

Advanced Technologies in Foundation Investigations

The Experiences of the LA DOTD
In Building a Tool box

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Background & Stats

- 1990's – Began assessing bridges for scour susceptibility.
- 3,600 Bridges evaluated and rated
- Bridges without plans rated "U" - Unknown
- 5,015 Unknown Foundations
(1,520 On-System & 3,495 Off-System)

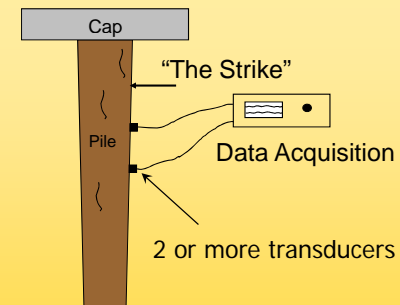
Research

- In 2003 LA DOTD was approached by FDH-SE, Inc.

Other NDE Methods

- Parallel Seismic
- Cross bore-hole logging
- Sonic Echo / Impulse Response

Dispersive Wave Propagation

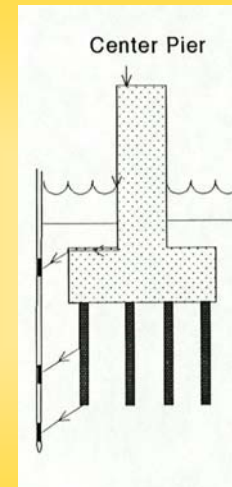
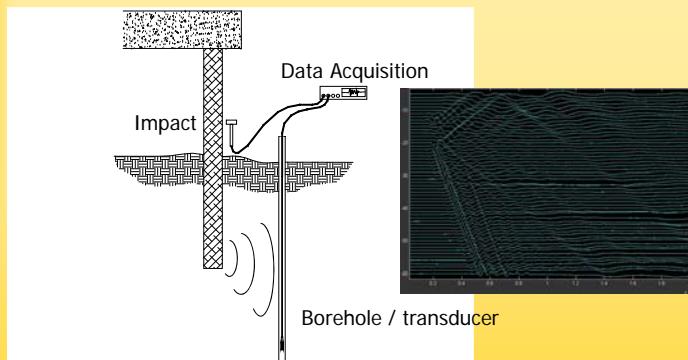




Technology Demo

- 3 bridges tested (2 concrete, 1 timber)
- 2.66% - Average error for concrete
- 4.92% - Average error for timber

Parallel Seismic

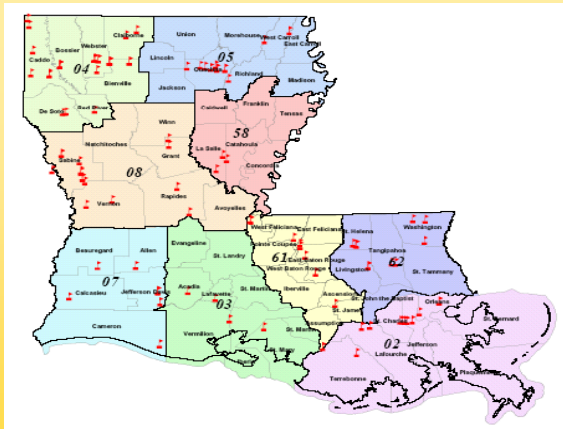




Pilot Project

- 107 Bridges were tested
- 11 “Control” structures
- Test piles selection

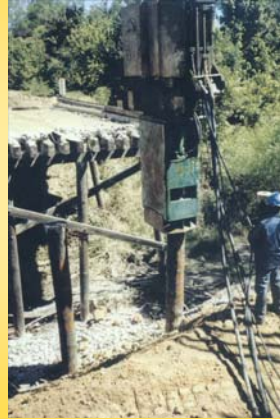
Distribution of Test Sites



Issues Identified

- Inconsistent results for steel piles
- Larger errors in timber piles than expected

Timber Pile Tests



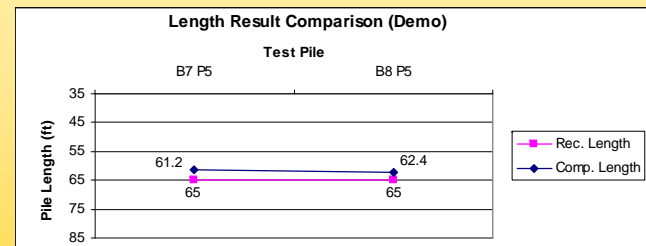
Typical Steel Results Experienced



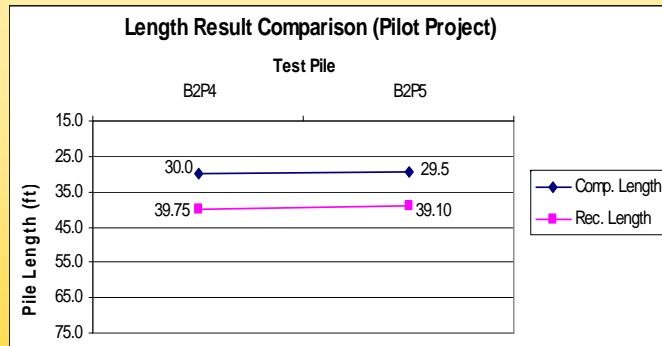
Typical Concrete Results Experienced



Typical Timber Results Experienced



Typical Timber Results Experienced



Intentions for Data Usage

- Bridge Scour analysis to be conducted
- Scour Susceptibility rated based on predicted scour and tested pile length
- Statistical approach to selecting future testing sites

Current Testing

- Completed testing of some 1000+ bridges
- Currently reviewing statistics
- LA DOTD Contracted FDH-SE, Inc. to test 1248 concrete and timber piles

Future Testing

- Adding PS\CPT to the Tool Box
- Adding PS\DW to the Tool Box
- Keeping an eye on industry for future developments

Questions ???

Comments /
Suggestions

Thank you!

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