



RESEARCH PROJECT CAPSULE [23-1ST]

October 2022

TECHNOLOGY TRANSFER PROGRAM

MASH TL-4 Engineering Analyses and Detailing of 36-inch and 42-inch High Median Barriers for DOTD

JUST THE FACTS:

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August 1, 2022

Duration:
6 months

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February 1, 2023

Funding:
SPR: TT-Fed/TT-Reg – 6

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POINTS OF INTEREST:

Problem Addressed / Objective of
Research / Methodology Used /
Implementation Potential

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PROBLEM

The Louisiana Department of Transportation and Development (DOTD) is planning to use a single slope median barrier for several I-10 bridges in Louisiana. Both 36-in. and 42-in. high single slope median barriers are being considered. The proposed design is similar in profile and height to the Texas Department of Transportation (TXDOT) single slope traffic rail (SSTR) that was successfully crash-tested and met the Manual Assessing Safety Hardware (MASH) Test Level 4 (TL-4). DOTD has incorporated the TXDOT SSTR Bridge Rail height and profile for the median barrier design shown in Figure 1. The profile, geometry, and reinforcing will be similar for the 42-in. barrier only taller and 8 in. wide at the top. DOTD would like to assess the strength capacity of both profiles through engineering analyses in order to use them as median barriers.

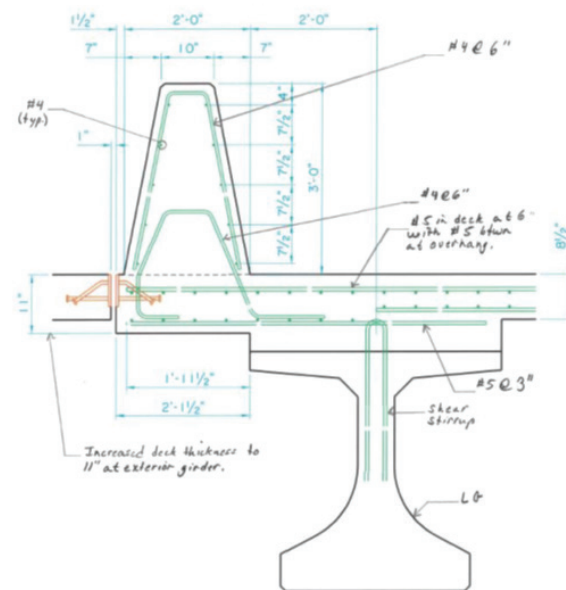


Figure 1. Typical 36-in. SSTR

OBJECTIVE

The research objective is to analyze the strengths of the four proposed retrofit designs considered for this project in accordance with AASHTO LRFD Section 13 Specifications for MASH Test Level 4 impact conditions. The research work will address the four following conditions:

- 36-in. single slope median barrier without the longitudinal open joints (as shown in Figure 1 except no longitudinal open joint).
- 36-in. single slope median barrier with longitudinal open joints (as shown in Figure 1).
- 42-in. single slope median barrier without the longitudinal open (same as Figure 1 except the barrier is 42 in. tall and 8 in. wide at top).
- 42-in. single slope median barrier with longitudinal open joints (same as Figure 1 except the barrier is 42 in. tall and 8 in. wide at top).
- Recommendation(s) and improvement(s) will be made as necessary based on our analyses to improve the strength and performance of MASH TL-4 conditions.

METHODOLOGY

The objectives of this research will be achieved through conducting an engineering strength analysis on the four proposed retrofit designs considered for this project in accordance with AASHTO LRFD Section 13 Specifications for MASH Test Level 4 impact conditions.

IMPLEMENTATION POTENTIAL

The finalized median barriers that were previously crash tested will be used for several Louisiana I-10 bridges. Implementing the results of the study will save the department tens of thousands of dollars in forgoing all crash tests necessary to meet MASH TL-4 criteria.