Cross-Hole Analyzer (CHAMP)
For crosshole and single hole sonic logging

The Cross-Hole Analyzer (CHAMP) determines the quality and consistency of the concrete of drilled shafts, slurry walls, bored piles, cast-in-situ piles and other types of concrete foundations. It may be used for crosshole sonic logging (CSL) of drilled shafts or single hole sonic logging (SSL) of smaller augered cast-in-place piles.

- Small
- Lightweight
- Rugged
- Easy touch screen operation
- Color LCD visible even in direct sunlight
- Battery lasts an entire day of normal testing

The CHAMP performs essential real time analysis (waterfall diagram) on site. Data is transferred to a computer for review and additional analysis with CHA-W and Tomosonic Software, and for report preparation.

THE TEST:
Shafts that will be tested with the CHAMP are built with steel (preferred for CSL) or PVC (required for SSL) tubes that span their length. A transmitter in one tube sends a high frequency signal that travels through the concrete and is detected by a receiver in another tube (or in the same tube for SSL). As these sensors are raised and/or lowered along the length of the foundation, they progressively scan the concrete for signal strength versus time and depth. In CSL, scanning various tube combinations for the entire shaft allows evaluation of concrete quality and defect location along the length and by quadrant.

The CHAMP meets or exceeds the requirements of ASTM D6760-08 and several other crosshole sonic logging codes and standards. Visit www.pile.com for a listing.

Quality Assurance for Deep Foundations
Cleveland Ohio USA info@pile.com www.pile.com

Pile Dynamics, Inc.
Cross-Hole Analyzer (CHAMP)
For crosshole and single hole sonic logging

DATA PROCESSING SOFTWARE

CHA-W
Performs data quality checks.
Provides powerful tools for data analysis:
- Edge Finder for First Arrival Time detection.
- Defect Analysis for easy defect identification.
- Two methods of signal strength evaluation (energy or amplitude).
Outputs user customized graphs and tables:
- Sonic Map - Signal strength versus time and depth in traditional waterfall diagram.
- First Arrival Time - Signal travel time from transmitter to receiver, versus depth.
- Wave-speed Plot - Wave-speed (an indicator of concrete strength) versus depth.
- Wave-speed Table - Wave-speeds, means and standard deviations.
- Energy or Amplitude Plot - Signal strength versus depth.
- Defect location graphically (horizontal red line) and in table format.

TOMOSONIC*
Tomosonic optical tomography software produces 2-D and 3-D color coded images that help visualize local defects. Views include horizontal and vertical slices and a three dimensional representation of the shaft.

CHAMP Specifications

Physical
Size: 115 x 190 x 240 mm
Weight: 4.2 kg
Screen: VGA sunlight readable touch screen display
Screen Size: 21.3 cm
Operating temperature range: 0 to 40°C.
Power: Internal 12V battery (lasts at least 5 hours in data collection mode)

Electronic
PCMCIA drive including removable memory card ≥ 128 MB
Analog to digital converter resolution: 12 bits
Sampling rate: 500 kHz, 1 MHz and 2 MHz, user selectable
Scan rate: 32 scans/s (pull rate allows up to approx. 1.5 m/s)
User adjustable gain, trigger and transmission power level
User selectable record size: 250, 500, and 1,000 points

Other
Operates in English or SI units
Windows® CE operating system
Furnished with CHA-W software (CHA-W is compatible with Windows® 2000, XP and Vista)
User manual included
One year warranty
Lifetime technical support

The CHAMP supports dual high resolution encoders to independently track the depth and direction of probe movements. Probes may be at different levels during pulling. Data can be taken in both upward and downward movements of the probes. The encoders may be placed directly on the tubes or on a tripod for CSL tests. SSL is always performed with a tripod.

Probes are sturdy: their oil-filled brass shells are pressure tested for water depths up to 300 m. Transmitter probes have an exclusive safety feature, they are powered by a 12 volt source in the probe and transformed to higher voltages within the probe itself. These higher voltages allow testing between access tubess more than 3 m apart. The probes may be fitted with bottom extension weights for deeper shafts and centralizers to position the probes in the center of the tubes.

Probes Specifications

Physical
Diameter: 25 mm
Length: 215 mm
Cable length: 60 m, 100 m or 150 m
Cable jacket: Heavy duty polyurethane
Element: Ceramic
Enclosure: Nickel Plated Brass

Electronic
Transmitter frequency (nominal): 45 kHz
Receiver tuned to 45 KHz nominal
Transmitter voltage: 200 – 800 Volts (user selectable)

Other
Independent depth encoder for each probe.