

Part 1 - General

- 1.1 RELATED REQUIREMENTS .1 Section 01 10 10 - General Instructions.
- 1.2 PRICE AND PAYMENT PROCEDURES .1 Measurement and Payment:  
.1 Cast-in-place concrete will not be measured but will be paid for as part of the lump sum price.
- 1.3 REFERENCES .1 Abbreviations and Acronyms:  
.1 Portland Cement: hydraulic cement, blended hydraulic cement (XXb - b denotes blended) and Portland-limestone cement.  
.1 Type GU, GUb and GUL - General use cement.  
.2 Reference Standards:  
.1 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.
- 1.4 ACTION AND INFORMATIONAL SUBMITTALS .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.  
.2 Provide two copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- 1.5 QUALITY ASSURANCE .1 Provide Departmental Representative, minimum 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.

1.6 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/Consultant 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.

Part 2 - Products

2.1 DESIGN CRITERIA

- .1 Not Used.

2.2 PERFORMANCE  
CRITERIA

- .1 Quality Control Plan: ensure concrete supplier meets performance criteria of concrete as established by the Departmental Representative.

2.3 MATERIALS

- .1 Concrete to the following standards or equivalent approved alternative:
  - .1 Portland Cement: to CSA A3001, Type GU.
  - .2 Supplementary cementing materials: CAN/CSA-A23.5
  - .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 Curing compound: to CSA A23.1/A23.2 white and to ASTM C309.

- .2 Contractor requested alternative to be submitted to the Departmental Representative a minimum of 48 hours prior to placement for approval

#### 2.4 MIXES

- .1 Proportion normal density concrete in accordance with CAN/CSA-A23.1, to give the following properties:
  - .1 Cement: Type GU Portland cement.
  - .2 Class of exposure: C-1
  - .3 Minimum compressive strength at 56 days: 35 MPa.
  - .4 Nominal size of coarse aggregate: 20 mm.
  - .5 Slump at time and point of discharge: 50mm to 100 mm.
  - .6 Air content: 5% to 8%.
- .2 Do not change concrete mix without prior approval of the Engineer. Should change in material source be proposed, new mix design to be approved by the Engineer

### Part 3 - Execution

#### 3.1 PREPARATION

- .1 Obtain the Departmental Representative's written approval before placing concrete.
  - .1 Provide 24 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 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
- .4 Do not place load upon new concrete until properly cured.

3.2 INSTALLATION /  
APPLICATION

- .1 Do cast-in-place concrete work to CSA A23.1/A23.2 (latest version).
- .2 Cast-in-place concrete should be protected during colder weather conditions as per CSA A23.1 (latest version).
- .3 Finishing and curing:
  - .1 Finish concrete to CSA A23.1/A23.2 (latest version). Curing requirements are based on the exposure class of the concrete, as presented in Table 2 of CSA A23.1. As outlined in Table 19 (CSA A23.1), for additional curing, Type 2, the concrete is to be cured for a minimum of 7 days at  $>10^{\circ}\text{C}$  and the time necessary to attain 70% of the specified strength.
  - .2 Freshly deposited concrete is to be protected from freezing during the cure period.
  - .3 During cold weather, adequate protection of the concrete shall be provided for the duration of the curing period by means of heated enclosures, coverings, insulation, or a suitable combination of these methods. Cold weather is defined as when the air temperature is at or below  $5^{\circ}\text{C}$  within 24 hours of placing.
  - .4 Use procedures as reviewed by or those noted in CSA A23.1/A23.2 to remove excess bleed water. Ensure surface is not damaged.

.5 Use curing compounds compatible with applied finish on concrete surfaces.

3.3 SURFACE  
TOLERANCE

.1 Concrete tolerance to CSA A23.1 (Latest Version).

3.4 CLEANING

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

**END OF SECTION**