Midyear Committee Week

To move initiatives forward, showcase the many DFI technical committees and to invite more participation, DFI organized a Midyear Committee Week, March 30 – April 3, 2020, during which video conference calls were held. Many joined the calls, explored the committee activities and became an active member.

All but one of DFI’s 26 technical committees and 2 industry-wide working groups held meetings, which were well attended. From 8 to 42 participants were on calls, with an average of 20 participants. Scores of members joined calls of which they are not committee members, and almost 100 non-DFI-members joined the calls throughout the week. This included representatives from state Departments of Transportation, encouraged by their geotechnical leadership to explore DFI activities and projects. The use of webcams fostered camaraderie during the global health crisis shutdown, and an end-of-the-week virtual happy hour provided a fun social gathering to cap off the technical meetings. We welcome all feedback and comments on this first-of-its-kind DFI event.

See the committee webpages under ‘Groups’ at www.dfi.org for recent news on committee activities. And please contact Mary Ellen Large at melarge@dfi.org with specific questions or if you would like to explore ways to get involved.

COMMITTEE VICE CHAIR JAMEY ROSEN, P.GEO

Project Information Management Systems

In 2018, DFI formed the Project Information Management Systems (PIMS) Committee to provide an industry forum to monitor and discuss requirements and challenges of adopting information management technologies in our industry.

Digital and automated mechanisms allow us to accumulate and process large amounts of data from modern equipment and instruments. Project teams require fast, frequent and reliable processing and access to this information to assure the quality, durability and integrity of constructed work. The committee supports DFI members in realizing...
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Sustainability
Currently Unchaired

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Women in Deep Foundations
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Join a Committee
To join a committee, email a letter to joincommittees@dfi.org on your company letterhead, indicating which committee, and describe your involvement in that technology/discipline.
maximum benefits of proper collection, analysis and management of project information to meet ever-increasing project demands.

Since its inception, the PIMS Committee has undertaken a campaign to assist DFI members to explore and implement PIMS processes. The committee has been tracking new and changing technologies, acquiring and compiling owner PIMS specifications, and authoring documents to bring this information to the DFI membership. The committee also frequently coordinates activities and information with the U.K.-based BIM/Digitalisation Committee (DFI Europe).

This active team developed and has presented the following PIMS resources since 2018:

- “The DFI ‘Digital-Visual-Virtual’ Data Revolution” — a Deep Foundations magazine article by Di Cicco (September-October 2018) that outlines the reasons the DFI PIMS Committee was started and challenges the deep foundations industry to be part of the digital revolution. The article may be viewed at http://dfi.dcatalog.com/v/September-October-2018/?page=56.

- “Project Information Management Systems in the Deep Foundations Industry” — a white paper that provides a general introduction to the concepts and applications of PIMS to the geotechnical foundations industry. The document provides definitions, an overview of benefits to the industry to adopt PIMS technologies, a brief review of existing technologies and procedures, and a discussion of the future of PIMS use for deep foundations. The white paper is free to download at www.dfi.org/viewpub.asp?tid=WP-PIMS-2018.

- A session titled, “The Digital Future,” also held during the 44th Annual Conference, which included presentations and technical papers on all aspects of collecting and managing project data. The conference proceedings may be accessed from the MyDFI member portal at www.dfi.org for conference attendees, and can be purchased by non-attendees by visiting https://dfi2.org/publications.asp?cat=5.

Current and ongoing PIMS Committee activities include:

- Working closely with USACE to assist with development of specifications for information management at its applicable geofoundations projects, specifically, those associated with seepage barrier wall and grout curtain installations. The committee leadership met with USACE representatives in December 2019 to “deep dive” into specifications and update them to meet the needs of the industry. The diversity of the committee membership has been particularly helpful for providing this guidance to USACE, as it consists of representative project owners, contractors, consultants and service providers — each of whom fill a specific role in applying and developing technology addressed in the specifications. The committee is developing generic specifications that will be shared with DFI membership for potential use in a variety of projects.

- Looking into developing a glossary of terminology used in information management technology. This document will serve as a companion to the white paper and will generally provide a common vocabulary for DFI members to communicate on PIMS items.

The committee welcomes new members to join and become involved. Please visit the committee’s webpage at ‘Groups’ at www.dfi.org frequently for recent news.
The committee’s focus is on the end users of subsurface characterization data, aiming to educate and improve their experience. We have been busy networking with other groups and coordinating events and presentations. Here is an update on our exciting activities:

**ITS Money Webinar and USACE Partnership:** The committee presented a segment in the Testing and Evaluation Committee’s popular ITS Money webinar series on April 1, on the subject of “Saving Money with Enhanced Subsurface Characterization.” In the presentation, we provided case histories and data to illustrate the ways that enhanced subsurface characterization programs truly can save money, dividing the mechanisms into three categories: direct cost savings, reduced design uncertainty and reduced construction risk. We also explained the challenge of demonstrating the value of subsurface characterization to owners and other stakeholders because often the cost savings are not direct, success stories are not publicized, and failures are not well documented and are often not approved for disclosure. We presented data from the excellent NCHRP Synthesis 484: “Investigation and Subsurface Conditions on Claims, Change Orders and Overruns” (2016), which includes a chart (modified with USACE data at right) illustrating the relationship between investment in site investigations and project cost escalations.

USACE’s Georgette Hlepas, Ph.D., P.E., has been gathering data to create a risk register that aims to identify and address cost and schedule risk associated with subsurface characterization. Creation of the risk register includes collection of data on project cost overruns and associated geotechnical investigation costs. USACE generously shared this data with the committee, and the effort is ongoing. The committee plans to partner with USACE on another ITS Money webinar in August to highlight this USACE risk register and a case history that illustrates a construction project that resulted in a claim. The webinar will suggest how the problem could have been avoided with a greater investment in subsurface characterization.

**Geotechnical Baseline Report Panel Discussion:** A geotechnical baseline report (GBR) is a concise source document developed by a design team and the project owner as part of contract documents. A GBR is intended to provide contractual representation of the anticipated underground conditions for a project and fairly allocate the risk from subsurface uncertainties between the owner and the contractor. GBRs are developed based on geotechnical data reports (GDR), previous experience and engineering judgement. Using GBRs for any underground project appears to be a common sense, reasonable approach to prevent or resolve possible disputes that put unnecessary pressure on the involved parties and the project. However, in our current state of practice, use of GBRs is mostly limited to tunneling and underground structures. The committee is organizing a panel discussion series in which geotechnical and legal experts will provide insight into the meaning, benefits and challenges of foundation design for projects with GBRs.

The first panel discussion is scheduled to take place at SuperPile ‘20. Randall Essex of Mott MacDonald and principal author of ASCE’s “Geotechnical Baseline Reports for Construction – Suggested Guidelines” (2007), which is considered a fundamental document for GBRs in the industry, is the lead panelist. Jim Morrison, P.E., of COWI North America is the moderator. Panelists include Victor Donald of Terracon representing the consultants’ perspective; Conrad Felice, Ph.D., P.E., P.Eng., D.GE., of C.W. Felice, representing the owner’s perspective; Jeremy Decker, Ph.D., of Kiewit Infrastructure representing the contractor’s perspective; and Rick Kalson of Benesch Law representing the legal perspective. The panel will focus on basics such as defining a GBR, and discussing its history, purpose, development and benefits to various construction project stakeholders. Follow-up panel discussions are proposed at DFI’s Annual Conference in October 2020 and at International Foundations Congress and Equipment Exposition (IFCEE) in 2021.

**Geophysics Panel Discussion:** Over the past few decades, many geophysical methods have steadily become familiar tools used for subsurface characterization as part of geotechnical investigations. Given the appropriate geologic setting and project objectives paired with the correct geophysical method(s), such investigations can add significant value using the broad range of data acquisition afforded by robust geophysical methods. However, geophysical programs are often poorly conceived and implemented, resulting in technical observations that are unsuccessfully interpreted or presented in such a way as to not provide high value, and to their relegation in a report appendix to be forgotten.

The committee is coordinating a geophysics panel discussion to be presented at DFI’s Annual Conference in October 2020. In this panel, geophysical and geotechnical experts (including consultants and owners) will explore sound investigation planning and presentation strategies that promote positive advancements in
changing the culture of the use of geophysics for geotechnical subsurface characterization. A brief presentation will cover challenges in the way geophysical investigations are currently conducted for geotechnical subsurface characterization and the challenges in preparing quality data presentation. The interactive panel presentations will also include successful case studies on using geophysics for geotechnical subsurface characterization. The geophysics panel will be moderated by Silas Nichols, P.E., Federal Highway Administration (FHWA). Discussion topics will include:

• How and when to engage a geophysical consultant during a project
• Differences between using a geophysical consultant as a contractor vs. as a team member
• The importance of the geophysical consultant understanding the project history, site surface and subsurface conditions and project objectives
• Improvements in the way geophysical results can be communicated and presented
• Improvements in the way geophysical results are used by a geotechnical engineer

FHWA Partnership: Every Day Counts A-GaME Program: FHWA has found that up to 50 percent of major infrastructure projects suffer impacts to schedules or costs due to geotechnical issues, many of which relate to risks related directly or indirectly to the scope and quality of site characterization work. FHWA seeks to address this issue in its current round of Every Day Counts (EDC-5), a program that identifies and deploys proven, yet underutilized, innovations at the state Department of Transportation level to save time, money and resources. The A-GaME (Advanced Geotechnical Methods in Exploration) is one of the innovations highlighted in this round of EDC and will likely be carried forward into the next round for EDC-6 (which will kick off in 2021). A-GaME seeks to raise awareness of the issue of inadequate subsurface characterizations and highlights five technologies in particular to promote to state agencies: cone penetration testing, seismic geophysics, electrical geophysics, measurement while drilling and optical and acoustic televiewers.

The Subsurface Characterization for Deep Foundations Committee is working closely with members of the A-GaME implementation team to promote A-GaME among DFI members and other end users of subsurface characterization data. FHWA will rely on the committee’s support to implement demonstrations of the highlighted technologies at conferences and other events. Mary Nodine, P.E., is also working with FHWA’s Ben Rivers on a paper for the DFI Annual Conference that will educate attendees on how improved subsurface characterization can benefit contractors, owners and consultants.

We are excited to share our upcoming panels and webinars and look forward to what the future holds as our committee continues to connect with DFI members and others in the industry. If you are interested in any of these initiatives, contact Mary Nodine at mnodine@geiconsultants.com.

COMMITTEE CHAIR PAOLO GAZZARRINI, PENG.

International Grouting Committee

Thanks to the initiative of Allen Cadden, P.E., D.GE, of Schnabel Engineering, the International Grouting Committee has been awarded funding through the DFI Committee Project Fund for a proposal to expand the DIGGS (Data Interchange for Geotechnical and Geoenvironmental Specialist) scheme for rock grouting. DIGGS is an emerging data transfer protocol that uses XML and GML language formats to facilitate exchange of data within the geoprofession (see article on page 97). This system will facilitate our ability to readily and accurately exchange data between points of acquisition, to the office for review, to analysis tools, and then to deliverables and storage tools. The project will start the integration of foundation construction technologies into this data transfer format and help establish methods and authorities to manage the open source scheme in the future. Using relatively straightforward rock grouting procedures as a model, DFI members will be able to become familiar with the DIGGS-based schema and create a baseline upon which many other DFI technologies can be readily built into the system. DIGGS is a special project of ASCE’s Geo-Institute, and more information can be found at www.geoinstitute.org/special-projects/diggs. This initiative will forge an even closer partnership between DFI and Geo-Institute. For information, contact Paolo Gazzarrini at paolo@paologaz.com.

Another primary committee initiative is also on a roll: the preparation of general documents summarizing the different international approaches and procedures existing in the grouting industry. Five working groups have been formed (rock grouting, soil grouting, jet grouting, compaction grouting and grouting testing) and the active participants, meeting by conference calls quarterly, are closing in on final documents to be shared with the industry.
Moving Forward in 2020
DFI’s Electric Power Systems Foundations Committee continues to develop a state-of-the-practice white paper on electric power system foundation industry needs and to support a new ASCE subcommittee focused on the development of an industry manual of practice for the design and construction of transmission line and substation foundations.

A team of committee members is working on a draft of the white paper aimed at providing recommendations for a uniform analysis and design approach for electric system deep foundations. Once reviews are complete, the final draft document will be sent to several other DFI technical committee chairs for review of foundation-specific content. The team aims to have all reviews completed and a final draft paper ready for presentation to the committee in June 2020.

The completion of the white paper has become timely now that the ASCE Structural Engineering Institute’s Electric Transmission and Substations Committee authorized the formation of an Overhead Line and Substation Foundations subcommittee for the development of an industry manual of practice. This new subcommittee met in Minneapolis in December 2019 and is busy developing a 15-chapter manual on all facets of transmission line and substation foundation investigation, design and construction. DFI’s Electric Power System Foundations Committee is actively engaged with the new ASCE subcommittee, with 5 DFI committee members serving in the 27-member ASCE group. This new subcommittee is highly industry driven and includes 17 practicing electric utility engineers. The subcommittee has an ambitious goal to produce the manual of practice within the next couple of years while calling on DFI members and resources for guidance and technical expertise.

The committee participated in the Midyear Committee Week and welcomed over 40 participants to the committee call. The participants discussed foundation research opportunities and needs in the electric power industry, with the objective of moving forward with the development of new DFI research requests for 2021.

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