

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1    Section 03 20 00 – Concrete reinforcing
- .2    Section 03 30 00.01 – Cast-in-place concrete – short form
- .3    Section 03 37 26 – Underwater placed concrete
- .4    Section 03 41 00 – Precast structural concrete

**1.2                REFERENCES**

- .1    Canadian Standards Association (CSA International)
  - .1    CSA-A23.1-04/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2    CSA-O86S1-05, Supplement No. 1 to CAN/CSA-O86-01, Engineering Design in Wood.
  - .3    CSA O121-M1978 (R2013), Douglas Fir Plywood.
  - .4    CSA O151-04, Canadian Softwood Plywood.
  - .5    CSA O153-M1980 (R2008), Poplar Plywood.
  - .6    CSA O437 Series-93 (R2006), Standards for OSB and Waferboard.
  - .7    CSA S269.1-1975 (R2003), Falsework for Construction Purposes.
  - .8    CAN/CSA-S269.3-M92 (R2013), Concrete Formwork, National Standard of Canada

**1.3                ACTION AND INFORMATIONAL SUBMITTALS**

- .1    Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2    Submit shop drawings for formwork and falsework.
  - .1    Submit drawings stamped and signed by professional engineer registered or licensed in Province of Quebec, Canada.
- .3    Submit - Material Safety Data Sheets in accordance with WHMIS MSDS.
- .4    Co-ordinate submittal requirements and provide submittals required by this section.
- .5    Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners, and locations of temporary embedded parts. Comply with CSA S269.1, for falsework drawings and Comply with CAN/CSA-S269.3 for formwork drawings.
- .6    Indicate formwork design data: permissible rate of concrete placement, and temperature of concrete, in forms.
- .7    Indicate sequence of erection and removal of formwork/falsework as directed by Departmental Representative.

## **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Waste Management and Disposal:
  - .1 Separate waste materials and unused materials for reuse, recycling or elimination in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .2 Place materials defined as hazardous or toxic in designated containers.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Formwork materials:
  - .1 For concrete without special architectural features, use wood and wood product formwork materials to CSA-O121, CAN/CSA-O86, CSA O437 Series and CSA-O153.
  - .2 Rigid insulation board: to CAN/ULC-S701.
- .2 Form ties:
  - .1 For concrete not designated 'Architectural', use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surface.
  - .2 For Architectural concrete, use snap ties complete with plastic cones and light grey concrete plugs.
- .3 Form release agent: non-toxic, biodegradable, low VOC.
- .4 Form stripping agent: colourless mineral oil, non-toxic, biodegradable, low VOC, free of kerosene, with viscosity between 70 and 110s Saybolt Universal 15 to 24 mm<sup>2</sup>/s at 40 degrees C, flashpoint minimum 150 degrees C, open cup.
- .5 Falsework materials: to CSA-S269.1.

## **Part 3 Execution**

### **3.1 FABRICATION AND ERECTION**

- .1 Verify lines, levels and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.
- .2 Obtain Departmental Representative's approval for use of earth forms framing openings not indicated on drawings.
- .3 Hand trim sides and bottoms and remove loose earth from earth forms before placing concrete.
- .4 Fabricate and erect falsework in accordance with CSA S269.1.
- .5 Do not place shores and mud sills on frozen ground.
- .6 Provide site drainage to prevent washout of soil supporting mud sills and shores.

- .7 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 CSA-A23.1/A23.2.
- .8 Use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners, joints, unless specified otherwise.
- .9 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.
- .10 Construct forms for architectural concrete, and place ties as indicated
  - .1 Joint pattern not necessarily based on using standard size panels or maximum permissible spacing of ties.
- .11 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections.
  - .1 Ensure that anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.
- .12 Clean formwork in accordance with CSA-A23.1/A23.2, before placing concrete.
- .13 Align form joints and make watertight.
- .14 Keep form joints to minimum.

### **3.2 REMOVAL AND STRAINING**

- .1 Leave formwork in place for a minimum of 48 hours after placing concrete, for all concrete elements
- .2 Re-use formwork and falsework subject to requirements of CSA-A23.1/A23.2.
- .3 For precast concrete slab, the Contractor will have to demonstrate that the slab reached a sufficient resistance before circulating on this one, after their installation.

**END OF SECTION**