



DID YOU KNOW?

The Crosshole Sonic Logging (CSL) method was developed by Jean Paquet of CEBTP as a down-hole variation of the Ultrasonic Pulse Velocity (UPV) test in 1969, but wasn't widely used until the 1980s with the advent of the portable digital computer.



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Saving Testing Time and Cost for Crosshole Sonic Logging with the CHAMP-Q 4-Probe System by Ryan Allin, P.E. and Alex Ryberg, P.E.

Crosshole Sonic Logging, or CSL, has become a standard non-destructive test method for the bored (drilled) foundation industry. Traditionally, the method requires the installation of nominal 2-in (50 mm) access tubes (preferably steel) in a shaft, attached to the inside of the reinforcing cage. The access tubes are filled with water, and transmitter and receiver probes are lowered to the bottom of two parallel tubes, then pulled simultaneously to the top of the shaft. At regular vertical increments, the probes measure the transit time for a sonic pulse to travel through the concrete from one probe to another. The entire data set, from shaft bottom to top between two access tubes, is generally referred to as a "profile". If the transit time is consistent throughout the entire profile, it would indicate concrete of consistent quality. Any degradation to the concrete quality, including any inclusions, would result in an increase in transit time.

Having the encoders at the tubes eliminates any possible slack in the cables which could affect the depth measurements.

"With improved testing efficiency, data can be evaluated and reports submitted...allowing construction to continue at an accelerated rate, potentially reducing costs..."

With the CHAMP-Q 4-probe system's ability to scan six profiles in one pull, the number of necessary pulls or iterations with the CSL probes is significantly decreased. This allows for more shafts to be tested per day, and testing sequences to become streamlined. With improved testing efficiency, the data can be evaluated and reports submitted in an expedited manner, allowing construction to continue at an accelerated rate, and potentially reducing testing costs, as more shafts can be tested in one day.

For example, a 72-inch (1.8 m) diameter shaft with six CSL access tubes requires 15 scans or iterations with a 2-probe system. Using the Champ-Q 4-probe system, the same 72-inch (1.8m) shaft can be tested with only three complete iterations of lowering the probes and scanning the shaft - 15 iterations are now reduced to three.

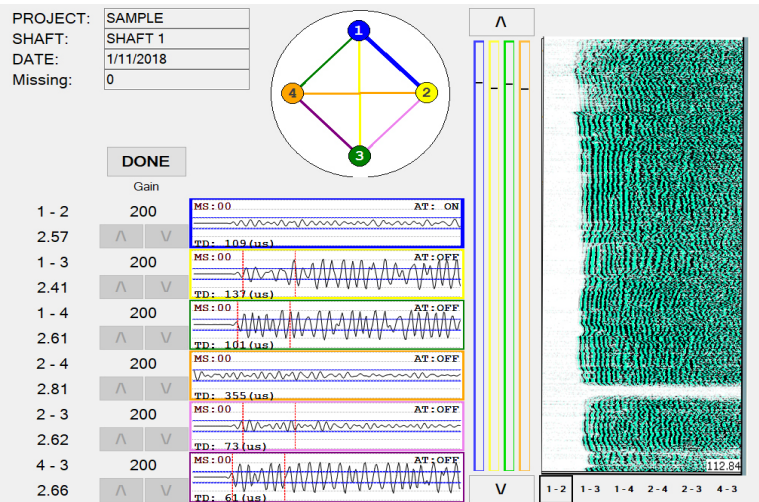


Four Is Better Than Two

With Pile Dynamic's new CHAMP-Q 4-probe system for crosshole sonic logging, six CSL profiles can be scanned simultaneously.

Most crosshole systems depend on separate transmitter and receiver probes to collect data. The typical 2-probe configuration includes the two aforementioned probes placed into two parallel access tubes, collecting data for a single profile, and then repeating the process until all tube combinations have been tested. This process is very time consuming onsite. The CHAMP-Q 4-probe system accelerates this process by replacing the individual transmitter and receiver probes with "transceivers" - which function as both a transmitter and receiver. By increasing the number of probes to four, the system can sequentially alternate which probe is transmitting while the other probes receive the transmitted signal. All of this happens seamlessly for the user, allowing for real-time data collection without any time lag.

The CHAMP-Q 4-probe system can be used with a tripod or depth encoders placed directly on the access tubes (see photo above).



New Software for a New Generation of Testing

Two additional probes and five additional data sets simultaneously collected gives the CHAMP-Q user an intuitive and simple way to assess the data during collection and review with the CHA-S software. File set-up is simplified, requiring minimal user inputs prior to data collection. Probe placement can be defined by simply dragging the probe to the appropriate access tube in file set-up. CHAMP-Q provides a recommended testing sequence to minimize the number of pulls required to test all profiles.

For additional information on the CHAMP-Q 4-probe system or any other PDI QA testing product, please visit www.pile.com.

GRL Completes Two Bi-Directional Static Load Tests in 24 Hours

GRL Engineers, Inc. recently completed two bi-directional static load tests (BDSL) within a 24 hour period. The two bi-directional tests were located 6,650 miles apart with one test in the US on a 6-foot (1.8 m) diameter drilled shaft and the second test in the Middle East on a 5-foot (1.5 m) diameter drilled shaft. Both tests utilized three 1,100 ton **GRL-Cells** in a single layer jack assembly. In this configuration, both bi-directional static load tests were capable of applying a maximum test load of 6,600 tons. The tests utilized PDI's Static Load Tester datalogger system to read and store all of the BDSLT electronic instrumentation readings including digital levels, pressure transducer, vibrating-wire displacement transducers, and vibrating-wire strainmeters. Both drilled shaft tests also utilized PDI's Thermal Wire Cables and Thermal Integrity Profiling system to assess the concrete quality and to delineate the as-built drilled shaft geometry for use in load-transfer evaluation and construction of the equivalent top-loading curve.



In Memory of David Klingberg of Wagstaff Piling Pty Ltd



The piling industry is in shock after the sudden passing of David Klingberg as a result of a site accident on 14th June. A moving commemorative service in Brisbane, attended by over 300 friends and colleagues, demonstrated the high esteem in which he was held. David was a PDA testing expert, with 30 years field experience. His professional niche in PDA testing satisfied his need to be involved in leading technology, to exercise his mental capabilities in the science of stress-waves and the art of connecting this to real-world engineering solutions, all with an uncompromising commitment to honesty and integrity. He was a patient teacher and mentor to many young engineers. David was at the forefront of his field internationally and contributed widely to conferences, seminars and to the development of the innovative 2009 Australian Piling Code. However, David was successful in far more than his professional achievements. He was honoured for his academic achievements, and successful in many sporting endeavors such as football (soccer), golf, netball, ten pin bowling, cycling, skiing and distance running. He loved four-wheel drives, camping, fishing and singing in his church choir. David was an all-round man who successfully embraced life, and yet was as humble and unassuming as one could be. Carpe Diem! Sieze the Day! David embraced this philosophy and made the most of his time here on Earth. He leaves his wife and two children, with their memories of his pride and encouragement of their achievements.

- By Julian Seidel, Nick Medley, Dion Denes, Hossein Ahmadi

Upcoming Events

Complete list of 2018 events available at www.pile.com/pdi-events

AUGUST

- 7: **Webinar:** SPT Hammer Energy Measurements ([Register Today!](#))
- 7: **Seminar:** Deep Foundation Integrity Testing and Wave Equation Analysis in **Indonesia** ([Register Today!](#))
- 8-9: **Workshop:** High Strain Dynamic Foundation Testing and Proficiency Test in **Indonesia** ([Register Today!](#))
- 13-15: **Seminar & Workshop:** QC in Deep Foundations in **Vietnam** (Sold Out)
- 27: **Seminar:** Deep Foundation Integrity Testing and Wave Equation Analysis in **India** ([Register Today!](#))
- 28-29: **Workshop:** High Strain Dynamic Foundation Testing and Proficiency Test in **India** ([Register Today!](#))

SEPTEMBER

- 5: **Webinar:** Quality Control of Drilled Shafts ([Register Today!](#))
- 11-14: **QC of Deep Foundations - Workshops:** [Memphis, Overland Park](#) and [Chicago](#) ([Register Today!](#))
- 19: **Webinar:** Benefits on Thermal Integrity Profiling/Review of Top and Bottom Roll-off Adjustments ([Register Today!](#))
- 19: **Workshop:** QC/QA of Deep Foundations in **London** ([Register Today!](#))
- 19-20: **DICEP 2018** Baltimore, MD (Booth #5)
- 21: **Workshop:** QC/QA of Deep Foundation in **Dublin** ([Register Today!](#))
- 23-26: **GeoEdmonton 2018** Edmonton, Alberta

OCTOBER

- 3: **Seminar:** Deep Foundation Integrity Testing and Wave Equation Analysis in **Cleveland, OH** ([Register Today!](#))
- 4-5: **Workshop:** High Strain Dynamic Foundation Testing and Proficiency Test in **Cleveland, OH** ([Register Today!](#))
- 12: **Workshop:** QA of Deep Foundations, **Winnipeg, Canada** ([Register Today!](#))
- 15: **Seminar:** Deep Foundation Integrity Testing and Wave Equation Analysis in **Dubai** ([Register Today!](#))
- 16-17: **Workshop:** High Strain Dynamic Foundation Testing and Proficiency Test in **Dubai** ([Register Today!](#))
- 18: **Webinar:** LRFD and Testing Economics ([Register Today!](#))
- 24-27: **43rd Annual DFI Conference** - Anaheim, California (Booth #407)

Elvis Ishimwe, PhD joins GRL-Chicago



Elvis is a recent Ph.D. graduate in Civil Engineering from the University of Arkansas, Fayetteville. He previously earned his MS and his BS degrees in Civil Engineering from the University of Arkansas, Fayetteville in 2014, and 2013, respectively. As part of his recent Ph.D. studies, Elvis evaluated the effects of liquefaction-induced dragload and downdrag on drilled shafts and driven piles within the New Madrid Seismic Zone of northeastern Arkansas and southeastern Missouri. He is an active member of Deep Foundation Institute (DFI) and ASCE Geo-Institute (G-I). Elvis has published many articles spanning various geotechnical topics, and is fluent in both French and English.

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