

Apart from the subsurface itself - the soil and rocks, strata and their characteristics, it is often necessary to investigate the properties of structures below ground. US company PDI - Pile Dynamics Inc. specialises in this area and has produced a Cross-Hole Analyzer (CHA)TM for determining the quality of concrete between pairs of tubes pre-installed in drilled shafts. The CHA meets or exceeds the specifications for crosshole sonic logging as required by ASTM D6760-02. A transmitter lowered down one tube sends a high frequency signal which is sensed some time later by the receiver in another. The sensors (transmitter and receiver) are then moved along the shaft and the process repeated until the entire shaft length is scanned. The test is repeated for each pair of water filled tubes, allowing for the investigation of defects both along the length and by quadrant.

The transmitter and receiver are fixed on a PVC cable offered in lengths of 60 m or 100 m and have each their own depth encoder. The CHA is built with a PAK-type enclosure that guarantees its ruggedness. It has a colour screen, Windows-based software and cutting edge electronics that ensure its reliability. With this device, defects in a pile are easy to recognise. They appear as weak signals in the signal plot, as missing signals in the traditional plot, as delayed arrivals in the arrival time plot, and as signals with low energy.