

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°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°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

