

Precast Concrete Hollow Core Planks

PART 1 General

1.01 SECTION INCLUDES

- A. Floor and roof planks.
- B. Connection plates, brackets, and hangers.
- C. Grouting plank joint keys.

1.02 RELATED SECTION

- A. Section 03300 – Cast in Place Concrete: Concrete superstructure building frame, topping, and reinforcement.
- B. Section 03411 – Structural Precast Concrete.
- C. Section 03451 – Architectural Precast Concrete.
- D. Section 03470 – Tilt-up Precast Concrete.
- E. Section 03505 – Self-Leveling Underlayment.
- F. Section 04200 – Masonry load bearing support walls.
- G. Section 05120 – Structural Steel: Supporting steel lintels, headers, etc.
- H. Section 05500 – Metal Fabrications: Supporting steel lintels, headers, etc.
- I. Section 07270 – Firestopping.
- J. Section 07900 – Joint Sealers: Caulking of butt joints of precast units at exposed underside of floor members.
- K. Section – Interior applied finish.

1.03 REFERENCES

- A. ACI 301 – Structural Concrete for Buildings.
- B. ACI 308 – Building Code Requirements for Reinforced Concrete.
- C. ASTM A36 – Structural Steel.
- D. ASTM A153 – Zinc Coating on Iron and Steel Hardware.
- E. ASTM A416 – Uncoated Seven-Wire Stress-Relieved Steel Strand for Prestressed Concrete.
- F. ASTM A615 – Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- G. ASTM A666 – Austenitic Stainless Steel, Sheet, Strip, Plate, and Flat Bar for Structural Applications.
- H. ASTM C150 – Portland Cement.
- I. ASTM C618 – FlyAsh.
- J. ASTM C33 – Aggregates.
- K. ASTM C260 – Air Entrainment.
- L. ASTM C494 – Water Reducing Agents.
- M. AWS D1.1 – Structural Welding Code.
- N. AWS D1.4 – Structural Welding Code – Reinforcing Steel.
- O. PCI – Manual For The Design of Hollow Core Slabs.
- P. PCI MNL-116 – Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products.
- Q. PCI MNL-120 – Design Handbook – Precast and Prestressed Concrete.

Precast Concrete

Hollow Core Planks (cont'd)

PART 1 General

- R. PCI MNL-123 – Manual on Design of Connections for Precast Prestressed Concrete.
- S. PCI MNL-124 – PCI Design for Fire Resistance of Precast Prestressed Concrete.
- T. PCI – Design Handbook – Precast and Prestressed Concrete.
- U. PCI – Tolerances for Precast and Prestressed Concrete.
- V. UL – Underwriters' Laboratories Inc., Fire Resistance Directory.
- W. UBC – Uniform Building Code.

1.04 DESIGN REQUIREMENTS

- A. Size components to withstand design loads in a [restrained] unrestrained condition as indicated on Structural Drawings.
- B. Concrete: Minimum compressive strength of 6000 psi at 28 days.
- C. Maximum Allowable Deflection of Roof Planks; [1/180], [1/240], [1/360], [] span.
- D. Maximum Allowable Deflection of Floor Planks; [1/180], [1/240], [1/360], [] span.
- E. Design components to accommodate construction tolerances, deflection of other building structural members and clearances of intended openings.
- F. Grouted Keys; Capable of transmitting horizontal shearforce of 2,000 lb/ft.
- G. Calculate structural properties of framing members in accordance with ACI 318.
- H. Utilize the PCI – Design Handbook.

1.05 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Shop Drawings: Indicate plank locations, unit identification marks, connection details, edge conditions, bearing requirements, support conditions, dimensions, openings, openings intended to be field cut, and relationship to adjacent materials.
- C. Product Data: Indicate standard component configuration, design loads, deflections, and cambers.
- D. Fabricator's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with the requirements of PCI MNL-116, PCI MNL-123, and PCI MNL-120.
- B. Maintain plant records and quality control program during production of precast planks. Make records available upon request.

1.07 QUALIFICATIONS

- A. Fabricator: Company specializing in manufacturing the work of this section with five years documented experience, PCI Certified.
- B. Erector: Company specializing in erecting the work of this Section with five years documented experience, PCI Qualified..

Precast Concrete

Hollow Core Planks (cont'd)

PART 1 General

- C. Design precast concrete members in accordance with PCI Manual For The Design of Hollow Core Slabs, under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State of.
- D. Welder: Qualified in accordance with AWS D1.1.

1.08 REGULATORY REQUIREMENTS

- A. Conform to ACI 318 code for design load and on-site construction requirements.
- B. Conform to PCI MNL-124, to achieve [] hour rating for roof assembly.
- C. Conform to PCI MNL-124, to achieve [] hour rating for floor assembly.

1.09 PRE-INSTALLATION CONFERENCE

- A. Discuss anchor and weld plate locations, sleeve locations, and cautions regarding cutting or core drilling.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provision of Section 01600.
- B. Lifting or Handling Devices: Capable of supporting member in positions anticipated during manufacture, storage, transportation, and erection.
- C. Mark each member with date of production and final position in structure.

1.11 COORDINATION

- A. Coordinate work under provisions of Section 01039.

PART 2

2.01 FABRICATORS – PCI CERTIFIED PLANT

2.02 MATERIALS

- A. Materials: ACI 318.
- B. Tensioning Steel Tendons: ASTM A416 Grade 250 or 270 K, of sufficient strength commensurate with member design.
- C. Reinforcing Steel: ASTM A615, deformed steel bars.
- D. Cement Grout: Minimum compressive strength of 3,000 psi at 28 days. Grout to be one part cement and three parts sand, and water.

2.03 ACCESSORIES

- A. Connecting and Supporting Devices: ASTM A36 carbon steel; conforming to PCI MNL-123 plates, angles, items cast into concrete, items connected to steel framing members, and inserts.
- B. Bearing pads 1/8 inch Tempered Masonite or Korolath.

2.04 FABRICATION

- A. Conform to AWS D1.4 and PCI MNL-116.
- B. Embed anchors, inserts, plates, angles, and other items at locations indicated.
- C. Provide openings required by other sections, at locations indicated. Greater than 8 inches diameter.

2.05 COMPONENTS

- A. Nominal Thickness: 6, 8, 10, 12, and 16 inches.

Precast Concrete Hollow Core Planks (cont'd)

PART 2**2.06 FINISHES**

- A. Plant Finish: Finish members to PCI MNL-116 Finish B Grade.

2.07 FABRICATION TOLERANCES

- A. Conform to PCI MNL-116.
- B. Maximum Bowing of Members: 1/4 inch in ten feet to a maximum of 3/8 inch.

2.08 SOURCE QUALITY CONTROL AND TESTS

- A. Provide testing and analysis of site placed concrete and grout under provisions of Section 01400.
- B. Provide shop inspection and testing for stressing tendons.
- C. Test samples in accordance with specified ASTM and ACI standards

PART 3**Execution****3.01 EXAMINATION**

- A. General Contractor to verify that site conditions are ready to receive work and field measurements are as indicated on shop drawings.
- B. General Contractor to verify that supporting structure is ready to receive work.

3.02 ERECTION

- A. Erect members without damage to structural capacity, shape, or finish. Replace or repair damaged members.
- B. Align and maintain uniform horizontal and end joints, as erection progresses.
- C. Install bearing pads at bearing ends of planks as indicated.
- D. Adjust differential camber between precast members to tolerance before final attachment and grouting
- E. Adjust differential elevation between precast members to tolerance before final attachment.
- F. Grout plank, joints, trowel smooth.
- G. Transition differential elevation of adjoining planks with grout to a maximum slope of 1:12. [_____].
- H. Secure units in place. Perform welding in accordance with AWS D1.1.

3.03 ERECTION TOLERANCES

- A. Erect members level and plumb within allowable tolerances. Conform to PCI MNL-116.

3.04 PROTECTION OF FINISHED WORK

- A. Protect members from damage from other trades by General Contractor throughout the job.