Meeting called to order at 1:10 p.m.

1. Introductions
   1.1. Chair requested that guests sign in.
   1.2. Members and guests introduced themselves.

2. Administrative Items
   2.1. Additions and changes to agenda
      2.1.1. DFI Drilled Shaft committee specification effort (B. Oliver)
      2.1.2. Testing recommendations, differences between 336.1 and 336.3R (A. McSweeney)
   2.2. Meeting to adjourn at or before 5:00 p.m.

3. Approval of Minutes
   3.1. Fall 2011, Cincinnati, OH
      3.1.1. Quorum not present, so approval of minutes will be deferred.
      3.1.2. Quorum achieved near the end of the meeting, Motion: Approve minutes as drafted, A. Ramme; Second: R. Frizzi; Discussion: A. Ramme requested that the
minutes be reviewed, but retracted moments later after accessing them via the committee website. **Vote:** unanimously approved.

4. **Membership Roster Update**
   4.1. Current roster
   4.1.1. The current roster from the committee website was presented on screen. There are 17 voting members; 40% is a quorum = 7 members required to hold votes on documents; 50% = 9 required to vote on other actions (sessions, SPs, etc.). There are 15 consulting/associate members.
   4.1.2. L. Schuler to be made a voting member.
   4.1.3. B. Oliver to send out a membership questionnaire to members who did not respond to the ballot nor attend the last two meetings.

5. **Status of Current Documents**
   5.1.1. Technical inquiry on grouting permanent casing received and answered. The inquiry and answer are provided below for members’ information:

   "Inquiry: ACI 336.1-01 (Specification for the Construction of Drilled Piers) Section 2.5 states that "Sand-Cement grout suitable to fill annular voids outside permanent casings shall be provided and placed in a manner acceptable to the Owner's Representative Geotechnical Engineer." How is this sand-cement grout actually installed between the outer casing and any voids that may be present outside of the casing and the soil? Is a thin pipe shoved down the side of the casing and pressure injected? Or some other means?? I need clarification on how this operation is actually performed."

   Response: Grout to fill the annulus between a permanent casing and the surrounding subgrade can be placed in several different ways; the appropriate method(s) depend on ground conditions, depth of annulus, relative diameters of the casing and the excavation, grout properties, and the design intent for the grout. The properties of the grout will have a significant influence on the placement method selected, as a fluid neat cement grout can be placed in a small diameter conduit more easily than a highly viscous sand-cement grout. These variables are the reasons that the specification does not dictate how the grout must be placed (although the issue is addressed in the Optional Requirements Checklist, items 2.5 and 3.6.5). If the grout is to be a critical part of the load-resisting system, the designer must include provisions in the project specifications to ensure that the grout placement and properties will perform acceptably. Some methods of grout placement that have been used successfully in the past include: pumping through a thin pipe placed in the annulus, gravity placement using a tremie placed in the annulus, gravity placement using a chute or 'elephant trunk', and pumping through one or more pipes embedded through the drilled pier. It is important to remember that 336.1 is a reference specification; as with any specification for foundations or other geotechnical application, it is critical that the designer tailor the project specifications to the site-specific requirements.

   5.1.2. Subcommittee members (A. Ramme, B. Oliver, L. Schuler) held teleconference 22 November 2011 to review proposed changes. Additional revisions provided by E. Ulrich.
   5.1.3. Subcommittee to prepare draft for initial ballot. A. Ramme to incorporate comments into the working draft. B. Oliver to ballot the body of the specification for committee input.
   5.1.4. Subcommittee to collect notes during drafting for inclusion in Optional Checklist, a separate guide, or a future revision of 336.3R.
   5.1.5. Testing recommendations (differences between 336.1 and 336.3R)
      – Visitor A. McSweeney requested clarification of testing recommendations.
336.1 requires one set of four cylinders per pier but not more than one set per truckload.

336.3R states: In addition to a set of cylinders for each specific batch of concrete yardage placed (typically 50 to 100 yd³ [38 to 76 m³] or day's placement, if less), one test cylinder should be taken from every truckload and tested at seven days to provide indicator information to detect potential problems.

The committee discussed the issue and noted that:

- Testing practices vary widely by geographic region
- Criticality of the foundations should be taken into account when determining the frequency of testing
- Multiple small piers from the same batch plant on the same day represent a lower risk than separate pours
- The specifying engineer should determine appropriate testing and modify the project specifications as required to adjust the default requirement in 336.1.


5.2.1. Subcommittee organized through ACI. The website has been populated with draft chapters.

5.2.2. First ballot closed 18 November 2011

5.2.2.1. Balloted Outline, Chapters 1 and 3

5.2.2.2. Ballot results:

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5.2.3. Subcommittee reports and working session under item 8

5.3. 336.3R – Design and Construction of Drilled Piers

5.3.1. Memo to IBC on Cracking Moment Equation – Ballot results:

Preliminary Voting Summary:
There are 16 committee members eligible to vote.

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5.3.2. Memo to IBC on Cracking Moment Equation - There is no need to resolve comments or reballot, as IBC has issued an errata to correct the equation.

5.3.3. Document final editing
   - 5.3.3.1.D. Hartman delivered re-drafted figures
   - 5.3.3.2.L. Schulze delivered revised units and equations
   - 5.3.3.3. Additional details are required on several references to complete final section for submission to ACI Staff. B. Hertlein to provide details for papers he co-authored. B. Oliver to contact E. Ulrich for others.

5.3.4. TAC Submission schedule and strategy – submit before April 10 deadline.

5.4. 336.4R – Alternative Method for the Analysis and Design of Footings using Load and Resistance Factors
   - 5.4.1. Maintain on hold until completion of 336.2R.
   - 5.4.2. Consider technical session on LRFD of foundations (limit states design of geotechnical capacity of foundations):
     LRFD is a general interest topic; there has been some passionate discussion on this committee and ASCE Retaining Walls committee. AASHTO mandatory documents are in place for federally funded projects. Session would probably need to focus on casually interested audience members and pros/cons, rather than detailed topics. Begin work now for session in 12 months?
     - Committee discussed value of session for soliciting input and gauging interest of community, as well as potential for distraction for ongoing document updates.
     - Committee members to poll potential speakers and report back to B. Oliver.
     - L. Schulze to check with Canadian coworkers, J. Draper to speak with KU professor Misra. B. Hertlein to check with Chia Tan.
     - Target Spring 2014 Convention in Reno, Nevada. B. Oliver to report on process and timing at the fall meeting.

6. TAC Updates

6.1. B. Oliver present excerpts from the TAC minutes for members’ information:
Standardization Process and Public Discussion for Concrete Terminology
Definitions on the Concrete Terminology (CT) Web page are added, revised, or withdrawn when approved by TAC, usually through actions related to the document review process. ASTM policy requires ASTM standards to only reference other standards, so for the CT to be referenced in ASTM standards, the CT needs to go through ACI standardization. The Standards Board released the CT for public discussion, which opened on July 1, 2010. During the 2010 fall meeting, TAC agreed that the CT will go through the standardization process once a year after this initial standardization. The CT Task Group is currently drafting responses to over 1,200 comments received during public discussion… the task group expects to be finished by the 2012 spring meeting.

Reorganization of ACI 318
At the 2011 summer meeting, TAC Secretary Falconer reported that the last scheduled ballot for 318 is schedule for January 2012. TAC Secretary Falconer reported that the 318 submittal to TAC will be pushed a back a year. The code will likely come out in 2014.

7. Review of Action Item list
   7.1. See revised list, attached and posted on website.

8. Working Session: 336.2R
   8.1. Subcommittee progress report (Bill Brant)
       8.1.1. Subcommittee established at the last convention, 336-0B.
       8.1.2. Website is populated with draft chapters and some revisions (marked as such).
               References are loaded under “Correspondence”.
   8.2. Chapter by chapter report
       8.2.1. Chapter 1 General – balloted, comments to be reviewed later in this meeting.
       8.2.2. Chapter 2 Notations and Definitions – no updates.
       8.2.3. Chapter 3 Loads – balloted, comments partially integrated, others to be reviewed later in this meeting.
       8.2.4. Chapter 4 Soil-Structure Interaction – no update.
       8.2.5. Chapter 5 Design Considerations – no update.
8.2.7. Chapter 7 Flexible Foundations – J. Draper delivered a revised draft for working group comments.

8.2.8. Chapter 8 Deep Foundation Supported Mats – drafting still in progress, subcommittee is hung up on decision to report three concepts versus one recommended approach/procedure.

8.2.9. Chapter 9 Construction Considerations – Some email traffic with suggestions, little progress otherwise.

8.2.10. Chapter 10 Summary – no update.

8.3. Subcommittee progress report (Rudy Frizzi)

8.3.1. Chapter 8 draft in progress

8.3.2. Traveled to Houston to review comments with E. Ulrich

8.4. Resolve ballot comments to Chapter 1 (hard copies provided)

8.4.1. Include a new chapter on teamwork, to be Chapter 3. Note that existing chapters will be renumbered accordingly and the outline revised.

8.5. Include design examples in document?

8.5.1. Add simple examples for determining flexible or rigid, for combined spread footing with lateral load through bearing then refer to SP 17

8.5.2. For mat examples, point to 447.

8.5.3. More complicated examples can be developed, then submitted for publication in the next revision of SP 17

8.6. Revisions and comments on Chapter 3 (hard copies provided)

8.6.1. High-level review of changes

9. Open Discussion of Current Issues in Construction (Footings, Mats, or Drilled Piers)

DFI specification effort

Committee discussed the DFI Drilled Shaft committee efforts through slurry subcommittee to draft a “slurry displacement construction method specification”. B. Hertlein and R. Frizzi provided insight via their involvement in DFI and ADSC.

− Hot topic in the industry
− Possible Toronto failure/installation issues
− Possibly more of a position paper than specification
− Intended to cover slurry walls as well as drilled piers

10. Adjourn

Motion: adjourn, B. Hertlein; Second: R. Frizzi; Vote: unanimously approved.
The meeting was adjourned at 5:15 p.m.
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<td>LARRY SCHULZE</td>
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<td>M J PAUL</td>
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**Technical Committee Attendees:** The purpose of an ACI technical committee is to reach consensus and publish information on concrete-related issues within its mission. The discussions at the committee's meetings are part of this consensus process, and are not the official position of the committee. Only a published committee document represents the formal consensus of the committee and the Institute.

**Visitors interested in committee membership should contact the chair or visit the ACI website, www.concrete.org, for a membership application.**

Return this Form to the Committee Chair or Secretary.
Drilled Shaft Committee

In my first update for Deep Foundations magazine, I want to thank Fred Rhyner for his many years of service to the committee. Fred has been an impressive leader; organizing and completing many initiatives benefiting the professional community.

The Drilled Shaft Committee held its last meeting during the October 2011 DFI Annual Conference. Among the 24 attendees were 16 visitors. The committee continues to have strong support with 29 members in 2011.

The FHWA has selected ADSC to conduct a research project on post-grouted drilled shafts. The 30-month contract will establish a practice synthesis on the process. The project is being led by Professor Eric Loehr from the University of Missouri, Department of Civil and Environmental Engineering. The initial work will include an overall review and synthesis of existing projects, led by Dan Brown, Dan Brown and Associates. People having post-grouting project experience with case study documentation are encouraged to share the information with the project team.

The slurry subcommittee is working with the ADSC on developing a slurry displacement construction method specification. Copies of the draft specification were handed out during the October meeting, and DFI members are encouraged to review and comment. Please forward comments to Mary Ellen Bruce (mebruce@dfi.org) or Tony Marinucci (tmarinucci@adsc-iafd.com), who are leading this effort.

Technical Committee Report Changes

Deep Foundations Magazine will appear six times this year. The Technical Committee Reports will appear twice per year, but in a new order. This issue features the reports from the Deep Foundations for Landslides/Slope Stabilization Committee, Drilled Shaft Committee, Driven Pile Committee, Helical Foundations and Tiebacks Committee, and the Slurry Wall/Trench Committee.

The March/April issue will include Testing and Evaluation, Soil Mixing, Micropile, Seismic and Lateral Loads, and Sustainability. May/June will include Marine Foundations, ACIP Pile, Ground Improvement, Tiebacks and Soil Nailing, Codes and Standards.

The process will be repeated beginning with the June/July issue.

UPCOMING EVENT:

Seven DFI technical committees are cooperating on this year’s Super Pile Conference. The two-day event will feature presentations from the committees on Driven Piles, Augered Cast-in-Place/Drilled Displacement Piles, Micropiles, Marine Foundations, Testing and Evaluation, Seismic and Lateral Loads, and Drilled Shafts. The first day will be a combined session; on the second day there will be two concurrent sessions, offering attendees the option to choose presentations that interest them.


For sponsorship opportunities, contact Katie Criqui at kcriqui@dfi.org.

The new issues for discussion at this year’s meeting centered on structural design issues. There appear to be varying views on the contribution of permanent casings within the shaft design field. The Owens and Reese 1982 publication on the subject demonstrated reductions in capacity when grouting a permanent casing. With the improvements in casing installation using large vibratory hammers, casings can be installed with effectively no annulus, increasing the friction contribution. Further understanding in the industry is needed, and case histories are sorely needed on the topic.

Another topic needing further research was the design of reinforcing. There appears to be a trend towards increasing the amount of steel in shaft design. Numerous factors could be contributing to this trend including increasing seismic loading and the numerous load cases required in ACI 318. Anyone wishing to speak on these subjects at upcoming DFI events is encouraged to submit abstracts. Those interested in joining this committee should write to DFI headquarters.