



MARY ELLEN BRUCE LARGE, PE., D.GE., TECHNICAL ACTIVITIES MANAGER

Technical Activities Update

DFI Technical Committees and Working Groups – Always Something New Happening

DFI's 18 technical committees and 3 working groups held their annual committee meetings at DFI's 41st Annual Conference in New York City in October. Hundreds of DFI committee and working group members gathered on committee meeting day to discuss the many and varied projects aimed at furthering the advancement and

understanding of deep foundations. The enthusiasm was high as successes were praised and new challenges proposed. Following are each committee's accomplishments and future plans. Join us at future committee meetings as there's always something new happening that surely will interest you to become more involved.



Augered Cast-in-Place Pile Committee

Chair: Morgan NeSmith, P.E., Berkel and Company Contractors, morgan@berkelandcompany.com
Trustee Liaison: Matthew Meyer, P.E., Langan Engineering and Environmental Services, mmeyer@langan.com

- Updated the *ACIP Pile Manual*, a commentary with guidance for preparing project specifications for ACIP Piles – now available for purchase on the DFI website.
- Organized the ACIP and DD Pile Seminar in November in Newport Beach, Calif.
- Conducting a research project in conjunction with Florida DOT and Dr. Grey Mullins from the University of South Florida regarding the installation, monitoring and performance of ACIP piles for inclusion in FL DOT Specifications. Expect project completion by the end of 2016.
- Evaluating options for further research in 2017.



Codes and Standards Committee

Chair: Lori Simpson, P.E., G.E., Langan Treadwell Rollo, lsimpson@langan.com
Trustee Liaison: Michael Wysocky, Ph.D., P.E., Thatcher Engineering Corporation, mwysocky@thatcherfoundations.com

- Leading an effort to rewrite Chapter 18 on Foundations of the *International Building Code* (2018 version) through the GeoCoalition Code Council (including active members from ASCE, Geo-Institute, GBA, ADSC, and strong involvement by PDCA).
- Revisions were submitted in January 2016. Several committee members attended the public code hearings in April 2016 to speak in favor of the changes.
- The committee has resubmitted some of the changes that were not approved through the public comment process. Dale Biggers, P.E., rep from PDCA, and Dan Stevenson, P.E., vice chair of the committee, recently attended the Public Comment hearings to speak in favor of the resubmittals.



- The committee reviewed requirements in some jurisdictions that require structural engineers to design earth retaining systems. The committee supported the Oak Brook Accords, between the ASCE Geo-Institute and the Structural Engineering Institute, which indicated agreement that design of geo-structures may involve structural, geotechnical and/or civil engineers and should not be subject to designated thresholds contemplated for S.E. licensure.



Deep Foundations for Landslides and Slope Stabilization

Chair: Chris Ramsey, P.E., Amec Foster Wheeler Environmental & Infrastructure, chris.ramsey@amecfw.com (*Immediate Past Chair: Vernon Schaefer, Ph.D., P.E., Iowa State University, vern@iastate.edu*)
Trustee Liaison: Erik Loehr, Ph.D., P.E., University of Missouri Columbia, eloehr@missouri.edu

- Developing a dedicated *DFI Journal* issue on pile stabilized slopes covering analysis and design issues, construction issues and performance through case history papers.

- Held a topical seminar with the Tiebacks and Soil Nailing Committee in Denver, Colo., August 2016 titled S3: Slopes, Slides and Stabilization. Next seminar is planned for Washington D.C. in August 2017.
- Conducting a study to compare limit equilibrium and advanced numerical methods for slopes reinforced with stabilizing piles.
- Preparing a literature study and modeling to compare strain wedge and GROUP procedures to define simplified analytical steps for A-Wall systems.



Drilled Shaft Committee

Chair: Paul Axtell, P.E., D. GE, Dan Brown and Associates, paxtell@dba.world
Trustee Liaison: James Johnson, Condon Johnson and Associates, jjohnson@condon-johnson.com

- Organized an outreach effort for the foundations industry at the International Bridge Conference in June 2016, including a special session on foundations and a dedicated exhibit hall area. They are continuing this effort for the 2017 conference, June 4-8, 2017, in National Harbor, Md.
- Prepared an October 2015 workshop for engineers, contractors and FHWA to develop a roadmap for quality assurance, acceptance and contractual obligations for post grouting of drilled shafts. The workshop report is currently available for free download from the DFI home page.
- Collaborating on a co-funded study with the European Federation of Foundation Contractors (EFFC) to develop a guide to improve tremie concreting and testing practices for deep foundations (drilled shafts and slurry walls). The first edition report,

titled *EFFC/DFI Best Practice Guide to Tremie Concrete for Deep Foundations* (2016), is available for free download from the DFI website.

- Collaborating on a co-funded study with the DFI Seismic and Lateral Loads Committee and ADSC to evaluate the shear demand in drilled shaft rock sockets through the DFI Committee Project Fund.



Driven Pile Committee

Chair: Ben Vance, P.E., STRATA, bvance@stratageotech.com (*Immediate Past Chair: Andrew Verity, Terracon, acverity@terracon.com*)

Trustee Liaison: David Borger, P.E., Skyline Steel, dborger@skylinesteel.com

- Updating the 1998 *Driven Pile Manual* to provide an online list of driven pile geometries and section properties.
- Leading the organizing committee for SuperPile '17 (Coronado Bay, Calif., June 14-16).
- Reviewing the Timber Piling Council's updated *Timber Pile Design and Construction Manual*.
- Exploring the development of a pile driving app.



Ground Improvement Committee

Chair: Tanner Blackburn, Ph.D., P.E., Hayward Baker, jtblackburn@haywardbaker.com

Trustee Liaison: Marty Taube, P.E., P.G., Menard USA, mtaube@menardusa.com

- Providing guidance for the development of new ground improvement specifications by

continued dissemination of *Guide to Developing Performance Specifications for Ground Improvement*, published in the Mar/Apr 2016 issue of *Deep Foundations*.

- Creating and maintaining a ground improvement presentation and speaker information database.



Helical Piles and Tiebacks Committee

Chair: Gary Seider, P.E., Hubbell Power Systems/Chance, glseider@hubbell.com

Trustee Liaison: Alan Roach, Berkel and Company Contractors, aroach@berkelapg.com

- Prepared a state of practice study on helical piles (Researchers: Profs. Alan Lutenegger, University of Massachusetts and Sam Clemence, Syracuse University) published in the 2015 *DFI Journal* Vol. 9 No. 1.
- Published standard specifications for helical anchors and compression piles, available for purchase on DFI website.
- Developing standard specifications for helical soil nails.
- Developing a committee-endorsed engineering instruction/training program for helical designers.
- Organizing annual topical seminars.
- Developing a helical pile design guide.
- Conducting Helical Seismic Research Study including literature review, laboratory and model testing and full-scale field testing (Researcher: Prof. Amy Cerato, P.E., University of Oklahoma).
- Working on two draft ASTM Standards – one for helical pile testing and another for installation/testing.



Manufacturers, Suppliers and Service Providers Committee

Chair: Mark Bryant, EIT, MacLean Power Systems, mbryant@macleanpower.com

Trustee Liaison: Matthew Janes, P.Eng., MBA, Isherwood Associates, matthew@isherwood.to

- Continued developing “expo” sessions for product and service presentations at the 41st Annual Conference.
- Organized sessions on good business practices for 2016 Annual Conference.
- Developing monthly showcase emails outlining MSSP members and their services.



Marine Foundations Committee

Chair: Rick Ellman, P.E., Mueser Rutledge Consulting Engineers, rellman@mrce.com

Trustee Liaison: Robert Bittner, P.E., Bittner-Shen Consulting Engineers, rbb@bittner-shen.com

- Completed DFI-funded study of comparison of impact versus vibratory driven piles with a focus on soil-structure interaction (Researcher: Prof. Paul Doherty, University College Dublin). Joint project with the Driven Pile Committee and available for free download from the committee’s web page.
- Considering topical seminars on Midtown Tunnel – Immersed Tube Tunnel, Norfolk Va., and Cape Wind Windfarm, Cape Fear, Ma.
- Planning possible update to the *Marine Foundations Manual* with current projects.

- Preparing proposal for new DFI-funded research project on “The use of geopolymer concrete for marine structures” (Researchers: Carlos Montes and Jorge Arroyo from Louisiana Tech University).
- Nomination of annual Ben C. Gerwick Award recipient to be presented at SuperPile ’17.
- Exploring possibility of developing Marine Foundations Committee in Australasia in conjunction with DFI-PFSF Conference in Melbourne, Australia in March 2017.



Micropile Committee – Joint with ADSC

Co-Chairs: Steve Davidow, P.E., S.E., Crux Subsurface, sdavidow@quanta subsurface.com and Terry Holman, Ph.D., P.E., Geosyntec, tholman@geosyntec.com

Trustee Liaison: John Wolosick, P.E., D.GE, Hayward Baker, jrwolosick@haywardbaker.com

- Updating the *Micropile Guide Specification* to include commentary from the AASHTO LRFD Construction Specification.
- Assisting with the 13th International Workshop on Micropiles planned by ADSC/DFI/ISM alliance in Vancouver, BC, March 29-April 1, 2017.
- Contributing to the program for SuperPile ’17, Coronado Bay, Calif.
- Worked on IBC code revisions.
- Developing a small diameter drilling safety video.
- Developing a *Micropile Inspection Guide*.



International Society for Micropiles

Acting Chair: Allen Cadden, P.E., D.GE, Schnabel Engineering, acadden@schnabel-eng.com



- Organizing the 13th International Workshop on Micropiles through the ADSC/DFI/ISM alliance in Vancouver, BC, Canada, March 29-April 1, 2017. Crux Subsurface is the sponsor.
- Updating the ISM website.



Seismic and Lateral Loads Committee

Chair: Kwabena Ofori-Awuah, P.E., ENV SP, KCI Technologies, kwabena.ofori-awuah@kci.com

Trustee Liaison: Anne Lemnitzer, Ph.D., P.E., University of California Irvine, alemnitz@uci.edu

- Developing Design Guidelines for Bridge Pile Foundations Subjected to Liquefaction-Induced Lateral Spreading – Ground Motions (Researcher: Prof. Arash Khosravifar, University of Portland) through the DFI Committee Project Fund.
- Completed an online lateral load test database, www.findapile.com, through the DFI Committee Project Fund (joint project with the Drilled Shaft Committee and co-funded by ADSC) (Researcher: Prof. Anne Lemnitzer, University of California at Irvine).
- Developing a white paper on *Practical Aspects of Pile Head Fixity*.
- Developing a white paper on *P-Y Curves*.
- Exploring a joint seminar with the Marine Foundations Committee in April/May 2017. Charleston, S.C. has been selected as a possible site because of both seismic and marine foundations challenges.

- Developing a workshop on Seismic and Lateral Loads Design Guide published by DFI in 2012. Planning to roll out the Workshops in the spring of 2018.



Slurry Wall Committee

Chair: Giovanni Bonita, Ph.D., P.E., P.G., GEI Consultants, gbonita@geiconsultants.com

Trustee Liaison: Stefano Valagussa, TREVIICOS Corporation, svalagussa@treviicos.com

- Finalizing the *Guide to Selection of Cutoff Methods*.
- Collaborated with the organizing committee of the DFI 41st Annual Conference on the Seepage Control & Remediation track.
- Working with members of the Sustainability Committee to identify sustainable aspects of slurry wall technologies and quantify carbon emissions for slurry walls case histories using carbon calculator.
- Initiating development of a PowerPoint presentation on slurry wall construction.
- Finalizing consensus guidelines for design and detailing of reinforced concrete diaphragm walls used as permanent basement walls in regions of high seismicity, including practical and economical design recommendations and proposals for influencing relevant building code provisions.
- Interest in connecting technical committee members with technical members from tunneling societies (NATC, RETC).
- Discussing specification for slurries for deep foundations.



Soil Mixing Committee

Chair: David Miller, P.E., Consultant, amiller527@aol.com (*Immediate Past Chair: Dennis Boehm, Hayward Baker, dwboehm@haywardbaker.com*)

Trustee Liaison: Marty Taube, P.E., P.G., Menard, mtaube@menardusa.com

- Published *DFI Soil Mixing Guidelines*, which provides an overview of constructability and feasibility of deep mixing in North America.
- Conducting a laboratory study of strength and deformation properties of soil-cement mixtures, and appropriate laboratory procedures (Researcher: Prof. George Filz, Virginia Tech).
- Preparing a white paper on QC/QA issues for deep mixing.
- Gauging the industry for market size by surveying industry members and cement associations.



Subsurface Characterization for Deep Foundations Committee

Chair: Victor Donald, P.E., Terracon, vrdonald@terracon.com

Trustee Liaison: Conrad Felice, Ph.D., P.E., ILF Consultants, conrad.felice@cwfelicellc.com

- Planning activities to raise the level of awareness of the need for and economic benefits of accurate and effective subsurface characterization information. Activities under consideration include:
 - General public relations campaign to create public awareness of the benefits.

- Collaboration with liaisons from AASHTO, ACI, ASTM, FHWA, GBA (formerly ASFE), G-I, TRB and USACE to consider an award or certification system (similar to LEED Certification) that promotes and recognizes the use of proper subsurface characterization techniques.

- Influencing foundation contracting by reviewing and commenting on new geotechnical contracts developed by the American Institute of Architects.
- Developing liaison with the DFI of India task force on geotechnical investigation.



Sustainability Committee

Chair: Carlos Englert, Ph.D., P.E., Schnabel Engineering, cenglert@schnabel-eng.com

Trustee Liaison: Marine Lasne, Entrepose Contracting, marine.lasne@entrepose.com

- Developing and conducting a research plan to gather information on the current status and future of sustainability legislation and regulatory initiatives that includes:
 - Developing a contact list of large private and public owners, and regulatory agencies such as FHWA, USACE, IGCC, U.S. Green Building Council, AIA, ASCE, etc.
 - Preparing a presentation to approach regulatory agencies and owners.
 - Contacting and meeting with regulatory agencies and owners.
 - Preparing a white paper reporting the findings of the study.
- Assist other committees on incorporating sustainable practices when preparing guide specifications, guidance documents, etc.



Testing and Evaluation Committee

Chair: Gerald Verbeek, Allnamics Pile Testing Experts BV, verbeek@allnamics-usa.com

Trustee Liaison: Bernie Hertlein, FACI, GEI Consultants, bhertlein@geiconsultants.com

- Conducting monthly meetings.
- Preparing a series of videos on foundation testing methods and data analysis for nonpractitioners; first video on static load testing being finalized for release (special thanks to Bob Simpson, Loadtest).
- Preparing an overview of instrumentation tools and use, and developing a seminar that DFI can add to its educational offerings.

- Initiated the ITS Money (Increased Testing Saves Money) initiative.
- Reviewing terminology for areas identified during non-destructive integrity testing.
- Ongoing liaison with ASTM, ACI, CGS, AASHTO, TRB, Geo-Institute and PDCA.

DFI Europe Monitoring and Instrumentation Committee

Chair: Rob Van Dorp, Allnamics, vandorp@allnamics.eu



- Sharing information between North American and European committees.
- Proceeding with the work and expanding the results we have achieved so far.



Tiebacks and Soil Nailing Committee

Chair: Ed Laczynski, P.E., Wagman Heavy Civil, erlaczynski@wagman.com

Trustee Liaison: Tom Richards, P.E., D.GE, Nicholson Construction, trichards@nicholsonconstruction.com

- Reviewing outcomes of S3 seminar and the software demonstrations.
- Reviewing AASHTO soil nail specification.
- Developing research for Committee Project Fund as well as reviewing previous submittal.
- Preparing a document on Tieback Soldier Pile Walls in LRFD.
- Preparing a joint seminar with the Landslides and Slope Stabilization Committee committee for 2017.

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Women in Deep Foundations Committee

Chair: Helen Robinson, P.E., Schnabel Engineering, hrobinson@schnabel-eng.com

Trustee Liaison: Michael Wysocky, Ph.D., P.E., Thatcher Engineering Corporation, mwysockey@thatcherfoundations.com

Advisor: Mary Ellen Bruce Large, P.E., D.GE, DFI Technical Activities Manager, melarge@dfi.org

- Held a highly-successful Women in Construction Panel Discussion in conjunction with EERI in March 2016 in New York City.
- Organized Boat Cruise Fundraiser in Chicago during SuperPile '16 with over 150 guests in attendance.
- Held a networking event in Denver in August 2016 sponsored by HDR Engineering during the S3 Seminar.
- Held second annual reception at 41st Annual Conference for women and men in the deep foundations industry.
- Solicited sponsorships to fund guest speaker, Dr. Mae Jemison as the 2016 Hal Hunt lecturer.
- Awarded professional development grants funded by the DFI Educational Trust and committee fundraising efforts to sponsor two women to attend the 41st Annual Conference.
- Selling beaded lanyards as a fundraiser for the Women in Deep Foundations fund.
- Developing regional networking and mentoring activities and events to encourage retention of women in deep foundations careers.
- Outreaching to other groups to increase female attendance at industry events.

- Highlighting achievements of women in *Deep Foundations* magazine, the DFI website and *PileBuck* magazine.
- Holding conference calls on the third Thursday of month at 11:00 a.m. EST.



Electric Power Systems Foundations Working Group

Co-Chairs: Peter Kandaris, P.E., DGA Consulting, pkandaris@digioiagray.com and Steve Davidow, P.E., S.E., Crux Subsurface, sdavidow@cruxeg.com

Trustee Liaison: Frank Haehrig, Zueblin Spezialtiefbau, frank.haehrig@zueblin.de

- Conducted a state-of-the-practice survey – members to provide input for additional participants.
- Issued standard of practice white paper section development draft for comments.
- Providing input on paper format – should there be one or a series of papers?
- Identifying who will develop sections in more detail.



Energy Foundations Working Group

Co-Chairs: Tony Amis, GI Energy, tony.amis@gienergy.net and Guney Olgun, Virginia Tech, olgun@vt.edu

Trustee Liaison: Gerry Houlahan, P.E., Moffatt & Nichol, ghoulahan@moffattnichol.com

- Discussing ways to raise the profile of energy foundations internationally.
- Encouraging DFI committees to consider energy foundations projects and dissemination of design and construction information.
- Compiling case histories on the use of energy foundations for infrastructure projects.
- Considering a 1- to 1½-day seminar on energy foundations design, construction and case histories.
- Supporting the implementation of the Ground Source Heat Pump Association's guidance document on design and construction of piles used as geothermal heat transfer elements.



Seepage Control Working Group

Chair: David Paul, P.E., U.S. Army Corps of Engineers

Trustee Liaison: Gianfranco Di Cicco, GDConsulting, gdcons2015@gmail.com

- Gathering dam and levee owners and members to discuss quality assurance and contractual issues related to seepage control projects.
- Reviewing the second draft of USACE Engineering Manual on Seepage Control Cutoffs for Dams and Levees (fall 2016).
- Conducted a workshop with the USACE Sacramento District (November 15-16, 2016) on specifications and quality assurance practices related to cutoff wall technologies.
- Serving as the lead committee involved in the U.S. Levee Safety Coalition with ASDSO, ACEC, ASCE, NAFSMA, USACE and USSD, to promote national levee safety, seepage control, coastal protection and water-related projects.