

Voices of the Industry

Industry Leaders Share Their Insights on the Underground Sector

What are the biggest challenges today for the underground sector?



Peter Faust, Vice President of Business Development, Malcolm Drilling:

Technology is advancing faster and faster. Specialty subcontractors are mostly at the forefront with their push for innovation. They develop new equipment and streamline procedures to be competitive since owners look more and more to the value every team member can bring to the table. Conventional design-bid-build projects will more and more be replaced by design-build, design-assist or early-contractor-involvement structures. To keep up, companies have to rely on solid in-house capabilities. Staff training and education—in house as well as industry wide—will be the key to success. Increased project sizes, ever faster construction schedules and complex designs will demand the best suitable solution. This will require a skill and education level never seen before in the industry.



Aaron Eder, PE, Principal and Conveyance Lead, MWH, now part of Stantec:

As the conveyance lead for the Portland office of one of the world's leading pipeline design firms, we see reducing risk and improving recovery as one of today's biggest challenges in the Pacific Northwest. This comes in the wake of Kathryn Schulz's 2016 Pulitzer Prize-winning story, "The Really Big One," (*New Yorker*, July 2015.) Seismologists have long warned us that a Cascadia Subduction Zone earthquake off our coast is anticipated to cause far greater damage than a crustal quake along fault lines, such as

California's San Andreas Fault. In the Pacific Northwest, the area of impact is estimated to cover 140,000 sq miles, including some 7 million people. When the next full-margin rupture happens, the region will suffer the worst natural disaster in the history of North America. By the time the shaking stops and the tsunami recedes, the area will be unrecognizable.

Would you comment on issues of safety?



Rick Marshall, CHST, Director of Safety, International Association of Foundation Drilling (ADSC-IAFD):

ADSC-IAFD and The National Commission for the Certification of Crane Operators (NCCCO) are now jointly developing a certification program for operators of foundation drill rigs. Staff from the two organizations, along with representatives from equipment manufacturers, suppliers, contractors, engineers, service providers and safety personnel, as well as other expert volunteers, will be working together over the next 12–16 months to develop the program. The ADSC Safety Committee identifies hazards in the anchored earth retention, drilled shaft and micropile workplace, and then minimizes our employees' risk by changing exposure to the hazards by educating (increasing awareness), administering (creating rules) or engineering (reconfiguring) the hazards out of the work environment.

The ADSC membership and the deep foundation industry at large wants owners of projects to understand the value of a safe working platform and not to simply look at the initial costs involved. The return on the investment of designing and constructing a safe working platform should prove to be most satisfactory at project completion.

What new technologies will be coming on board within the next couple of years?

Eder: Water systems in particular need to be designed to withstand earthquakes due to the need to provide drinking water and firefighting capabilities. Earthquake-resilient pipe installations used to be limited to Japan, where "seismic joints" were first manufactured. Now, in response to the increased emphasis on seismic resiliency, all major U.S.-based ductile iron pipe suppliers manufacture pipe with seismic joints—essentially telescoping sleeves that can be utilized to provide longitudinal expansion and contraction, along with lateral or longitudinal joint deflection, capabilities in a pipeline. They are typically designed in locations of known and active faults and landslides.

Faust: Ever taller buildings on smaller footprints combined with the most difficult ground conditions are becoming the standard. Foundations are getting larger and deeper, and the demand for higher design capacities is increasing. The trend of high-strength concrete with values of up to 10,000 psi and high-strength reinforcement steel with up to Grade 100 has also made its way into deep foundation elements. Utilizing these materials can improve the performance of the foundation elements while saving money and reducing risk. Drilled shafts are currently pushing the limits beyond the 300-ft drilling depth. Designers need to acknowledge that construction means and methods also need to be considered when designing such extreme elements. Concrete technology for such deep and difficult placement conditions has improved tremendously in the past 10 years. This knowledge must be shared between the specialty contractor, the designer and the supplier to guarantee the best possible construction quality. ♦