SECTION 03415

PRECAST CONCRETE HOLLOW CORE PLANKS

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Precast floor planks.
   B. Connection plates with brackets and hangers.
   C. Grouting plank joint keys.

1.02 RELATED REQUIREMENTS
   A. Section 03300 - Cast-in-Place Concrete.

1.03 REFERENCE STANDARDS
   A. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2010.
   B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2008.
   E. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2009b.
   F. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2003.
   I. PCI MNL-116 - Manual for Quality Control for Plants and Production of Structural Precast Concrete Products; Precast/Prestressed Concrete Institute; 1999, Fourth Edition.
   K. PCI MNL-123 - Design and Typical Details of Connections for Precast and Prestressed Concrete; Precast/Prestressed Concrete Institute; 1988, Second Edition.
   M. PCI MNL-126 - Manual For The Design of Hollow Core Slabs; Precast/Prestressed Concrete Institute; 1998.
   N. PCI MNL-135 - Tolerance Manual For Precast and Prestressed Concrete Construction; Precast/Prestressed Concrete Institute; 2000.
1.04 DESIGN REQUIREMENTS

A. Design planks in accordance with the requirements of PCI MNL-120, PCI MNL 126, PCI MNL-124, ACI 318, and ACI 301.

B. Design connections in accordance with PCI MNL-123.

C. Design components to withstand dead loads and design loads in the configuration indicated on the drawings and as follows:
   1. Floor Assembly: 150 lb/sq ft live load.
   2. Maximum Allowable Deflection of Floor Planks: 1/360 span, cambered to achieve flat surface under dead load.
   3. Design components to accommodate construction tolerances, deflection of other building structural members and clearances of intended openings.
   4. Grouted Keys: Capable of transmitting horizontal shear force of 2,000 lb/ft.

D. Fire Resistance: Design planks in accordance with PCI MNL-124 to achieve hourly ratings as follows:
   1. Floor Assembly: one hour.

1.05 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate standard component configuration, design loads, deflections, and cambers.

C. 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.

D. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Under direct supervision of a Licensed Structural Engineer experienced in design of this Work and licensed in the State of Illinois.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

C. Erector Qualifications: Company specializing in performing the type of work specified in this section, with minimum five years of documented experience.

D. Welder Qualifications: Qualified within previous 12 months in accordance with AWS B2.1.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Lifting or Handling Devices: Capable of supporting member in positions anticipated during manufacture, storage, transportation, and erection.

1.08 PROJECT CONDITIONS

A. Coordinate with framing components directly associated with the work of this section.

B. Coordinate field cut openings with affected section.

C. Coordinate location of hanger tabs and devices for mechanical and electrical work.
PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Precast Concrete Hollow Core Planks:

2.02 PRECAST UNITS

A. Precast Hollow Core Planks:  Comply with PCI MNL-120, PCI MNL 126, PCI MNL-124, ACI 318, and ACI 301.
   1. Dimensions as indicated on drawings.
   2. Design components to withstand dead loads and design loads in the configuration indicated on the drawings and as follows:
   3. Design connections in accordance with PCI MNL-123.
   4. Design components to accommodate construction tolerances, deflection of other building structural members and clearances of intended openings.

2.03 MATERIALS

A. Concrete Materials:  ACI 301.
B. Tensioning Steel Tendons:  ASTM A 416/A 416M, Grade as required for capacity; seven-wire stranded steel cable; type as required for capacity; full length without splices; None - N/A uncoated.
C. Reinforcing Steel:  ASTM A615/A615M Grade as required for capacity deformed steel bars.
D. Non-Shrink Grout:  Non-metallic, minimum compressive strength of 10,000 psi at 28 days.
E. Cement Grout:  Minimum compressive strength of 3,000 psi at 28 days.

2.04 ACCESSORIES

A. Connecting and Supporting Devices:  Plates, angles, items cast into concrete, items connected to steel framing members, and inserts: ASTM A 36/A 36M carbon steel; prime painted.
B. Core Hole End Plugs:  Foamed-in-place insulation.
C. Bearing Pads:  High density plastic, 1/8 inch thick, smooth on one side.  Vulcanized elastomeric compound molded to size.
D. Sill Seal:  Compressible glass fiber strips.

2.05 FABRICATION

A. Planks:  Plant cast, prestressed, hollow core.
   1. Dimensions as indicated on drawings.
B. Weld reinforcing in accordance with AWS D1.4.
C. Embed anchors, inserts, plates, angles, and other items at locations indicated.
D. Provide openings required by other sections, for Plumbing/HVAC/Electrical/Fire Protection, etc., at locations indicated.
   1. Floor Members:  Commercial Grade.
F. Connecting and Supporting Steel Devices:  Do not paint surfaces in contact with concrete or surfaces requiring field welding.
2.06 SOURCE QUALITY CONTROL
   A. See Section 03300 for testing of concrete and grout, materials, and mix designs.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that site conditions are ready to receive work and field measurements are as indicated on shop drawings.

3.02 PREPARATION
   A. Prepare support devices for the erection procedure and temporary bracing.

3.03 ERECTION
   A. Erect members without damage to structural capacity, shape, or finish. Replace or repair damaged members.
   B. Install bearing pads and sill seal at bearing ends of planks as indicated.
   C. Align and maintain uniform horizontal and end joints, as erection progresses.
   D. Maintain temporary bracing in place until final connection is made. Protect members from staining.

3.04 TOLERANCES
   A. Erect members level and plumb within allowable tolerances. Conform to PCI MNL-135.

3.05 PROTECTION
   A. Protect members from damage caused by field welding or erection operations.
   B. Provide non-combustible shields during welding operations.

3.06 CLEANING
   A. Clean weld marks, dirt, and blemishes from surface of exposed members.

END OF SECTION