GCP

SECTION 03400

PRECAST CONCRETE SPECIFICATIONS

PART 1 – GENERAL

1.01 DESCRIPTION:

A. Work of Other Sections:

1. Concrete Reinforcement: Section 03200
2. Cast-In-Place Concrete: Section 03300
3. Exposed Aggregate Concrete: Section 0351
4. Precast Concrete Panels: Section 03410
5. Structural Framing: Section 05100
6. Insulation: Section 07211
7. Sealants: Section 07900
8. Painting: Section 09900
9. Topping: Section 03300
10. Core Drilling Holes: Responsibility of Respective Trades.

1.02 QUALITY ASSURANCE:

A. Manufacturer: The manufacturer shall be Gulf Coast Precast, Inc. or an equal, having a proven background of experience and record of performance required for this project.
B. Requirements of Regulatory Agencies: Design, construction and installation shall meet requirements of state and local building codes.
C. Allowable Tolerances:

1. Length of precast units shall be $\pm$ 1/2 inch of the length indicated on the approved shop drawing.
2. Width of precast concrete units: $\pm$ 1/4 inch.
3. Thickness of precast concrete units: $\pm$ 1/8 inch.
4. Location of inserts within units: $\pm$ 1 inch.
5. Differential camber between adjacent units of the same design: $\pm$ 1/4 inch per 10 feet.

D. Source Quality Control: Cylinder tests of concrete quality shall be made by manufacturer in accordance with ASTM C 192, for each mix design, for each day of production, or for each 100 cubic yards of concrete.

1.03 SUBMITTALS:

A. Shop Drawings:

1. Submit 6 copies of shop drawings for approval prior to fabrication.
2. Drawings shall show location, span, dimensions, reinforcement, location of anchor plates as required, openings, hanger spacing and anchoring details.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. Delivery and Handling: Transport and handle precast concrete plank with proper equipment to protect units from dirt and damage.
B. Storage:

1. Store precast concrete plank to protect units from contact with soil or ground.
2. Store plank on firm surfaces to avoid warping and cracking.

PART 2 – PRODUCT

2.01 MATERIAL:

A. Concrete:

1. Portland cement shall conform to ASTM C 150
2. Aggregate:

   a. Normal weight aggregate shall conform to ASTM C 33, for fine to course gradation.
   b. Lightweight aggregate shall conform to ASTM C 330, for fine to course gradation.

3. Admixtures:

   a. Chemical admixtures shall conform to ASTM C 494.
   b. Calcium chloride shall not be used.

4. Water shall be potable & free from foreign materials in amounts harmful to concrete.

B. Prestressing strands shall be uncoated 7 wire strands conforming to ASTM A 416, Grade 250 or 270.
C. Bearing pads shall be non-staining pressed or tempered wood.
D. Weld inserts, anchor plates, etc. shall be as shown on drawings as required for anchoring slabs to supports.
E. Headers required to safely carry design loads shall be fabricated of steel and be painted with one coat of red primer.

2.02 MIXES:

A. Mix design shall be in accordance with the latest edition of ACI Committee 211.
B. Measurements of concrete mix shall be within the following limits:

1. Cement: $\pm$ 1 percent
2. Water: $\pm$ percent
3. Fine Aggregate: $\pm$2 percent
4. Course Aggregate: +2 percent
5. Admixtures: + 3 percent

2.03 FABRICATION AND MANUFACTURE:

A. Precast concrete plank shall be quad tee plank with pretensioned, prestress strands as manufactured by Gulf Coast Precast, Inc.. Plank shall be cast in 48" widths.
B. Fabrication and Design:

1. Design of precast concrete plank shall be in accordance with the latest edition of ACI 318.
2. Concrete shall have a minimum compressive strength of 5000 psi at 28 days.
3. Precast concrete plank shall be designed and reinforced for all superimposed dead and live loads as shown on architectural and structural plans.
4. Prestressing strands shall be pretensioned by a single strand jacking system. Strands shall be marked for slippage, and if slippage occurs, strand shall be detensioned and restressed. Tension of strand shall be checked to insure accurate results.
5. Prestressing strands will be released when concrete reaches a strength of 3,000 psi or greater as required by design.
6. Precast concrete plank shall be wet or steam cured and shall be clean, smooth, and straight without fins, broken edges, or structural defects prior to delivery.
7. Precast concrete plank shall be designed for a one (1) hour fire rating where indicated on architectural or structural plans.

PART 3 – EXECUTION:

3.01 INSPECTION:

A. Each individual precast plank shall be checked at the fabrication site just prior to loading for transportation to the project site. No broken, cracked, spalled, warped or otherwise defective units shall be erected.
B. Weld angles, anchor inserts in bearing surfaces and supporting structures shall be installed plumb to line and grade by others prior to erection of slabs. Precast concrete plank contractor will verify that structure and anchorage inserts are within allowable tolerances.
C. All bearing surfaces including lintels to be installed by others prior to plank erection.
D. Where masonry walls are used as bearing surfaces, the top course shall be solid.

3.02 PREPARATION:

A. General Contractor shall coordinate delivery and erection of precast concrete plank, provide clear site.
B. Care shall be taken to protect the work and material of other trades during installation of plank.

3.03 INSTALLATION:

A. Precast concrete plank shall be installed according to approved shop drawings and details by mechanics experienced in precast concrete plank erection.
B. Cooperate with other trades to permit inserting of anchors, hangers, etc. Hangers shall be placed before units are grouted.
C. Where indicated on architectural plans precast concrete plank manufacturer shall feather joints with skim coat of latex underlayment for the direct application of pad and carpet.

D. Units shall be erected tight and at right angles to bearing surfaces unless shown otherwise. Minimum bearing shall be 2-1/2 inches on steel, 3 inches on concrete and 3-1/2 inches on masonry. Align and level precast concrete plank using shims.

E. Where weld inserts are shown, precast concrete plank contractor shall weld inserts in slabs to bearing surfaces.

F. Grouting Joints:

1. Clean joints before grouting.

2. Grout for joints shall be 1 part portland cement, 3 parts sand, and water.

3. Fill joints between units with grout.

4. Remove grout that seeped through to ceiling below before grout hardens.

G. Openings greater that 8 inches square to be saw cut in field by precast concrete contractor. Openings 8 inches or less will be done by trades requiring same.

H. All openings required in the precast plank shall be indicated on the structural plans.

3.04 ADJUST AND CLEAN:

A. Remove rubbish and debris resulting from precast concrete plank work from premises upon completion.

B. After erection and grouting is completed the general contractor will be responsible for the protection of the plank.