

IOWA HIGHWAY RESEARCH BOARD (IHRB)

Minutes of April 22, 2016

Regular Board Members Present

K. Jones

M. Kennerly

T. Nicholson

S. Okerlund

R. Knoche

P. Hanley

W. Weiss

R. Stutt

D. Miller

P. Assman

K. Mayberry

L. Roehl

M. Parizek

Alternate Board Members Present

D. Claman

W. Klaiber

Members with No Representation

Secretary – V. Goetz

Visitors

Leighton Christiansen

Brian Worrel

Francis Todey

Dean Bierwagen

Wayne Sunday

Travis Hosteng

David Jeong

Darla Hugaboom

Iowa Department of Transportation

Iowa Department of Transportation

Iowa Department of Transportation

Iowa Department of Transportation

Retired, Department of Transportation

Iowa State University

Iowa State University

Federal Highway Administration

The meeting was held at the Iowa Department of Transportation Ames Complex, Materials East/West Conference Room, on Friday, April 22, 2016. The meeting was called to order at 9:00 a.m. by Chairperson Sarah Okerlund with an initial number of 15 voting members/alternates at the table.

1. Agenda review/modification

2. Motion to approve Minutes from the March 25, 2016 meeting

Motion to Approve by M. Parizek; 2nd W. Weiss

Motion carried with 15 Aye, 0 Nay, 0 Abstaining.

- 3. Final Presentation:** TR-645, “Development and Integration of Advanced Timber Bridge Inspection Techniques for NBIS”, MN DOT Project Number 2015-02, Travis Hosteng Iowa State University, (\$60,000).

BACKGROUND

Timber bridges are an important component of the U.S. highway system, especially in rural areas. The December 2012 National Bridge Inventory (NBI) database includes 48,759 bridge structures that have timber as the primary structural member in the superstructures. Minnesota is reported to have 1,710 bridges containing wood or timber as a superstructure type, however there are additional unreported numbers that also have timber as a decking material on steel beams or as substructure elements such as timber columns, abutments, pilings, pier caps or wing walls (USDOT FHWA, 2012). These bridges, with spans greater than 20 ft (6 m) have a variety of different types of superstructure construction. The two primary types are beam and longitudinal deck/slab systems. Longitudinal deck/slab systems include nail-laminated, spike-laminated, stress-laminated, and longitudinal glulam bridges. The members may be either sawn or glue laminated lumber (glulam).

Researchers described techniques for using inspection tools in the Timber Bridge Inspection Manual, which supplements MnDOT’s existing Bridge Inspection Field Manual. They estimate that using NDE techniques could extend the service life of timber bridges by 10 years or more. Economic analysis suggests that in nearly all cases, the extended service life and reduction in truck detours will easily justify the costs of these inspection techniques. The timber bridge short course was presented to more than 140 participants at four locations in Minnesota and two in Iowa. MnDOT also created demonstration videos for some of the inspection techniques. The IHRB contributed funds towards this project led by MN DOT.

DISCUSSION

- Q. Have you ever thought about giving this to the industry to be used as a tool for acceptance so we can make sure the material is working?
- A. Very good question, I am not sure if a Piling or a wood pole is inspected.
- Q. Do you know how many Counties in Minnesota bought their own equipment vs borrowed it?
- A. I believe there was only one county that bought their own equipment, St Louis County.
- Q. When were the one day training sessions in Iowa?
- A. Last Summer.

- 4. Additional Scope/Funding Request: TR-681,** “Testing of Multi-Performance Level Box Beam Standards”, Phares, ISU/InTrans, \$14,300

BACKGROUND

The Iowa DOT in principal cooperation with HDR, Inc. has been working to develop a new set of bridge standards particularly targeted toward use by counties. The standards include details for Ultra-High Performance Concrete UHPC in the joint.

OBJECTIVES

The objective of the work proposed in this scope expansion relates to evaluating the constructability of the UHPC joint. The specific item of concern relates to demonstrating an acceptable means and methods for providing a top form when UHPC is placed in the longitudinal joint between adjacent box beams.

The means and method demonstrated are to provide an approach that does not require the use of mechanical connectors that result in “holes” in the box beam.

Motion to Approve by K. Jones; 2nd R. Knoche
Motion carried with 15 Aye, 0 Nay, 0 Abstaining.

5. New Proposal: “Evaluation of the Performance of a Short-Span T-beam Bridge in Buchanan County”, Phares, ISU/InTrans, \$89,129

BACKGROUND

In the relatively recent past, a company based out of Omaha, Nebraska has developed a proposed bridge girder/deck section that may be a cost effective option for county engineers. In very simple terms, the shape is a single T-shape that is approximately 8 ft wide, with a top flange/deck that is 7.5 in. thick, and has a stem that is 1 ft 5 in. wide at the narrowest point. These individual sections are connected together using one of two proposed connection details: (1) using cast-in place UHPC or (2) using a bolted connection in combination with traditional joint fill materials. The proposed beam section appears to be easy to precast with no internal voids. Estimated weights for the cross-section are on the order of 19-31 tons for span lengths ranging from 40 to 60 feet. Additionally, the proposed section uses the commercially available, corrosion-resistant reinforcing steel known as MMFX which has tensile strengths reported to be 100 ksi.

The research team understands that Buchanan County intends to build a bridge using the proposed shape during the summer of 2016. Thus, a unique opportunity exists to document the design, construction, and performance of this bridge. Even more, the fact that four beams will be fabricated offers the opportunity to have additional beams fabricated such that the connection detail can be tested in the Iowa State University Structural Engineering Laboratory.

OBJECTIVES

The objective of this work is to evaluate the performance of a proposed short-span bridge alternative currently being considered by Buchanan County. This project will also document the design and construction of the bridge so as to provide valuable information to other counties interested in constructing similar bridges. Additionally, laboratory testing will be completed to verify the efficacy of the proposed joint between adjacent precast beams.

Motion to Approve by K. Jones; 2nd L. Roehl
Motion carried with 15 Aye, 0 Nay, 0 Abstaining.

6. RFP Proposal: IHRB-16-17: “County Use of the BridgeWatch”, Scanell, USEngineering Solutions, \$32,875.

OBJECTIVES

The Iowa DOT would like to incorporate forty-three county bridges into the existing Iowa DOT BridgeWatch monitoring system.

Thirteen Bridges in Adair Co. & 30 Bridges in Winneshiek Co.

- Develop and integrate shape files for basins

- Implement thresholds and site information for river and radar data sources
- Creation of six user profiles for Alerts
- BridgeWatch training session in Ames

Discussion

Q. We have had a lot of railroad bridges wash out, is there an ability to use this system with a private owner like this?

A. BridgeWatch will contract with whoever would like to pay for their services.

Q. Have the counties already agreed to these bridges?

A. Yes

Q. The proposal is for \$32,000 but there is a table of optional services, is this table an option for the Counties if they want optional services?

A. Yes

Q. Will there be any kind of summary from the two participating counties?

A. I think the counties could come and give a quick presentation of the results.

Motion to Approve by W. Weiss; 2nd P. Assman

Motion carried with 15 Aye, 0 Nay, 0 Abstaining.

New Business

1. We received a request to the Research Office for match funding for a Mid-West Transportation Center Grant (MTC). This has to do with Life cycle data for Asset management. Our Maintenance Office at the DOT started a small scale pilot where they have identified three assets that they want to start discussing how to deal with all of the data collected and start talking about a lifecycle of the data starting from the design through bidding, construction and maintenance. They were approached by Dr. Jeong. He has applied for \$80,000 dollars, and it requires a one to one match for the project to move forward. The request is up to \$50,000 dollars for the IHRB to match the funding and the Civil Engineer Department is providing the other \$30,000.

Motion to Approve by T. Nicholson; 2nd R. Knoche

Motion carried with 15 Aye, 0 Nay, 0 Abstaining.

2. We have gone through legal with both ISU and Iowa DOT and we have signatures on our new Memorandum of Understanding for the Innovative Pilot Program that we are working out with Iowa State University. The IHRB is contributing \$80,000 and the Mid-West Transportation Center is matching \$80,000, Iowa DOT is providing \$20,000 of Primary Road funding for a total fund of \$180,000. The intent of the program is to provide seed funding for innovating projects and proposals. Since it is a partnership between Iowa State University, Mid-West Transportation Center, Iowa Highway Research Board and the Iowa Department of Transportation, the selection process for projects and how the program is going to operate will be determined by an Executive Committee. We would like to have Iowa Highway Research Board representatives serving on the committee. I would like to have three volunteers to serve on this committee, from County, City and DOT. The goal is to develop this committee over the summer and develop the program guidelines and develop the program guidelines and call for proposals in the fall.

Kevin Jones volunteered to represent the Iowa Department of the Transportation

Larry Roehl volunteered to represent the Counties

Sarah Okerlund volunteered to represent the Cities

3. The Iowa DOT has received a Federal Grant to do a one of a kind project that has not been done before using Ultra High Performance Concrete (UHPC) as an overlay on a bridge deck. This project will be done the middle of May. We will be using this project as a showcase and have it done prior to the first International Ultra High Performance Concrete Conference in Des Moines in July. Last year the board approved funding to develop Ultra High Performance Concrete training for local agencies to start talking about UHPC. Iowa is one of the leading States that use UHPC and we would like to make sure the Counties are aware of what this product is and how it works because it is becoming more mainstream. Since we are going to have experts from France coming with LaFarge and we will have Federal Highway Administration involved and all of the experts already coming to the overlay project, it is a great opportunity to host this workshop at the time. With the Highway Research Board funding it will be free to local agencies. Whatever is left over from funding that we do not use during the workshop the intent would be to develop training materials or have a few workshops around the State or during the December meeting share more of the information about UHPC and education to the local agencies.
4. I have the application ready for STIC funding for fiscal year 2016. Last September the Highway Research Board prioritized all of the STIC requests. We applied for 2015 funding, it was close enough to October for the new Federal Fiscal Year, we decided to continue down the list. The next two projects in line, the first one did not qualify for STIC funding and the second was looking at E-Maintenance for the Counties. After discussing trying to change that scope into a construction type of application which would be more suitable for the STIC funding the decision was to hold off on the funding for this project because Counties did not feel they had enough of a concept or a need to find good use of the money at this time. The next three projects we are going to apply for are:
 - a. E-Construction at the DOT where we are buying iPads for the construction field personal to implement going from paper to paperless. Because of how the project worked out we applied for half of the project in 2015. I am sending the application for the other half of the funding which is \$45,000 dollars.
 - b. We are hosting our first Innovations in Transportation Conference in Ames in August. We are inviting a futurist to talk about how changes in technology are going to affect us. I am requesting that the board approve the use of \$10,000 in STIC funds to support the Innovations Conference. Most of that funding will be used to help for organizing the speakers. In the afternoon we are inviting State DOT CEO's to give us a different perspective on how they see transportation changing and how it will affect the DOT in the future. We are also trying to come up with companies that are dealing with data and logistics and those nontraditional transportation companies that are getting involved with the way people interact with the transportation system.
 - c. The third project is related to Smart Work Zone Everyday Counts Initiatives. The Office of Traffic Operations would like to develop a data center that would gather all of the data we have like crash information we have at work zones then come up with a data repository with high quality data and open it up to anybody in the industry that would like to use it.

This fall we will do another call for projects that would be potentially eligible for STIC through the same process of prioritizing.

Motion to Approve by W. Weiss; 2nd R. Knoche
Motion carried with 15 Aye, 0 Nay, 0 Abstaining.

7. Leighton is hosting an open house following the IHRB meeting today. Leighton's last day with the Iowa Department of Transportation as our Research Librarian is April 25, 2016

8. Adjourn

The next meeting of the Iowa Highway Research Board will be held Friday, May 20, 2016 in the East/West Materials Conference Room at the Iowa DOT. The meeting will begin promptly at 9 a.m.



Vanessa Goetz, IHRB Secretary