

INTRODUCTION

Crosshole Sonic Logging (CSL) is a test used to establish concrete integrity. The CSL test involves lowering ultrasonic probes to access tubes and as the probes are pulled to the surface a data processor records the passage of ultrasonic pulses (compression wave energy) from a source in one tube to a receiver in another tube. (see diagram A) Recordings are made at depth intervals typically on the order of 6 cm as the sensors rise. The tubes may be steel (recommended) or PVC plastic that are nominally 38 to 50 mm ID.

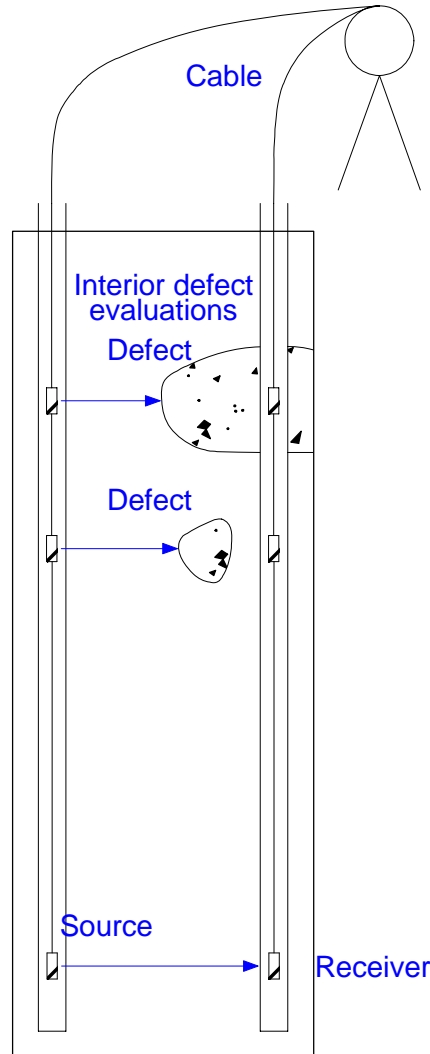
Where the energy transferred is relatively constant and/or there is little change in the transit time detected with changing depth, one can interpret that the acoustic parameters of the concrete between the tested tubes are generally uniform.

Potential defects are indicated by delays in signal arrival time (slower velocity) and lower energy at a given depth and are easily seen on screen to promote further detailed analysis where required.

ADVANTAGES

A key benefit of employing LOADTEST personnel to perform CSL testing is our wealth of experience and understanding of physical limitations of the testing technique, and pile characteristics likely causes of any anomalous responses.

Among our staff are some of the leading experts in this form of testing.



CROSSHOLE

Diagram illustrating the technique



CSL Equipment from Olson

APPLICATIONS

The acoustic non-destructive evaluation of concrete can be performed in foundation structures of various geometries, from cylindrical piles, to diaphragm wall, slurry walls or barrettes.

Up to 8 m of concrete can be traversed (although at decreased resolution).

CSL tests are particularly well suited to larger foundation elements and can provide a means of testing the concrete integrity where low-strain impact integrity testing from the top of the pile may fail to be effective.



Test in progress

Crosshole Sonic Logging can be carried out on piles scheduled for static loading by top-down load application or bi-directional testing using O-cell[®] technology.

SYSTEMS AVAILABLE

LOADTEST has at its disposal several different leading CSL systems available throughout the world. If your specification requires a particular equipment type, we would be pleased to advise regarding suitability and resolution.