

## CPCI SAMPLE SPECIFICATIONS

### SECTION 03410 - HOLLOW CORE PRECAST/PRESTRESSED CONCRETE

## 1.0 GENERAL

### 1.1 DESCRIPTION

- .1 The General conditions of the Contract and Supplementary General Conditions apply to this Division, except as qualified herein and/or excluded.
- .2 Refer to the drawings and specifications.

### 1.2 RELATED WORK

- .1 Cast-in-Place Concrete: Section 03300

**Spec Note:** The following items relating to precast/prestressed slabs, carried out by other trades, should be covered in their respective specifications.

- (1) Drypacking of gap between precast/prestressed slabs at all locations where load bearing walls are parallel to length of slab.
- (2) Perimeter caulking.
- (3) Electrical holes.
- (4) Concrete topping (minimum 37 mm [1 1/2"])

### 1.3 REFERENCE STANDARDS

- .1 Do precast/prestressed concrete work in accordance with CSA A23.4 and CSA A23.3.
- .2 Do welding in accordance with CSA W59 for welding to steel structures and CSA W186 for welding reinforcement.

### 1.4 QUALIFICATIONS OF MANUFACTURER

- .1 Fabricate precast/prestressed concrete elements certified by the Canadian Standards Association in the appropriate category(ies) according to CSA Standard A23.4-00 "Precast Concrete - Materials and Construction". The precast concrete manufacturer shall be certified in accordance with the CSA Certification program for Structural Precast/Prestressed Concrete prior to submitting a tender and must specifically verify as part of his tender that he is currently certified in the appropriate category(ies):

**(A) PRECAST CONCRETE PRODUCTS - ARCHITECTURAL**

(I) Non-Prestressed or (II) Prestressed

**(B) PRECAST CONCRETE PRODUCTS - STRUCTURAL**

(I) Non-Prestressed or (II) Prestressed



**(C) PRECAST CONCRETE PRODUCTS - SPECIALTY**

(I) Non-Prestressed or (II) Prestressed

Only precast concrete elements fabricated by certified manufacturers are acceptable to the Owner. Certification must be maintained for the duration of the fabrication and erection for the project. Fabricate precast concrete elements in accordance with \_\_\_\_\_(Provincial) Building Code requirements.

- .2 The precast concrete manufacturer shall be a member in good standing with the Canadian Precast/Prestressed Concrete Institute (CPCI) and have a proven record and satisfactory experience in the design, manufacture and erection of precast concrete facing units of the type specified. The company shall have adequate financing, equipment, plant and skilled personnel to detail, fabricate and erect the work of this Section as required by the Specification and Drawings. The size of the plant shall be adequate to maintain the required delivery schedule.

**1.5 DESIGN CRITERIA**

- .1 Design precast/prestressed concrete units to CSA A23.3 and to carry handling stresses.
- .2 Design loads in accordance with applicable codes for use and occupancy, wind, temperature, and earthquake.
- .3 Consider vibration characteristics in accordance with NBC.
- .4 Design prestressed units to meet one (1) or two (2) hour fire resistance rating [specify].

**1.6 SOURCE QUALITY CONTROL**

- .1 Upon request, provide Engineer with certified copies of quality control tests and inspection related to project as specified in CSA A23.4 and CSA G279.
- .2 Inspection of prestressed concrete tendons is required in accordance with CSA G279.
- .3 Upon request, provide Engineer with certified copy of mill test report of reinforcing steel supplied, showing physical and chemical analysis.

**1.7 SHOP DRAWINGS**

**Spec Note:** It is not the Precast Manufacturer's responsibility to confirm and correlate dimensions at the job site.

- .1 Submit shop drawings in accordance with Section 01340 - Shop Drawings, Product Data.
- .2 Submit shop drawings in accordance with CSA A23.4 and CSA A23.3. Upon request, the following items shall be provided:
  - .1 Design calculations for items designed by the Manufacturer
  - .2 Estimated camber



- .3 Finishing schedules
- .4 Methods of handling and erection
- .5 Openings, inserts and related reinforcement
- .6 Each drawing submitted to bear stamp of qualified Professional Engineer registered in the Province of \_\_\_\_\_ [specify].

## **1.8 WARRANTY**

- .1 This Contractor hereby warrants that the precast/prestressed elements will not spall or show visible evidence of cracking, except for normal hairline shrinkage cracks, in accordance with the General Conditions warranty clause, for a one-year period.

## **2.0 PRODUCTS**

### **2.1 MATERIALS**

- .1 Cement, aggregates, water, admixtures: To CSA A23.4 and CSA A23.1.
- .2 Prestressing steel: Uncoated 7 wire cable conforming to CSA G279.
- .3 Reinforcing steel: To CSA G30.18.
- .4 Anchorages and couplings: To CSA A23.1.
- .5 Embedded steel: To CSA G40.21, Type M300W
- .6 Welding materials: To CSA W48.1.
- .7 Bearing pads: 3mm Korolath continuous bearing strips.
- .8 Insulation: Expanded polystyrene to CAN/CGSB-51-20.
- .9 Air entrainment admixtures: To CSA A266.1.
- .10 Chemical admixtures: To CSA A266.2.

### **2.2 CONCRETE MIXES**

- .1 Use concrete mix designed to produce 41 MPa (6000 psi) compressive strength at 28 days with a maximum water/cement ratio to CSA A23.1, Table 7 for Class D exposure.
- .2 Air entrainment of concrete mix: To CSA A266.4.
- .3 Admixtures: To CSA A266.4, CSA A266.5.
- .4 Do not use calcium chloride or products containing calcium chloride.

### **2.3 GROUT MIX**

- .1 Cement grout: One-part type 10 Portland cement 2 1/2 parts sand, sufficient water for placement and hydration.



## **2.4 MANUFACTURE**

- .1 Manufacture units in accordance with CSA A23.4.
- .2 Mark each precast unit to correspond to the identification mark on shop drawings for location on a part of unit which will not be exposed.
- .3 Provide hardware suitable for handling elements.
- .4 Provide plug at each cell end of hollow core at exterior [optional].

## **3.0 EXECUTION**

### **3.1 ERECTION**

- .1 Erect elements within the allowable tolerances indicated or specified.
- .2 Erection tolerances to be non-cumulative in accordance with CSA A23.4, Section 10.
- .3 Install 3mm Korolath bearing strips, smooth side up when bearing on concrete or masonry supports.
- .4 Set units in a tight, level position on true level bearing surface provided by others. Minimum bearing 90mm (3 1/2") on masonry and 75mm (3") on structural steel.
- .5 Fasten precast/prestressed units in place as indicated on reviewed shop drawings.
- .6 Level differential elevation of horizontal joints with grout to slope not more than 1:12.
- .7 Clean field welds with a wire brush and touch up with primer.
- .8 Field cut holes and openings up to 150mm (12") diameter for mechanical trades. Openings larger than 150mm (12") to be located on shop drawings at time of approval to be formed in the plant or cut in field. Do not cut reinforcing without prior approval of the precast hollow core slab manufacturer and the Engineer.

### **3.2 TOPPING**

- .1 This contractor shall provide a suitable top finish to accept direct application of finished flooring/roofing as per room finish schedule.
- .2 Where concrete topping (minimum 37mm [1 1/2"]) is to be applied by others, refer to the appropriate specifications. The top surface of the precast/prestressed slabs is to be raked (roughened) for bonding of the topping.

### **3.3 EXPOSED CEILINGS**

- .1 Caulk exposed ceiling longitudinal joints, using standard caulking (by others).
- .2 The underside of precast shall be finished as per CSA A23.4 (clause 24.2.2) STANDARD FINISH.

### **3.4 CLEAN-UP**

- .1 Upon completion of the work of this section, all surplus material and debris shall be removed from the site.

