



2009 - 2010

November Meeting Notice



Minnesota Geotechnical Society

The Washington Monument Case History

Date: Wednesday, November 11, 2009

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

Time: 6:00 Social Hour (Beverages and Light Hors d'oeuvres), Sponsored by Geo-Institute of ASCE; the Geo-Institute Board will be present to meet you and discuss any ideas or suggestions you may have.

7:00 Dinner & Dessert: 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
2. Feta Cheese and Sun-Dried Tomato Stuffed Walleye - Served over white cheddar mashed potatoes with a drizzle of lemon thyme butter sauce.
3. Seared Chicken Parmesan - Tender chicken breast crusted with aged Parmesan cheese and rapidly seared until golden brown. Served over white cheddar mashed potatoes and a sautéed vegetable medley.
4. Manicotti - Fresh pasta tubes filled with ricotta, mozzarella and parmesan cheeses. Baked in marinara sauce and finished with melted mozzarella.

8:00 Informative Session by Geo-Institute of ASCE

8:15 Presentation – “**The Washington Monument Case History**” by
Jean-Louis Briaud, Ph.D., P.E., D.GE

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

Cost: \$25.00 members, \$30.00 non-members, and \$5.00 Full-time students, payable to MGS at the door.

Reservations: Requested by 12 Noon, Friday, November 6, 2009

(When registering, please keep in mind that MGS is responsible for payment of all meals reserved. If you register and cannot make the meeting, please try and find a replacement so MGS does not have to cover the cost of the unused meal. Thanks!)

Please register via the website at <http://www.mngeotechnicalsociety.com/eventsmpls.asp>

President	Vice President	Secretary	Treasurer	Program Chair	ASCE Chair	Past President
Paul Martin	Mike Haggerty	Kurt Heckendorf	Mark Osborn	Travis Rengstorf	Joe Bentler	Gregory Norris
651-487-7084	952-832-2944	651-290-5411	507-645-0964	651-789-4667	651-603-6616	763-428-2242

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The Washington Monument Case History

Jean-Louis Briaud, Ph.D., P.E., D.GE,

Professor at Texas A&M University

President of Geo-Institute of ASCE and the International Society
for Soil Mechanics and Geotechnical Engineering (ISSMGE)

The Washington Monument was built between 1848 and 1884 in honor of George Washington, first President of the United States of America. The Monument consists of a 169.16 m high column with a large pyramidal foundation. It was built in two periods straddling the Civil War. During the first period from 1848 to 1858, the foundation base was 24.38 m square, the column was built to a height of 55.5 m and the average pressure under the foundation reached 513 kPa. In 1879, the foundation was underpinned and the base of the foundation became a square ring with an outside dimension of 38.54 m and an inside dimension of 13.41 m. The column was completed in 1884 and created an average pressure under the foundation of 465 kPa.

The original foundation rested on a medium compact sand - stiff clay mixture which was 3.76 m thick, underlain by a 8.30 m thick layer of very dense sand, gravel and clay, followed by a 11.68 m thick layer of stiff to very stiff high plasticity blue clay resting on decomposed Wissahickon schist. The underpinning brought the foundation level down to the very dense sand and gravel layer. Calculations indicate that the Monument settled about 1.3 m during the first construction period, 1848-1858. During underpinning in 1879, the measured settlement was 52 mm. During the completion of the column from 55.5 m to the full height of 169.16 m the measured settlement was an additional 63 mm. From 1884 to 1993, the Washington Monument settled an additional 55 mm in a very linear fashion with time. This remarkable case history is described in some detail including settlement and bearing capacity calculations which show that the underpinning process in 1879 likely saved the Monument from serious trouble.

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