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Delaware Valley  
Chapter



American Society of Civil Engineers

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**DELAWARE VALLEY  
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DVGI November 2016

Volume 16, Issue 8

**November 2016 Dinner Meeting**

**SPEAKER:** Roger A. Failmezger, P.E., F. ASCE  
 President, In-Situ Soil Testing, L.C.

**TOPIC:** New Methods in Direct Push Geotechnical Testing

**DATE:** Tuesday, November 15th, 2016

**LOCATION:** Valley Forge Casino Resort Hotel, Parkview Ballroom  
 1160 First Avenue, King of Prussia, PA 19406

**TIME:** 5:30 PM Social Hour, 6:30 PM Dinner and  
 7:15 PM Presentation

\*\*\*Registration and Payment Online at <http://www.dvgi.org/> \*\*\*

Mr. Failmezger will present two case studies where new methods in direct push testing were used to overcome common difficulties with working in a river and inside a building. The first case study is about the Route 301 Bridge over the Potomac River between Maryland and Virginia. A direct push system, weighing 15 tons was placed on the mudline with a 100 ton capacity crane, and efficiently performed cone penetrometer test (CPT) and dilatometer test (DMT) soundings. This method effectively pushed those probes and avoided many problems that occur when pushing from the barge, such as vertical movement from tides and waves, lack of lateral support between the deck and the mudline and inaccuracies of depth measurements. At one of the CPT soundings, the seafloor system pushed the probe to 135 feet below the mudline before encountering penetration refusal. Seismic (p and s) dilatometer tests (SDMT) used heavy underwater hammers that generated either the compression wave or shear wave and measured those wave velocities. The undrained shear strengths in the cohesive soils and the constrained deformation moduli from CPT, DMT, pressuremeter (PMT) and vane shear test (VST) compared well with each other. A second case study for the Lynchburg Hospital where the owner wanted to add two more floors to the existing hospital and use the existing spread footings when possible. Portable equipment bolted to the concrete basement slab pushed the dilatometer probe for 20+ test soundings to the top of the decomposed rock (20 to 50 feet). The chosen locations for the soundings were carefully planned to avoid numerous utilities both above and below the soundings and large existing concrete footings. The small portable push system barely fit into these small areas that were available. Based on the deformation moduli from the DMT, the engineer could determine which footings could support the additional loads and which ones needed to be underpinned.

**ABOUT THE SPEAKER:**

Mr. Failmezger graduated from Lehigh University with a Bachelor's degree and from the University of Florida with a Master's degree. He is a registered professional engineer in Virginia, Maryland and Pennsylvania and a Fellow of the American Society of Civil Engineers. In 1995 he started In-situ Soil Testing with the purchase of the old University of Florida research direct push truck for \$2200. Since then he has performed more dilatometer tests than anyone else (over 100,000 tests), many miles of CPT, over 4000 pressuremeter tests (more than anyone in U.S. other than a few people in Chicago) and about 500 borehole shear tests. He has published over 20 technical papers on in-situ testing and probability. Since 2005 he has chaired the Virginia Geo-Institute Chapter and organized four GeoVirginia conferences, recognized by the Geo-Institute as their model regional conference. He organized and edited the "Second International Conference on the Flat Blade Dilatometer Test".

*One Professional Development Hour (PDH) will be provided for this dinner meeting.*



## November 2016 Short Course

### Quantifying risks and choosing most appropriate In-situ soil tests

**INSTRUCTOR:** Roger A. Failmezger, P.E., F. ASCE  
President, In-Situ Soil Testing, L.C.

**DETAILS:** Tuesday, November 15th, 2016,  
Valley Forge Casino (Parkview Ballroom)  
1:30 PM to 5:00 PM

Register Online at [www.dvgi.org](http://www.dvgi.org)

Our November speaker has graciously agreed to present a short course prior to our normally scheduled dinner meeting.

**This will be a 3- hour Short Course and ASCE/DVGI will offer 3 PDH credits.** Course Outline is satisfactory for recognition in the states of PA, NJ, and DE. Mr. Failmezger will discuss how one can quantify risks using probability methods. While most presenters show complicated mathematical equations for probability, his presentation shows how simpler methods can be used that even the owner can easily understand. Effectively communicating risk is the primary goal. He will point out how deterministic solutions are flawed due to the uncertainty in geotechnical properties.

In the second half of the short course, Mr. Failmezger will present the advantages and disadvantages of various in situ tests. He will demonstrate the accuracies of the different tests from existing case study data. He will provide guidance for choosing which test to use depending on the geotechnical problem.





## October 2016 Dinner Meeting

### Case Studies of Pile Damage Assessment & Hammer Performance Using the Pile Dynamic Analyzer (PDA)

Craig H. Olson, P.E.



Image courtesy of Presenter

For our October dinner meeting, Mr. Craig H. Olson, P.E. TRC Engineers, Inc. delivered a presentation titled “Pile Damage Assessment Using Pile Dynamic Analysis” which discussed local pile driving issues in the Philadelphia region. Specifically, Mr. Olson discussed the ability of assessing a driven pile for damage issues while the pile is being driven-in real-time! The discussion centered around the use of the Pile Dynamic Analyzer (PDA) and the basics of PDA data set-up and the PDA data output screens. The use of the PDA is a robust, viable and inexpensive tool which commonly specified to be used on most driven pile foundations. The beauty of the PDA is that it provides key insights into the total pile driving system and the interdependencies between the subsurface conditions, the performance of the pile hammer and the driven pile. All three of these elements are required to ascertain the assumptions made by the foundation’s designer -structurally and geotechnically.

A brief introduction of the PDA system was provided to the attendees which provided insight into the discussion of ‘Pile Integrity’ for the purposes of identifying potential damage to a driven pile. Mr. Olson further explained how accurate real time PDA data review is a key project site attribute that is required at the project site so that the project team can assess the viability of the pile driving. The PDA provides the impact wave signature of a return

wave for each blow. Mr. Olson referred to this impact return wave as the ‘heartbeat of the pile’. The PDA can lock-in and locate minor or significant changes in the smoothness of this ‘heartbeat’ which are commonly referred to as a pile’s impedance change (Beta). Several examples of recent driven piles were discussed to relate where the PDA indicated pile damage along a pile’s length and pictures of the extracted piles were provided to show these correlations. One additional key feature of the PDA is for the evaluation of a hammer’s performance during pile driving. Mr. Olson went on to provide an example of a recent project where a pile hammer’s performance was shown to decrease over subsequent test piles. The example showed how the PDA can provide diagnostic clues about a pile hammer’s performance and could potentially avoid under driven piles.



Image courtesy of Presenter

#### ABOUT THE SPEAKER:

Mr. Craig H. Olson, PE is a degreed professional who offers demonstrated experience in the performance of Pile Dynamic Analysis (PDA) testing (using the Pile Dynamic Analyzer – PAK, PAX, PDA 8G models), along with the completion of such related testing services as vibration and sound monitoring (using the Instantel Mini Mate Plus seismographs) for public- and private-sector construction projects throughout the Mid-Atlantic region. He has also designed, developed and tested various aerospace subsystems for vibration and acoustic response over the past 28 years. During his early technical career, he was given increasingly more responsible roles as a test engineer and test conductor at domestic and international aerospace test facilities with General Electric and Lockheed Martin. He has also served in a project management role for mechanical systems design, as well as the testing of construction and aerospace projects.



## ANNOUNCEMENTS

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### Earn PDHs at 2016-2017 DVGI Events

Upcoming Dates for 2016-2017 Dinner Meetings and events are as follows:

- ◆ **November 15th Short Course:** Roger A. Failmezger, P.E., F. ASCE, In-Situ Soil Testing, L.C. — “Quantifying risks and choosing most appropriate In-situ soil tests”
- ◆ **November 15th Dinner Meeting:** Roger A. Failmezger, P.E., F. ASCE, In-Situ Soil Testing, L.C. — “New Methods in Direct Push Geotechnical Testing”
- ◆ **January 17th:** TBD
- ◆ **February 21st:** TBD

*One PDH will be awarded for most dinner meetings that you attend.*

*If you are interested in presenting at one our monthly meetings,  
please get in touch with a DVGI board member.*

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### HAVE DVGI PUBLISH YOUR ARTICLE, ADVERTISEMENT, OR JOB POSTING

- Do you have an interesting article on a project or individual in your organization that you would like to have published in the DVGI newsletter?
- Would you like to get the word out about a job opening, new venture, etc. to our membership via the newsletter?

Please submit your articles or news items for consideration in the next edition of the newsletter or get in touch about our reasonably-priced advertising by contacting [theresa\\_loux@golder.com](mailto:theresa_loux@golder.com).

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### DVGI Merchandise Available for Purchase

Coffee mugs (\$8) and lapel pins with the DVGI logo (\$5) are available for purchase. See Russ Preuss if you are interested in purchasing either of these items.

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**ASCE/G-I Members:**  
Read past and present issues of Geo-Strata magazine online at [www.asce.org](http://www.asce.org)

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## ANNOUNCEMENTS



### Geosynthetic Institute

#### *GSI Webinars for 2017—(1.5 PDH/each)*

*From 11:30 AM—1:00 PM (Eastern Time)*

*Topics, Dates and Registration at [www.geosynthetic-institute.org/webinar.htm](http://www.geosynthetic-institute.org/webinar.htm)*

*Cost: GSI Members \$200; Nonmembers \$250*

Date	GSI No.	Title
January 4	W-5	Geosynthetics in Hydraulic Applications
January 18	W-18	Pond Liner Design & Performance
February 8	W-19	Geomembrane Wave (or Wrinkle) Management
February 22	W-20	Geonet and Geospacer Drainage Materials Connections and Attachments
March 8	W-9	Behavior & Analysis of 20 Solid Waste Landfill Failures
March 22	W-10	Wet (Bioreactor) Landfills for Rapid Degradation of MSW Organics
April 12	W-11	Lateral & Vertical Expansions over Landfills
April 26	W-6	Geosynthetics in Heap Leach Mining
May 10	W-12	Landfill Covers: Past-Present-Emerging
May 24	W-13	Beneficial Uses of Abandoned and/or Closed Landfills
June 14	W-14	Lifetime Predictions of Exposed & Nonexposed Geosynthetics
June 28	W-21	A Brief Overview of Geosynthetics and Their Major Applications
July 12	W-15	In-Situ Stability of Soil Slopes Using Nailed GS
August 9	W-16	Sand Drains-to-Wick Drains to Sand Columns
September 13	W-17	Geosynthetics in Erosion Control
October 11	W-1	MSE Wall Failure Data Base (300 cases)
October 25	W-2	MSE Wall Back Drainage Design
November 8	W-3	MSE Wall Remediation and Monitoring
December 13	W-4	MSE Wall Field Construction Inspection Practices



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## JOB POSTING

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### Philadelphia Area Senior Geotechnical Engineer / Project Manager



TRC Companies, Inc. (NYSE: TRR) is an engineering, consulting, and construction management firm that provides integrated services to the Environmental, Energy, Infrastructure, Transportation and Real Estate markets. Our multi-discipline project teams provide turnkey services to help our clients implement complex projects from initial concept to delivery and operation. A broad range of commercial, industrial, and government clients depend on us for customized and complete solutions to their toughest business challenges.

TRC is seeking a qualified Project Manager / Senior Geotechnical Engineer in the Philadelphia Area. TRC's Geotechnical Engineering Group consists of a geotechnical engineering division, a full-service drilling division, an ASTM/AASHTO accredited soil mechanics and concrete testing laboratory, a PDA testing and vibration monitoring component, and a commercial construction inspection division, all of whom work together to provide high-quality and cost-effective geotechnical design solutions for a wide range of project applications. Typical projects include industrial processing facilities, mooring structures, municipal wastewater treatment facilities, power generation and transmission projects, low to high-rise residential developments and office complexes, multi-story parking facilities, highways, bridges, schools and churches. Our service area is primarily located within PA, NJ, NY, VA, WV, OH, DE, DC, and MD.

The responsibilities associated with this position include participating in project pursuits and serving in a project management and/or lead technical role for geotechnical projects. Typical tasks will include proposal preparation, the planning, analysis, design, reporting, and preparation of specifications for geotechnical projects, and mentoring of junior technical staff. Specialized experience with regard to site investigation programs, design and in-situ testing of deep foundations, soil and rock slope stability evaluations, design of retaining walls and reinforced soil slopes, and settlement evaluation and mitigation measures is required.

#### **Qualifications**

- BSCE required, MSCE in Geotechnical Engineering preferred.
- PE license.
- DOT and/or Turnpike Authority experience a plus.
- 5 to 10+ years geotechnical engineering experience required.
- Demonstrated leadership skills, communication skills, and ability to work with various technical disciplines in a team setting are essential.

TRC offers a very competitive salary and benefits package. Please send inquiries to [mgillespie@trcsolutions.com](mailto:mgillespie@trcsolutions.com).

EOE Minorities/Females/Protected Veterans/Disabled

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## JOB POSTING



**VILLANOVA**  
UNIVERSITY

## Tenure-track faculty position in Geotechnical Engineering

Villanova University's Department of Civil and Environmental Engineering seeks candidates for a full-time tenure-track assistant professor position in geotechnical engineering starting in the fall 2017 semester. The Department is recognized as a national leader in providing a distinctive broad-based civil engineering education grounded in Augustinian Catholic values, encouraging our students to have a strong commitment to service, and performing high-quality scholarly research.

The Department has fifteen full-time faculty members, approximately 230 undergraduate students, and 125 graduate students. Degree programs offered through the Department include B.S. (Civil Engineering), M.S. (Civil Engineering and Water Resources/Environmental), and Ph.D. degrees. We are acknowledged as a premier program known for our outstanding pedagogy and curricula, international opportunities, and personal attention to students at both the undergraduate and graduate levels. Additionally, we strive for research excellence while integrating the outcomes into the education of our undergraduate and graduate students.

The Department is looking for a geotechnical engineering faculty member that can contribute to and enhance our research strengths in transportation infrastructure and systems, effective stormwater management, geoenvironmental applications, and/or resilient building systems. The Department has built excellent infrastructure to support teaching and scholarship, including soils, structural, environmental, fluids, and water resources laboratories. In addition, the campus is home to multiple instrumented stormwater control measures that form an outdoor laboratory. Additional laboratory facilities maintained by other departments within the College of Engineering are also available for multi- and cross-disciplinary work.

Requirements include a Ph.D. in Civil Engineering or a related field (must be completed at the time of hire), work towards professional registration, a dedication to teaching excellence at both the undergraduate and graduate levels, a commitment to high-quality and visible scholarship, and a commitment to impactful engineering service. The successful candidate will be expected to develop and teach undergraduate and graduate courses, develop a strong research program, and perform service within and beyond the academic community.

Applications must be completed online at <https://jobs.villanova.edu/> (Posting number 2016339F). Application packages must include curriculum vitae; academic transcripts; statements on teaching philosophy, research interests (specifically detailing how these interests will align with our existing research strengths), and design experience; and the names and contact information of three references. Review of applications will begin on January 15, 2017 and continue until the position is filled.

Villanova University is ranked in the top 50 of the nation's best colleges and universities by US News & World Report in its 2017 "Best Colleges" rankings. The university is located 12 miles from Philadelphia along the historic Main Line. From its founding in 1842 to its position today as a leading Roman Catholic university, Villanova University has forged a path of academic excellence.

Villanova is sponsored by the Augustinian order. Diversity and inclusion have been and will continue to be an integral component of the University's mission. Villanova is an Equal Opportunity/Affirmative Action employer. The Department of Civil and Environmental Engineering values dynamic and diverse faculty members who are committed to teaching, scholarship, and service — and who can contribute to the University's conversation regarding truth, community, values, and social justice.

Please feel free to contact Dr. Kristin Sample-Lord ([kristin.sample-lord@villanova.edu](mailto:kristin.sample-lord@villanova.edu)), Co-chair of the search committee, if you have questions regarding the position.





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## EVENTS AND CONFERENCES

### ***SAVE THE DATE FOR GETT 2017***

Girl's Exploring Tomorrow's Technology (GETT) is a free, fun, informational event for middle and high school girls in grades 5 through 10 and their parents that features successful women in technology. Attendees learn the facts about how technology careers can be fulfilling, fun and rewarding personally, professionally and financially.

DVGI participated in last year's Expo, with more than 1,000 in attendance (including 622 girls in grades 5-10 and 176 parents and educators). We provided interactive activities illustrating principles of shallow and deep foundation design and liquefaction using every-day items such as cool whip, gelatin, wood sticks, legos, sand and colored water. We're looking to participate again in 2017 and welcome volunteers and/or ideas for new and interesting hands-on demonstrations.



GETT 2017 is scheduled for March 25, 2017 at West Chester East High School. For information about registering a parent, student, and/or educator, or to participate in the expo as an exhibitor independent of DVGI, visit [www.gettpa.org](http://www.gettpa.org).

If you'd like to volunteer at GETT 2017 as a representative as of DVGI, or have suggestions for demonstrations, please contact Theresa Andrejack Loux ([theresa\\_loux@golder.com](mailto:theresa_loux@golder.com)) or Melissa Gillespie ([mgillespie@trcsolutions.com](mailto:mgillespie@trcsolutions.com)).

### ***SAVE THE DATE*** ***2017 Mid-Atlantic Geo-Wall Competition***

*Saturday, April 8, 2017*  
*University of Maryland, College Park*

We are looking for sponsors! \$150 per firm.

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Please contact Eric Backlund  
([ebacklund@kleinfelder.com](mailto:ebacklund@kleinfelder.com)) if interested.





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## EVENTS AND CONFERENCES

### **EWR: Economic Impact of Green Stormwater Infrastructure—(1 PDH)**

*This presentation assesses the local economic impact of the first 5 years of Philadelphia's comprehensive stormwater management plan, Green City, Clean Waters. The plan, managed by Philadelphia Water, is addressing EPA Clean Water Act regulations with decentralized, neighborhood scale, natural systems, otherwise known as green stormwater infrastructure (GSI).*

**SPEAKER:** Lee Huang, Econsult Solutions, Inc.  
**LOCATION:** Michael's Deli, 130 Town Center Rd  
King of Prussia, PA  
**DATE:** Thursday, November 17, 2016  
**TIME:** 5:30 PM Networking,  
6:00 - 8:00 PM Presentation  
**COST:** \$30, Students - \$15,  
**RSVP:**

<http://events.r20.constantcontact.com/register/event?oeidk=a07edd07bdd2a2468d4&llr=aos5oylab>

### **Rebuilding the System - SEPTA Capital Program Update—Multi-Society Meeting with Engineers' Club—(1 PDH)**

*We will be joining the Engineers' Club and other partner societies at the annual Multi-Society Meeting. This is a good opportunity to kick off the holiday season and network with engineers and other professionals that you might not normally see at your society meetings. The Meeting will be a lunchtime event this year.*

**SPEAKER:** Jeffrey Knueppel, SEPTA  
**LOCATION:** Sofitel, 120 S. 17th Street  
(at Sansom Street), Center City  
**DATE:** Wednesday, December 7th  
**TIME:** 11:30 AM  
**RSVP:** TBD

## CENTRAL PENNSYLVANIA GEOTECHNICAL CONFERENCE

Hershey, Pennsylvania

January 25, 26, & 27, 2017

<http://www.central-pa-asce-geotech.org/>



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