

## **Specifications for PRECAST ARCHITECTURAL CONCRETE**

### **PART 1: GENERAL**

#### **1.1 SCOPE OF WORK:**

- a. **Extent:** The work required under this division consists of all precast architectural concrete work and related items necessary to complete the work indicated on drawings and described in specifications.

#### **1.2 ACCEPTABLE MANUFACTURERS:**

The manufacturer (and erector) of the precast architectural concrete work shall have recently performed similar work of similar scope and shall have satisfactorily completed such work.

#### **1.3 SHOP DRAWINGS:**

- a. Submit five copies of shop drawings to architect for approval. Obtain approval of drawings prior to proceeding with manufacturing of any present units.
- b. Shop drawings shall indicate: Profiles, joints and arrangements of units, details of special conditions or shapes; method of installation and anchoring; details of typical and special anchors and insert details of typical and special joints; details for connecting to adjoining work or materials; reinforcing for each unit. Each piece or unit of precast concrete when delivered shall have the setting number marked clearly on the back or unexposed edge.

#### **1.4 SAMPLES AND MODELS:**

**Samples:** Before purchasing any materials or proceeding with any work submit for Architect's approval, 2 samples of precast concrete for each type of material and finish, showing the complete range of color and texture and the character of the work that the contractor proposes to furnish. Samples shall be 12 inches by 12 inches by not more than 1-1/2 inches thick.

## PART 2: PRODUCTS

### 2.1 MATERIALS:

- a. **Cement and Aggregate** for precast concrete shall conform to the requirements specified under Concrete, Section 3A.
- b. **Metal Reinforcement:** Wire reinforcement shall be zinc coated cold drawn steel conforming to ASTM Specification A82-62T. Steel reinforcing bars shall be Intermediate grade conforming to ASTM A160-57T and be deformed in accordance with ASTM A305-56T.
- c. **Flashing Reglet:** Form flashing reglets into precast work where indicated. Reglet shall be 16 oz. copper Revere Simplex manufactured by Revere Copper and Brass, Inc. and shall be made especially for casting into concrete. Reglet insert flashing is specified in Division 10.
- d. **Metal Anchors, Inserts and Accessories:** provide all metal anchors, dowels, cramps, inserts, clip angles, anchor plates, shear ties, stud bolts, edge channels and other fastening devices and accessories necessary for proper installation of the precast units. Except where other materials are indicated or specified, the preceding items shall be fabricated from steel or wrought iron with a hotdipped galvanized coating applied after forming.

### 2.2 COLOR AND TEXTURE:

Exposed surfaces of precast concrete shall match the approved sample. All precast units shall receive a special coating specified under another division of the specifications.

### 2.3 FORMS:

- a. Construct forms and molds of materials that will result in units having sharp arrises, dimensional accuracy and uniformity of shape and texture. Provide bracing and reinforcing sufficient to withstand all stresses occasioned by casting without distortion.
- b. Thoroughly clean form faces after each casting operation and make any minor repairs required. An approved non-staining form release agent may be used to coat the forms to aid in stripping.

## 2.4 CONCRETE:

- a. It shall be the responsibility of the manufacturer to produce precast concrete units of the quality specified from concrete mix formulas designed to suit the particular manufacturing and project requirements. Prior to production of precast units, the manufacturer shall submit to the Architect for approval, the mix design he proposes to use. Any changes made in the approved design mixes during production must be approved in advance by the Architect. If the use of an admixture is desired by the manufacturer, it shall be included in the proposed design mix (Lime will not be permitted in the mix for precast units.) Should it become necessary to increase the slump, add cement with the water in the specified water-cement ratio; do not add water alone to increase the slump.
- b. Concrete using standard weight coarse aggregate shall be used for all precast units; it shall have mix proportioned to attain a minimum compressive strength of 5000 psi when cured and tested at 28 days. Absorption shall not exceed 5 feet percent by weight. The maximum allowable slump shall be 3 inches, the water-cement ratio shall not exceed 5 gallons per bag of cement and the minimum cement content shall be 7-1/2 bags per cubic yard.

## PART 3: EXECUTION

### 3.1 FABRICATION OF PRECAST UNITS:

- a. Fabricate precast units to size and shapes indicated and of color and texture to match the approved sample. In the finished work, no unfinished edges shall be exposed to view. The finished units shall be straight, and true to size and shape within the costing tolerance hereinafter specified. Exposed edges shall be sharp, straight, and square and all flat surfaces in a true plane. Warped, cracked, broken, spalled, stained or otherwise defective units shall not be used except for back or unexposed surfaces of panels. Units with imperfections in exposed surface such as joint lines or uneven color will not be acceptable.
- b. Back surfaces of panels or units exposed to view on the inside shall have a float finish. Back surfaces of panels unexposed to view shall have a float finish.
- c. Reinforcing for all units shall be as detailed on the drawings.

- d. Place and secure in the forms all anchors, clips, inserts, lifting devices, stud bolts, shear ties and other devices required for handling and installing the precast units and for the attachment of subsequent items as indicated or specified. Securely weld all anchoring, fastening and lifting devices, etc. to the steel reinforcement in the precast units.
- e. Precast units shall be form-cured for a minimum of 20 hours and kept wet continuously for not less than 6 days after being removed from the forms. Temperature during the curing period shall be controlled at 70 degrees F. and humidity shall be at least 80 percent. Following this curing period, the units shall be allowed to dry for at least 4 days before shipping to the job site.
- f. The exposed surfaces shall be finished to match approved sample as soon after casting as practical.

### **3.2 HANDLING AND STORAGE:**

Precast units shall be handled, transported and stored in a manner to avoid undue strains, hair cracks, straining, or other damage. Replace (or satisfactorily repair) all damaged or defective units. Store precast units on clean blocking, in a vertical position, free of the ground and protected from mud or rain splashes. Cover units with durable covers of canvas, heavy waterproof paper or plastic sheeting. Covers shall be secured firmly and shall protect the units from dust, dirt or other staining materials.

### **3.3 ACCEPTANCE OF SURFACES TO RECEIVE PRECAST WORK:**

Prior to installing any precast work, the Contractor shall inspect surfaces and examine previously placed work of other trades insofar as it affects work specified herein. He shall notify the Architect in writing of any serious defects or conditions that will interfere with, or prevent a satisfactory installation; he shall not proceed with installation until such defects or conditions have been corrected. The starting of installation work shall imply acceptance of the surfaces and backing to receive the precast work.

### **3.4 INSTALLATION AND SETTING PRECAST WORK:**

- a. Workmen used must be skilled in this type of work. Installation shall be in accordance with approved shop drawings. Each unit, piece, or panel shall be set in position assigned on the approved shop drawings, carefully plumbed and aligned and securely anchored to the backing as detailed.

- b. Precast concrete panels shall be secured to structure by connections as indicated. Set units plumb, level and true with joints kept open and units resting on temporary shims while bolted connections are made. Remove shims as soon as possible to avoid staining. Joints shall be uniform and of width indicated. All exposed or accessible steel clips, bolts and other connecting devices shall be given a coat of zinc chromate or other approved paint after erection.

### **3.5 JOINT FILLERS AND CAULKING:**

Fillers and caulking for vertical joints is specified in Section 7E, Caulking and Sealants.

### **3.6 PROTECTION:**

Protect precast work against damage from cutting or welding operations; provide non-combustible shields as necessary while welding. During construction, tops of units in walls shall be covered at end of each day's work and in bad weather. Protect precast work at all times from drippings and heavy rains. Cover sills, copings, and projecting units with non-staining board covering secured with galvanized nails and maintain until building is completed. Protect other work as necessary to prevent damage. Replace damaged or defective units.

### **3.7 CLEANING:**

After completion of setting, pointing and caulking, all precast work shall be thoroughly cleaned by scrubbing with fiber brushes and a mild alkaline abrasive cleaner that contains no caustic or harsh fillers. Cleaning shall begin at the top of the building and proceed downward. Upon completion, leave precast facing clean and free from mortar stains or traces of cleaning compound, and with all joints pointed. Metal windows and other exposed metals members in exterior walls adjacent to the precast work shall be sponged off with the cleaning operation and left undamaged.

A weak solution of muriatic acid may be used for removing stains if approved by the Architect and suitable provisions are made to prevent acid from damaging adjacent metal and other work. All traces of acid must be removed.