Based on the methodology developed in the LRFR specifications, this project will develop a method of determining live-load factors for more realistic bridge rating for bridge structures using weigh-in-motion (WIM) data. Adaptation of the methods will be beneficial to account for unique site-specific characteristics of truck loads and permitting regulations in different states. The project will initially focus on two representative WIM sites in Alabama and investigate an innovative approach to determine the site-specific, live-load factors based on WIM data.

Transportation agencies are beginning to transition from the American Association of State Highway and Transportation Officials (AASHTO) Manual for Condition Evaluation of Bridges (AASHTO, 1994) to the AASHTO Load and Resistance Factored Rating (LRFR) Specifications (AASHTO, 2003) for bridge rating and evaluation. The LRFR specifications extend the limit states design philosophy from AASHTO load and resistance factor design (LRFD AASHTO, 2004) to evaluation of existing bridges. For evaluation of existing bridges, site-specific information will be collected in this research project to characterize the local uncertainty, rather than relying on generalized information. The live-load factors in the LRFR code are based on Ontario-based load data thought to be representative of heavy truck traffic nationwide. However, the LRFR specifications provide procedures for calculating site-specific load factors using truck-weight data collected from WIM sites that follows the same format used in the derivation of LRFD live-load factors. Site-specific load factors are more refined because they are characteristic of a particular bridge site, route, or jurisdiction and reflect the actual truck traffic and likely maximum loadings over the exposure period. In this study, live-load factors for bridge rating will be developed using WIM data including one state and one interstate route, considering possible variations in times of collection. The approach and methods thus developed have the potential to be used by Alabama and other states.

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