	-4.06 g
Curb	2329 kg (5135 lb)	Lateral	4.11 m/s (13.48 ft/s)	Lateral	-9.17 g
Test Inertial	2303 kg (5077 lb)				
Dummy	/ kg (lb)				
Gross Static	2303 kg (5077 lb)				
8. Impact Conditions					
Speed	104.3 km/h (64.8 mph)	degrees		13. Test Article Deflections	
Angle	25 degrees	Classification	Moderate	Dynamic Deflection	1.70 m (66.9 in)
Location/Orientation	1.50 m (59.1 in) before V & VI	Particularities	None	Permanent Deflection	1.17 m (46.1 in)
9. Exit Conditions					
Speed	84 km/h (52 mph)	Degrees		Dynamic Working Width	2.06 m (81.1 in)
Angle	not obtainable	Classification	Moderate	Permanent Working Width	1.61 m (63.4 in)
10. Post-Impact Trajectory					
Vehicle Stability	Satisfactory	VDS	11LF03		
Stopping Distance	71.5 m (75 in)	CDC	11FDEW3		
Vehicle Width	m (28.5 in)	Max. Exterior Deformation	279 mm (10.98 in)		
Height	m (81.1 in)	Max. Interior Deformation	13 mm (0.51 in)		
11. Occupant Risk					
Impact Velocity		OCDI	OCDI		
Longitudinal	4.37 m/s (14.34 ft/s)	LF0000000			
Lateral	4.11 m/s (13.48 ft/s)				
12. Test Article Damage					
Classification	Moderate				
Particularities	None				
13. Test Article Deflections					
Dynamic Deflection	1.70 m (66.9 in)				
Permanent Deflection	1.17 m (46.1 in)				
14. Vehicle Damage					
Dynamic Working Width	2.06 m (81.1 in)				
Permanent Working Width	1.61 m (63.4 in)				
Classification	Moderate				
VDS	11LF03				
CDC	11FDEW3				
Max. Exterior Deformation	279 mm (10.98 in)				
Max. Interior Deformation	13 mm (0.51 in)				
OCDI	OCDI				
LF0000000					

## Summary of Crash Test Results

1. Sequential Photographs		2. Plan View		3. Cross-Sectional View	
0.000 s	0.130 s	0.260 s	0.457 s	0.557 s	
					
4. General Information		8. Impact Conditions		12. Test Article Damage	
Test Agency	crashtest-service.com GmbH (CTS)	Speed	101.6 km/h (63.1 mph)	THV	7 m/s (22 ft/s)
Test Standard	MASH Test TL 3-10	Angle	25 degrees	PHD	22.32 g
CTS Test No.	18649	Location/Orientation	1.23 m (48.4 in) before transiton of barriers V & VI	ASII	1.2 g
Date	April 21, 2017			Classification	Moderate
5. Test Article		9. Exit Conditions		13. Test Article Deflections	
Type	Barrier	Speed	84.3 km/h (52 mph)	Dynamic Deflection	1.13 m (44.5 in)
Name	SafeZone	Angle	not obtainable	Permanent Deflection	0.85 m (33.5 in)
Installation Length	69.63 m (2741.3 in)			Dynamic Working Width	1.52 m (59.8 in)
Key Elements - Barrier	Length: 5.80 m (228.3 in) Base Width: 0.45 m (17.7 in) Height: 0.61 m (31.9 in)	Vehicle Stability	Satisfactory	Permanent Working Width	1.30 m (51.2 in)
6. Soil Type and Condition		10. Post-Impact Trajectory		14. Vehicle Damage	
Type of Soil	Asphalt	Stopping Distance	61.3 m (2413 in) m (338 in) laterally behind	Calibration	Moderate
Soil strength	/		8.6	VDS	11LFQ3
Condition	overcast, dry 14.9° C (58.82° F)	Vehicle Snagging	None	CDC	11FDEW3
7. Test Vehicle		11. Occupant Risk		Max. Exterior Deformation	
Type/Designation	1100C	Impact Velocity	69 mm (2.72 in)	Max. Interior Deformation	
Make and Model	2012 KIA Rio	Longitudinal	65 mm (2.56 in)	OCDI	LF0000011
Curb	1076 kg (2372 lb)	Lateral	4.96 m/s (16.27 ft/s)		
Test Inertial	1085 kg (2392 lb)	Ridetop Accelerations (10 msec avg.)			
Dummy	75 kg (165 lb)	Longitudinal	-3.17 g		
Gross Static	1160 kg (2557 lb)	Lateral	-10.83 g		

### A.1 Maker's drawings of the item to be tested

