

**06070 Streetscape****Index**

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**06070-1     Scope**

The Contractor shall supply all labour, plant, equipment and materials for the construction of sidewalks, curbs and unit pavers complete as shown and detailed on the drawings and as described in these Specifications.

**06070-2     Method of Removing Sidewalk and Curb**

Concrete will be removed to the nearest control joint. No partial squares of sidewalk will be permitted. Unless a clean, straight break already exists along a joint, the ends of the concrete to be removed shall be cut with a concrete saw. The cut shall be of sufficient depth to permit removal without damage to the remaining structure.

**06070-3     Asphalt, Concrete and Rubble Disposal**

Concrete asphalt and rubble may be disposed at the City of Saskatoon disposal site as specified by the Engineer or as written in the contract.

**06070-4     Subgrade Preparation**

150mm of material shall be removed and base shall be placed to a depth not less than 150mm below the bottom of the concrete structure. The material shall be mixed, wetted or dried as required.

The subgrade shall be compacted to a minimum of 98% Standard Proctor Density by means of approved mechanical compaction equipment. Sheepsfoot rollers may be required by the Engineer in locations with cohesive soil.

Where concrete is hand poured final grade preparation and compaction shall be carried out after the forms are placed. The subgrade elevation shall be checked to ensure adequate thickness of the granular base and concrete. When the subgrade preparation is approved, the Contractor will be permitted to place and compact the levelling which will give the required sidewalk thickness.

The surface of the subgrade after final trimming and rolling shall be within  $\pm 10$ mm of the design cross section and staked elevations.

**06070-5     Forms**

The forms shall be free from warps or other defects and shall have smooth, clean surface adjacent to the concrete. The forms shall be thoroughly cleaned and oiled before any concrete is deposited within them.

The forms shall be well staked, braced and held rigidly to the established line and grade to enable the use of mechanical concrete vibrators and vibrator screeds when placing concrete.

**06070-6     Placing Concrete**

Concrete shall be placed in a continuous operation. The interval between placing successive batches shall not exceed 30 minutes unless the last load completed the work to an expansion joint. Maximum mixing time of concrete after water has been added shall be 60 minutes.

Concrete shall be placed as close as possible to but no further than one metre from its final position in the forms. Rehandling of concrete shall not be permitted.

It shall be deposited in such a manner that segregation of the aggregates shall not occur.

After placing, the concrete shall be tamped, vibrated or otherwise consolidated to eliminate all voids and honeycombing. Vibrating screeds, shall be operated in accordance with the manufacturer's instructions. Over vibration resulting in bleeding shall not be allowed.

In combined rolled curb and sidewalk areas, a steel vibrating screed shall be used in such a manner as to obtain dense concrete and the required cross section continuously.

Where combined curb and sidewalks are poured, concrete shall be placed by hand in the curb excavation in advance of placing the sidewalk concrete so that subgrade material will not be forced into it from beneath the sidewalk section.

Concrete shall not be placed when the ground temperature is less than 2°C. Concrete shall be covered and heated, if necessary, to maintain a temperature of 5°C for at least 36 hours. Covering shall not be removed for 72 hours. Cost of heating and covering shall be borne by the Contractor.

Concrete damaged due to freezing shall be replaced by the Contractor at his expense.

During hot weather, an approved set retarder may be used. Sidewalk and curb shall be poured at a rate such that finishing as specified can be accomplished. Surface wetting shall not be permitted during finishing. The Engineer may terminate the work temporarily if, in his opinion, the work cannot be properly finished.

**06070-7     Concrete**

Concrete materials, method of concrete handling and construction shall conform to the latest edition of CAN3-A23.1 as published by the Canadian Standards Association.

Minimum compressive strength of the concrete at 28 days shall be 32MPa.

Aggregates shall comply with Section 5, CAN3-A23.1.

Nominal aggregate size shall be 30 mm.

Cement shall be Type 10 Normal Portland Cement complying with Section 3, CAN3-A23.1. A minimum of 300 kg of cement per cubic metre of mixed concrete shall be used.

Slump shall not exceed 70mm or be less than 25mm.

An approved air entraining agent complying with Section 6, CAN3-A23.1 shall be used. Air entrainment shall be 5% to 8% by volume.

Water cement ratio shall not exceed 0.38 by weight.

Reinforcing steel shall conform with CSA G30.12-M77 and CSA G30.6.

Calcium chloride may be used as an accelerating agent on the approval of the Engineer. It shall conform to ASTM D-98. Maximum amount of calcium chloride in the mix shall not exceed 2% of cement by weight.

**06070-8     Concrete Tests**

Ready mixed and transit mixed concrete should conform to CSA A23.1.13.

After the award of the work, the Contractor shall submit the following information in writing relating to the ready mix concrete supplier.

1. Name, address and contact person.
2. Recent concrete mix design on results of six concrete test cylinders of the same concrete which will be used for the work.

During the progress of the work, the Contractor shall hire an approved materials testing laboratory and take one set of three concrete test cylinders for each concrete pour. One cylinder will be tested after 7 days of curing and two cylinders will be tested after 28 days of curing. No more than one test in five nor two consecutive tests shall be below the specified concrete strength.

One copy of the test results shall be submitted to the Owner.

#### **06070-9      Finish Sidewalk, Curb and Gutter**

Concrete shall be deposited in a manner to prevent segregation of the aggregate. Special care shall be taken in placing concrete to prevent voids, pockets, rough areas and honeycombing. The concrete shall be consolidated by using mechanical concrete vibrators or vibrator screed in such a manner as to work the coarse aggregate away from the forms and exposed surfaces.

After the concrete has sufficiently set to permit further finishing without concrete bleeding, the surface shall be brought to a true surface with a wood float. The surface shall be marked and finished as shown on drawings using approved tools. After marking, the surface shall be trowelled smooth with a steel trowel and a uniform brush finish applied with a soft bristled push broom to the satisfaction of the Engineer.

After the initial concrete set, the curb form shall be removed and the exposed surface of the curb shall be worked to a true surface, trowelled smooth and then given a uniform brush finish.

Substandard work or finished surfaces which are marred or damaged prior to setting shall be replaced by the Contractor at his expense.

Each block or portion of block of sidewalk constructed shall be marked at the end with a suitable tool showing the name of the Contractor and the year of construction.

Curb returns shall be smooth, continuous curves and shall be tangent where they join the straight sections or another curve.

**06070-10    Curing Compound**

Apply a curing compound to all exposed surfaces. Curing compound shall comply with ASTM C309, Liquid Membrane - Forming Compounds for Curing Concrete. The rate of application shall be as recommended by the manufacturer or as directed by the Engineer. The pressure spray distributor shall be such that a continuous even coating is applied.

Concrete placed after September 30 will be cured with an application of a penetrating sealer to prevent de-icing agents from spalling the concrete.

The cost of supplying and applying curing compound is to be included in the respective sidewalk and curb unit prices.

**06070-11    Protection**

Pedestrian traffic shall not be allowed on the walks for 24 hours after the concrete is poured. Lane and driveway crossings shall be barricaded and not used for a period of 5 days after the concrete is poured.

**06070-12    Pavement Removal and Repairs**

To facilitate the removal and construction of the sidewalk, curb, or curb and gutter, the Contractor shall jack hammer or saw cut the adjacent pavement. Extent of removal shall be kept to a minimum but adequate to enable the work to be performed correctly.

Payment for patch paving will be made on the Contract bid price either included in the curb unit price or on a square metre basis.

**06070-13    Sidewalk Support Adjacent to Buildings**

At concrete foundations, steps, or sidewalks on property the new sidewalk needs to be dowelled in to the existing concrete structure. The Contractor shall install 250 x 10 rebar into the concrete building foundation. Rebar is to be installed 100mm into the foundation, 50mm from the bottom of the sidewalk.

This work is included in the unit price payment for the sidewalk.

**06070-14     Concrete Pavers**

Concrete pavers shall be as specified in the Contract. Type 10 Normal Portland cement shall be used having a minimum strength of 55MPa in 28 days. The maximum water absorption shall be 5%.

The Contractor shall supply the required test data for each project. Test data may be on the pavers manufactured or most current test results obtained in manufacturing similar pavers. If applicable data is not available, appropriate tests as required in the industry shall be performed and one copy provided to the Owner.

Should a special penetrating sealer be required to be applied to provide a minimum of twenty years of service, without spalling, it shall be included in the unit price.

**06070-15     Placing of Unit Pavers**

After the excavation is completed to the correct elevation, the top 150mm of the subgrade and the 150mm of granular base are to be compacted to a minimum of 98% Standard Proctor Density.

After the granular base has been approved, spread and screed sand to ensure 25mm depth prior to the installation of unit pavers.

Pattern of paver installation to be as shown on plans and verified by Owner.

Pavers are to be installed from a straight edge, laying pavers directly on the screeded sand in the patterns as shown. Install unit pavers true to grade and free of any movement. Joints between pavers should be a maximum of 3mm or as required to achieve the design pattern. The spacing on a curved area shall be equal.

Where required, pavers are to be saw cut neatly to fit accurately.

After the pavers are placed, the pavers are to be vibrated to the final level with two or three passes of a vibrating plate compactor. Spread and sweep dry sharp sand into the joints and vibrate down. Finish by washing and sweeping clean.



It shall be the responsibility of the Contractor to maintain the appropriate level of the pavers including the filling between the joints with sand during the two year maintenance period.

**06070-16    Sidewalk, Curb and Gutter Construction**

All work performed shall meet the current standards as outlined for concrete sidewalk, curb and gutter construction, Specification 06010 and as shown on cross section drawings.

**End of Specification 06070**