

PART - 1 GENERAL

1.1 SUMMARY

- .1 Provide labour, materials, products, equipment, and services to complete the work specified in this Section in accordance with the Contract requirements. including, but not limited to:
 - .1 Vehicular and pedestrian concrete paving.

1.2 RELATED REQUIREMENTS

- .1 The requirements of the Articles of Agreement, Conditions of the Contract, Division 01 Specification Sections, and the Contract Drawings apply to this Section.

1.3 STANDARDS

- .1 All supply and design of materials and their performance are to be in accordance with:
 - .1 The requirements of OPSS unless specified otherwise hereinafter.
 - .2 Ontario Building Code (latest edition).
 - .3 CSA-A23.1, "Concrete Materials and Methods of Concrete Construction".
 - .4 CSA-A23.3, "Design of Concrete Structures for Buildings".
 - .5 CSA-A266.1 "Air-Entraining Admixtures for Concrete"
 - .6 CAN/CSA-A3000, "Cementitious Materials Compendium".
- .2 Abide by the current bylaws and regulations of the province and/or municipality in which the work is located and abide by the current laws and regulations with regard to public safety. The regulations of the Minister of Labour, Occupational Health and Safety Act, the Workers' Compensation Board and other applicable acts administered by the authority having jurisdiction of the province apply to the work of this section.

1.4 SITE EXAMINATION

- .1 Verify all site conditions which may affect the performance of this Section.
- .2 Report in writing all conditions which may adversely affect the work of this Section.
- .3 Commencement of work implies acceptance of surfaces and conditions. Claims for damages or extras resulting from such conditions will be rejected, unless due to conditions which could not be determined prior to or during the course of construction.

1.5 ALLOWABLE TOLERANCES

- .1 Grade base courses with surfaces within 12 mm of established elevations and within a tolerance of 12 mm under a 3000 mm long straightedge.

- .2 Finish concrete paving surfaces within 12 mm of established elevations and locations, within 3mm of other surfaces at junction, and within a tolerance of 6 mm under a 3000 mm long straightedge.
- .3 Finished concrete paving surfaces shall have a minimum positive slope of 1.5% to the nearest drains.

1.6 INSPECTIONS

- .1 The locations of all paved areas to be staked out by the Contractor under direction of the Consultant prior to commencing with Work.
- .2 All base courses are to be approved by the Consultant prior to the installation of finished surfaces.
- .3 Give timely notice when ready for stake out and inspections.

PART - 2 PRODUCTS

2.1 MATERIALS

- .1 Granular Base Course:
 - .1 Granular 'A' in accordance with specified requirements of OPSS Specification 1010.
 - .2 Aggregates are to be non-reactive with alkalis in accordance with CSA Test Method A23.2-27A and A23.1 Annex B.
 - .3 The source of the aggregate and the method of manufacture or production, including the type of equipment used, is not to be altered for the duration of the project following the acceptance of the aggregate.
- .2 Concrete:
 - .1 Concrete shall have a high mix concrete in accordance with CAN/CSA-A23.4M94, to provide minimum compressive strength of 32 MPa at 28 days.
- .3 Foam Expansion Joint Filler:
 - .1 Light weight, flexible expansion joint filler with removable portion to ensure uniform joints, Deck-O-Foam, as manufactured by W.R. Meadows 1-800-258-4563 or approved equivalent.
- .4 Foam Rod Backup:
 - .1 Approved 25mm diameter foam rod.
- .5 Expansion Joint Sealer:
 - .1 Rubberized asphalt expansion joint sealer, Sikaflex® 1c SL, or approved equivalent, as prepared for use on at expansion joints in concrete surfaces. Colour to match adjacent finish.
- .6 Concrete Surface Weatherproofing Sealant:

- .1 One part pourable, non-yellowing polyurethane sealant, Vulkem 45 as manufactured by Mameco (905) 624-2410 or approved equivalent.

PART - 3 EXECUTION

3.1 QUALITY ASSURANCE

- .1 Concrete Placement
 - .1 Schedule placement to minimize exposure to wind and hot sun before curing materials are applied.
 - .2 Avoid placing concrete if rain, snow, or frost is forecast within 24 hours. Protect fresh concrete from moisture and freezing.
 - .3 Schedule delivery of concrete to provide consistent mix times from batching until discharge.
 - .4 Place concrete using methods which prevent segregation of mix.
 - .5 Paving work shall be done only by skilled workmen, with suitable machinery, supervised by foremen experienced in the type of Work specified herein.
 - .6 Execute the Work of this Section by a Subcontractor with skilled tradesmen who has equipment adequate for project and is known to have been responsible for satisfactory installations similar to that specified during a period of at least five years, so that work is performed expeditiously.

3.2 JOINT CONSTRUCTION

- .1 Longitudinal Construction Joints shall be tied to concrete pavement with 15 mm round deformed reinforcement bars.
- .2 Transverse Expansion Joints shall have the filler cut to the exact cross section of the curb, curb and gutter, gutter or sidewalk. The joints shall be similar to the type of expansion joint used in the adjacent pavement.
- .3 Joint Fillers: Extend joint fillers full-width and depth of joint, and not less than 12 mm or more than 25 mm below finished surface where joint sealer is indicated. Furnish joint fillers in one-piece lengths for full width being placed, wherever possible. Where more than one length is required, lace or clip joint filler sections together.
- .4 Joint Sealants: All joints shall be sealed with approved exterior pavement joint sealants and shall be installed per manufacturer's recommendations.
 - .1 Sealant shall match concrete colour.

3.3 MIX DESIGN

- .1 Design mix to produce normal weight concrete consisting of Portland cement, aggregate, water reducing admixture, air entraining admixture, and water to produce the following properties:

- .1 Compressive Strength: 32 MPA (unless otherwise noted on Landscape drawings or required by structural engineer), minimum at 28 days, unless otherwise indicated on the Drawings on specifications.
- .2 Slump Range: 50 – 125 mm at time of placement.
- .3 Air Entrainment: 5% to 8%.
- .2 Do not re-temper mix by adding water in field.

3.4 EXAMINATION

- .1 Ensure that grading and backfilling has been completed in accordance with Specification, and that subgrade conditions are satisfactory for placing of subbase, base and pavements before commencing Work.
- .2 Commence Work upon Consultant's verification that subgrade densities, as specified, have been attained under pavement locations.

3.5 SUBMITTALS

- .1 Submit mix design to the independent laboratory prior to placement of any concrete.

3.6 PLACING BASE COURSES

- .1 Where applicable subgrade to be compacted to 98% Standard Proctor Maximum Dry Densities prior to placement of base courses. Specified base and subbase course thicknesses of walkways shall be the thickness after compaction to density of 98% Standard Proctor Density.

3.7 PLACING OF FINISH PAVEMENTS AND CONCRETE BASE COURSES

- .1 Finish pavement surfaces to elevations indicated on Drawings, ensuring a minimum positive slope of 1.5%. All slopes shall be to direct water away from structures and to the nearest drainage facility.
- .2 Maintain accuracy of elevations to within specified tolerances.
- .3 Ensure that drainage is affected from all areas without formation of puddles.
- .4 Inform Consultant if slopes to drains are less than 1.5% before commencing work in order that corrective methods may be considered.

3.8 CONCRETE SIDEWALKS

- .1 Pour slabs to depth shown on Drawings, of air entrained 32 MPa (unless otherwise noted on Landscape drawings or required by structural engineer), (50 mm slump), within approved forms.
- .2 Screed slabs to provide drainage of minimum slope of 15mm/1000mm unless shown otherwise on Drawings.
- .3 Finish slabs with light sandblast finish. DO NOT provide steel trowel borders to slabs unless shown otherwise on Landscape drawings for accessibility reasons.
- .4 Remove dirt, dust and grease from sidewalk surfaces and apply two coats of concrete surface sealer, the second applied after the first has dried. Apply sealer

only after concrete has cured for minimum of two weeks and if it is thoroughly dry and the air temperature is 21C or over.

3.9 JOINTS

- .1 Expansion Joints:
 - .1 Locate 10 mm wide expansion joints at no further than 6000 mm O.C., or where otherwise indicated on Drawings, and where walks abut vertical construction.
 - .2 Set foam expansion joint filler in accordance with manufacturer's instructions.
- .2 Install approved foam backing material and apply sealant with squeegee, fill joints to surface of slab with joint sealer.
- .3 Immediately remove all sealant from surface.
- .4 Control Joints:
 - .1 Saw cut control joints as indicated on Drawings or as directed by the Landscape Architect on site, as soon as concrete can be cleanly cut and before shrinkage cracks can form. Saw cuts shall be 5mm wide x 25mm deep.

3.10 ADJUSTMENT AND CLEANING

- .1 Replacement of Defective Work:
 - .1 Replace defective concrete sidewalk with patches covering entire area between scored joints.
- .2 Be responsible for the repair of all damages until inspected and approved by the Consultant and traffic is allowed onto pavement.
- .3 After completion of paving, clean all landscape areas and structures such as curbs, walls, catch basin gratings, manhole covers, etc. from all contamination resulting from paving operations.

END OF SECTION