



## PREFACE

### ULTRASONIC TESTING OF PILES

For the ultrasonic test at least two tubes (either plastic or steel, minimum diameter of 50 mm or 2"), are cast in the pile and filled with water. An emitter of ultrasonic pulses is lowered in one of those tubes and a receiver - in another. Both emitter and receiver are connected by cables to the CHUM which records the first arrival time (FAT) and the energy as the probes are simultaneously raised to the top. As long as the FAT and the attenuation are roughly constant, one may deduct that the concrete quality is also uniform and the pile is therefore acceptable. On the other hand, if at some level there is an anomaly (significant increase in the FAT and/or attenuation), it may indicate that the concrete at this level is flawed or defective. The size and location of the affected zone can then be studied by adding oblique readings (tomography). Installing a larger number of tubes on the perimeter gives an almost complete coverage of the pile's cross-section.

Because of the character of the ultrasonic method, it can detect flaws which may escape detection by other integrity testing methods. It is especially suitable for testing large-diameter piles and slurry-wall elements.

If a defect is found, the steel tubes may be pierced at the corresponding depth and the pile repaired by grouting.

The piles can be tested after the concrete has gained some strength, usually at an age of five days or more from casting.

XXXXXX Bridge  
Bored Pile



\_\_\_\_\_ (project name)  
**Report on Pile Testing**  
No. xxxxxxxx xxxxxxx

1. **Introduction**

Following the instructions of Messrs. \_\_\_\_\_ we visited the site on April 22 2013 and tested \_\_\_\_\_ piles with the CHUM ultrasonic tester manufactured by Piletest.com. All the piles tested were bored and cast in situ with bentonite slurry.

A summary table of the ultrasonic test results, as well as the graphs obtained from the instrument, is presented in Appendix A.

Testing was performed according to ASTM standard D6760-16 and to the manufacturer's instructions.

This warranty replaces all other warranties, either express or implied.

The preface to this report forms an inseparable part of it.

2. **Summary**

The ultrasonic tests on pile HTP-01 revealed an anomaly at a depth of 48 m in five out of the six profiles tested. This corresponds to the presence of an O-Cell placed at this depth.

A very minor anomaly was observed at a depth of 34 m in the S-W profile.

Otherwise, no anomalies were found.

sign

**XXXXXX Bridge**  
Bored Pile



### Project Totals

Subsite	Number of Piles	Number of Profiles	Total length of piles m	Total length of profiles m
	1	6	12.23	73.12
<b>TOTAL:</b>	<b>1</b>	<b>6</b>	<b>12.23</b>	<b>73.12</b>

### Project Summary

Pile	Date	Profile	Measured length of pipes (m)	Remarks
A1-BP2	2019-01-27	NS	12.17m	-
"		NE	12.18m	-
"		NW	12.18m	-
"		SE	12.18m	-
"		SW	12.23m	-
"		EW	12.18m	-

**XXXXXX Bridge**  
Bored Pile

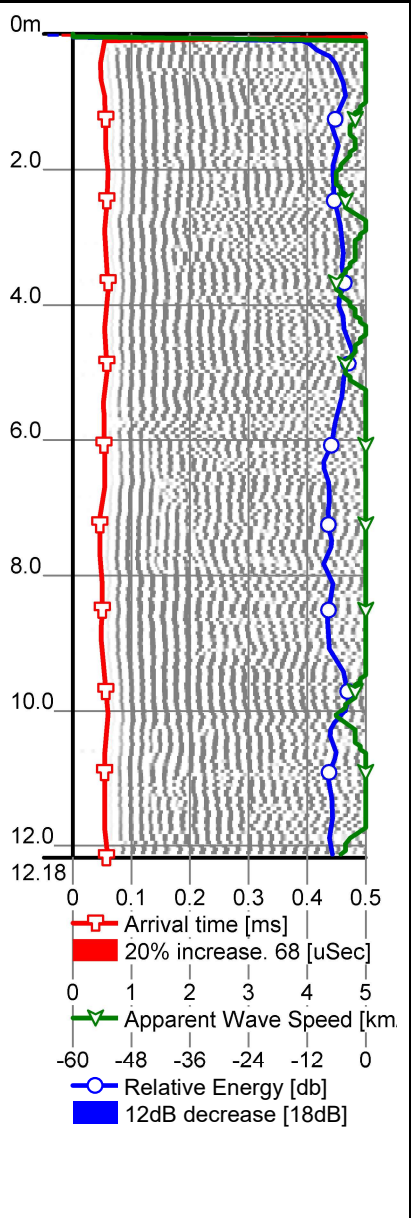
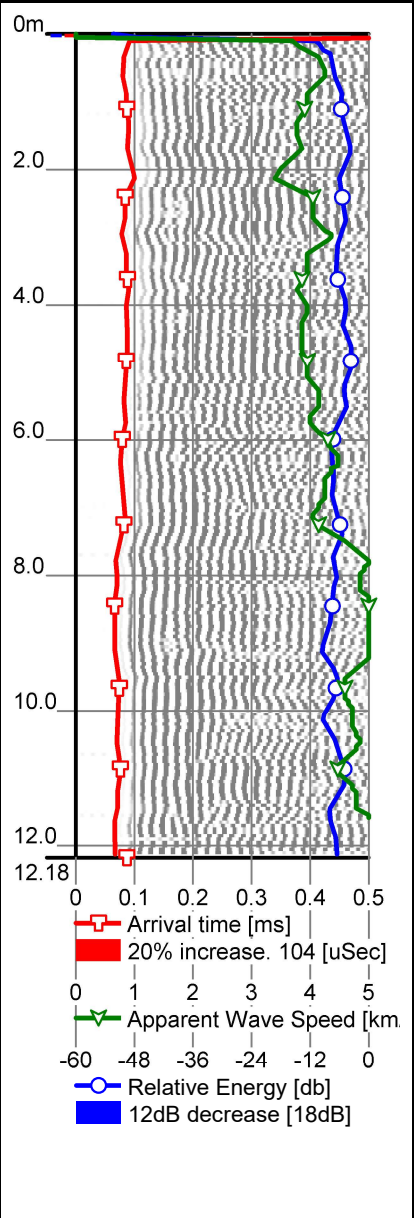
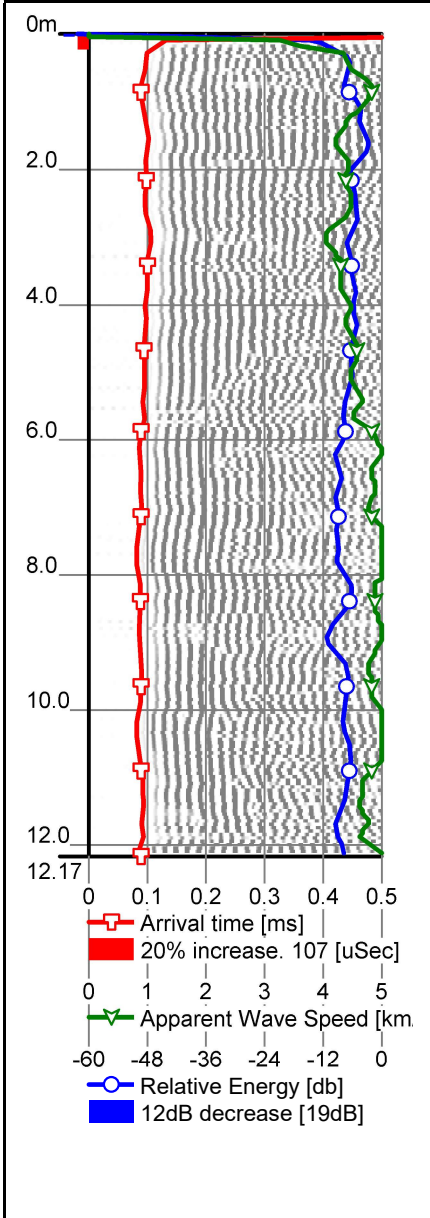


**Pile: A1-BP2**  
Date: 2019-01-27  
Diameter: 0.80m

**NS**  
12.17m  
Distance: 0.43m  
Filter: 2

**NE**  
12.18m  
Distance: 0.34m  
Filter: 2

**NW**  
12.18m  
Distance: 0.27m  
Filter: 2



**XXXXXX Bridge**  
Bored Pile

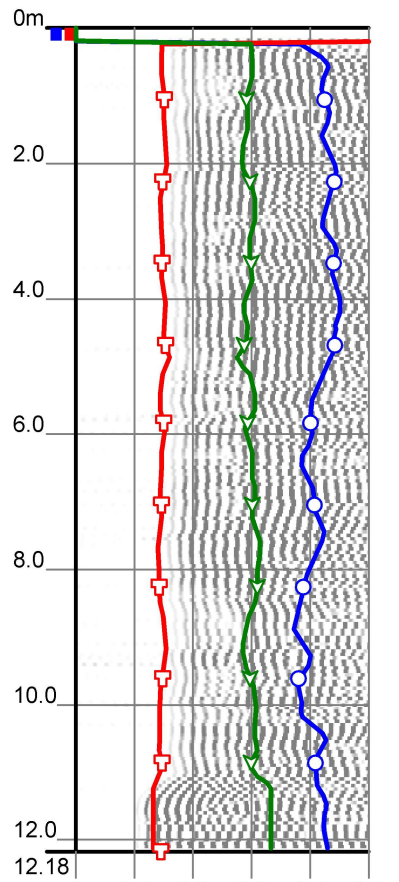
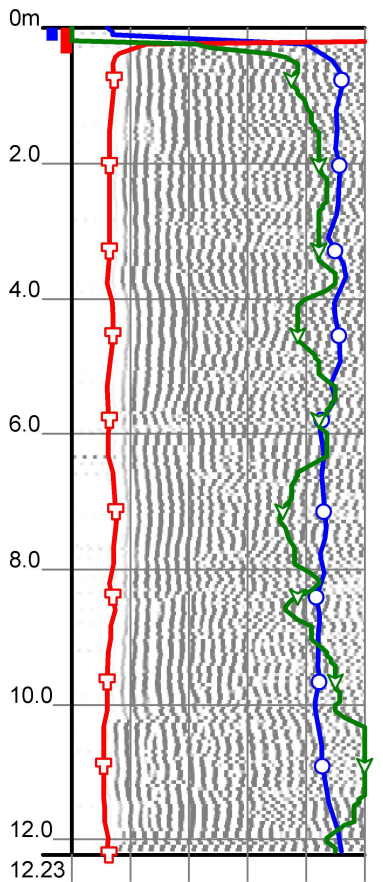
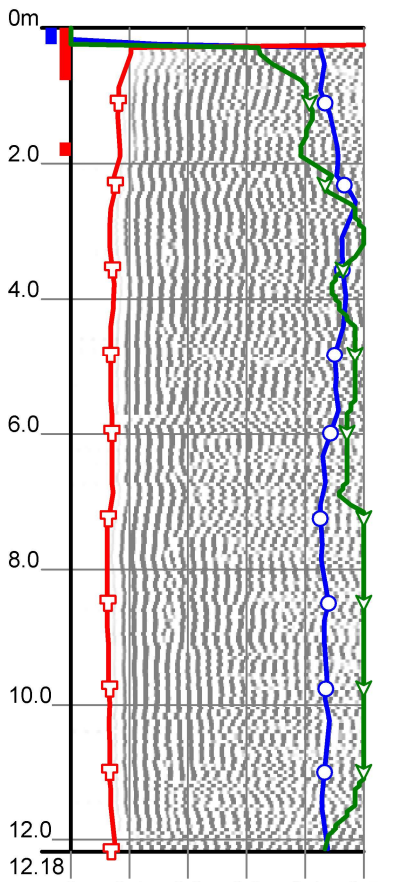


**Pile: A1-BP2**  
Date: 2019-01-27  
Diameter: 0.80m

**SE**  
12.18m  
Distance: 0.33m  
Filter: 2

**SW**  
12.23m  
Distance: 0.27m  
Filter: 2

**EW**  
12.18m  
Distance: 0.44m  
Filter: 2



▾ Arrival time [ms]  
■ 20% increase. 83 [uSec]  
▾ Apparent Wave Speed [km]  
○ Relative Energy [db]  
■ 12dB decrease [19dB]

▾ Arrival time [ms]  
■ 20% increase. 76 [uSec]  
▾ Apparent Wave Speed [km]  
○ Relative Energy [db]  
■ 12dB decrease [19dB]

▾ Arrival time [ms]  
■ 20% increase. 174 [uSec]  
▾ Apparent Wave Speed [km]  
○ Relative Energy [db]  
■ 12dB decrease [22dB]