

CHAPTER 8 PRECAST CONCRETE

SICC-801 GENERAL

SICC-801.1 Scope. The requirements of this chapter, NCSBC-1704.4, and NCSBC-Table 1704.4 Item 9 shall apply when construction includes precast concrete building elements as listed in SICC-302.4.

SICC-801.2 Precast concrete fabrication. Fabricators for off-site precast concrete elements shall be subject to special inspections as required by SICC-302.1 and SICC-803 and NCSBC-1704.2. Site-cast precast concrete elements shall be subject to special inspections during fabrication as required by SICC-2007 Chapter 7 and SICC-804.1, and NCSBC-1704.4.

SICC-801.3 Precast concrete erection. Precast concrete elements shall be subject to special inspections during erection as required by SICC-804.2 and NCSBC-Table 1704.4 Item 9.

SICC-802 FABRICATION AND ERECTION DOCUMENTS

SICC-802.1 Review and approval. The concrete mix designs shall be submitted to the **RDP** responsible for preparation of precast concrete designs and the **AR**, **SER** for review and approval. The fabrication and erection documents shall be submitted for review and approval to the **SER** prior to precast concrete elements' fabrication and/or erection, as appropriate. The **GC** shall provide **SER**-approved fabrication and erection documents, including the concrete mix designs for use by the **SIER** to conduct special inspections during construction.

SICC-802.2 Preparation of fabrication and erection documents. A **RDP** with experience in the design of precast concrete structures shall prepare sign and seal fabrication and erection documents for precast concrete building elements, including but not limited to: design drawings and calculations, connection details, design of lifting inserts, rigging requirements, and erection bracing. Documents for site-cast precast concrete shall also include, but are not limited to: element fabrication, form removal, storage and transportation.

SICC-802.3 AR and SER review and approval. The **AR** and the **SER** shall review the fabrication and erection documents and the concrete mix designs for compliance with the architectural and structural design of the building.

SICC-803 INSPECTION OF PRECAST CONCRETE FABRICATORS

Where fabrication of precast concrete elements is being performed off-site on the premises of a fabricator's shop, special inspection of the fabricator is required (see SICC-302.1 and NCSBC-1704.2). The **SIER** shall verify that the precast plant has a documented and implemented Quality Control Program and shall notify **CCBSD** in writing of his/her findings. The minimum quality control program shall be in accordance with the Precast/Prestressed Concrete Institute (PCI) Plant Certification Program. Alternatively, the **SIER** may inspect the precast plant at appropriate intervals to verify that materials, methods, products, and quality control comply with project specifications, RDP approved fabrication and erection documents. PCI MNL-116, "Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products," and/or PCI MNL-117, "Manual for Quality Control for Plants and Production of Architectural Precast Products" are resources available to the **SIER** for plant inspections.

SICC-804 INSPECTION OF PRECAST CONCRETE ELEMENTS

The **SIER** shall perform special inspections of precast concrete building elements as required by the NCSBC, NCSBC-1704.4, and NCSBC-Table 1704.4 Item 9 during erection for conformance with SER approved documents.

SICC-804.1 Site-cast precast concrete. During fabrication of site-cast precast concrete elements, the **SIER** shall verify the following:

- **Concrete.** Concrete complies with the approved concrete mix designs and the applicable provisions of SICC-2007 Chapter 7 for cast-in-place concrete.
- **Compressive strength of field-cured cylinders.** The compressive strength of field-cured cylinders satisfies minimum strength requirements of the approved construction documents and the lifting requirements and lifting insert specifications of the approved fabrication and erection documents.
- **Reinforcing steel.** Reinforcing steel, including lifting inserts, is installed in accordance with approved documents.

SICC-804.2 Erection: During erection of precast concrete elements, the **SIER** shall verify the following:

- **Assembly.** Precast concrete elements are lifted, assembled and braced in accordance with approved fabrication and erection documents.
- **Welders.** Welders and weld inspectors are certified in accordance with AWS D1.1, Chapter 5, Part C.
- **Connections.** All welded connections in the structural frame are in accordance with approved documents and applicable sections of the AWS D1.1 Welding Code, SJI Specifications, AISC, and NCSBC. All connections of architectural precast concrete elements in buildings exceeding 30 feet in height and assigned to Seismic Design Category D, E or F in accordance with NCSBC-1707.6.

SICC-805 COMPLETION OF PRECAST CONCRETE CONSTRUCTION

Upon completion of architectural and structural precast concrete construction, the **SIER** shall submit a completion letter to **CCBSD**. The **SIER** shall also indicate the date of completion on the final report of special inspections for all precast concrete construction.

Precast Concrete (CASE Guidelines)

Item	Scope
1. Plant Certification / Quality Control Procedures <input type="checkbox"/> Fabricator Exempt	<i>Review plant operations and quality control procedures.</i>
2. Mix Design	<i>Inspect concrete batching operations and verify compliance with approved mix design</i>
3. Material Certification	
4. Reinforcement Installation	<i>Inspect size, spacing, position and grade of reinforcing steel. Verify that reinforcing bars are free of form oil or other deleterious materials.</i>
5. Prestress Operations	<i>Inspect placement, stressing, grouting and protection of prestressing tendons</i>
6. Connections / Embedded Items	
8. Concrete Placement	<i>Inspect placement of concrete. Verify that concrete conveyance and depositing avoids segregation or contamination. Verify that concrete is properly consolidated .</i>
9. Sampling and Testing of Concrete	<i>Test concrete compressive strength (ASTM C31 & C39), slump (ASTM C143), air-content (ASTM C231 or C173) and temperature (ASTM C1064).</i>
10. Curing and Protection	<i>Inspect curing, cold weather protection and hot weather protection procedures.</i>
11. Erected Precast Elements	<i>Inspect erection of precast concrete including member configuration, connections, welding and grouting.</i>
12. Other:	