

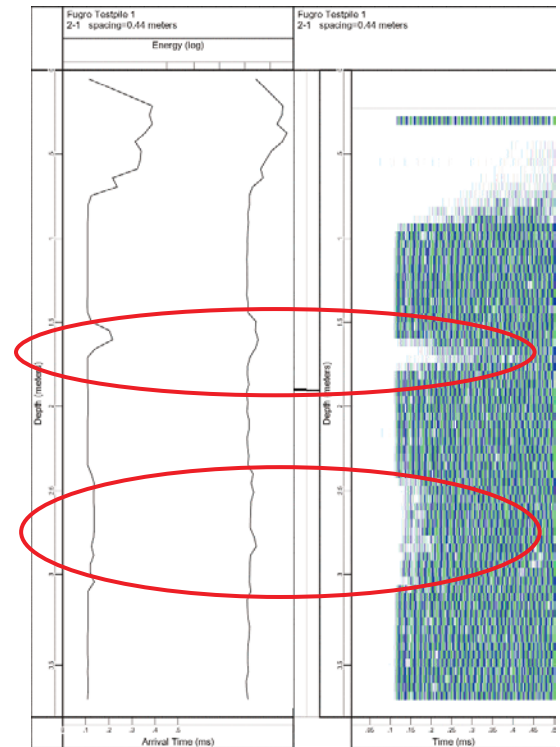
Fugro Engineering Services Limited

CROSS-HOLE SONIC LOGGER (CSL)



INTRODUCTION

The CROSS-HOLE SONIC LOGGER enables advanced integrity testing of deep foundations; bored piles, diaphragm walls, barrettes, driven hollow pre-stressed concrete piles and cast-in-situ piles.



Typical test result showing defects at about 1.7m and from about 2.5m to 3.0m (circled)

CROSS-HOLE SONIC LOGGER - KEY FEATURES

- Employs state-of-the-art digital signal capture and processing
- One operator can set up the equipment and test within minutes
- Real-time observation and playback of logged data on LCD display
- Immediate hard copy on site using external printer
- Solid state digital data storage for further analysis and reporting
- All hardware and software encased in one rugged, lightweight unit.

GENERAL DETAILS

The CROSS-HOLE SONIC LOGGER is used to detect defects in concrete structures and in other solid structures such as rock or concrete-rock interfaces. Defects that may be detected using sonic logging include: honeycombing; segregation due to improper concrete placement methods; washout of cement due to groundwater flow; cracks in pile shafts due to shrinkage; inclusion of foreign material causing contamination of concrete; necking and arching of piles due to collapse of side walls during withdrawal of temporary liners.



CSL Sensors and Cables

SYSTEM ARCHITECTURE

The CROSS-HOLE SONIC LOGGER incorporates a wide array of features in a compact unit - an ultrasonic pulse generator, ultrasonic pulse reception condition, ultrasonic digitiser, digital storage, depth sensor interface, display, keyboard, printer, solid state storage and AC/DC power supplies all housed in a sturdy steel case. A meter-wheel with depth encoder and application-specific probes complete the system.

OPERATION

Pulses generated by the ultrasonic pulse generator are converted into ultrasonic waves by the transmitter probe and are received by the receiver probe. After conditioning, signals are digitised and stored. The meter-wheel, acting as a depth sensor, provides the vertical (Y) axis for the storage display and the signal is displayed on the horizontal (X) axis of the storage display. Variations in delay and signal strength indicate the presence of defects.

CROSS-HOLE SONIC LOGGER (CSL)

SPECIFICATIONS

- Full VGA colour LCD
- Built in water resistant keyboard
- User adjustable trigger level
- User adjustable gain
- Sampling rate: 500kHz
- Measuring accuracy 2 micro-seconds
- Operating range: 0 - 40°
- Power: 120 - 220 VAC (50 - 60HZ) to 12VDC converter or 12V car battery
- Internal backup batteries for up to 30 minutes of run time

SENSORS

- Transmitter frequency (nominal): 100kHz
- Maximum transmitter rate: 60kHz
- Diameter: 25mm
- Transmitter length: 240mm without add-on weights
- Receiver length: 195mm without add-on weights
- Element: ceramic
- Cable length: 60m or 100m
- Independent depth encoder for each sensor

The Fugro Group is an international organisation with around seven thousand staff in over fifty countries.
Our major disciplines are Geotechnics, Environmental Services and Survey.

Fugro Engineering Services Limited

Fugro House
Hithercroft Road
Wallingford
Oxfordshire OX10 9RB
Tel: +44 870 4021 400
Fax: +44 870 4021 499
Email: wallingford@fes.co.uk

Armstrong House, Unit 43
Number One Industrial Estate
Medomsley Road, Consett
Co. Durham DH8 6TW
Tel: +44 1207 581120
Fax: +44 1207 581609
Email: consett@fes.co.uk