

Committee Meeting Minutes

AFS30 Foundations of Bridges and Other Structures

Wednesday, January 26, 2011

Time: 2:30 PM – 6:00 PM

Location: Marriott Hotel, Washington B6

Chairman, Brian Liebich

Secretary: Robert Kimmerling

1. Welcome of Members and Guests

- a. Meeting Called to Order by Committee Chair Brian Liebich at 2:30pm. All individuals present were welcomed and asked to introduce themselves. Attendance sheets for members and friends were routed through the room. Those present:

Members	Non-Members
Brian Liebich (Chair)	Gray Mullins
Naser Abu-Hejleh	Norman Dennis
Dan Brown	Prasenjit Basu
Ken Fishman	Aaron Zdinak
George Goble	Jim Sheahan
KJ Kim	Rick Land
Robert Kimmerling	Dave Stanley
Mark Morvant	Burak Tanyu
Silas Nichols	Phillip Ooi
Jamal Nusairat	Jeff Horsfall
Sam Paikowsky	Tony Simmons
Miguel Pando	Izzaldin Al Mohd
Frank Rausche	Jawdat Siddiqi
Hani Titi	Teddy Antonios
Jim Withiam	Justice Maswoswe
	Camilo Marulanda
	Ben Arndt
	David Brodowski
	Diyar Bozkurt
	Michael Adams
	Robert Liang
	Muhannad Suleiman
	Mohamed Ashour
	Mary Ellen Bruce
	Antonio Marinucci
	Kevin Scott
	Liz Smith
	Brian Anderson
	Don Anderson

	Conrad Felice
	Azam Azimi
	Mohammed Mulla
	Daniel Alzamora
	Jennifer Nicks
	Anand Puppala
	Jeff Von Handorf
	Thornchaya Wejrungsheel
	Lin Li
	Paola Bandini
	Murad Abu Faersakh
	Panchy Ammugusaamy

2. General Committee Business

- a. Review of Committee Name: Presently: “Foundations of Bridges and Other Structures.” The Committee had a general consensus that the current name, while functional, is cumbersome. Two options were weighed as potentials, “Foundations for Transportation Infrastructure” and “Structural Foundations.” The relative merits of the option were discussed, including the limits of the Committee Scope and the concerns likely to be voiced by other TRB Committees. Advisory Vote taken, Committee overwhelmingly in favor of the new name “Foundations for Transportation Infrastructure.” This proposed name will be taken to the Section Meeting for consideration of other committees. If they are in favor, a formal vote of the entire AFS30 Committee will be taken to consider name change.
- b. Review of Committee Scope. The present Committee Scope is: *“This committee is concerned with the local and global behavior, stability, and interaction of structural foundations, and their supporting materials, for permanent and temporary transportation structures (bridges, retaining walls, box culverts, buildings, overhead signs, and other transportation structures).”* Motion to retain committee scope passed unanimous.
- c. Approval of 2010 minutes. Content was affirmed as accurate, misspelling of Kyle Rollins name noted. Motion to approve minutes unanimous.
- d. TRB Announcements provided by Section Chair Njoroge Wainaina. TRB Meeting for next year will be January 22-26, 2012. Number of Young Members permitted for each committee increased from 2 to 4.
- e. AFS30 Triennial Strategic Plan Results shared with the committee. AFS30 rated Excellent on Technology Transfer and Committee Interaction—high praise for the committee. Research Needs Statements were rated an average of Good, but ranged from poor to excellent—a result that caused some confusion. The Committee has a need to develop new Research Needs Statements, as this was a

source or some of the low TSP marks. Goals were identified generally as good—the breath was identified as ambitious, although there was some desire by reviewers to identify timelines. Liebich to e-mail the TSP Review Results to the Committee.

- f. Committee Rotations are coming up for AFS30 in 2011. The Committee will be required to rotate off 1/3 of the Members and replace those members with new individuals. There are now four additional spots specifically for Younger Members, defined as those under the age of 35. There are Emeritus Member Slots that are also above this number.

3. Technology Transfer

- a. AFS30 Received Papers for this Annual Meeting. 12 were recommended for Presentation, demonstrating an overall high level of quality. 4 Papers were recommended to be published.
- b. The Three AFS30 Sessions were reviewed and summarized by the moderators:

682 (GPS11-006)

Integrated Field Testing to Maximize Design and Construction Efficiency

Mark J. Morvant, Louisiana Department of Transportation and Development, presiding
Sponsored by Committee on Foundations of Bridges and Other Structures

Lateral Capacity of Short Rock Sockets in Weak Rock (11-2791)

Robert L. Parsons, University of Kansas
Matthew Charles Pierson, University of Kansas
Isaac Willems, University of Kansas
Jie Han, University of Kansas
James Joseph Brennan, Kansas Department of Transportation

Lateral Load Testing Micropiles to Evaluate the Impact of Threaded Joints and Casing Plunge on Short Micropiles in Shallow Rock (11-1429)

J. Brian Anderson, Auburn University
Michael R. Babalola, North Carolina Department of Transportation
John Fargher, North Carolina Department of Transportation
Dean Hardister, North Carolina Department of Transportation
John Pilipchuk, North Carolina Department of Transportation

Field Testing and Analyses of a Batter Pile Group Foundation Under Lateral Loading (11-0715)

Murad Yusuf Abu-Farsakh, Louisiana State University
Xinbao Yu, Louisiana Transportation Research Center
Binay Pathak, Louisiana State University
Zhongjie Zhang, Louisiana Department of Transportation and Development

Pile Load Test and Implementation of LRFD Specifications: Case Study of Caminada Bay Bridge Project in Louisiana (11-2891)

[Sungmin Yoon](#), Louisiana Department of Transportation and Development
[Ching Tsai](#), Louisiana Department of Transportation and Development
[James Matt Melton](#), Louisiana Department of Transportation and Development

435 (GPS11-007)

Foundations: Mitigation, Monitoring, and Metamorphosis

[Robert E. Kimmerling](#), PanGeo Inc., presiding

Sponsored by Committee on Foundations of Bridges and Other Structures; Committee on Soils and Rock Instrumentation

File and Shaft Integrity Test Results: Classification, Mitigation, Acceptance, and Rejection (11-2619)

[Karen Webster](#), GRL Engineers, Inc.

[Frank Rausche](#), GRL and Associates

[Scott Webster](#), GRL Engineers, Inc.

Water Jetting for Mitigation of Defects in Drilled Shafts: Laboratory Investigation (11-3556)

[Gregg L. Fiegel](#), California Polytechnic State University

[Clayton Proto](#), California Polytechnic State University

[Daniel C. Jansen](#), California Polytechnic State University

[Matthew Schaffer](#), California Polytechnic State University

[Jay S. DeNatale](#), California Polytechnic State University

Statistical Approach in Determining Monitoring Distance During Pile Driving (11-2609)

[Mo Zhang](#), Worcester Polytechnic Institute

[Mingjiang Tao](#), Worcester Polytechnic Institute

[Gavin P. Gautreau](#), Louisiana Transportation Research Center

[Zhongjie Zhang](#), Louisiana Department of Transportation and Development

Design and Performance of Geogrid-Reinforced Embankment Supporting Spread Footing Bridge Foundation (11-2087)

[Kyung Jun Kim](#), North Carolina Department of Transportation

[Christopher A. Kreider](#), North Carolina Department of Transportation

[Young Jin Park](#), North Carolina State University, Raleigh

Poster Session (P)s

236 (GPP11-002)

Load and Resistance Factor Design Practice and Case Studies in Geotechnical Engineering

[Kyung Jun Kim](#), North Carolina Department of Transportation, presiding

Sponsored by Committee on Foundations of Bridges and Other Structures

Challenges of Design-Build Mass Transit Project in North Jersey (11-1790)

[Russell W. Preuss](#), Gannett Fleming, Inc.

NCDOT Experience in Load and Resistance Factor Design and Construction of Driven

Pile Foundations (11-3890)

Kyung Jun Kim, North Carolina Department of Transportation

Christopher A. Kreider, North Carolina Department of Transportation

Procedure for Incorporating Pile Setup in Load and Resistance Factor Design of Steel H-Piles in Cohesive Soils (11-3428)

Kam Weng Ng, Iowa State University

Sri Sritharan, Iowa State University

Muhannad T. Suleiman, Lehigh University

Modeling of Soil-Structure Interaction in Presence of Large Deformations in Soil (11-2287)

Ronald F. Kulak, Argonne National Laboratory

Cezary Bojanowski, Argonne National Laboratory

Implementation of Bayesian Theory on LRFD of Axially Loaded Driven Piles (11-4101)

Jae Hyun Park, Korea Institute of Construction Technology

Dongwook Kim, Korea Institute of Construction Technology

Moonkyung Chung, Korea Institute of Construction Technology

Ka Hyun Park, Seoul National University, South Korea

Choong-Ki Chung, Seoul National University, South Korea

5. Ongoing and Competed NCHRP Research

- a. NCHRP 41-10: Developing Production Pile Driving Criteria from Test Pile Data. Dan Brown provided a review of the Synthesis Study that identified the various State DOT practices for the means of acceptance of driven piles. A nationwide survey and specific practice leading state interviews were utilized to establish how states chose and implement their pile driving acceptance practices. The Synthesis is completed and will be published soon.
- b. NCHRP 24-31: LRFD Design and Construction of Shallow Foundations for Highway Bridge Structures. The project was reviewed by Samuel Paikowsky which provided information regarding germane input, State DOT practice and conclusion databases. Calibrations for bearing capacity and service condition, although service loading not published. NCHRP Report 651 provides the published results of this research. There will be some related issues being balloted by AASHTO in 2012.
- c. NCHRP 42-01: Practices and Guidelines for the Incorporation and Use of Geotechnical Information in Design-Build Projects. Brian Liebich identified that a Synthesis project developed by this committee last year was selected and funded by NCHRP. The Synthesis was the top selection of all NCHRP Synthesis proposals, reinforcing the concept that geotechnical proposals will be funded if they are viewed as meritorious. The Principal Investigator selected for this project is Douglas Gransberg.

- d. Federal Highway Administration Update. Silas Nichols provided information on some geotechnical initiatives presently underway. GEC 10 and 11 are now published, with GEC 3 update coming in March 2011. Long Term Bridge Performance program is in final stages of the pilot study which includes geotechnical elements – will be a 20 year program. Small grants are underway for post-grouting of shafts, high-performance concrete for geotechnical applications, Long term performance of MSE. Presently revamping training manuals with LRFD sample calculations. Webinars on LRFD implementation, updates to Driven piles manual, HEC-18 update all continuing interests. Greater focus upon Asset management (especially walls and geohazards), speeding implementation of research into design, GRS/IBS systems, Soil nails use and SNAP and SHRP II solutions being rolled out for geotech. Naser Abu-Hejleh discussed new revision of NHI 132083 for LRFD Training, expanding the use of shallow foundations, expanded guidance on driven piles and addressing site variability.

6. 2012 Annual Meeting Proposals

- a. Future Goals from Triennial Strategic Plan were reviewed:
 - i. Highlight Innovative and Emerging Foundation Systems: Hybrid Piles, Pile – Soil Improvement Systems, Large Diameter Piling, Non-Traditional Installation Methods and Equipment
 - ii. Present Effective Methodologies to Evaluate and Address Anomalies Within Deep Foundations: Characterization and Design Review, Techniques for Grouting of Drilled Shaft Defects, Structural System Supplements, Consequences of Repairs
 - iii. Enhance and Optimize the Economic Use of Traditional Foundations: Post-Grouting, Better Characterization of Soil Set-Up, Creative Use of Foundations in Non-Traditional Applications, Integrated Testing Programs
 - iv. Evaluate Foundations of Existing Structures: Re-use, Unknown Foundations, Health Monitoring
 - v. Provide Guidance on Resolution of Contractual Issues for Foundation Systems: Coordination with Innovative Contracting Methods, Differing Site Assessment, Consideration of How Contractor Means and Methods Affect Design Assumptions
 - vi. Accelerate the Construction of Reliable Foundation Systems: Integration with Project Acceleration Methods, Site Soil Enhancements, Emerging Materials for Foundations Use

- vii. Integrate Field Testing into Design and Construction to Maximize Efficiency: Load and Resistance Factor Design Ramifications, Methodology of Shafts in Rock Sockets, Performance Based Design for Extreme Events
 - viii. Reduce Environmental Impact and Enhance Sustainability: Optimized Designs, Efficient Use and Recycling of Materials, Contextually Appropriate Design, Protection of Existing Structures, Construction Vibrations, Cooperative Environmental Solutions
- b. Review of progress in achieving these SP goals. AFS30 in 2011 had sessions or research in four of these areas:
- i. Present Effective Methodologies to Evaluate and Address Anomalies Within Deep Foundations: Characterization and Design Review, Techniques for Grouting of Drilled Shaft Defects (Session 435: Paper 11-2619 and 11-3556)
 - ii. Provide Guidance on Resolution of Contractual Issues for Foundation Systems: Coordination with Innovative Contracting Methods (NCHRP 42-01)
 - iii. Integrate Field Testing into Design and Construction to Maximize Efficiency: Integrated Testing Programs and Methodology of Shafts in Rock Sockets (Session 682) and Load and Resistance Factor Design Ramifications (Session 236)
 - iv. Reduce Environmental Impact and Enhance Sustainability: Protection of Existing Structures and Construction Vibrations (Session 435: Papers 11-2609 and 11-2087)
- c. Sessions / Calls for Papers
- i. Rehabilitation of Existing Foundations. Particular emphasis on Case Histories. Dan Brown and KJ Kim to develop Call for Papers.
 - ii. Use of Spread Footings for Bridge Foundations. Naser Abu-Hejleh and Samuel Paikowsky to develop Call for Papers.
 - iii. Energy Piles. Mary Ellen Bruce and Muhanned Suleiman to Develop a Call for Papers on the implementation and use of the Energy Pile concept.
 - iv. Discussion Forum of Constructability of Foundations. Panel discussion, designers, contractors (such as ADSC), testers, owners. Presentations. Potentially present in a workshop venue. Grey Mullins and Robert Kimmerling to develop outline of forum.

- d. Potential topics of overload evaluation of bridges—Silas Nichols indicated that some guidance is already available. Topic not followed further.

7. Technical Presentations

- a. Slated presentation by Ed Kavazanjian on “The Performance of Bridge Foundations and Abutments in the September 4 Darlington, New Zealand Earthquake” cancelled as Ed had to leave Washington DC early due to weather.
- b. Muhannad T. Suleiman gave a presentation on, “New pile setup experimental study and LRFD incorporation.” Identified some present limitations with existing methodologies and provided recommendations and guidance on how best to incorporate pile setup into the design of new piling.

8. Break (4:26pm)

9. 2011 Technology Transfer

- a. Research Needs. Chair reviewed the Research Needs Statements that we identified in the Triennial Strategic Plan.
 - i. Comparisons of Full Scale Load Testing Methods for Foundations with Controlled Blind Capacity Predictions
 - ii. Examination of Real-World Performance Compared to Predicted Design: Case Studies and Conclusions Using Smart Bridges
 - iii. Adjusting Resistance Factors to Account for the Effect of Site Variability and Thoroughness of Subsurface Investigation on Geotechnical Design Reliability
- b. Additionally, he emphasized the successful synthesis study that was submitted and funded last year as the top choice for all synthesis studies.
- c. Open discussion of various needs, valuable topics and current issues where research would be of value.
- d. In discussion on construction vibrations, the question of the effects of vibrations upon curing concrete were noted. Jeff Horsfall of WISDOT indicated that a nearly complete research report on that issue is being prepared for WISDOT. Jeff will make the report available to the Chair who will forward the link to a Committee members and friends.
- e. Research Needs Statements

- i. Unknown Foundations. Methodologies that go beyond simple pile length estimations to actual system performance. Mohammed Mulla, Jennifer Nicks and Jim Sheahan. Coordinate RNS with Hydraulics.
 - ii. Vibration Monitoring with PDA and other measurements. Primary Focus is for structure damage related to pile driving, although additional related topics may include any construction-induced vibration and fish mortality. Frank Rausche and KJ Kim.
- f. Synthesis Studies
 - i. Tort Liability Protection and Construction Vibrations. Synthesis Study related to, but emphasis distinct from, the Vibration Monitoring. KJ Kim and Frank Rausche to write.
- g. Webinars. One identified in TSP: State of the Practice of Quality Assurance / Quality Control for Drilled Shafts. Format of a Webinar is 90 minutes total, 60 of presentation, 30 of topics. Topic and content controlled by the committee, TRB sets up the technical details and registration. Process is that the lead sends the plan to the Chair for review by the Committee and then submits to TRB for scheduling.
 - i. Good Practices for Developing Pile Driving Criteria. Related to the Synthesis topic NCHRP 41-10: Developing Production Pile Driving Criteria from Test Pile Data from Dan Brown, although an emphasis on “how to” and good practices, not a summary of the synthesis. Dan Brown to take the Lead on development of the webinar and lining up speakers for content
 - ii. For next year: Results of NCHRP 42-01: Practices and Guidelines for the Incorporation and Use of Geotechnical Information in Design-Build Projects would make a good synthesis topic.
- h. E-Circulars. None identified for 2011.

10. Other Committee Announcements

- a. Don Anderson provided an update from Seismic Subcommittee. Successfully supported one synthesis topic, with the University of Illinois selected from 6 proposals – completion by summer 2011. One research statement for M-O procedure. One Webinar on seismic issues for walls – over 500 parties in attendance. A session in TRB 2011 on seismic design of Foundations. Future plans include a Synthesis topic for liquefaction effects on foundations and a Webinar with Structure Earthquake Committee being developed as a preliminary to the NHI Seismic course.

- b. Conference announcements: ASCE GeoInstitute Foundation Engineering in the Face of Uncertainty. Call For Abstracts due June 2011, papers June 2012. Geo Conference Sessions 2013. Announcement distributed by Jim Withiam.
- c. New Book on Ground Improvement by Kirche discussed by Frank Rauche.

11. Technical Presentations

- a. Robert Liang presented on “Innovative Methods of Constructing Large-Diameter Cast-in-Situ Tubular Piles and the Related Applications.”
- b. Gray Mullins presented on “Thermal Integrity Profiling of Drilled Shafts.”
- c. Yasser Abdelghany not present to present “Steel Fibers Reinforced Grouted and Fiber Reinforced Polymer Helical Screw Piles - A New Dimension for Deep Foundations Seismic Performance.”
- d. Insufficient time for presentation “Stress measurements in concrete” by Tony Simmonds.
- e. Power Point Presentations will be uploaded to Committee web site.

12. Adjourn (6:00pm)