Title:	Develop Deck and Overhang Design Guidelines for Sound Walls and Other Heavy Loads
The Problem:	Both TxDOT's standard sound wall on rail and T80TT rail weighs approximately 1100 pounds per linear foot. This make the rails too heavy for a standard overhang. In addition, the assumption that the rail load is distributed to 3 beams is no longer valid. In the past, simple finite element analysis (FEA) models have been developed to evaluate these overhangs. The models were restricted with respect to deck thickness, beam spacing, overhang width, full depth cast-in-place, and the number of beams the load was distributed to. In addition, these FEA models did not always account for wind load or impact, and only accounted for the dead load. There is a need to have a design guide that allows the engineer to design the overhang for a variety of deck thicknesses, ability to use panels, overhang widths, beam spacings, and number of beams engaged. By providing design guidelines, structural engineers will be able to design the bridge deck and overhang to support these heavy loads. This will allow the engineers to design for various geometries, including horizontal curvature. In addition, the engineers will be able to design for the optimum deck thickness, beam spacing, and number of beams for a specific project.
Technical Objectives:	This research will develop a deck and overhang design guide for heavy loads that considers AASTHO load combinations. To achieve this objective, the work to be performed shall include: 1. Conduct literature review to determine state of practice nationwide. 2. Develop preliminary design guidelines for heavy loads on decks and deck overhangs. 3. Conduct FEA modeling of heavy loads on decks and deck overhangs to verify preliminary design guidelines. 4. Perform analysis of FEA modeling of heavy loads on decks and deck overhangs. 5. Develop design guidelines for heavy loads on decks and deck overhangs. The expectation of the project end product(s) shall attain a Technology Readiness Level of 8.
Anticipated Deliverables:	1. Technical memorandum for each task completed. 2. Monthly progress reports. 3. Value of Research (VoR) that includes both qualitative and economic benefits, to be included in the final research report; not a stand-alone deliverable. 4. Research report documenting the findings of the research, including recommended design guidelines for heavy loads on decks and deck overhangs. 5. Project Summary Report
Proposal Requirements:	1. Utilize the “Proj/Agre” and “PA_Form” templates located at the TxDOT RTI website. 2. Proposals will be considered non-responsive and will not be accepted for technical evaluation if they are not received by the deadline or do not meet the requirements stated in RTI's University Handbook, which is also located at the RTI website. 3. Proposals should be submitted in PDF format, 1 PDF file per proposal. File name should include project name and university abbreviation. 4. This project will be tracked during the life of the project using a Technology Readiness Level (TRL) scale. For more information about the use of a TRL, click.