

Section 1 Description

Acoustic measuring devices such as a SoniCaliper^{tm pend} Testing System (SCTS) provide an effective method for evaluating shaft verticality, volume and diameter insitu by profiling the excavated surfaces of drilled shafts prior to reinforcement or concrete placement. The contractor shall be responsible for obtaining the services of an SCTS firm experienced with SCTS testing and equipment approved by the engineer. The contractor will be responsible for scheduling and coordinating the testing, and presentation of the data to the engineer and/or client.

Section 2 SoniCaliper Testing and Evaluation of Test Results

A. Preliminary Submittal – As part of the Drilled Shaft Installation

Submit a technical proposal prepared by the SCTS firm that addresses the testing procedures and qualifications and experience of the testing firm. Include at least 4 similar deep foundation projects for which the testing organization has been engaged. Use personnel having a minimum of one year of experience in SCTS testing and interpretation. Within 10 working days, the engineer will review the proposal and report to the contractor whether the SCTS testing firm is approved and the proposal is acceptable.

B. Testing

Test each shaft and determine verticality, diameter and volume. Use an approved independent testing firm meeting the requirements above to perform the SCTS tests.

Provide the testing firm access to the top of the shaft enabling one person to centralize and lower the SoniCaliper into the test shaft. Provide a surrounding work area clear and free of debris. Provide such assistance, equipment or necessary materials to the testing agency as required facilitating the SoniCalipering process. A 110-volt power source will be required at the test shaft location for operation of the testing equipment.

Allow sufficient time for the calipering, which will occur between the completion of excavation and final clean out and the installation of the reinforcing steel cage prior to concreting. (Typically less than 30 minutes)

Perform the SCTS testing process on all finished excavated shafts unless directed otherwise by the engineer. Perform the SCTS testing process in accordance with generally accepted SCTS testing methods. The calipering system should be able to transmit and receive >50 data points at each elevation.(less data points may be required for a dry excavation) At a minimum, take caliper readings every 5 feet in uncased portions, every 1 foot 5 feet above and below the bottom of casing, and every 20 feet in the casing. If telescoping casing is used, take readings every 1 foot for 5 feet above and below each casing transition.

If a feature, which in the opinion of the engineer could affect the integrity of the uncased shaft is identified on the real time visual display, the engineer may reduce the testing interval as necessary to improve the definition of the feature. Provide these additional readings at no additional cost to the department.

C. Test Reports

Provide real-time data regarding the shaft verticality, diameter and volume to the engineer on site as the SCTS testing is in progress. Within 1 hour after completing the SCTS testing, provide a computer file of an analysis of shaft verticality, diameter and volume. Within 7 working days after completion of each test, provide 2 copies of a final report to the engineer, including, as a minimum, the following information:

- Date of test
- Shaft No., and Reference Elevation
- A plot of shaft volume vs. depth
- Analysis of shaft verticality; and
- Description of any shaft wall encroachment

D. Evaluation of SCTS Test Results

The engineer will review the “real-time” data collected by the SCTS testing firm during the testing process at each shaft. The engineer will determine if the shaft verticality requirements have been met and inform the contractor. If defects or features noted by the testing firm in the shaft excavation are deemed sufficient by the engineer to potentially cause concrete loss or soil intrusion during concrete placement, or loss of bearing capacity, the engineer will meet with the contractor to discuss remediation.

Section 3 Method of Measurement

Payment for SCTS testing will be on a contract unit price per drilled shaft tested. Payments will include all equipment, labor, materials and mobilizations necessary to test a shaft and present a report of the findings.

Section 4 Payment

The department will pay for the completed and accepted quantities under the following:

Pay Item	Pay Unit
SoniCaliper	Each

The department will consider payment as full compensation for all work required under this part.