RESEARCH NEEDS FOR STRUCTURES TAG

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ISSUE

Development of a Comprehensive Bridge Load Testing Program to Supplement IDOT's Load Rating Program

SUMMARY OF PROBLEM

The National Bridge Inspection Standards that are regulated by the Federal Highway Administration (FHWA) requires that all bridges be rated for load carrying capacity. Those that cannot carry current legal loads must be posted or otherwise restricted. Over the past few years, IDOT has been updating load ratings of many bridges that were previously reported with assigned load ratings. Some of the previously assigned load ratings are valid while others are not considered valid. A Plan of Corrective Action (PCA) is in effect to analytically load rate structures with invalid assigned load ratings, including some that have been load rated using engineering judgment. Most of the issues are on the local system. Smaller bridges, including culverts with fill that were in service for many years without load restrictions, are now being recommended for immediate load posting due to analytical load ratings per the AASHTO Manual for Bridge Evaluation. Bridges with timber substructures are an additional concern, with many of them being required to either close or become restricted for load carrying capacity. Sudden load posting of these structures is a concern of the IDOT districts as well as local agencies and many often question the true need for the load restrictions.

An allowable alternative to analytical load rating is a load testing program. Instrumenting bridges while known loads are placed on the structure can be used to determine if load posting is necessary. IDOT currently does not have a load testing program or policy. This tool can be used in the load rating program and it is probable that some structures can validly avoid load posting.

DESIRED RESULTS/OUTCOME

The research should include proof load testing of several structures, including small concrete structures and culverts. However, due to the common accelerated deterioration of timber piles, and the ability to repair them, they should not be considered for this load testing program.

Ultimately, a comprehensive bridge load testing protocol would be developed and utilized for the future bridge load program in Illinois. This protocol must satisfy the load testing requirements of the AASHTO Manual for Bridge Evaluation.