

**PART 1
General****1.01 SECTION INCLUDES**

- A. Columns and bearing saddles.
- B. Beams, structural wall panels, spandrels, girders, purlins and stadia.
- C. Grout packing.
- A. Connection devices.
- B. Lintels.

1.02 RELATED SECTIONS

- A. Section {_____ - _____}: Foundation concrete work.
- B. Section 03300 – Cast-in-Place Concrete: Concrete topping [and reinforcement].
- C. Section 03505 – Self-Leveling Underlayment.
- D. Section 03415 – Precast Concrete Hollow Core Planks.
- E. Section 03451 – Architectural Precast Concrete.
- F. Section 03470 – Tilt-up Precast Concrete.
- G. Section: Section 07900 – Joint Sealers: Calking of butt joints of precast units at exposed underside of floor members [_____].

1.03 REFERENCES

- A. ACI 301 – Structural Concrete for Buildings.
- B. ACI 318 – Building Code Requirements for Reinforced Concrete.
- C. ANSI/AWS D1.1 – Structural Welding Code.
- D. ANSI/AWS D1.4 – Structural Welding Code – Reinforcing Steel.
- E. ANSI/ASTM A185 – Welded Steel Wire Fabric for Concrete Reinforcement.
- F. ANSI/ASTM A416 – Uncoated Seven-Wire Stress-Relieved Strand for Prestressed Concrete.
- G. ANSI/ASTM A497 – Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
- H. ASTM A-36 – Structural Steel.
- I. ASTM A153 – Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- J. ASTM A615 – Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- K. ASTM A666 – Austenitic Stainless Steel, Sheet, Strip, Plate, and Flat Bar for Structural Applications.
- L. ASTM C150 - Portland Cement.
- M. ASTM C618 – FlyAsh.
- N. ASTM C33 – Aggregates.
- O. ASTM C260 – Air Entrainment.
- P. ASTM C494 – Water Reducing Agents.
- Q. PCI MNL-116 – Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products.
- R. PCI MNL-120 – Design Handbook – Precast and Prestressed Concrete.
- S. PCI MNL-123 – Manual on Design of Connections for Precast and Prestressed Concrete.

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- T. PCI MNL124 – PCI Design for Fire Resistance of Precast Prestressed Concrete
 - A. Underwriters Laboratories.
 - B. UBC – Uniform Building Code.

1.04 DESIGN REQUIREMENTS

- A. Size components to withstand design loads in a restrained or unrestrained condition as indicated on structural drawings.
- B. Concrete: Minimum compressive strength of 6,000 psi at 28 days.
- A. Maximum Allowable Deflections: [1/180], [1/240], [1/360], [] span.
- B. Design members exposed to the weather to provide for movement of components without damage, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to seasonal or cyclic day/night temperature ranges.
- C. Design system to accommodate construction tolerances, deflection of other building structural members and clearances of intended openings.
- D. Calculate structural properties of framing members in accordance with ACI 301 ANSI/ACI 318.

1.05 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Shop Drawings: Indicate layout, unit locations, fabrication details, unit identification marks, reinforcement, connection details, support items, dimensions, openings, and relationship to adjacent materials, and sealed by a Professional Structural Engineer.
- C. Indicate design loads, deflections, cambers, bearing requirements, and special conditions.
- A. Product Data: Indicate standard component configurations, design loads, deflections, cambers, and bearing requirements.
- B. Design Data: Submit design data reports indicating calculations for loadings and stresses of fabricated, designed framing.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with the requirements of PCI MNL-116, PCI MNL-123, PCI MNL-120.

1.07 QUALIFICATIONS

- A. Fabricator: Company specializing in manufacturing the work of this section with minimum five years documented experience. PCI Certified.
- B. Erector: Company specializing in erecting the work of this section with five years documented experience, approved by manufacturer.
- A. Design precast concrete members under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State of [].
- B. Welder: Qualified in accordance with ANSI/AWS D1.1 and ANSI/AWS D1.4.

1.08 REGULATORY REQUIREMENTS

- A. Conform to ACI 318 code for design load and construction requirements applicable to work of this Section.

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- B. Conform to PCI MNL-124 to achieve [_____] hour rating for floor and roof assembly.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01600.
- B. Handle precast members in position consistent with their shape and design. Lift and support only from support points.
- C. Lifting or Handling Devices: Capable of supporting member in positions anticipated during manufacture, storage, transportation, and erection.
- D. Protect members to prevent staining, chipping, or spalling of concrete.
- E. Mark each member with date of production and final position in structure.

1.0 COORDINATION

- A. Coordinate work under provisions of Section 01039.
- B. Coordinate the work of framing components associated with the work of this section.

PART 2**2.01 FABRICATORS – PCI CERTIFIED PLANT****2.02 MATERIALS**

- A. Cement: White or Gray portland, conforming to ASTM C150 Type I or III.
- B. Aggregate, Sand, Water, Admixtures: Determined by precast fabricator as appropriate to design requirements and PCI MNL-116.

2.03 REINFORCEMENT

- A. Tensioning Steel Tendons: ANSI/ASTM A416 Grade 250k or 270k, of sufficient strength commensurate with member design.
- B. Welded Steel Wire Fabric: ASTM A185 Plain Type ASTM A497 Welded Deformed Type ASTM A497 Deformed Type; in flat sheets coiled rolls; unfinished galvanized.
- C. Coating: Galvanize or Epoxy coat reinforcement to resist corrosion.

2.04 ACCESSORIES

- A. Connecting and Supporting Devices: ASTM A36 carbon steel ASTM A666 stainless steel Plates, angles, items cast into concrete or items connected to steel framing members, inserts, conforming to PCI MNL-123; prime painted hot-dip galvanized in accordance with ASTM A153 unfinished. Do not paint surfaces in contact with concrete or surfaces requiring field welding.
- B. Grout:
 - 1. Non-shrink Grout: Premixed, packaged ferrous and non-ferrous aggregate shrink-resistant grout.
- C. Bearing Pads: Neoprene.
- D. Bolts, Nuts and Washers: High strength steel type recommended for structural steel joints. Quenched and tempered alloy steel type. Corrosion resistant chromium-nickel type.
- E. Prime Paint: Zinc rich alkyd type.

2.05 FABRICATION

- A. Fabrication procedure to conform to PCI MNL-116.

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- B. Maintain plant records and quality control program during production of precast members. Make records available upon request.
- C. Ensure reinforcing steel, anchors, inserts, plates, angles, and other cast-on items are embedded and located as indicated on shop drawings.
- D. Tension reinforcement tendons as required to achieve design load criteria.
- E. Provide required openings with a dimension larger than 10 inches and embed accessories provided by other Sections, at indicated locations.

2.06 FINISHES

- A. Ensure exposed-to-view finish surfaces of precast concrete members are uniform in color and appearance.
- B. Cure members under identical conditions to develop required concrete quality, and minimize appearance blemishes such as non-uniformity, staining, or surface cracking.
- C. Exposed-to-View Finish (Finish B): Normal plant finish with fins and protrusions removed, ground edges and ends, flat face surfaces.

2.07 FABRICATION TOLERANCES

- A. Conform to PCI MNL-116.

1.00 SOURCE QUALITY CONTROL AND TEST

- A. Test samples in accordance with applicable ASTM standard.

PART 3**Execution****1.00 EXAMINATION**

- A. General Contractor to verify that site conditions are ready to receive work and field measurements are as shown on shop drawings.
- B. Concrete: Minimum compressive strength of 6,000 psi at 28 days.

2.00 ERECTION

- A. Erect members without damage to structural capacity, shape, or finish. Replace or repair damaged members.
- B. Align and maintain uniform horizontal and vertical joints, as erection progresses.
- C. Adjust differential camber between precast members to tolerances before final attachment.
- D. Install bearing pads.
- E. Set vertical units dry, without grout, attaining joint dimension with shims.
- F. Grout underside of column and beam connections.
- G. Secure units in place. Perform welding in accordance with ANSI/AWI D1.1.

3.00 ERECTION TOLERANCES

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

4.00 PROTECTION OF FINISHED WORK

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