Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 32 16 15 – Concrete Walks, Curbs and Gutters.

1.2 REFERENCES

.1 *Bureau de normalisation du Québec* (BNQ)

.1 BNQ 2560-114-2014 "*Travaux de génie civil – Granulats*" (civil engineering work – aggregates).

.2 BNQ 1809-500/2006 "*Travaux de construction – trottoirs et bordures en béton*" (construction work – concrete sidewalks and curbs).

.2 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-19.24-M90, Multicomponent, Chemical-Curing Sealing Compound.

.3 ASTM

.1 ASTM A1064/A1064M-16 "Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plan and Deformed for Concrete."

.2 ASTM D1751-04-2013-e1 "Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)".

.4 Canadian Standards Association (CSA)/CSA International

.1 CSA-A23.1/A23.2-14, Concrete materials and methods of concrete construction / Test methods and standard practices for concrete.

.2 CAN/CSA A3000-13, Cementitious materials compendium (contains A3001, A3002, A3003, A3004 and A3005).

.3 CAN/CSA G30.18-2009, *Barre d'acier au carbone pour l'armature du béton* (Carbon steel bar for the reinforcement of concrete).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit required documents and samples in accordance with section 01 33 00 – Submittal Proceddures.

.2 Shop Drawings:

.1 Submit placing drawings prepared in accordance with drawings to clearly show size, shape, location and necessary details of reinforcing.

.2 At least 10 working days prior to carrying out the work, notify the Departmental Representative of the proposed source of supply for aggregate and allow him or her access to it for the purposes of sampling.

.3 At least 10 working days prior to carrying out the concreting work, provide the Departmental Representative with copies of test reports carried out by the manufacturer together with a certificate issued by a qualified independent testing and inspection laboratory certifying that the materials listed below will be in compliance with the specified requirements.

.1 Portland cement.

.2 Composite hydraulic cement.

.3 Supplementary cementing materials.

.4 Grout.

.5 Admixtures.

.6 Aggregates.

.7 Water.

.8 Joint gaskets.

.9 Joint filler/sealer.

.10 Backup strips.

.4 Provide the Departmental Representative with mix formulas for approval and a certificate attesting that the chosen dosage formula will produce concrete with the stated quality, strength and performance, and meeting the requirements of CSA Standard A23.1/A23.2.

.5 The Departmental Representative's acceptance of the concrete formula(s) in no way releases the Specialist Contractor from its responsibility to supply concrete whose properties, in both the plastic and cured states, meet the requirements of the specifications.

.6 At least ten (10) days prior to undertaking concreting work, submit the proposed methods for controlling the quality of the following aspects to the Departmental Representative for approval:

.1 Hot-weather concreting.

.2 Cold-weather concreting.

.3 Curing.

.4 Finishing.

.5 Execution of joints.

.7 All documents must be submitted electronically, in PDF format.

1.4 QUALITY ASSURANCE

.1 Provide to Departmental Representative, 4 weeks minimum prior to starting concrete work, valid and recognized certificate from plant delivering concrete.

1.5 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.

Part 2 Products

2.1 MATERIALS

.1 Concrete for sidewalks, curbs and gutters: in compliance with the characteristics of mixes in BNQ Standard 1809-500.

.2 Reinforcing bars: to CAN/CSA-G30.18, Grade 400.

.3 Welded steel wire fabric: to ASTM A1064/A1064M.

.4 Premoulded joint filler:

.1 Bituminous impregnated fibreboard: to ASTM D1751.

.5 Joint sealer/filler: to CAN/CGSB-19.24, Type 1, Class B.

.6 Other constituents of concrete and concrete structures: in accordance with CSA Standard A23.1/A23.2 .

2.2 MIXES

.1 All concrete must be supplied as ready-mix by the same supplier.

.2 The ready-mix concrete supplier is solely responsible for the formulation and dosage of the concrete and must make all the necessary arrangements itself, at its own expense, to verify the quality and uniformity of its product.

Part 3 Execution

3.1 PREPARATION

.1 Provide Departmental Representative 24 hours' notice before each concrete pour.

.2 Check that the erection of formwork is complete and that the forms are clean and free of ice, snow and water.

.3 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.

.4 Protect previous Work from staining.

.5 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.

.2 Sleeves and inserts:

.1 Cast in sleeves, ties, slots, anchors, reinforcement, frames, conduit, bolts, waterstops, joint fillers and other inserts required to be built-in.

.2 Sleeves and openings greater than 100 mm x 100 mm not indicated must be reviewed by Departmental Representative.

3.3 FINISHES

.1 The surface must be regular and must match with the transverse and longitudinal profiles.

.2 Concrete slab: anti-slip surface texture to be obtained by sweeping.

.3 Equipment pads: provide smooth trowelled surface.

.4 Pavements, walks, curbs and exposed site concrete:

.1 Screed to plane surfaces and use aluminum floats.

.2 Provide round edges and joint spacing using standard tools.

.3 Trowel smooth to provide lightly brushed non-slip finish.

3.4 CONTROL JOINTS

.1 Cut and form 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.

.2 Sidewalks, curbs and exterior slab: use type 2 curing product, white pigmented.

3.7 SITE TOLERANCES

.1 Tolerances regarding the finish of concrete sidewalks and curbs must be in accordance with BNQ Standard 1809-500.

3.8 FIELD QUALITY CONTROL

.1 The concrete must be submitted to tests performed by designated laboratory according to the standard CSA A23.1/A23.2. The cost of these tests must be carried out by the Departmental Representative.

3.9 CLEANING

.1 Perform cleanup work in accordance with section 01 74 11 – Cleaning..

.2 Designate cleaning area for tools to limit water use and runoff.

.3 Cleaning of concrete equipment in accordance with section 01 35 43 – Environmental Procedures.

END OF SECTION