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MASH-16 Compliance Assessment

Sponsor Information

Date:	September 9, 2019
Name:	Andrew Pott
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Address:	2829 W. Howard Place, Room 309P
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Country:	U.S.A.

Texas A&M Transportation Institute (TTI) evaluated the product described below and found it to meet the appropriate evaluation criteria in MASH-16.

Device & Testing Criterion

System Type	Device Name/Variant	Testing Criterion	Test Level
Longitudinal Barriers	Colorado Type 9 Single Slope Bridge Rail for MASH TL-4	MASH-16	TL4

Disclosure of Financial Interest

- TTI has no financial interest beyond payment for services for design and/or evaluation of this product.
- Other (describe):

Product Description

- New Hardware
 Significant Modification to Existing Hardware
 Non-significant Modification to Existing Hardware

The purpose of this assessment is to determine if the Colorado Department of Transportation (CODOT) Type 9 Single Slope Bridge Rail for MASH TL-4 meets the strength and performance requirements of MASH Text Level 4. Details of the Colorado Type 9 are provided in the details attached to this assessment. A comparison of the CODOT Type 9 Bridge Rail with the TXDOT SSTR Bridge Rail (Successfully Crash Tested to MASH TL-4) is also attached.

Evaluation Results

Any full-scale crash testing performed by TTI as part of this evaluation was done in compliance with MASH-16.

MASH Test Number	Description/Justification	Evaluation Results
4-10 (1100C)	<p>Previous testing was conducted on the TXDOT SSTR Bridge Rail for MASH TL-4. Based on the performance of the TXDOT SSTR for MASH Test 4-10, the CODOT Type 9 Bridge Rail meets the performance requirements for MASH 4-10. Engineering strength analyses were performed on the Colorado Type 9 Single slope Bridge Rail Design. The calculated mid-span strength was approximately 95 kips at 30 inches height. The calculated strength at an open joint/end was 56 kips at 30 inches height. This calculated strength at a joint/end does not meet the strength requirements for MASH TL-4 (80 kips @ 30 inches height). The Colorado Type 9 Bridge Rail as presented and evaluated herein meets the strength and performance requirements for MASH Test 4-10.</p>	Non-critical, not performed
4-11 (2270P)	<p>Previous testing was conducted on the TXDOT SSTR Bridge Rail for MASH TL-4. Based on the performance of the TXDOT SSTR for MASH Test 4-11, the CODOT Type 9 Bridge Rail meets the performance requirements for MASH 4-11. Engineering strength analyses were performed on the Colorado Type 9 Single slope Bridge Rail Design. The calculated mid-span strength was approximately 95 kips at 30 inches height. The calculated strength at an open joint/end was 56 kips at 30 inches height. The calculated strength at a joint/end does not meet the strength requirements for MASH TL-4 (80 kips @ 30 inches height). The Colorado Type 9 Bridge Rail as presented and evaluated herein does not meet the strength and performance requirements for MASH Test 4-11. Crash testing of this design is warranted.</p>	Non-critical, not performed
4-12 (10000S)	<p>Previous testing was conducted on the TXDOT SSTR Bridge Rail for MASH TL-4. Based on the performance of the TXDOT SSTR for MASH Test</p>	Non-critical, not performed

	<p>4-12, the CODOT Type 9 Bridge Rail meets the performance requirements for MASH 4-12. Engineering strength analyses were performed on the Colorado Type 9 Single Slope Bridge Rail Design. The calculated mid-span strength was approximately 95 kips at 30 inches height. The calculated strength at an open joint/end was 56 kips at 30 inches height. The calculated strength at a joint/end does not meet the strength requirements for MASH TL-4 (80 kips @ 30 inches height). The Colorado Type 9 Bridge Rail as presented and evaluated herein does not meet the strength and performance requirements for MASH Test 4-12. Crash testing of this design is warranted.</p>	

Signature(s)

- New Hardware or Significant Change to Existing Hardware:* By signature below, the researcher has determined that the critical crash test(s) for this device was (were) conducted in accordance with MASH-16 criteria. The researcher has determined that no additional crash tests are necessary to determine MASH-16 compliance.
- Non-significant Change to Existing Hardware:* By signature below, the researcher has determined that the modification to existing hardware is deemed non-significant.

Researcher Name:	William F. Williams, P.E.
Researcher Signature:	
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City, ST Zip:	College Station, TX 77843-3135
Country:	USA

TTI Crash Testing Performed: Yes (lab signature required) No (lab signature not required)

Laboratory Name:	
Laboratory Signature:	N/A
Address:	
City, ST Zip:	
Country:	

Accreditation Certificate Number and Dates of Current Accreditation Period:	
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