

Partie 1 General

1.1 REFERENCES

- .1 Abbreviations and Acronyms
 - .1 Portland cement: hydraulic cement, blended hydraulic cement (XXb - where 'b' denotes blended).
 - .1 Type GU, GUb and GUL - General use cement.
 - .2 Fly ash
 - .1 Type F: with content of calcium oxide lower than 15%.
- .2 References
 - .1 ASTM International
 - .1 ASTM C260/C260M, Standard Specification for Air-Entraining Admixtures for Concrete.
 - .2 ASTM C494/C494M, Standard Specification for Chemical Admixtures for Concrete.
 - .3 ASTM C1017/C1017M, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
 - .2 Canadian Standards Association (CSA)/CSA International
 - .1 CSA A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA A283, Qualification Code for Concrete Testing Laboratories.
 - .3 CSA A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 et A3005).

1.2 ADMINISTRATIVE

- .1 Pre-installation meeting: convene coordination meeting with Departmental Representative one (1) week prior to beginning concrete works.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 At least two (2) weeks prior to beginning Work, provide Departmental Representative with product data sheets and, as the case may be, samples of materials proposed for use as follows:
 - .1 Type of cementing material.
 - .2 Type of blended hydraulic cement.
 - .3 Admixture.
 - .4 Fine and coarse aggregate.
 - .5 Type of joints.

- .3 Provide testing and inspection results and reports for review by Departmental Representative and do not proceed without written approval when deviations from mix design or parameters are found.
- .4 provide accurate records of poured concrete items indicating date and location of pour, quality, air temperature and test samples taken.
- .5 Concrete hauling time: provide for review by Departmental Representative any deviations exceeding maximum allowable time of 120 minutes for concrete to be delivered to site of work and discharged after batching.

1.4 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.
- .2 Provide Departmental Representative minimum two (2) 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.
- .3 Minimum two (2) weeks prior to starting concrete work, provide proposed quality control procedures for review by Departmental Representative on following items.
 - .1 Falsework erection.
 - .2 Hot weather concrete.
 - .3 Cold weather concrete.
 - .4 Curing.
 - .5 Finishes.
 - .6 Formwork removal.
 - .7 Joints.
 - .8 Protection measures during concrete curing.

1.5 SHIPPING, 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.

Partie 2 Product

2.1 MATERIALS

- .1 Type 1 concrete: concrete slab.

- .1 Blended hydraulic cement: Type GUb-SF to CSA A3001.
- .2 Water: to CSA A23.1.
- .3 Aggregate: to CSA A23.1/A23.2.
- .4 Admixtures
 - .1 Air entraining admixture: to ASTM C260.
 - .2 Chemical admixtures: to ASTM C494 and ASTM C1017. Departmental Representative to approve accelerating or set retarding admixtures during cold and hot weather placing.
- .5 Curing compound: white, to CSA A23.1/A23.2.
- .6 Sealant: When curing is complete, apply sealant to concrete as recommended by supplier.

2.2 MIX DESIGNS

- .1 Type of cement: GUb-SF.
- .2 Minimum compressive strength: 25 MPa at 28 days.
- .3 Class of exposure: C-1.
- .4 Nominal size of coarse aggregate: 20 mm.
- .5 Air entrainment additive: 5 to 8%.
- .6 Mixing water: Maximum water/cement ratio in weight: 0,45.
- .7 Other admixtures: to ASTM C494. Contractor to submit list of accelerating or set retarding admixtures during cold and hot weather placing for approval by Departmental Representative before placing of concrete.

Partie 3 Execution

3.1 PREPARATION

- .1 Obtain Departmental Representative's written authorisation before placing concrete.
 - .1 Provide 72 hours minimum notice prior to placing of concrete.
- .2 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 Pumping of concrete will not be permitted.
- .4 Prior to placing of concrete obtain Departmental Representative's approval of proposed method for protection of concrete during placing and curing in adverse weather.
- .5 Any damage caused by severe storms, tides or wave overtopping will be the responsibility of the Contractor. In case of damage caused by bad weather or any other circumstances beyond the control of the Departmental Representative, concreting will be redone to the satisfaction of the Departmental Representative, at no additional cost.
- .6 Protect existing structures from staining.

- .7 Clean and remove stains prior to application for concrete finishes.
- .8 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
- .9 Do not place load upon new concrete until authorized by Departmental Representative.

3.2 PLACEMENT

- .1 Do cast-in-place concrete work to CSA A23.1/A23.2.
- .2 Curing and finishing
 - .1 3-day minimum damp curing.
 - .2 Acceptable curing methods: Ponding, continuous sprinkling, moisture retaining material or continuously soaked or sprinkled mats.

3.3 SURFACE TOLERANCE

- .1 Concrete tolerance to CSA A23.1.

3.4 FIELD QUALITY CONTROL

- .1 Site tests: Conduct tests as follows.
 - .1 Concrete pours.
 - .2 Slump.
 - .3 Air content.
 - .4 Compressive strength at 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 Inspection or testing by Departmental Representative 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.
 - .1 Washing of concrete trucks shall be performed in the Contractor's temporary storage area. However, residual concrete shall be removed from site at work completion.
 - .2 Divert unused admixtures and additive materials (pigments, fibres) from landfill to authorised hazardous material collections site in accordance with applicable regulations.
 - .3 Do not dispose of unused admixtures and additive materials into sewer systems, into lakes, streams, onto ground or in other location where it will pose health or environmental hazard.
 - .4 Prevent admixtures and additive materials from entering drinking water supplies or streams.

- .5 Using appropriate safety precautions, collect liquid or solidify liquid with inert, non-combustible material and remove for disposal.
- .6 Dispose of waste in accordance with applicable local, Provincial/Territorial and National regulations.

END OF SECTION