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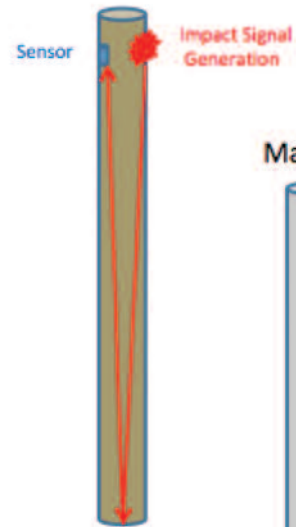
Pile Length Testing

Paul S. Fisk, President NDT Corporation

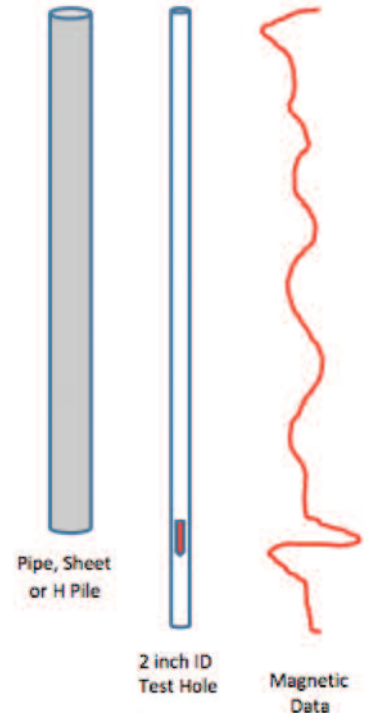
Pile Length Testing

Dredging, directional drilling, tunneling, scour analysis and the reuse of an existing foundation are all projects that it is important to know how long existing piles are. NDT Corporation can determine the length of timber, concrete, sheet piles and pipe piles using pulse echo measurements (reflected compressional waves). Sensors are attached to the side of the pile and a signal induced into the pile with a projectile or hammer impact; the time required for the signal to travel from the impact to the end of the pile and reflect to a sensor at the impact location is used to determine the pile length. Metal pipe, H, and sheet pile lengths can be determined using a boring and a magnetic gradiometer.

Pulse-Echo Measurements



Magnetic Measurements



Project Experience

DOCKING FACILITIES

Dredging projects to deepen port facilities for deeper draft ships may impact the structural capabilities of docks and piers by undermining existing piles or drastically change pile depth of embedment. Many of these docks and piers have been in services for decades and no pile length records are available. NDT Corporation tested a representative number of piles to determine pile lengths and depth of embedment at Ports in Connecticut, Rhode Island, and Massachusetts.



NDT Corporation testing piles to determine pile lengths and depth of embedment.

QUALITY ASSURANCE OF AUGER CAST PILES



Installation of auger cast piles.

Installing auger cast piles is a production process; the quality/integrity of each pile can be affected by soil and ground water conditions as well as the timing of material deliveries. Pulse-echo measurements are made to QA (quality assurance) each pile.

SCOUR RATING BRIDGES/REUSE OF BRIDGE FOUNDATION WITH A NEW SUPER STRUCTURE



NDT Corporation using pulse echo measurements on timber and sheet piles to determine their lengths.

State DOT's are required to determine how susceptible their bridges are to scour. Many bridges over rivers are supported by timber piles, others have had scour events in the past that were remediated with sheet piling. Many of these bridges were built or repaired decades ago and the records of how deep these piles were driven no longer exist. NDT Corporation has used pulse echo measurements on timber and sheet piles to determine their lengths.

BUILDING EXPANSION



NDT Corporation determines how deep a pile foundation is. Typically these measurements are made in conjunction with a geotechnical test pitting and boring program.

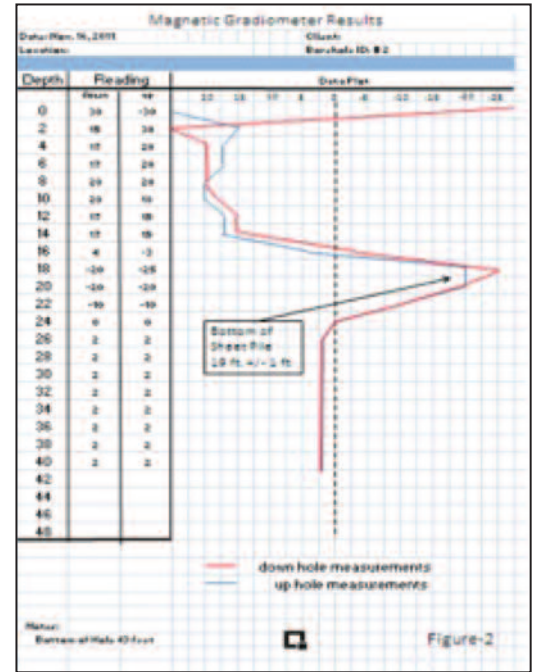
To enlarge buildings in urban areas the only option in many cases is to add a floor or two. To determine if the foundation is capable of supporting these floors, it is necessary to determine how deep the pile foundation is. Typically these measurements are made in conjunction with a geotechnical test pitting and boring program. Pile tops are exposed in a test pit and tested. Pile lengths are compared with boring data to determine if the piles are end bearing or friction piles. NDT has completed this type of pile testing on several projects in Puerto Rico and St. Thomas.

DIRECTIONAL DRILLING/SHEET PILE LENGTHS

Where sheet piling has been installed along the shore line, it is important to identify how deep the sheeting is prior to starting drilling. If a 2 inch PVC lined hole can be provided, a down hole magnetic gradiometer can be used to determine the depth to the end of the pile. If a hole cannot be drilled or is not available, pulse echo measurements can be made.



NDT Corporation uses a down hole magnetic gradiometer to determine the depth to the end of the pile.



NDT Corporation

We are nondestructive and geophysical testing experts with more than 700 projects across the US to our credit. Our geophysical tests assess soil and bedrock conditions to identify sinkholes, subsidence, shear zones and voiding. Our non-destructive concrete tests provide documented, cost-effective assessments of the integrity, as-built details and weakness or deterioration of concrete structures.



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