

IOWA HIGHWAY RESEARCH BOARD (IHRB)

Minutes of June 26, 2015

Regular Board Members Present

A. Abu-Hawash
W. Weiss
R. Stutt
K. Mayberry

T. Wipf
P. Mouw

Alternate Board Members Present

C. Poole
D. Sprengeler
J. Thorius
M. Parizek

Members with No Representation

K. Jones
R. Knoche
D. Schnoebelen
D. Miller

S. Okerlund
R. Fagnman

Secretary - V. Goetz

Visitors

Leighton Christiansen
Scott Neubauer
Francis Todey
Charlie Purcell
Ken Brink
Jeremy Ashlock
Brent Phares
Kasthurira Gopalakrishnan
Mike Steenhoek
Andy Wilson
Peter Taylor

Iowa Department of Transportation
Iowa State University
Iowa State University
Iowa State University
Soy Transportation Coalition
Federal Highway Administration
CP Tech Center

The meeting was held at the Iowa Department of Transportation Ames Complex, Materials East/West Conference Room, on Friday, June 26, 2015. The meeting was called to order at 9:00 a.m. by Chairperson Terry Wipf with an initial number of 9 voting members/alternates at the table.

1. Agenda review/modification - None

2. Motion to approve Minutes from the May 26, 2015 meeting

Motion to Approve by K. Mayberry; 2nd W. Weiss
Motion carried with 9 Aye, 0 Nay, 0 Abstaining.

*****1 member joined the table. Total voting members = 10.**

3. Match Funding Problem Statement, *Load Testing of Rural Iowa Bridges*, Mike Steenhoek, Soy Transportation Coalition, (\$250,000).

BACKGROUND

Rural Iowa communities depend upon rural roads and bridges for mobility and economic growth. Many rural bridges across the state are load limited, requiring vehicles transporting people and products to detour. Research has demonstrated that the visual inspection of bridges is inaccurate and highly variable. This contributes to inaccurate assessments that can ultimately result in a sizable percentage of bridges being unnecessarily load posted or identified for rehabilitation or replacement. This not only results in unwarranted detours, but it prevents state and local governments from most efficiently allocating scarce resources to those bridges that truly are in urgent need of modernization and repair. In 2013, the Iowa Department of Transportation, Iowa State University, and the Soy Transportation Coalition provided funding to load test three rural bridges that had been assigned load restrictions in Sioux County, Ida County, and Johnson County. This initial project was successful in providing a more accurate assessment of the three rural bridges and justified the removal of the load restrictions. Given the success of the initial project, the next step is to encourage a more widespread utilization of the technology in rural areas throughout Iowa.

OBJECTIVES

Each load test of a rural bridge costs approximately \$7,500. The Bridge Engineering Center at Iowa State University estimates that a \$300,000 allocation would allow 40-50 bridges to be evaluated over twelve months.

DISCUSSION

Q. What are the criteria for selecting bridges for inspection/testing?

A. Project will exclude severely dilapidated bridges; focus on bridges that are not new, but needing some attention.

Q. Have the three proposed bridges been load tested after their initial inspections?

A. There is no set interval, but best guess would be 7-8 years based on visual inspections.

Q. Would it be feasible to establish a guide for load testing uses and needs?

A. Would the counties pick up the cost? Limited resources can be a limiting factor.

Q. IHRB is more regional, state specific. This proposal seems very project-specific, and may not be the best use of IHRB funds.

A. The goal is, by demonstrating success in one area, to show value across the board.

Q. What do we get from this project other than the funding to load test 40-50 bridges?

A. There is a perceived need throughout the state that this funding would help fill.

- The bridge testing program was originally developed as a project by the IHRB so the board has already invested in developing this technology and it is available to any county who needs to use it.
- It may be more beneficial to produce a guide and information to distribute to the counties on the current load rating program on how to identify bridges that could potentially benefit from load testing. It would be good to seek out a proposal for developing the criteria for load testing

based on things like condition of the bridge, load posting, out of distance travel, and others. And do more tech transfer activities to promote the program that is already in place and available.

- Load rating cannot be extrapolated to other bridges. It is unique to each bridge at the time of load testing in the condition at load testing. Testing 50 bridges only provides information on those 50 bridges and cannot benefit the majority of counties. It is not even 1 bridge per county.
- The IHRB recommends additional discussion with the ICEA community regarding load testing before considering this project.
- The IHRB recommends to that the ICEA board continue the discussion with Mike on other opportunities to promote the current load testing technology and program. The board may consider in the future work that is identified to educate more counties on the benefits of load testing or a proposal on guidelines for evaluating bridges to be considered for the use of load testing.

Motion to Not-Approve by M. Parizek; 2nd C. Poole
Motion carried with 10 Aye, 0 Nay, 0 Abstaining.

4. FINAL REPORT TR-664, “Low-Cost Rural Surface Alternatives: Demonstration Project”, Jeramy Ashlock, Iowa State University, (\$121,974).

BACKGROUND

Granular surfaced roads in seasonally cold regions are frequently subjected to freeze-thaw cycles, which lead to damage such as frost heave, frost boils, thaw weakening, rutting, and potholes. The damage significantly increases maintenance costs, adversely affects public safety, and inconveniences both agricultural traffic and the traveling public. The most unfavorable scenarios usually occur during spring thaws, when granular surfaced roads are most vulnerable and also heavily used by agricultural traffic. Thawing water cannot drain efficiently and becomes trapped above the zone of frozen soil, causing the saturated unbound granular materials to lose strength, especially under heavy traffic loads.

Current maintenance practice typically involves covering the entire damaged road surface with virgin aggregate then blading without compaction, and lowering or cleaning drainage ditches. However, since virgin aggregate is becoming more scarce and continually increasing in price, this is not the most sustainable or economical solution. Additionally, current practice is focused on repairing freeze-thaw damage rather than minimizing or preventing its occurrence in the first place. Many studies have evaluated various methods to improve the freeze-thaw performance of granular surfaced roads such as chemical, mechanical, and biological stabilization, but most of these studies focused on only one or two technologies, without comprehensive long-term performance monitoring. To address the perceived deficiencies, White and Vennapusa (2013) reviewed more than 150 journal articles and research reports from the domestic and international literature. Based on their recommendation that “demonstration research projects be established to examine a range of construction methods and materials for treating granular surfaced roadways to mitigate frost-heave and thaw-weakening problems,” a field demonstration project was conducted in this study to compare the relative performance, durability, and costs of several stabilization technologies under the same set of geological, climate, and traffic conditions.

OBJECTIVES

The main goal of this project was to identify the most effective and economical stabilization methods for preventing or mitigating freeze-thaw damage on granular surfaced roads. The specific objectives of the research project were as follows:

- Construct demonstration test sections using several of the stabilization methods recommended in IHRB Project TR-632 (White and Vennapusa 2013)
- Conduct comprehensive field tests to compare the relative performance of the demonstration sections before, during, and after seasonal freeze/thaw cycles
- Assess the construction costs, relative performance, maintenance costs, and long-term life-cycle costs of the different stabilization methods
- Identify the most effective and economical methods for minimizing or eliminating freeze-thaw issues before they occur
- Translate the research results into practice

Perform comprehensive laboratory tests to compare the relative performance of the various stabilization methods
Conduct comprehensive field tests to compare the relative performance of the demonstration sections before, during, and after seasonal freeze/thaw cycles

- Assess the construction costs, relative performance, maintenance costs, and long-term life-cycle costs of the different stabilization methods
- Identify the most effective and economical methods for minimizing or eliminating freeze-thaw issues before they occur
- Translate the research results into practice

Motion to Approve by K. Mayberry; 2nd J. Thorius
Motion carried with 10 Aye, 0 Nay, 0 Abstaining.

5. RFP Proposals Review

A. IHRB-14-08

IHRB Board moved to not vote on this at this time.

B. IHRB-14-10

IHRB Board moved to not vote on this at this time.

C. IHRB-14-11

Motion to Approve by W. Weiss; 2nd K. Mayberry
Motion carried with 10 Aye, 0 Nay, 0 Abstaining.

6. STIC Review and Call for STIC Incentive Funds

The IHRB serves as The Statewide Transportation Innovation Council for the State of Iowa. We are able to set the direction not only for projects that would be funded for STIC but also to foster innovation in the State and to have one place we can have communication with our Federal Highway Administration. There were several representatives from each State that met last fall in Louisville, KY and talked about Every Day Counts initiatives round three. This was

recently published and the team that went to KY came up with an Implementation plan for Iowa.

7. STIC Incentive Fund Requests

After discussion of top three ranked topics, the board agreed to proceed with applications to FHWA for STIC incentive funds.

8. New Business

No new Business.

9. Adjourn

The next meeting of the Iowa Highway Research Board will be held Friday, July 31, 2015, in the East/West Materials Conference Room at the Iowa DOT. The meeting will begin promptly at 9 a.m.



Vanessa Goetz, IHRB Secretary