

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 03 20 00 – Concrete Reinforcing

1.2 PRICE AND PAYMENT PROCEDURES

- .1 Cast-in-place concrete will not be measured but will be paid for as part of the lump sum price.

1.3 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM C260/C260M-10a(2016), Standard Specification for Air-Entraining Admixtures for Concrete.
 - .2 ASTM C494/C494M-16, Standard Specification for Chemical Admixtures for Concrete.
 - .3 ASTM C1017/C1017M-13e1, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
 - .4 ASTM D1751-04(2013)e1, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
- .2 Canadian Standards Association (CSA)
 - .1 CSA A23.1/A23.2-14, Concrete Materials and Methods of Concrete Construction/ Methods of Test and Standard Practices for Concrete.
 - .2 CSA A283-06(R2016), Qualification Code for Concrete Testing Laboratories.
 - .3 CSA A3000-13, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

1.4 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 Departmental Representative and concrete producer as described in CSA A23.1/A23.2.
 - .2 Deviations to be submitted for review by Departmental Representative.
 - .2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.
- .2 Packaging Waste Management: remove for reuse and return by manufacturer of crates, pallets, padding, packaging materials.

Part 2 Products

2.1 MATERIALS

- .1 Portland Cement: to CSA A3001, Type GU
- .2 Supplementary cementing materials: to CSA A3001.
- .3 Water: to CSA A23.1.
- .4 Aggregates: to CSA A23.1/A23.2.
- .5 Admixtures:
 - .1 Air entraining admixture: to ASTM C260.
 - .2 Chemical admixture: to ASTM C494.
- .6 Premoulded joint fillers:
 - .1 The expansion/contraction joint filler is to consist of closed-cell polypropylene foam in accordance with ASTM D1751, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
- .7 Self-Levelling Petroleum-Resistant Caulking:
 - .1 Self-levelling, grey colour, jet fuel resistant, to Meets CAN/CGSB 19.24-M90.
- .8 Epoxy Anchors:
 - .1 Anchors and embedment to be as per design drawings.
 - .2 2 part epoxy complete with manufacturer supplied mixing nozzle.

2.2 MIXES

- .1 Performance Method for specifying concrete: to meet Departmental Representative performance criteria to CSA A23.1/A23.2.
 - .1 Ensure concrete supplier meets performance criteria as established below and provide verification of compliance as in Quality Control Plan.
 - .2 Provide concrete mix to meet following plastic state requirements:
 - .1 Workability: free of surface blemishes.
 - .2 Finishability: minimum amount of bleeding.
 - .3 Set time: 10 hours maximum.
 - .3 Provide concrete mix to meet following hard state requirements:
 - .1 Cement: Type GU Portland Cement.
 - .2 Durability and class of exposure: C-1.
 - .3 Compressive strength at 56-day age: 35 MPa minimum.
 - .4 Slump at time and point of discharge: 50 mm to 100 mm.
 - .5 Air Content: 5% to 8%.
 - .6 Aggregate size 20 mm maximum.
 - .7 Intended application: new reinforced concrete pad for petroleum storage tank and fence post bases.
 - .4 Concrete supplier's plant certification.

Part 3 Execution

3.1 PREPARATION

- .1 Obtain Departmental Representative's written approval before placing concrete.
 - .1 Provide 48 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.
 - .3 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .4 Clean and remove stains prior to application for concrete finishes.

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 Departmental Representative.
 - .2 Cast in sleeves, ties, slots, anchors, reinforcement, frames, conduit, bolts, waterstops, joint fillers and other inserts required to be built-in.
 - .3 Sleeves and openings greater than 100 x 100 mm not indicated, must be reviewed by Departmental Representative.
- .3 Finishing and curing:
 - .1 Broom finish concrete to CSA A23.1/A23.2.
 - .2 Use procedures as reviewed by Departmental Representative or those noted in CSA A23.1/A23.2 to remove excess bleed water. Ensure surface is not damaged.
 - .3 Use curing compounds compatible with applied finish on concrete surfaces.
- .4 Joint fillers:
 - .1 Install pre-moulded joint filler in expansion and isolation joints full depth of slab flush with finished surface to CSA A23.1/A23.2.

3.3 SURFACE TOLERANCE

- .1 Concrete tolerance to CSA A23.1.

3.4 PROTECTION AND CURING

- .1 Cure concrete by protecting it against loss of moisture, rapid temperature change and mechanical injury for at least seven (7) days after placement. After finishing operations have been completed, the entire surface of the newly placed concrete shall be covered by whatever curing medium is applicable to local conditions and approved by the Departmental Representative. The edges of concrete slabs exposed by removal of forms shall be protected with continuous curing treatment equal to the method selected for curing the slab and curb surfaces. Cure to CAN/CSA-A23.1. Have the equipment

needed for adequate curing at hand and ready to install before actual concrete placement begins.

3.5 FIELD QUALITY CONTROL

- .1 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.

3.6 CLEANING

- .1 Clean in accordance with Section 01 74 11- Cleaning.

END OF SECTION