

**Part 1            General**

**1.1               RELATED REQUIREMENTS**

- .1       Section 03 20 00 – Concrete Reinforcing.
- .2       Section 03 30 00 – Cast-in-place-concrete.

**1.2               REFERENCES**

- .1       Canadian Standards Association (CSA International)
  - .1       CSA-A23.1/A23.2, latest edition, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2       CAN/CSA-O86-latest edition, Engineering Design in Wood.
  - .3       CSA O121, latest edition, Douglas Fir Plywood.
  - .4       CSA O151, latest edition, Canadian Softwood Plywood.
  - .5       CSA S269.1, latest edition, Falsework for Construction Purposes.
  - .6       CAN/CSA-S269.3,latest edition, 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.
- .3       Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, ties, liners, and locations of temporary embedded parts. Comply with CSA S269.1, for falsework drawings. Comply with CAN/CSA-S269.3 for formwork drawings.
- .4       Indicate formwork design data: permissible rate of concrete placement, and temperature of concrete, in forms.

**1.4               DELIVERY, STORAGE AND HANDLING**

- .1       Not used.

**1.5               PRICE AND PAYMENT PROCEDURES**

- .1       Measurement and Payment
  - .1       No measurement will be made under this section. Include costs related to the formworks in items of concrete work.

## **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, CSA-O151.
- .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. The ties must be protected against rust according to standard CGSB1-GP-72.
  - .2 The filling of cones rods must be made with « Sikatop 123 Plus » or approved equivalent.
- .3 Form release agent: non-toxic, biodegradable, low VOC.
- .4 Form stripping agent: colourless mineral oil, non-toxic, biodegradable, low VOC, free of kerosene.
- .5 Falsework materials: to CSA-S269.1, latest edition.

## **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 the Departmental representative 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 and CSA 269.3, latest edition.
- .5 Provide site drainage to prevent washout of soil supporting shores.
- .6 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.
- .7 Align form joints and make watertight.
  - .1 Keep form joints to minimum.
- .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, and place ties as indicated and as directed.
- .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.

### **3.2 REMOVAL AND RESHORING**

- .1 Leave formwork in place for following minimum periods of time after placing concrete.
  - .1 Two (2) days for walls and five (5) days for walls more than 3 meters and sides of beams.
  - .2 One (1) day for footings and abutments.
- .2 Remove formwork when concrete has reached 70 % of its design strength or minimum period noted above, whichever comes first, and replace immediately with adequate reshoring.
- .3 Provide necessary reshoring of members where early removal of forms may be required or where members may be subjected to additional loads during construction as required.
- .4 Space reshoring in each principal direction at not more than 3000 mm apart.
- .5 Re-use formwork and falsework subject to requirements of CSA-A23.1/A23.2.

**END OF SECTION**