

## SECTION 2

### FOUNDATIONS (Piles and Piers)

#### PILES

##### OBJECTIVE

The observation of driven piles is a specialized discipline that requires the oversight of a design geotechnical engineer. Interpretation of pile capacity is achieved through knowledge of the anticipated soil types and the types of pile-driving equipment being used to install the piles. Materials engineering laboratories should only perform this service under the supervision and oversight of the design geotechnical engineer.

If this inspection is not performed by the geotechnical engineer of record, it is recommended that the geotechnical engineer at least monitor the work of the special inspector to ensure that the inspector has the knowledge, experience, and all pertinent information needed.

##### OBSERVATION DUTIES

###### A. Documents

1. Review the approved plans, specifications, and the geotechnical engineer's report.
2. Note and record the equipment being used on site.

###### B. Verification

1. Verify that pile materials, sizes, and lengths comply with the requirements.
2. Determine capacities of test piles and conduct additional load tests, as required under the supervision of the design geotechnical engineer.
3. Observe driving operations and maintain complete and accurate records for each pile.
4. Verify locations of piles and their plumbness.
  - a) Confirm type and size of hammer.
  - b) Record number of blows per foot of penetration.
  - c) Determine required penetrations to achieve design capacity.
  - d) Record tip and butt elevations and record any pile damage.
5. For steel piles, perform additional inspections in accordance with Section 1704.3.
6. For concrete piles and concrete-filled piles, perform additional inspection in accordance with Section 1704.4
7. For specialty piles, perform additional inspections as determined by the registered design professional in responsible charge.
8. For augered uncased piles and caisson piles, perform inspections in accordance with Section 1704.9.

###### C. Testing

1. Determine capacities of test piles and conduct additional load tests, as required (*CBC Table 1704.8*).

###### D. Reports

1. Submit written progress reports describing the tests and observations made and showing the action taken to correct nonconforming work.

## SECTION 2

### FOUNDATIONS (Piles and Piers) (continued)

#### PIERS (Cast-In-Drilled-Hole CIDH)

##### OBJECTIVE

Drilled pier (CIDH) observation requires experience with soil and rock identification and with interpretation of design soil and embedment requirements. Materials engineering laboratories engaging in this service should do so only under the direct supervision and oversight of the design geotechnical engineer. Minor drilled pier foundations for non-structural improvements may be observed without the oversight of the design geotechnical engineer. Additionally, CIDH piles deriving their support in friction for lightly loaded structures can be observed by special inspection personnel provided a design geotechnical engineer is reviewing and accepting the work. CIDH piers for major structures, for critical structures such as schools and hospitals, for any pier constructed underwater using the tremmie method, or for any pier requiring an interpretation of end-bearing capacity or embedment into a specific soil or rock type should only be performed under the supervision of an engineer or geologist.

##### OBSERVATION DUTIES

###### A. Documents

1. Review the approved plans, specifications, and the geotechnical engineer's report.
2. Note and record the equipment being used on site.

###### B. Verification

1. Observe drilling operations and maintain complete and accurate records for each pier.
2. Verify locations of piers and their plumbness. Confirm pier diameters, bell diameters (if applicable), lengths, log of soil types embedment into bedrock (if applicable), and adequate end strata bearing capacity.
3. For concrete piers, perform additional inspections in accordance with Section 1704.4.
4. For masonry piers, perform additional inspections in accordance with Section 1704.5.

###### C. Sampling of Materials

1. Obtain samples of soil and rock if required by the geotechnical engineer of record for confirmation of classification or strength testing.

###### D. Testing

1. Perform testing of continuity of pier defects using geophysical methods if required by design professionals.

###### E. Reports

1. Submit written progress reports describing the tests and observations made and showing the action taken to correct nonconforming work.