

## SECTION 8

### PRE-TENSIONED CONCRETE

#### OBJECTIVE

Because the quality of materials used in prestressed construction is more closely controlled than normal concrete construction, there has developed a strong quality system program by plant manufacturers. As a result, the purpose of pre-tensioned concrete plant observation is to verify the actual control program and to check its effectiveness.

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 shop detail drawings.
2. Verify that concrete mix designs, tensioning data, and calculations for stressing have been approved by the reviewing authority.
3. Verify that jacking equipment has been calibrated.

##### B. Mill and Plant Test Reports

1. Check conformance of all materials to project specifications. Verify steel mill test reports for prestressing steel and deformed bar steel. Verify mill markings and tags. Verify cement mill test reports and certification.
2. Check fabricator's testing facility and reporting of tests performed under fabricator's quality control program.

##### C. Sampling

1. Sample and deliver or ship to the laboratory for testing the following when independent tests are required by project specifications:
  - a) Concrete aggregates
  - b) Prestressing strand or wire
  - c) Reinforcing steel
  - d) Steel used for structural steel embedded items

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

1. Verify that qualified welders are employed to perform welding of structural steel using welding procedures qualified in accordance with AWS Structural Welding Code.

##### E. Pre-Placement Observations

1. Bed layout and form cleanliness.
2. Quantity and spacing of reinforcing and stressing steel.
3. Location of inserts and embedded items.
4. Profile of stressing steel.
5. Witness tensioning of prestressing elements, measure elongation of strand, and record gauge pressure.

##### F. Tests and Observation During Casting

1. Perform batch plant observations.
2. Conduct slump, air, and unit weight tests. Request adjustments as necessary.
3. Cast compression test specimens.
4. Observe placement and vibration of concrete in forms.
5. Observe finishing treatment.

##### G. Post-Placement Tests and Observations

1. Observe curing procedures, temperatures, and curing cycles.
2. Monitor compressive strength results for specified release strength.
3. Witness stress transfer.
4. Identify member by component and date cast.

##### H. Field Erection

1. Check members for damage during storage or shipment.
2. Check field installation and structural connections.

##### I. 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.