Florida Department of Transportation Research

Implementation of the 2013 AASHTO Manual for Bridge Element Inspection

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Project Manager
Richard Kerr
FDOT Maintenance Office

Principal Investigator
John Sobanjo
Florida State University

Current Situation

The Florida Department of Transportation (FDOT) maintains thousands of bridges – large and small – in humid and coastal conditions that create a high potential for deterioration. FDOT monitors bridges closely, collecting bridge component condition data and entering this data into software that tracks components' condition and helps prioritize and schedule maintenance. With the release of the 2013 AASHTO *Manual for Bridge Element Inspection* and the AASHTOWare Bridge Management Software, FDOT needed to adapt its decision support models to meet the new standards.

Research Objectives

In a series of tasks, Florida State University researchers revised existing computational methods to support adoption of new bridge element inspection standards and software.

Bridges in Florida must undergo regular inspections to make sure their "health" is maintained.

Project Activities

The researchers revised the method for computing the bridge health index (BHI). Based on the evaluation of dozens of individual bridge elements, the BHI summarizes a bridge's overall condition. The researchers investigated various approaches to assigning weights to the many elements that contribute to this index.

For each bridge element, there is a list of recommended preservation actions, ranging from no action needed to completely replacing the component. Preservation actions were revised, based on the description of bridge elements, their condition states, and various levels and extents of defects defined in the FDOT Bridge Inspection Guide.

The AASHTOWare Bridge Management Software software can also be used predictively. Bridge element evaluations help define the condition of bridge components. Knowing how long a component takes to move to a lower state helps predict the bridge's overall condition at a future time. These transition times were updated for the new software.

The action effectiveness model (AEM) is a part of the AASHTOWare Bridge Management Software that can track maintenance of bridge components and predict how these actions extend the bridge's life and reduce maintenance. The researchers revised the AEM, based on the new bridge element inspection manual, on historical costs, preservation unit costs, and other cost parameters.

Finally, the researchers updated the Project Level Analysis Tool (PLAT), a decision support tool which allows planners to estimate the benefits of maintenance projects, both in terms of initial costs and life cycle costs.

Project Benefits

Advances in bridge management methods and software can help protect Florida's large investment in its bridges and save millions of dollars over the life of a bridge through appropriate and timely maintenance.

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