



2015-2016

November Meeting Notice

Minnesota Geotechnical Society

Geotechnical Challenges on the I-90 Dresbach Bridge/Interchange Project

Joseph Bentler, P.E.

The I-90 Dresbach Bridge project involves replacement of the existing 2,500-foot long steel bridge over the Mississippi River in the LaCrosse (WI)/La Crescent (MN) area. The existing bridge, completed in 1967, is fracture-critical and has narrow shoulders. The new bridge, currently under construction, is a concrete structure that meets current structural and geometric design standards. The interchange between Highway 61/14 and Interstate 90 is also being reconstructed to improve traffic flow, safety, and capacity.

The presentation will give an overview of the project while briefly highlighting several geotechnical design aspects. Specific geotechnical design challenges associated with the west approach embankment on the Minnesota side of the new bridge will be discussed in greater detail. That area included the construction of a new nearly 70-foot high embankment, plus a frontage road and reinforced concrete cantilever retaining wall wrapping around the front of the bridge abutment. Furthermore, a buried layer of fine alluvium compromised global stability and necessitated staged construction to allow the layer time to consolidate and gain strength.

The global stability analysis for the west approach embankment was performed using conventional limit equilibrium software. Various river levels including the 500-year flood needed to be considered, as well as the potential for significant scour around a new bridge pier at the toe of the slope. The extent to which driven foundation piles for both the cantilever retaining wall and the bridge abutment would help maintain slope stability was included in the limit equilibrium analyses to show that stability would be maintained even under extreme limit states.

In order to validate the design of the approach embankment and walls and to confirm that the staged construction would occur in a stable manner, extensive geotechnical instrumentation consisting of ShapeAccelArrays and vibrating wire piezometers, earth pressure cells, and tiltmeters. Automated dataloggers were used, with remote access to the data via cellular modem. Results of the geotechnical monitoring will be presented.

President	Vice President	Secretary	Treasurer	Program Chair	ASCE Chair	Past President	Duluth Representative
Josh Van Abel	Kyler Bender	Brian Sanchez	Joe Rozmiarek	Kurt Schimpke	Joe Bentler	Joel Swenson	Peter Demshar
952-995-2310	651-389-4182	763-447-4230	651-646-8148	952-832-2897	651-603-6616	952-832-2799	218-788-6309

<http://www.mngeotechnicalsociety.com>

Date: Wednesday, November 11, 2015

Location: Rose Vine Hall (downstairs at Grumpy's Bar & Grill)
2801 Snelling Ave. N., Roseville, MN

Time: 6:00 Social Hour – Sponsored by American Engineering Testing

7:00 Dinner: Salad, Rolls, Coffee/Soda and a choice of:

1. 10-Ounce Top Sirloin - Char-grilled and topped with bleu cheese garlic butter. Served with white cheddar mashed potatoes and a sautéed vegetable medley – \$40.00
2. Chicken Marsala - A chicken breast lightly breaded and drizzled with marsala wine sauce, mushrooms and onions– \$35.00
3. Feta Cheese and Sun-Dried Tomato Stuffed Walleye - Served over white cheddar mashed potatoes with a drizzle of lemon thyme butter sauce – \$35.00
4. Chicken Fettuccine Alfredo - Fettuccine noodles, snow pea pods, and mushrooms tossed in an Alfredo cream sauce and topped with a grilled chicken breast and parmesan cheese – \$30.00
5. Cobb Salad - Iceberg topped with turkey, ham, bacon, hard cooked eggs, avocado, diced tomatoes, bleu cheese crumbles, and black olives with choice of dressing (Ranch, Fat Free Ranch, Bleu Cheese, French, Fat Free French, Italian, Fat Free Italian, Balsamic Vinaigrette) – \$25.00

8:00 Presentation – Joe Bentler, PE

(One professional development hour toward continuing education requirements for Professional Engineers is available).

9:00 Coffee and Dessert – Sponsored by American Engineering Testing

Cost: Paid 2015-2016 MGS Members receive a \$5 meeting discount on the meal costs listed above.
The cost for full-time students is \$5, payable to MGS at the door.

Reservations: Requested by 12 Noon, Friday, November 6, 2015

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