

State-Aid Bridge News

July 12, 2006

- **Local Bridge Scanning Tour Update**

After holding multiple meetings with industry experts in the area of steel, concrete and timber, the Local Bridge Scanning Tour Team (LBSTT) decides to start with the state of New York. New York will be the first of many states across the country that the LBSTT will scan in the pursuit of finding long lasting, innovative, fast, safe, and efficient local bridges for the state of Minnesota.

Minnesota already has a well developed inventory of tried and true local bridges. However, based on LBSTT's consultation with national industry experts, there appears to be other proven local bridge types worth our consideration. For example, in the area of concrete we find other states with similar weather conditions successfully using the side by side precast box beam bridge, or the side by side precast bulb tee beam bridge. In Colorado they're using simple span steel girders made continuous over the piers with an innovative concrete diaphragm/deck connection. This method of construction (simple-made-continuous) has greatly reduced the cost of steel fabrication and erection.

Our trip to New York will take place at the end of September 2006. We plan to visit several urban/rural counties in the Buffalo NY area, and visit a regional precast concrete plant. The NY FHWA and DOT have been graciously assisting us in the logistics of this tour. In fact, the FHWA is sponsoring this trip for the State and County Engineers of the LBSTT.

After we assess the success of the NY tour, we'll get back to planning our trek out west. It looks like we will make our way to Colorado and Washington State sometime in the spring of 2007. In the end, we plan to report our findings to the various local agencies in way of a presentation and a formal report.

The members of the Local Bridge Scanning Tour Team are 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), Ron Benson (Erickson Engineering), Larry Erickson (SRF Consulting Group) and Kent Rohr (WSN).

- **Mn/DOT's New Prestressed Concrete Beam Shapes**

A short time ago MnDOT began examining prestressed beam shapes used around the country to determine if any shape provided a cost effective advantage over our current shape. The new shape that Iowa DOT developed a few years ago appears to meet this criterion. This shape is also very similar to the Wisconsin shape which will allow our fabricators to market beams to all three states with the use of a common form. Estimates show the beams can span up to 8 % longer or can be spaced up to 30% wider than the previous beams.

Realizing the benefit of these more robust beam shapes, the Mn/DOT Bridge Office invested in developing new standards and details for the new shapes. On May 31st, 2006 the Mn/DOT Bridge Office authorized the use of the new beam shape up to a 63 inch height. The new shapes are designated as MN45, MN54, and MN63 prestressed concrete beams.

The LRFD Bridge Design Manual and Bridge details have been modified for the new prestressed concrete beams shapes and are ready for implementation. If you have any questions or concerns about these standards, please contact Erik Wolhowe our Bridge Standards Engineer, at 651-747-2147.

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

In cooperation with the Mn/DOT Bridge Office, the FHWA has agreed to conduct a 4 day training class on LRFD FOR HWY BRDG SUBSTRUCTURES & EARTH RETAINING STRUCTURES. Currently there is no vacancy for the class offered in July. However, by popular demand, the class will also be offered on October 23rd thru 26th, 2006.

This LRFD class is for Mid-level bridge and geotechnical journeymen or mid-level design engineers with one to five years of experience responsible for the structural and/or geotechnical design of bridge substructures and earth retaining structures. The content of the class contains training to determine load distribution and load combinations, principles of limit state designs, geotechnical spread footing design (soil and rock), driven pile and drilled shaft design (soil and rock), substructure design and detailing for a cantilever abutment and hammerhead piers, mechanically stabilized earth walls, precast modular walls, and ground anchor wall design.

Again, we would like to congratulate our Local Bridge Consultants as they continue to successfully implement the new LRFD specifications.

As a reminder, 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 please contact Dave Dahlberg, our LRFD Implementation Engineer, at 651-747-2116.

- **Local Bridge Replacement Program**

The 2006 Legislative session turned out to be very beneficial to the Local Bridge Replacement Program. This year, the legislature approved \$55 million in state bond funds for local bridges and one earmark project. Hennepin County received an earmark of \$2.5 million for design costs for the Lowry Avenue Bridge with an estimated replacement cost of \$33 million. The remaining \$52.5 million will fund the local match on the 2006/2007 federal bridge projects and local bridges through out the state. In the past month since the passing of the bonding bill, 110 bridge projects have been approved for funding and letting. At this time there is no waiting list for bridge funds and projects are approved on first come/first serve basis.

This year the legislature also revised the language in the town bridge account related to payment for engineering costs. This change increased the threshold for net tax capacity in town bridge account from \$200,000 to \$300,000. The new language states that 100 percent of all related engineering costs that exceed \$10,000 or in the case of towns with a net tax capacity of less than \$300,000, 100 percent of the engineering costs can be paid by the town bridge account. This became effective on July 1, 2006.

- **Rating Section added to Website**

A new section, "Rating State Aid Bridges", has been added to the State Aid Bridge website. It can be found under Handbook, Miscellaneous. It explains some basic information about bridge ratings and using the new rating forms. These forms, which include a block for certification by a registered engineer, were posted on the website earlier this year. You may start using the new forms immediately. They will be required for all new bridges turned in after January 1, 2007. For re-rating old bridges the date is September 1, 2006. These changes are required in part because of changes in NBIS rules.

- **Bridge Rating Project**

As most of you know there is a project underway to rate certain county and local bridges throughout the state. This work is being done by three consultant firms, LHB, TKDA, and URS, under the direction of our Bridge Rating Unit and the MnDOT State Aid Office.

This project was initiated as a result of a law passed last year commonly known as the “Timber Haulers Bill”. The primary basis for selecting the bridges for this project was the operating rating as recorded in Pontis. A low operating rating would predict that a bridge was not capable of carrying the new heavier trucks.

(If anyone has questions about how to apply the rating or posting procedures in relation to these new “timber hauler trucks”, contact the Bridge Rating Unit at 651-747-2118.)

This project is under way now and is expected to be completed around the end of 2006. Some of you should have already received completed ratings. In addition to sending you the new ratings, the consultants are also sending them to the Bridge Office. They will be stored in the Bridge Management files. Also the Pontis database will be updated as required. With the large number of ratings coming in at one time, this may take a while. But eventually they will get done and you will be able to look them up from your own offices. Some of the ratings include digital photographs. MnDOT does not plan to keep these or store them in Pontis.

There is one important thing we would like all bridge owners to keep in mind. Most bridges in this project are being rated with the software product called Virtis. (Some bridge types such as trusses are not compatible with Virtis at this time.) The electronic files for the Virtis bridges will be permanently stored by the Bridge Office. Should any change occur to one of these bridges in the future new ratings can be calculated fairly quickly. If one of your Virtis rated bridges has a change that would require a new rating, you may request that our Bridge Rating Unit do that for you. You should contact them with the inspection report or other information explaining the need for a new rating. For non-Virtis bridges or when the damage or deterioration is to a substructure, the new rating will have to be done yourself or your own consultant.

- **Bridge Hydraulic News**

I received a call a while back, from an individual designing a storm sewer system for a roadway with an ADT of 7000 and a 40 mile an hour speed limit. When I checked the State Aid Manual, I found the following table:

DESIGN FREQUENCY

PROJECTED ADT	DESIGN SPEED	DESIGN FREQUENCY
0 To 999	≤ 60 kmh (40 mph)	3 Year
	≥ 60 kmh (40mph)	3 Year
1,000 to 4,999	≤ 60 kmh (40 mph)	3 Year
	≥ 60 kmh (40mph)	5 Year
5000 and Greater	≤ 60 kmh (40 mph)	5 Year
	≥ 60 kmh (40mph)	10 Year

As you can see, there is a problem. The designer wasn't sure which storm frequency to use and costs between the two choices was significant. The correct Design Frequency was the 5 year event. It should read : less than or equal to 40 mph for a 5 year event or greater than 40 mph for a 10 year event. The Internet copy of the State Aid manual was also problematic. It had a glitch in the system that was not reading the greater than or equal to sign. In looking more carefully, I found another problem; Fig. A 5-892.605 had been incorrectly included in the manual. This figure applies to trunk highways only! Please delete it from your paper manuals. The web site has been corrected to reflect these changes.

- **State Aid Bridge Contacts:**

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