RESEARCH in Progress

Coalition for Advanced Wood Structures
a university, industry, government partnership

Revision of Timber Bridge Design Specifications

Bridges in the United States are designed based on procedures and specifications endorsed by the American Association of State Highway and Transportation Officials (AASHTO). To a great extent, these design specifications are based on performance data obtained from research and experience. Bridge design specifications must be revised on a regular basis to reflect new information, and revisions or modifications are introduced on a yearly basis.

Background

Timber bridge design procedures have been part of the AASHTO Bridge Design Specifications for many years. In the past several decades, ongoing research has provided the basis for many timber bridge design provisions. A significant amount of research data (particularly field load-testing performance data) has yet to be used to revise the specifications.

Evaluation of current load distribution criteria will be compared with results obtained from actual load testing.

Objective

The objectives of this research are to (1) evaluate recent timber bridge load-test data and associated bridge performance, (2) develop analytical models of the tested bridges to further evaluate bridge performance, and (3) update pertinent AASHTO timber bridge design specifications to reflect field and analytical bridge performance data.

Approach

The project scope includes the evaluation of existing experimental data from bridge field load tests and complementary analytical evaluations using finite element models of the tested bridges. The following tasks will be completed:

- Review current AASHTO Bridge Design Specifications and meet with representatives of the national bridge engineering community to identify sections that require modification
- Collect and compile existing timber bridge field testing data
- Develop finite element models for idealizing timber bridge structural performance and perform parametric studies using the finite element models to investigate the sensitivity of the analytical results
- Use existing field load-test data to validate finite element models
- Perform finite element analysis with validated models to represent structural performance on a broader family of timber bridges that were field tested
- Make modifications to pertinent sections of the AASHTO Bridge Design Specifications, with particular emphasis on developing live load distribution provisions

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- Present changes to AASHTO Bridge Subcommittee at national meetings
- Develop final report

Expected Outcomes

This research will result in a set of recommended revisions to pertinent sections of the AASHTO Load and Resistance Factor Design (LRFD) Bridge Design Specification regarding timber bridges. These revisions will be presented for approval by the AASHTO Bridge Subcommittee before they are placed in the design specification.

Timeline

The research required to develop the recommended revisions is expected to be completed by late 2007.

Cooperators

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