

## SECTION 9

### POST-TENSIONED CONCRETE

#### OBJECTIVE

Post-tensioned concrete is normally constructed onsite rather than fabricated in plants. As a result, more responsibility is placed on the independent inspection agency to verify that quality control meets acceptable standards.

The Statement of Special Inspections, prepared by the responsible design professional, will define the special inspection task(s) required. Qualified special inspectors who diligently perform the duties listed below while under the direct supervision of the materials engineering laboratory can best achieve this objective.

#### OBSERVATION DUTIES

##### A. Documents

1. Review the approved plans, specifications, and approved placing and stressing drawings furnished by the post-tensioning contractor.
2. Review the reinforcing steel placing drawings to check whether they have been coordinated with the stressing drawings.

##### B. Mill Test Reports

1. Check that reinforcing steel and post-tensioning steel supplied to job is properly identified and mill test reports show conformance to project specifications.

##### C. Sampling of Materials

1. Sample and deliver to the laboratory for testing the following materials when required by project specifications:
  - a) Concrete aggregates and cement
  - b) Prestressing strand, rods, or wire
  - c) Reinforcing steel
  - d) Steel used for structural inserts

##### D. Steel Fabrication of Embedded Items

1. Visit fabrication plant.
2. Verify that qualified welders only are welding in accordance with AWS Structural Welding Code.
3. Verify that only qualified welding procedures are being used.
4. Observe the welding operations and the finished product for defects and verify that corrections are made, if necessary.

##### E. Pre-Placement Observations

1. Check the general layout, size, spacing, and profile of all reinforcing steel and post-tensioning steel.
2. Observe all anchorages, inserts, embedded items, blockouts, conduits, etc.
3. Calibrate or review current calibration data on the proposed stressing equipment.

##### F. Observation During Placement of Concrete

1. Observe batch plant operations when required.
2. Observe concrete placement and report any damage or misalignment of any embedded components (with particular emphasis at end anchorages).
3. Cast compression test specimens.
4. Test slump, air content, and unit weight. Request adjustment as necessary.

##### G. Stressing

1. Verify that the concrete compressive strength meets the minimum required strength prior to post-tensioning.
2. Check the stressing sequence and verify the required post-tensioning forces.
3. Call to the attention of the structural engineer any out of tolerance discrepancy in force-elongation relationship, spalled concrete, broken tendons, or anchorage slippage.
4. Verify friction losses where applicable.
5. When using bonded tendons, observe grouting procedure.

##### H. Reports

1. Submit written progress reports describing the tests and observations made and showing the action taken to correct nonconforming work. Itemize any changes authorized by architect/engineer. Report all uncorrected deviations from plans or specifications.