CW 3325 –PORTLAND CEMENT CONCRETE SIDEWALK

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1. GENERAL CONDITIONS

The General Conditions and Standard Provisions attached hereto shall apply to and be a part of this Specification.

3. DESCRIPTION

This Specification shall cover the operations relating to the construction of Portland cement concrete sidewalks.

The work to be done by the Contractor under this Specification shall include the supply of all materials, and the furnishing of all superintendence, overhead, labour, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all work as hereinafter specified.

5. MATERIALS

5.1 General

The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification.

5.2 Handling and Storage of Materials

All materials shall be handled in a careful and workmanlike manner, to the satisfaction of the Contract Administrator.

5.3 Testing and Approval

All materials supplied under this Specification shall be subject to inspection and testing by the Contract Administrator or by the Testing Laboratory designated by the Contract Administrator. There shall be no charge to the City for any materials taken by the Contract Administrator for testing purposes.

The Contract Administrator shall approve all materials before any construction is undertaken. If, in the opinion of the Contract Administrator, such materials, in whole or in part, do not conform to the Specification detailed herein or are found to be defective in manufacture or have become damaged in transit, storage or handling operations, then such material shall be rejected by the Contract Administrator and replaced by the Contractor at his own expense.

5.4 Portland Cement Concrete Constituent Materials

Portland cement concrete constituent materials shall conform to the requirements of Section 5.3 and Section 6.1 of Specification CW 3310.

5.5 Incidental Materials

Incidental materials shall conform to the requirements of Section 5.4 of Specification CW 3310.

7. SUPPLY OF MATERIALS

7.1 Concrete Supply

Unless otherwise specified in the Specifications for the Work, the use of a ready-mixed concrete plant only will be permitted. Concrete shall be proportioned, mixed and delivered in accordance with the requirements of CAN3-A23.1, Section 18, Production of Concrete, except that the transporting of ready-mixed concrete in nonagitating equipment is not permitted without the written permission of the Contract Administrator.

The discharge of ready-mixed concrete from the transit mixer shall be completed within 1 1/2 hours after the introduction of the mixing water to the cement and aggregates, unless the Contract Administrator authorizes an extension of time.

All delivery tickets shall indicate the time of batching.

The Contractor shall maintain all equipment used for handling and transporting the concrete in a clean condition and proper working order.

8. EQUIPMENT

All equipment shall be of a type approved by the Contract Administrator. The equipment shall be in good working order, kept free from hardened concrete or foreign materials, and shall be cleaned at frequent intervals.

9. CONSTRUCTION METHODS

9.1 Construction

No concrete work shall commence until the excavation has been completed in accordance with Specification CW 3110 and the Drawings, and has been approved by the Contract Administrator.

Compact the sub-grade in accordance with CW 3110.

Where required as a leveling course, a maximum thickness of 50 mm of approved material shall be supplied and placed in accordance with Specification CW 3110.

Additional base course material shall be supplied and placed in accordance with Specification CW 3110.

9.2 Forms

Forms for concrete shall conform to Section 9.1of Specification CW 3310.

9.3 Joints

Sidewalk joints shall be constructed, where required, in accordance with the details shown on the Drawings or as directed by the Contract Administrator. The joints shall be vertical and shall not deviate more than 15 mm from the horizontal alignment shown on the Drawings.

Expansion joints shall be constructed only where new concrete is being placed up against existing non-pavement structures, or where directed by the Contract Administrator. A 15 mm thick fibre joint filler shall be installed in expansion joints. The fibre joint filler shall extend from the base of the concrete slab up to the concrete surface, but no higher.

Joints shall be saw-cut by approved methods to the dimensions shown on the Drawings as soon as the concrete is sufficiently hard so that it will not be ravelled or damaged. The time at which all such saw cutting is to be undertaken shall be determined by the Contractor. The Contractor shall be wholly responsible for all concrete defects arising from this operation and shall further correct or replace all such defective concrete as may be required in the opinion of the Contract Administrator. The costs of all corrective measures shall be borne entirely by the Contractor and rejected concrete shall be removed by and at the expense of the Contractor clear of the site of the work.

During saw cutting operations, the Contractor shall take necessary measures to protect adjacent properties and structures from the saw-cut residue.

Formed joints for sidewalks not greater than 1.5 metres in width may be constructed by depressing an approved tool into the plastic concrete or by installing an approved parting strip to be left in place.

Where required the Contractor shall prepare the face of the non-pavement structure to ensure a vertical joint prior to installing the fibre joint filler. Where voids exist between the fibre joint filler and the non-pavement structure after placing the sidewalk, the Contractor shall fill the voids with an approved grout, at the Contractor's expense.

9.4 Concrete Placement

Concrete shall be placed in accordance with Section 9.4 of Specification CW 3310.

The Contractor shall install sign clamps as supplied by the Traffic Services sub-section of the Public Works Department at locations designated by Traffic Services. The cost of installing sign clamps shall be incidental to the cost of constructing concrete sidewalk.

9.5 Concrete Finishing

Concrete Finishing shall be carried out in accordance with Section 9.5 of Specification CW 3310.

9.6 Concrete Curing

Concrete curing shall be carried out in accordance with Section 9.6 of Specification CW 3310.

9.7 Weather Conditions

The contractor shall be responsible for taking all necessary measures to protect the freshly placed concrete to the satisfaction of the Contract Administrator and in accordance with Section 9.8 of Specification CW 3310.

9.8 150mm, Reinforced Sidewalk in Private Approaches

150mm reinforced concrete sidewalk placed through private approaches shall be paid in accordance with CW 3235.

10. QUALITY CONTROL

10.1 Inspection

All workmanship and all materials furnished and supplied under this Specification are subject to close and systematic inspection and testing by the Contract Administrator including all operations from the selection and production of materials through to final acceptance of the specified work. The Contractor shall be wholly responsible for the control of all operations incidental thereto notwithstanding any inspection or approval that may have been previously given. The Contract Administrator reserves the right to reject any materials or works that are not in accordance with the requirements of this Specification.

10.2 Access

The Contract Administrator shall be afforded full access for the inspection and control testing of concrete and constituent materials, both at the site of work and at any plant used for the production of concrete, to determine whether the concrete is being supplied in accordance with this Specification.

10.3 Materials

All materials supplied under this Specification shall be subject to testing and approval by the Contract Administrator in accordance with Section 5 of this Specification.

10.4 Concrete Quality

Quality control tests will be used to determine the acceptability of the concrete supplied by the Contractor.

The Contract Administrator shall obtain samples of concrete and of the constituent materials required for quality control tests. The Contractor shall make no charge for these materials.

The frequency and number of concrete quality control tests shall be in accordance with the requirements of CAN3-A23.1-M77.

An outline of the quality control tests is as follows:

Slump tests shall be made in accordance with CAN3-A23.5C, Slump of concrete. If the measures slump falls outside the limits specified in Section 5.4 of this Specification, a second test shall be made. In the event of a second failure, the Contract Administrator reserves the right to refuse the use of the batch of concrete represented.

Air content determinations shall be made in accordance with CAN3-A23.2-4C, Air Content of Plastic concrete by the Pressure Method. If the measured air content falls outside the specified limits, a second test shall be made at any time within the specified discharge time limit for the mix. In the event of a second failure, the Contract Administrator reserves the right to reject the batch of concrete represented.

Samples of concrete for test specimens shall be taken in accordance with CAN3-A23.2-1C, Sampling Plastic Concrete.

Test specimens shall be made and cured in accordance with CAN3-A23.2-3C, Making and Curing Concrete Compression and Flexure Test Specimens.

Compressive strength tests of laboratory-cured cylinders at twenty-either (28) days shall be the basis for acceptance of all concrete supplied by the Contractor. For each twenty-eight (28) day strength test, the strength of two companion standard-cured test specimens shall be determined in accordance with CAN3-A23.2-9C, Compressive Strength of Cylindrical Concrete Specimens, and the test result shall be the average of the strengths of the two specimens.

Compressive strength tests on specimens cured under the same conditions as the concrete works shall be made to check the strength of the concrete so as to determine if the pavement may be opened to traffic, and also to check the adequacy of curing and/or cold weather protection. For each field-cured strength test, the strength of two field-cured test specimens shall be determined in accordance with CAN3-A23.2-9C, Compressive Strength of Cylindrical Concrete Specimens, and the test result shall be the average of the strengths of the two specimens.

10.5 Addition of Water and/or Air Entraining Admixture

After initial mixing no water and/or air-entraining admixture may be added except if, at the start of discharge the measured slump of the concrete or the measured air content of the concrete is less than that specified and less than 60 minutes have elapsed from the time of batching to the start of discharge. Water added shall not exceed 12 litres per cubic metre as measured by an approved measuring device. Air entraining admixture shall be added as required to meet specified allowable air content ranges. The mixer drum shall be turned a minimum of 30 revolutions at mixing speed and the slump and air content shall be tested.

10.6 Corrective Action

Acceptance criteria for compressive strengths of laboratory-cured cylinders shall confirm with Sections 17.5 and 17.6 of CAN3-A23.1-M77.

The Contractor shall, at his own expense, correct such work or replace such materials found to be defective under this Specification in an approved manner to the satisfaction of the Contract Administrator.

12. METHOD OF MEASUREMENT

12.1 Concrete Sidewalks

Construction of concrete sidewalks will be measured on a surface area basis. The surface area to be paid for shall be the number of square metres constructed in accordance with this Specification and accepted by the Contract Administrator, as computed by measurements made by the Contract Administrator.

13. BASIS OF PAYMENT

13.1 Concrete Sidewalks

Construction of concrete sidewalks will be paid for at the Contract Unit Price per square metre for "100 mm Concrete Sidewalk", measured as specified herein, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

13.2 Leveling Course

No payment shall be made for leveling course.

13.3 Excavation, Sub-grade Compaction, and Base Course

Excavation, sub-grade compaction, and additional base course shall be paid for in accordance with Specification CW 3110.