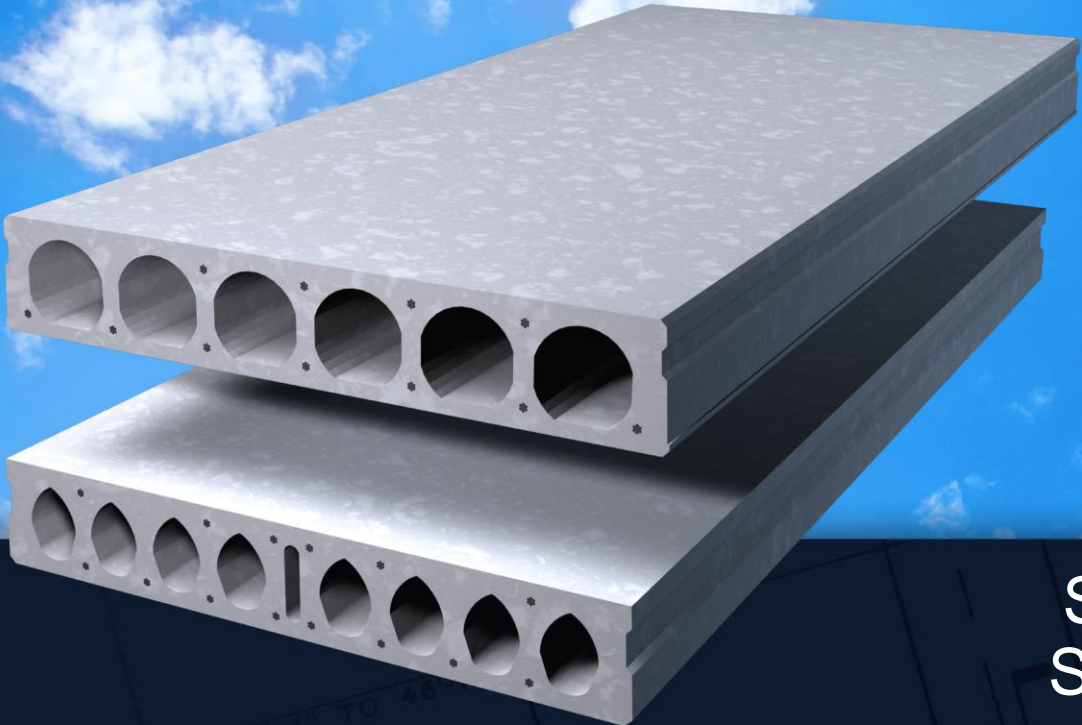


# Precast, Prestressed Hollowcore Plank



## Specifications Section 03400



A Chapter of the  
Precast/Prestressed Concrete Institute

DATE ISSUED  
April 8, 2011



**Precast/Prestressed Concrete Institute Northeast**

**SPECIFICATIONS FOR PRECAST,  
PRESTRESSED HOLLOWCORE PLANK**

**SECTION 03400**

**1. GENERAL**

**1.01 Description**

- A. Work Included:
  - 1. These specifications cover product design, manufacturing, transportation and installation of precast, prestressed, concrete, hollowcore plank, including grouting of all joints.
  
- B. Related Sections:
  - 1. 033000- Cast-in-Place Concrete: Site cast concrete.
  - 2. 051200- Structural Steel Framing: Adjacent structural frame.
  - 3. 034500 - Architectural Precast Concrete
  - 4. Underlayments (Floor and/or Roof Leveling)
  - 5. Section 079200 - Caulking and Sealants
  
- C. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

**1.02 Quality Assurance**

- A. Manufacturer Qualifications: The **Precast Prestressed Concrete Institute (PCI) Plant Certification Program** and shall be certified in category C2.
  
- B. Erector Qualifications: **Precast Prestressed Concrete Institute PCI Qualified Erector** program and regularly engaged for at least 5 years in the erection of precast structural concrete similar to the requirements of this project.
  
- C. Welder Qualifications: In accordance with AWS D1.1.
  
- D. Codes and Standards: Comply with provision of following codes, specifications and standards, except as otherwise indicated .
  - 1. ACI 301 "Specifications for Structural Concrete".
  - 2. ACI 318 "Building Code Requirements for Structural Concrete".

3. Concrete Reinforcing Steel Institute, "Manual of Standard Practice".
4. Precast Prestressed Concrete Institute MNL - 116, "Manual for Quality Control for Plants and Production of Precast Concrete Products".
5. Precast Prestressed Concrete Institute MNL - 135, "Tolerance Manual for Precast and Pre-stressed Concrete Construction".
6. Precast Prestressed Concrete Institute MNL - 120, "PCI Design Handbook".
7. Precast Prestressed Concrete Institute MNL – 127 "Erection Manual Standards and Guidelines for the erection of precast concrete products."
8. Precast Prestressed Concrete Institute MNL – 124, "Design for Fire Resistance of Precast Prestressed Concrete."
9. American Welding Society, AWS D1.1 "Structural Welding Code-Steel", D1.4 "Structural Welding Code – Reinforcing Steel", D1.6 "Structural Welding Code - Stainless Steel", C5.4, "Recommended Practices for Stud Welding".
10. ASTM Specifications – As referred to in Part 2-Products, of this Specification.

### 1.03 Submittals and Design

#### A. Shop Drawings:

1. Erection Drawings
  - a. Plans locating and defining all hollowcore planks furnished by the manufacturer, with all major openings shown.
  - b. Sections and details showing connections, weld plates, edge conditions and minimum support conditions of the hollowcore plank units.
  - c. All dead, live and other applicable loads used in the design.
  - d. Fire rating.
  - e. Shop tickets are typically not required for approval.

#### B. Approvals:

1. Submit \_\_\_\_\_ copies of erection drawings for approval prior to fabrication. Fabrication not to proceed prior to receipt of approved drawings.

#### C. Product Design Criteria:

1. Loadings for design
  - a. Handling and erection stresses.
  - b. All dead and live loads as specified on the contract documents.
  - c. All other loads specified for hollowcore plank where applicable.
2. Approximate camber and deflection values and how they may affect the project should be reviewed with the manufacturer.
3. Fire rating shall be \_\_\_\_\_ hour(s). MNL-124 maybe used to determine fire rating.
4. Design steel plank support headers at openings when headers are determined necessary by the manufacturer's engineer.
5. Design calculations shall be performed by an engineer, registered in the state that the project is located in, and be experienced in precast prestressed concrete design. Design calculations shall be submitted for approval upon request.
6. Design shall be in accordance with ACI 318 and other applicable codes and standards.

#### D. Tests and Reports:

1. Perform all concrete testing in accordance with PCI MNL-116 requirements.

## **2. PRODUCTS**

### **2.01 Materials**

- A. Portland Cement:
  1. ASTM C150 – Type I or III.
- B. Admixtures:
  1. Water Reducing, Retarding, Accelerating, High-Range Water Reducing Admixtures: ASTM C494
- C. Aggregates:
  1. ASTM C33 or C330
- D. Water:
  1. Potable or free from foreign materials in amounts harmful to concrete and embedded steel.
- E. Reinforcing Steel:
  1. Bars:  
Deformed Steel: ASTM A615 – Grade 60  
Deformed Low Alloy Steel: ASTM A706
  2. Wire:  
Cold Drawn Steel: ASTM A82.
- F. Prestressing Strand:
  1. Uncoated, 7-Wire, Low Lax strand: ASTM A416 (including supplement) – Grade 250K or 270K.
- G. Welded Studs: In accordance with AWS D1.1.
- H. Structural Steel Plates and Shapes: ASTM A36.
- I. Bearings Strips:
  1. Plastic: Multi-monomer plastic strips shall be non-leaching and support construction loads with no visible overall expansion.

### **2.02 Concrete Mixes**

- A. 28-day compressive strength: Minimum of 5,000 psi
- B. Release strength: Minimum of 3,000 psi
- C. Use of calcium chloride or admixtures containing chlorides is not permitted.

### **2.03 Fabrication**

- A. Manufacturing procedures and tolerances shall be in compliance with PCI MNL 116.
- B. Openings: Opening locations will be determined by the appropriate trades and provided to the manufacturer. Manufacturer shall provide openings 12 inches square or larger and shown on the architectural and structural drawings. Small openings (less than 12 inches square) shall be drilled or cut by the respective trades after plank is grouted. Prior to field cutting, openings must be approved by the manufacturer.
- C. Finishes: Bottom surface shall be a smooth steel form finish from an extrusion process, without major chips, spalls and imperfections. Top surface is a uniform screed finish. Consult the plank manufacturer for other surface finish requirements.

## **2.04 Product Delivery, Storage, & Handling**

- A. Delivery and Handling:
  - 1. Hollowcore plank shall be lifted and supported during manufacturing, stockpiling, transporting and erection operations only at the lifting or supporting points designated by the manufacturer.
  - 2. Transportation, site handling and erection shall be performed by qualified personnel with acceptable equipment and methods.
- B. Storage:
  - 1. Store all units off ground on firm, level surfaces with dunnage placed at bearing points.
  - 2. Place stored units so that identification marks are discernible.
  - 3. Separate stacked units by dunnage across full width of each plank.

## **3. EXECUTION**

### **3.01 Erection**

- A. Site Access: Erection access suitable for cranes and trucks to move unassisted from public roads to all crane working areas as required by erector, or otherwise indicated herein, shall be provided and maintained by the general contractor. Obstructing wires shall be shielded or removed and, when applicable, snow removal and winter heat shall be provided by the general contractor.
- B. Stability of the building structure during erection shall be the responsibility of others.
- C. Preparation: The general contractor shall be responsible for:
  - 1. Providing true, level, bearing surfaces on all field-placed bearing walls and other field-placed supporting members. Masonry wall bearing surfaces shall be bonded to beams with properly filled and cured concrete.
  - 2. All pipes, stacks, conduits and other such items shall be stubbed off at a level lower than the bearing plane until after the plank are set. Masonry, concrete or steel should not be installed above plank-bearing surface until after the plank is in place.

- D. Installation: Installation of hollowcore slab units shall be performed by a **PCI Qualified Erector** or have a minimum five years experience installing precast concrete. Members shall be lifted at points determined by the manufacturer. Bearing strips shall be set where required.
- E. Alignment: Members shall be properly aligned. Variations between members shall be leveled out by jacking, bolting or any other method recommended by the manufacturer.
- F. The general contractor shall provide and maintain all safety barricades, rebar caps and opening covers required for plank in accordance with current industry safety standards.
- G. Hollowcore plank units may be drilled or “shot” with approval from the manufacture.

### **3.02 Grouting**

- A. Grout:
  - 1. Cement grout: Grout shall be a mixture of not less than one part Portland cement to three parts fine sand, and the consistency shall be such that joints can be completely filled without seepage over adjacent surfaces. The grout shall achieve a minimum 28-day compressive strength of 3,000 psi. Any grout that seeps from the joint shall be completely removed before it hardens. Typically non-shrink grout is not required.
  - 2. Grout keys shall be filled and cured properly prior to loading the deck with building materials, equipment or field cut openings.
  - 3. Loading the deck with building materials and equipment should be reviewed with the manufacturer.
  - 4. Cold Weather construction requirements shall apply when grouting in winter conditions.

### **3.03 Welding**

- B. Field welding shall be done by qualified welders using equipment and materials compatible to the base material.

### **3.04 Patching**

- A. Patching will be acceptable providing the structural adequacy of the hollowcore unit is not impaired. Patching shall be preformed in accordance with the plank manufactures approved details.

### **3.05 Cleaning**

- A. Remove rubbish and debris resulting from hollowcore plank work from premises upon completion.

END OF SECTION 03400