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## **DIVISION 03**

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**Part 1            General**

**1.1            MEASUREMENT PROCEDURES**

- .1            This work shall be incidental to contract and will not be measured for payment.

**1.2            ACTION AND INFORMATIONAL SUBMITTALS**

- .1            Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2            Provide testing results for review by Departmental Representative and do not proceed without written approval when deviations from mix design or parameters are found.
- .3            Concrete hauling time: provide for review by Departmental Representative deviations exceeding maximum allowable time of 120 minutes for concrete to be delivered to site of Work and discharged after batching.

**1.3            QUALITY ASSURANCE**

- .1            Provide to Departmental Representative, three days minimum prior to starting concrete work, valid and recognized certificate from plant delivering concrete.
  - .1            Quality Control Plan: provide written report to Departmental Representative verifying compliance that concrete in place meets performance requirements.

**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 the Departmental Representative.
- .2            Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.

**1.5            WASTE MANAGEMENT AND DISPOSAL**

- .1            Separate and recycle waste materials in accordance with Section 01 35 43, Environmental Procedures.
- .2            Carefully coordinate the specified concrete work with weather conditions.
- .3            Ensure emptied containers are sealed and stored safely for disposal away from children.
- .4            Prevent plasticizers, water reducing agents and air entraining agents from entering drinking water supplies or streams. Using appropriate safety precautions collect liquid or solidify liquid with an inert, non-combustible material and remove for disposal. Dispose of all waste in accordance with applicable local, provincial and national regulations.
- .5            Choose least harmful, appropriate cleaning method that will perform adequately.

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**Part 2            Products**

**2.1            PERFORMANCE CRITERIA**

- .1            Quality Control Plan: ensure concrete supplier meets specifications.

**2.2            MATERIALS**

- .1            Cement: to CSA A3001, Type GU.
- .2            Water: to CSA A23.1/A23.2.
- .3            Reinforcing bars: to CAN/CSA-G30.18, Grade 400.
- .4            Welded steel wire fabric: to ASTM A185.
- .5            Premoulded joint filler:
  - .1            Bituminous impregnated fibreboard: to ASTM D1751.
- .6            Joint sealer/filler: grey to CAN/CGSB-19.24, Type 1, Class B.
- .7            Sealer: boiled linseed oil to ASTM D260, mixed with mineral spirits 1:1.
- .8            Other concrete materials: to CSA A23.1/A23.2.

**2.3            CERTIFICATES**

- .1            Submit certificates in accordance with Section 01 33 00 Submittal Procedures.
- .2            Minimum three days prior to starting concrete work, submit to Departmental Representative manufacturer's test data and certification by qualified independent inspection and testing laboratory that following materials will meet specified requirements:
- .3            Portland cement.
- .4            Supplementary cementing materials.
- .5            Admixtures.
- .6            Aggregates.
- .7            Water.
- .8            Provide certification that mix proportions selected will produce concrete of quality, yield and strength as specified in concrete mixes, and will comply with CAN/CSA A23.1.
- .9            Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CAN/CSA A23.1.
- .10          Provide certification that the alkali-aggregate reactivity and iron content of the materials has been examined and meets the requirements.

**2.4            MIXES**

- .1            Proportion concrete in accordance with CAN/CSA-A23.1.
- .2            Minimum 28 day compressive strengths and exposure classifications:
  - .1            *Walks, curbs and exposed site concrete: 32 MPa; C-2.*

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- .3 Nominal size of coarse aggregate: Clause 14 of CAN/CSA-A23.1.
  - .4 Slump: to Table 6 of CAN/CSA-A23.1.
  - .5 Air content: all concrete to contain purposely entrained air in accordance with Table 10 of CAN/CSA-A23.1.
  - .6 Admixtures: to Clause 6 of CAN/CSA-A23.1.

### **Part 3 Execution**

#### **3.1 PREPARATION**

- .1 Provide Departmental Representative 24 hours notice before each concrete pour.
- .2 During concreting operations:
  - .1 Development of cold joints not allowed.
  - .2 Ensure concrete delivery and handling facilitates placing with minimum of rehandling, and without damage to existing structure or Work.
  - .3 Concrete shall not be placed on frozen granular base material.
- .3 Protect previous Work from staining.
- .4 Clean and remove stains prior to application of concrete finishes.

#### **3.2 INSTALLATION/APPLICATION**

- .1 Do cast-in-place concrete work in accordance with CSA A23.1/A23.2.

#### **3.3 FINISHES**

- .1 Formed surfaces exposed to view: sack rubbed finish in accordance with CSA A23.1/A23.2.
- .2 Pavements, walks, curbs and exposed site concrete:
  - .1 Screed to plane surfaces and use wood floats.
  - .2 Provide round edges and joint spacings using standard tools.
  - .3 Trowel smooth to provide lightly brushed non-slip finish.

#### **3.4 CONTROL JOINTS**

- .1 Cut control joints in slabs on grade at locations indicated, to CSA A23.1/A23.2 and install specified joint sealer/filler.

#### **3.5 EXPANSION AND ISOLATION JOINTS**

- .1 Install premoulded joint filler in expansion and isolation joints full depth of slab flush with finished surface to CSA A23.1/A23.2.

#### **3.6 CURING**

- .1 Use curing compounds compatible with applied finish on concrete surfaces free of bonding agents and to CSA A23.1/A23.2.

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- .2 Prevent placed concrete from freezing if working during cold weather using methods approved by the Departmental Representative.
- 3.7 SEALING APPLICATION
- .1 After curing is complete, apply two even coats of linseed oil mixture to clean dry surfaces, each at 8 m<sup>2</sup>/L. Allow first coat to dry before applying second coat. Apply poly-siloxane resin blend sealer at 4 m<sup>2</sup>/L.
- 3.8 SITE TOLERANCES
- .1 Slab finishing tolerance to CSA A23.1/A23.2.
- 3.9 FIELD QUALITY CONTROL
- .2 Concrete testing: to CSA A23.1/A23.2 by designated testing laboratory.
- 3.10 CLEANING
- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .2 Use trigger operated spray nozzles for water hoses.
- .3 Designate cleaning area for tools to limit water use and runoff.
- .4 Cleaning of concrete equipment to be done in accordance with Section 01 35 43 Environmental Procedures.

**END OF SECTION**