

SECTION 03411

STRUCTURAL PRECAST CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Precast concrete for wet wells, junction structures, valve vaults, and meter vaults as shown on the Drawings. Also includes supporting and connecting devices necessary for proper installation and embedded items shown on the Drawings.

1.02 DESIGN REQUIREMENTS

- A. Design structural precast concrete members in accordance with ACI 350R.
- B. For members exposed to weather, design 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.

1.03 SUBMITTALS

- A. Conform to all provisions and sections of these specifications.
- B. Shop Drawings: Indicate layout, unit locations, fabrication details, reinforcement, connection details, support items, dimensions, openings, and relationship to adjacent materials and design calculations signed and sealed by a Professional Structural Engineer licensed in the State of Texas.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with the requirements of PCI MNL-116 and ACI 301.

1.05 QUALIFICATIONS

- A. Fabricator: Company specializing in manufacturing precast concrete components with minimum 5 years documented experience.
- B. Erector: Company specializing in erecting precast concrete components with 5 years documented experience and approved by manufacturer.
- C. Welder: Qualified within previous 12 months in accordance with AWS D1.1 and AWS 1.4.

- D. Design precast concrete members under direct supervision of a Professional Structural Engineer experienced in design of structural precast concrete components and licensed in the State of Texas.

1.06 REGULATORY REQUIREMENTS

- A. Conform to ACI 318 and ACI 350R for design load and construction requirements applicable to work of this section.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver, store, protect, and handle products at the site under provisions of Section 01500 - Temporary Facilities and Controls.
- 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.

PART 2 PRODUCTS

2.01 CEMENT, GRAY PORTLAND, CONFORMING TO ASTM C 150 TYPE II.

- A. Aggregate, Sand, Water, Admixtures: Determined by precast fabricator as appropriate to design requirements and PCI MNL-116 and Section 03310 - Structural Concrete.

2.02 REINFORCEMENT

- A. Reinforcing Steel: ASTM A 615 Grade 60, deformed steel bars.
- B. Welded Steel Wire Fabric: ASTM A 497 Welded Deformed Type; in flat sheets; unfinished.

2.03 ACCESSORIES

- A. Connecting and Supporting Devices: ASTM A 666 stainless steel plates, angles, items cast into concrete.
- B. Grout: Non-shrink, non-metallic, minimum compressive strength of 7000 psi at 28 days conforming to Section 03600 - Structural Grout.

2.04 FABRICATION

- A. Fabrication procedure to conform to PCI MNL-116 and ACI 318.
- 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-in items are embedded and located as indicated on shop drawings.
- D. Provide required openings with a dimension larger than 10 inches and embed accessories, provided by other Sections, at indicated locations.

2.05 FINISHES

- A. Finish members to PCI MNL-116 Commercial Finish A grade.

2.06 FABRICATION TOLERANCES

- A. Conform to PCI MNL-116.
- B. Maximum Out-of-Square: 1/8 inch/10 feet, non-cumulative.
- C. Maximum Out of-Round: 1/8 inch/10 feet diameter, non-cumulative.
- D. Maximum Misalignment of Anchors, Inserts, Openings: 1/8 inch.

2.07 SOURCE QUALITY CONTROL AND TESTS

- A. Test samples in accordance with applicable ASTM standard and as required by Section 03310 - Structural Concrete.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that site conditions are ready to receive work and field measurements are as shown as on shop drawings.

3.02 PREPARATION

- A. Prepare support equipment for the erection procedure, temporary bracing, and induced loads during erection.
- B. Prepare a means of protection of PVC liner and embeds from damage during construction, transportation, and erection.

3.03 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. Provide continuous resilient waterstop or ASTM C 443 rubber gasket to obtain watertight joint between precast units.
- D. Set vertical units dry, without grout, attaining joint dimension with lead or plastic spacers.
- E. Grout joints between precast units before caisson sinking proceeds.
- F. Secure units in place with connection plates before caisson sinking proceeds.
- G. Perform welding in accordance with AWS D1.1.

3.04 ERECTION TOLERANCES

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

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, or blemishes from surface of exposed members.

END OF SECTION