

Part 1 General

1.1 RELATED REQUIREMENTS

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

1.2 PRICE AND PAYMENT PROCEDURES

- .1 Measurement and Payment
 - .1 Measurement Procedures: in accordance with Section 01 29 00 - Payment Procedures.
 - .2 No deductions will be made for volume of concrete displaced by reinforcing steel, structural steel, or piles.
 - .3 Cast-in-place concrete will not be measured but will paid for as fixed price item.
 - .4 Supply and installation of studs, anchor bolts, nuts, washers, sealing anchors and blots with grout or adhesive will not be measured but considered incidental to work.

1.3 REFERENCES

- .1 Ministry of Transportation of Quebec, Standard 3101 « Béton de masse volumique normale ».
- .2 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 CSA A283, latest edition, Qualification Code for Concrete Testing Laboratories.
 - .3 CSA A3000, latest edition, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
 - .4 CAN/CSA S6, latest edition, Canadian Highway Bridge Design code.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Not used.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings
 - .1 Submit placing drawings prepared in accordance with plans to clearly show size, shape, location and necessary details of reinforcing.
 - .2 Submit drawing showing formwork and falsework design to : CSA A23.1/A23.2 and to applicable standards.
 - .3 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec.

- .3 Submit to the laboratory designated by Departmental Representative for approval samples of materials to be used in concrete mix for testing as follows :
 - .1 1 kg Supplementary cementing materials.
 - .2 1 kg blended hydraulic cement.
 - .3 1 kg admixture.
 - .4 Fine and coarse aggregate.

1.6 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.
- .2 Provide the Departmental representative, minimum 4 weeks prior to starting concrete work, with valid and recognized certificate from plant delivering concrete.
 - .1 Provide test data and certification by qualified independent inspection and testing laboratory that materials and mix designs used in concrete mixture will meet specified requirements.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements
 - .1 Concrete hauling time: deliver to site of Work and discharged within 120 minutes maximum after batching.
 - .1 Do not modify maximum time limit without receipt of prior written agreement from the Departmental representative and concrete producer as described in CSA A23.1/A23.2.
 - .2 Deviations to be submitted for review by the Departmental representative.
 - .2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.

Part 2 Products

2.1 DESIGN CRITERIA

- .1 Not used.

2.2 PERFORMANCE CRITERIA

- .1 Not used.

2.3 MATERIALS

- .1 Concrete and its components must comply with the Standard 3101 of the Ministry of Transportation of Quebec.

2.4 MIXES

- .1 Concrete mix must comply with the Standard of 3101 of the Ministry of Transportation of Quebec.

Part 3 Execution

3.1 PREPARATION

- .1 Obtain the Departmental representative written approval before placing concrete.
 - .1 Provide 24 hours minimum notice prior to placing of concrete.
- .2 Place concrete reinforcing in accordance with Section 03 20 00 - Concrete Reinforcing.
- .3 During concreting operations.
 - .1 Development of cold joints not allowed.
 - .2 Ensure concrete delivery and handling facilitates placing with minimum of re-handling, and without damage to existing structure or Work.
- .4 Pumping of concrete is permitted only after approval of equipment and mix.
- .5 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .6 Prior to placing of concrete obtain the Departmental representative approval of proposed method for protection of concrete during placing and curing and in adverse weather.
- .7 Protect previous Work from staining.
- .8 Clean and remove stains prior to application for concrete finishes.
- .9 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
- .10 In locations where new concrete is dowelled to existing work, drill holes in existing concrete.
 - .1 Place steel dowels of deformed steel reinforcing bars and pack solidly with epoxy grout to anchor and hold dowels in positions as indicated.
- .11 Do not place load upon new concrete until authorized by the Departmental representative.

3.2 INSTALLATION/ APPLICATION

- .1 Do cast-in-place concrete work to CSA A23.1/A23.2.
- .2 Sleeves and inserts
 - .1 Do not permit penetrations, sleeves, ducts, pipes or other openings to pass through joists, beams, column capitals or columns, except where indicated or approved by the Departmental representative.
 - .2 Where approved by the Departmental representative, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere.
 - .3 Sleeves and openings greater than 100 x 100 mm not indicated, must be reviewed by the Departmental representative.
 - .4 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain written approval of modifications from the Departmental representative before placing of concrete.
 - .5 Confirm locations and sizes of sleeves and openings shown on drawings.
 - .6 Set special inserts for strength testing as indicated and as required by non-destructive method of testing concrete.

- .3 Anchor bolts
 - .1 Set anchor bolts to templates in co-ordination with appropriate trade prior to placing concrete.
 - .2 Grout anchor bolts in preformed holes or holes drilled after concrete has set only after receipt of written approval from the Departmental representative.
 - .3 Protect anchor bolt holes from water accumulations, snow and ice build-ups.
 - .4 Set bolts and fill holes with epoxy grout.
 - .5 Locate anchor bolts used in connection with expansion shoes, rollers and rockers with due regard to ambient temperature at time of erection.
- .4 Drainage holes and weep holes
 - .1 Form weep holes and drainage holes in accordance with Section 03 10 00 - Concrete Forming and Accessories. If wood forms are used, remove them after concrete has set.
 - .2 Install weep hole tubes and drains as indicated.
- .5 Finishing and curing
 - .1 Finish concrete to CSA A23.1/A23.2.
- .6 Joint fillers
 - .1 Furnish filler for each joint in single piece for depth and width required for joint, unless otherwise authorized by the Departmental representative.
 - .2 When more than one piece is required for joint, fasten abutting ends and hold securely to shape by stapling or other positive fastening.
 - .3 Locate and form joints as indicated.
 - .4 Install joint filler.
 - .5 Use 12 mm thick joint filler to separate slabs-on-grade from vertical surfaces and extend joint filler from bottom of slab to finished slab surface.

3.3 SURFACE TOLERANCE

- .1 Concrete tolerance to CSA A23.1.

3.4 FIELD QUALITY CONTROL

- .1 Site tests: conduct tests as follows in accordance with Section 01 45 00 - Quality Control and submit report as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.
 - .1 Concrete pours.
 - .2 Slump.
 - .3 Air content.
 - .4 Compressive strength at 7 and 28 days.
 - .5 Air and concrete temperature.
- .2 Inspection and testing of concrete and concrete materials will be carried out by testing laboratory designated by Departmental Representative for review to CSA A23.1/A23.2.
 - .1 Ensure testing laboratory is certified to CSA A283.

- .3 Ensure test results are sent to testing Laboratory so that they can be examined during the pre-pouring concrete meeting.
- .4 The Departmental Representative will pay for costs of tests as specified in Section 014500 « Quality Control ».
- .5 The Laboratory Representative will take additional test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.
- .6 Non-Destructive Methods for Testing Concrete: to CSA A23.1/A23.2.
- .7 Inspection or testing by the Laboratory designated by Department Representation will not augment or replace Contractor quality control nor relieve Contractor of his contractual responsibility.

3.5 CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .2 Waste management
 - .1 Dispose of waste in accordance with applicable local, Provincial/Territorial and National Regulations.

END OF SECTION