

## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 03 30 00 – Cast-in-Place Concrete.

### **1.2 REFERENCES**

- .1 Canadian Standards Association (CSA International).
  - .1 CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction.
  - .2 CSA- 0121, Douglas Fir Plywood.
  - .3 CAN/CSA-086.1, Engineering Design in Wood (Limit States Design)
  - .4 CAN/CSA-S269.3, Concrete Formwork

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Formwork materials: use wood and wood product formwork materials to CSA-0121 and CAN/CSA-086.1.
- .2 Form ties: use removable or snap-off metal ties, free of devices leaving holes larger than 25 mm diameter in concrete surface.

## **PART 3 - EXECUTION**

### **3.1 FABRICATION AND ERECTION**

- .1 Verify lines, levels and centres before proceeding with formwork and endure dimensions agree with drawings.
- .2 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CAN/CSA-A23.1.
- .3 Clean formwork in accordance with CAN/CSA-A23.1, before placing concrete.

### **3.2 REMOVAL**

- .1 Leave formwork in place for a minimum of 2 days prior to removal.

**End of Section**

## **PART 1 GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 03 30 00 – Cast-in-Place Concrete.

### **1.2 REFERENCES**

- .1 Canadian Standards Association (CSA International).
  - .1 CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction.
  - .2 ACI 315R-80, Manual of Engineering and Placing Drawings for Reinforced Concrete Structure.
  - .4 CAN/CSA-G30.18, Billet-Steel Bars for Concrete Reinforcement.
  - .5 CSA-G30.3, Cold Drawn Steel Wire for Concrete Reinforcement.

### **1.3 SUBMITTALS**

- .1 Shop Drawings.
  - .1 Submit placing drawings prepared in accordance with plans to clearly show size, shape, location and all necessary details of reinforcing.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Reinforcing bars: to CAN/CSA-G30.18, billet steel, deformed bars, Grade 400.
- .2 Cold-drawn annealed steel wire ties: to CSA G30.3.
- .3 Chairs, bolsters, bar supports, spacers: to CAN/CSA-A23.1.

### **2.2 FABRICATION**

- .1 Fabricate reinforcing bars in accordance with CAN/CSA-A23.1 and ACI 315R, Manual of Standard Practice by the Reinforcing Steel Institute of Canada.
- .2 Provide “L” shaped corner bars to match the size and spacing of all horizontal bars in the grade beams, with the minimum length of each leg to be 600mm.

## **PART 3 - EXECUTION**

### **3.1 PLACING REINFORCEMENT**

- .1 Place reinforcing steel as indicated on the drawings and in accordance with CAN/CSA-A23.1.
- .2 Prior to placing concrete, obtain Engineer’s approval of reinforcing material and placement.

**End of Section**

## **PART 1 GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 03 10 00 – Concrete Forming and Accessories.
- .2 Section 03 20 00 – Concrete Reinforcing.
- .3 Section 03 35 00 – Concrete Finishing.

### **1.2 REFERENCES**

- .1 Canadian Standards Association (CSA International).
  - .1 CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction.
  - .2 CAN/CSA-A23.2, Methods of Test for Concrete.
  - .3 CAN/CSA-A3000-A5, Portland Cement.

## **PART 2 -PRODUCTS**

### **2.1 MATERIALS**

- .1 Portland cement: to CAN/CSA-A3000-A5.
- .2 Water: to CAN/CSA-A23.1.
- .3 Aggregates: to CAN/CSA-A23.1. Coarse aggregates to be normal density.
- .4 Air entraining admixture: to ASTM C 260.

### **2.2 MIXES**

- .1 Proportion normal density concrete in accordance with CAN/CSA-A23.1.
- .2 Cement: Type HS.
- .3 Minimum compressive strength at 28 days: 30MPa.
- .4 Class of exposure: F-1, to CAN/CSA-A23.1.
- .5 Nominal size of coarse aggregate: 20mm.
- .6 Slump: to CAN/CSA-A23.1.
- .7 Air content: concrete to contain entrained air in accordance with CAN/CSA-A23.1.
- .8 Admixtures: to CAN/CSA-A23.1.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- .1 Obtain Engineer's approval before placing concrete. Provide 24 hours notice prior to placement of concrete.
- .2 Ensure reinforcing and inserts are not disturbed during concrete placement.
- .3 Maintain accurate records of poured concrete to indicate date, location of pour, quality, air temperature and test samples taken.
- .4 In locations where concrete dowels are installed into previously poured concrete, drill holes in concrete, place dowels and pack solidly with epoxy grout.

### **3.3 CONSTRUCTION**

- .1 Do concrete work in accordance with CAN/CSA-A23.1, including placing and curing concrete during cold weather.

### **3.4 FINISHES**

- .1 Formed surfaces exposed to view: sack rubbed finish in accordance with CAN/CSA-A23.1.
- .2 Interior floor slab: initial finishing operations followed by final finishing comprising mechanical floating and steel trowelling as specified in CAN/CSA-A23.1 to produce hard, smooth, dense trowelled surface free from blemishes.
- .3 Exterior slab: Screed to plane surfaces and use aluminum floats. Provide round edges and joint spacings using standard tools. Trowel smooth to provide lightly brushed non-slip finish.

### **3.4 SITE TOLERANCE**

- .1 Concrete tolerance in accordance with CAN/CSA-A23.1, Table 22, Class A.

### **3.6 FIELD QUALITY CONTROL**

- .1 Concrete testing to CAN/CSA-A23.2.

**End of Section**

## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 03 30 00 – Cast-in-Place Concrete.

### **1.2 REFERENCES**

- .1 Canadian Standards Association (CSA International).
  - .1 CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction.
  - .2 CAN/CGSB-25.20, Surface Sealer for Floors

### **1.3 SUBMITTALS**

- .1 Product Data
  - .1 Submit product data for review by Engineer, along with WHMIS MSDS sheets. Indicate VOC content. Include application instructions for concrete floor treatment.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Chemical hardener: to CAN/CGSB-25.20, Type 1 – Sodium silicate.
- .2 Surface sealer: to CAN/CGSB-25.20, Type 2, water based, clear colour.

### **2.2 MIXES**

- .1 Mixing, ratios and application in accordance with manufacturer's instructions.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- .1 Verify that slab surfaces are ready to receive work and elevations are as instructed by manufacturer

### **3.5 APPLICATION**

- .1 Apply chemical hardener and surface sealer to interior floor slab in accordance with written instructions of manufacturer.

### **3.6 PROTECTION**

- .1 Protect finished installation in accordance with manufacturer's instructions.

**End of Section**