State-Aid Bridge News

August 2, 2005

- **Bridge Hydraulic Information**

The FHWA has been inquiring about our Scour Program. In particular, there are two areas of concern;

1. Are our Scour Action Plans current
2. Re-rating all F G and J bridges

Please check your scour ratings and your action plans to be sure they are current.

The USGS maintains an interactive web site http://gisdmnspl.cr.usgs.gov/watershed/index.htm that will calculate drainage areas and give you the information you need to use in regression equations. This coverage is only for certain portions of the state. I would like to know how many of you use this site and if you find it useful. Could you please drop me a note about the site at petra.dewall@dot.state.mn.us . Thanks, Petra

- **Load and Resistance Factor Design (LRFD) of Local Bridges**

This fall the Mn/DOT Bridge Office intends to hold a one day workshop on LRFD foundations & pile capacity determination, and other miscellaneous LRFD design topics. The workshop will be tailored for bridge and geotechnical engineers to learn and understand Mn/DOT's latest LRFD policies/methods on reporting foundation recommendations, completing pile load tables with factored loads, and field verification of ultimate bearing capacities.

The State Aid Bridge Office will broadcast an invitation to our local bridge consultants upon official notice of a time and date for this important workshop. The various geotechnical firms will be notified as well.

As a reminder, all new local bridges on which preliminary engineering is initiated after October 1, 2007, shall be designed by the LRFD Specifications, this is also the deadline imposed by FHWA.

The LRFD Mn/DOT Bridge Design Manual is available online. You will be able to access the manual through the Bridge Office Website at **http://www.dot.state.mn.us/bridge**. Mn/DOT intends to keep the online manual updated and current with the latest AASHTO LRFD Specifications and Mn/DOT Bridge design/detailing practices.

If you have any questions on the LRFD Bridge Design Manual please contact Dave Dahlberg, our LRFD Implementation Engineer, at 651-747-2116.

- **New Prestressed Concrete Beam Shapes**

The Mn/DOT Bridge Office has developed two new beam shapes, the "Minnesota 45" and "Minnesota 54". These new I-beam shapes are heftier; with a wider top and bottom flange they will be able to span 10-15% longer distances.

These new beams are born from some slight modifications to the standard Iowa DOT beam shapes. The Mn/DOT Bridge Office Standards Unit is currently working on standards for these new shapes. The new shapes should be available for our local bridge consultants to implement sometime early next year.

Note, the latest Mn/DOT Bridge Standard Plans and Details are available online. You can access the standards through the Bridge Office Website at **http://www.dot.state.mn.us/bridge**. Mn/DOT intends to keep the online standards updated and current with the latest AASHTO LRFD Specifications and Mn/DOT Bridge design/detailing practices.

- **Bridge Management Update**

A CD containing bridge inspection data and a new version of Pontis have been mailed to local agencies with more than 10 bridges. Follow the instructions on the CD to install the new version of Pontis. When all inspections have been entered, the data should be sent to Thomas Martin in the Mn/DOT Bridge Office no later than February 15, 2006. Those agencies with a small number of bridges should mail or fax a copy of their completed inspections to Thomas Martin.

An email containing several reports was also sent to most agencies. Please review the reports and note any corrections and send them to Thomas Martin. If you have any questions regarding bridge inspection, contact Thomas Martin at 651-747-2121 or Jim Pierce at 651-747-2119.

The Pontis reports web site has a report called **INSPECTION DUE.** This report lists all inspections due this season. There is also a report called **INSPECTION REPORT - INSPECTIONS DUE**, that prints all of the inspection reports for inspections that are due. Once you have completed all inspections and your inspection data has been submitted to the Bridge Office and entered into the database, the report **INSPECTION REPORT - INSPECTIONS PERFORMED**, can be run to print all of the completed inspection reports for your bridge files.

- **Asbestos on Bridges Update**

In mid July this year an investigation was initiated on the effectiveness of the mandated asbestos studies for bridge replacement projects. The investigation was conducted in cooperation with the counties and coordinated through Alan Forsberg, Blue Earth County Engineer. Below is a summary of the investigation as reported by Alan Forsberg.

Of the 74 studies, 4 found some asbestos in small amounts contained in tar paper or caulking. Demolition would be by equipment in open surroundings. The environmental and health risk would therefore appear to be very small. All but the third one are less than EPA volume, area or length criteria for reporting. The third one did not specify a quantity so comparison to EPA criteria could not be made.

The cost of the studies ranged from $600 to $2,000. At $1,000 per study about $72,000 would have been expended on studies. The limited health and environmental benefits of these studies does not appear worth the cost. We should be able to develop some screening criteria to accomplish the same goal without the extensive time and cost of the current study mandate. The MPCA also has a reporting requirement that the contractor file a report 10 days before demolition. This effectively stops a bridge replacement project for 10 days after the contract is awarded.

The next step is to coordinate with the MPCA and hopefully discuss some options for screening out studies which are not justified by benefits.

- **Semi-Integral Bridge Abutments**

Fully integral abutments are characterized by beams that are fixed to a concrete pile cap supported by a single row of piling. This abutment allows for bridges to be constructed without deck expansion joints. They have been successfully used on the local system for years. They cost less to construct and require less maintenance then an equivalent bridge with deck joints. Unfortunately by design, integral abutments are restricted to short abutments on piling with no or very little skew.

The semi integral abutment also allows for a jointless bridge. It is characterized by beams that extend over the abutment cap and that are embedded in a back wall. The beams are supported on bearings placed on the abutment cap. This abutment style allows for high abutments that require more than one row of piling, abutments founded on rock, and geometric constraints calling for higher skews.

Realizing the site condition criterion that prevents the use of a fully integral abutment, and the many benefits of the joint less bridge, the Mn/DOT Bridge Office is now developing a bridge standard for the semi integral abutment. These abutment structures have been successfully used in other states since the 1970’s, and the construction costs have been lower compared to conventional abutments with deck joints.

- **Mn/DOT & FHWA Precast Slab System Workshop**

We're excited to encourage our local agencies and local consultants to attend the upcoming Precast Slab System Workshop.

The workshop is geared towards those individuals that are directly involved in the development and construction of local bridge projects. The workshop will introduce the new inverted tee beam bridge born from Mn/DOT's attendance of the 2004 FHWA & AASHTO International Scanning Tour on Prefabricated Bridges.

The workshop brochure is on the Mn/DOT Bridge Office homepage along with information on the Precast Slab System and plans to the two bridges currently under construction utilizing this design. http://www.dot.state.mn.us/bridge/

We look forward to your attendance in this exciting move towards alternate short span bridges in an effort to reduce time and cost of bridge construction.

- **Local Bridge Scanning Tour**

We're excited to announce our plans to conduct a Local Bridge Scanning Tour in early spring of 2006. In cooperation with the FHWA, SALT, and the Mn/DOT Bridge Office, a tour is being planned to visit a few areas of the country to learn and see the successes of their local bridge program.

The primary purpose of this tour is to advance our understanding of the various local bridge systems available, and to hopefully implement these systems for the counties of Minnesota. In particular we will be focusing our energies on bridge systems on low ADT routes that have been proven reliable, economical, and cost effective.

This challenging week long tour will take us to both Spokane Washington on the west coast, and then to Pennsylvania on the east coast. The tour will consist of visiting a local precast plant, county bridges, and meeting with the associated county engineer and their consultants.

The current makeup of the tour team is Dave Conkel, State Aid Bridge Engineer, Patti Simmons, State Aid Programs Engineer, Romeo Garcia, Minnesota FHWA Bridge Engineer, Alan Forsberg, Blue Earth County Engineer, Gary Bruggeman, Steele County Engineer, and Ron Benson, Erickson Engineering.

Tentatively, the County Engineers will be funded for the tour through SALT, Patti, Dave, and Romeo will be funded by the FHWA, and Ron will be funded by Erickson Engineering.

- **State Aid Bridge Contacts:**

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