

IOWA HIGHWAY RESEARCH BOARD (IHRB)
Minutes of July 29, 2022

Regular Members Present

J. Hauber
D. Skogerboe
J. DeVries
C. Burke
R. Koester
R. Knoche
A. Bradley
W. Weiss
T. Roll
W. Rabenberg
M. Rydl
A. McGuire
D. Snead

Alternate Members Present

A. Clemons

Members with No Representation

D. Sanders

Executive Secretary

V. Goetz

Administrative Assistant

T. Bailey

Visitors

Ashley Buss	Iowa Department of Transportation
Brent Phares	Iowa State University
Justin Dahlberg	Iowa State University
Chris Cromwell	Federal Highway Administration
Jon Nania	U.S. Geological Survey
Padraic O'Shea	U.S. Geological Survey
Amy Russell	U.S. Geological Survey

AGENDA

1. Agenda review/modification

2. Minutes Approval from the June 24, 2022 meeting

Motion to Approve by 2nd by T. Roll
Motion carried with 14, 0, 0

3. TR-731, Final Report, "Improving Concrete Patching Practices on Iowa Roadways", Todd Nelson, Wiss, Janney, Elstner Associates, Inc. \$175,000, (15 min).

Q. We have used a C four mix with water reducer with a 24-hour mix with a lot of success, did you see this in your research?

A. We didn't value this type of mix, we were targeting more of the five and twelve-hour mixes for full depth repairs, for a higher release rate.

Q. Your alternative M mix and your standard mix design, I noticed there was a difference in fine aggregate content and quartz aggregate content on one of your slides, was that intentional or was that the way the mix worked out?

A. This was intentional, we optimized the gradation following a couple industries standards to optimize that gradation.

Q. The optimization, is that intended to reduce coarse aggregate interlock to make the concrete more forgiving?

A. There are two concepts, increase cohesiveness and placeability of the mix. In addition, optimize to reduce the cement content with future research.

Q. Is there a way to get close to a five-hour cure time like we have in our spec now or will we need separate specifications for restricted hour patching vs standard day time patching?

A. We targeted the twelve hours, there is opportunity to optimize the mixes percentage to get the five hour and it is feasible. Based on this research and our experiences, those typical mixes are going to have to be developed with a specific ready-mix company.

Motion to Approve by T. Roll 2nd by A. Clemons

Motion carried with 14, 0, 0

4. TR-752, Final Report, "Implementation of Recommendations for Eliminating Longitudinal Median Joints in Wide Bridges", Brent Phares, Iowa State University, \$148,551, (15 min).

<http://publications.iowa.gov/41332>

Q. Is the model close to what the original bridge structure is?

A. Yes, we try to model as closely to the actual bridge structure as possible.

Motion to Approve by R. Knoche 2nd by R. Koester

Motion carried with 14, 0, 0

5. Proposal, Request for Continuation of HR-140, "[Collection and Analysis of Streamflow Data](#)", Jon Nania, U.S. Geological Survey, FY23 \$329,360, FY24 \$341,460, FY25 \$353.570, (15 min).

Engineers design bridges and culverts on floodplains for which damage may be incurred by occasional floods of varying magnitude. By using flood-frequency analyses to design structures on flood plains to either a specific probability or a specific calculated risk, such as a 1- or a 2-percent chance that a given flood magnitude will be exceeded in any one year, engineers are able to standardize the risk factors involved with estimating flood-frequency discharges. Knowledge of the magnitude and frequency of floods is essential for economic planning and safe design of bridges, culverts, roadways, and other structures located on floodplains. Flood-frequency analyses are computed for streamgages by using annual peak discharges. As each additional annual peak discharge is added to the record of a streamgage, an updated flood-frequency analysis can be computed, and the revised discharge for various annual exceedance probabilities or recurrence intervals can be determined. Thus, flood-frequency statistics can be recalculated each year, and as additional annual peak discharges are collected and used in the analyses, these statistics become more reliable. The USGS Water Mission Area recommends that the weighting of independent estimates method be used for estimating flood probabilities for streamgages by USGS Water Science Centers. The WIE calculation weights single streamgage estimates obtained by using EMA fits to the log-Pearson Type III distribution and regional regression equation estimates according to the variances of the two sets of independent estimates. Compared to single-streamgage EMA estimates, WIE estimates provide improved flood probabilities for streamgages, particularly for short-record streamgages. Standard flood frequency methods as described here assume peak discharges are statistically stationary. Long-term streamgage records also provide the basis for testing this assumption and applying methods for nonstationary flood frequency. In fact, data from project HR-140 are currently being used in the Transportation Pooled Fund Study TPF-5(460):

Flood-Frequency Analysis in the Midwest: Addressing Potential Nonstationary Annual Peak-Flow Records. Information from flood-elevation profiles is used by engineers to analyze and design bridges, culverts, and roadways. Water-surface elevations, collected both upstream and downstream of bridges, enable engineers to model the hydraulics of actual flood events. Flood-profile reports provide engineers with information on the magnitude and frequency of floods.

Q. The funding request looked like the inflation is being covered by the Research Board, would you address this?

A. Cost of living has increased, we have been stable with the Research Board for ten years and haven't changed prices. We have been struggling trying to keep the Research Boards funding flat by contributing funds from our other sources.

Q. Funding has been flat for several years and looks like it is barely going up, is there any plans to upgrade equipment?

A. The cost includes purchasing new technology to measure and collect data.

Motion to Approve by A. Bradley 2nd by M. Rydl
Motion carried with 14, 0, 0

6. 2022 STIC Ideas Ranking

- a. [Bridge Digital Delivery: Peer Exchange with AGC and ACEC \(#3819\)](#)
- b. [ETALYC'S Hyperflow Pilot for Signal Performance Assessment \(#3818\)](#)

Motion to select both applications for STIC funding by W. Weiss 2nd by R. Knoche
Motion carried with 14, 0, 0

7. New Business

Change in membership starts in July. Anthony Bardgett is off the Board; Derek Snead, Jones County Engineer is New Member for County district six and Angela Kersten, Scott County Engineer, will be Alternate.

8. Adjourn

The next regular meeting of the Iowa Highway Research Board is scheduled for September 30, 2022 in the East/West Materials Conference Room at the Iowa DOT.

TB/VG