



# ACI 301-F Specification Update

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and Exposition



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## Precast Structural Concrete Section 13

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# General Items

~~Description~~ Scope — This section covers requirements for precast structural concrete members designated in Contract Documents.

# Submittals

*Shop Drawings* — Submit shop drawings for erection of precast concrete members, including member locations, plan views, elevations, dimensions, handling procedures, and connection details. Shop drawings shall indicate details for connections at the member ends and to each adjoining member.



# Submittals

*Welding Certificates* — Submit welding procedure specifications and personnel certificates



# Submittals

*Structural Design Submittal* — If specified, submit structural calculations prepared, signed, and sealed by a licensed design engineer.



# Submittals

*Design Modifications* — If modifications to design in Contract Documents are proposed, notify Architect/Engineer immediately and submit drawings.

# Submittals

~~Submit erector qualifications as required...~~

Unless otherwise specified, submit a current Certificate of Compliance furnished by PCI designating qualification for the Work.



# Submittals

~~Submit fabricator qualifications as required...~~

*Plant Quality Control* — Unless otherwise specified, submit certification of precast concrete plants and personnel in accordance with the Precast/Prestressed Concrete Institute (PCI) Plant Certification program.

# Submittals

If specified, submit material test reports or material certificates, signed by manufacturers or suppliers certifying that the following items comply with specification requirements:

- Cementitious Materials
- Concrete Aggregates
- Reinforcement and Prestressing Steel
- Admixtures
- Bearing Pads
- Structural-Steel Shapes and Hollow Structural Sections
- Insulation
- Other Components



# Quality Assurance

*Erector Qualifications* — Unless otherwise specified precast concrete erector shall be qualified by the PCI Erector Certification Program in the Category specified in Contract Documents before beginning work at the Project site. ~~Submit a current Certificate of Compliance furnished by PCI designating qualification for the Work.~~



# Quality Assurance

*Fabricator Qualifications* — Unless otherwise specified, fabricator shall be certified in accordance with PCI Plant Certification program for the Group and Category specified in Contract Documents.

# Quality Assurance

*Retention of Records* – Unless a longer period is specified, retain quality control records and compliance certificates for each type of precast member for at least ~~5 years~~ 6 years.



# Preconstruction Conference

Unless otherwise specified, schedule a preconstruction conference at the Project site.

Design and construction parties including Special Inspector shall be invited to attend the conference.



# Structural Design

Unless otherwise specified, design each member for required loads, handling, transportation, erection, and other design criteria indicated in the Contract Documents. ~~Shop drawings shall indicate design methods used and shall indicate details for connections at the member ends and to each adjoining member.~~

# Structural Design (Part 2)

Specify design criteria, and applicable codes and standards. Design criteria shall include (as applicable):

- Superimposed Gravity Loads
- Lateral Load Provisions
- Wind, Seismic and Other Vertical Loads
- Topping Slab Thickness
- Design Temperature Range
- Lateral Drift Limits
- Deflection Requirements other than those Required by Specified Codes.



# Sand-Cement Grout

If grout will be in contact with prestressing steel, constituent materials used shall be such that the water-soluble chloride ion ( $\text{Cl}^-$ ) content of grout shall not exceed 0.06 percent of mass of cement as tested in accordance with ASTM C1218 / C1218M.

# Hardware

- Steel Connection Materials
- Hardware Surface Finish
- Bolted Connectors

# Fabrication

Openings larger than 10 inches in any dimension shall be formed or saw cut. Do not drill or cut openings without obtaining acceptance from Architect/Engineer.





# Maximum Curing Temperature

Unless otherwise specified, maximum concrete temperature during ~~initial~~ curing shall not exceed 160°F ~~153°F... A temporary rise in maximum initial curing concrete temperature is permitted for a period less than 2 hours provided it does not exceed the maximum allowable temperature by more than 5°F.~~



# Protection of Strand Ends

For members assigned to Exposure Class C1 or C2... protect strand ends and anchorages, ~~not exposed to view when in service,~~ with bitumastic, zinc-rich, or epoxy paint.

# Precast Insulated Concrete Panels

Maximum concrete temperature at the insulation board during curing shall not exceed the maximum temperature limit for the insulation board as specified by insulation manufacturer.





# Top Surface of Composite Members

Top surfaces of ~~double tees, hollow core plank,~~  
~~or other~~ precast concrete members intended  
to act compositely with a concrete topping  
shall be intentionally roughened as indicated in  
the Contract Documents ~~have a rough scratch~~  
~~finish transversely scarified to provide ridges at~~  
~~least 1/4 in. deep.~~



# Bearing Pad Installation

Install bearing pads to a maximum height of 1 ½ in. If the height required to achieve bearing is in excess of 1 ½ in., add steel shims below bottom bearing pad. Tack weld steel shims together.





# Finishing

Where specified, trowel top of grout joints on roofs to prevent unevenness that might interfere with placing of, or cause damage to, insulation and roofing. Finish transitions due to different surface levels at a slope not steeper than 1 to 12.



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## Precast Architectural Concrete Section 14

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# Submittals

The Following Shall be Submitted:

- Concrete Mixtures
- Design Reference Sample
- Sample Panels (UNO)
- Fabricator Qualifications (UNO)

# Submittals

If Specified, Submit:

- Range Sample Panel
- Full Size Mock-Up
- Shop Drawings
- Structural Design Submittals
- Material Test Reports Data

# Submittals

If specified, design calculations and shop drawings signed and sealed by a licensed design engineer responsible for their preparation showing governing panel types, connections, concrete cover, and reinforcement types including special reinforcement.

# Submittals

*Shop Drawings* - <If specified> Submit shop drawings showing panel types, connections, concrete cover, and reinforcement types including special reinforcement. If specified, shop drawings shall be signed and sealed by licensed design engineer responsible for precast member design.

# Submittals

*Structural Design Submittal* —If specified, submit structural calculations prepared, signed, and sealed by a licensed design engineer.



**NEW**

# Structural Design of Arch Precast

*Structural Design* — Unless otherwise specified, design governing panels for required loads, handling, transportation, erection, and other specified design criteria

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# Structural Design of Arch PC (Part 2)

Specify design criteria, and applicable codes and standards. Design criteria shall include (as applicable):

- Superimposed Gravity Loads
- Lateral Load Provisions
- Wind, Seismic and Other Vertical Loads
- Design Temperature Range
- Lateral Drift Limits
- Deflection Requirements other than those Required by Specified Codes.



# Precast Arch Concrete Finishes

Unless otherwise specified, float finish  
unexposed surfaces of architectural concrete  
units ~~by smooth steel trowel finish~~.