

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.
- .2 Section 32 13 13 – Concrete Paving

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 QUALITY ASSURANCE

- .1 Installer Qualifications:
 - .1 Experienced installer who has completed pavement work similar in material, design, and extent to that indicated for Project and whose work has resulted in construction with a record of successful in-service performance.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit product data, shop drawings, and samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:

- .1 Provide manufacturer's data for materials, including aggregate type and bonding agents.
- .2 Manufacturer's data is to include printed product literature and data sheets including product characteristics, performance criteria, physical size, finish and limitations.
- .3 Design Mixtures
 - .1 For each concrete pavement mixture. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
- .3 Samples
 - .1 Concrete base colour sample.
 - .2 10-lb. sample of exposed aggregate. Information from aggregate supplier indicating source, type, color, and gradation of aggregate shall accompany sample.

1.6 MOCK-UPS

- .1 Mock-ups will be used to judge quality of conformance with design intent, quality of work, and material application.
- .2 Construct a minimum 2x2m mock-up of exposed aggregate concrete paving, on site.
- .3 At minimum, the mock-up must demonstrate typical:
 - .1 Surface finish & texture
 - .2 Colour
 - .3 Control Joints
 - .4 Standard of workmanship.
- .4 Notify Landscape Architect seven days in advance of dates and times when mock-up will be constructed.
- .5 The Contractor is to allow for inspection of mock-up before proceeding with work.
- .6 When accepted, the mock-up will demonstrate minimum standard of quality required for this work.
- .7 Maintain the approved mock-ups during construction in an undisturbed condition as a standard for judging the completed pavement.
- .8 Demolish and remove approved mock-up from the site when directed by Landscape Architect.

1.7 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.

1.8 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.

1.9 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.
 - .2 Aggregates:
 - .1 Clean and graded natural or manufactured aggregate suitable for exposure.
 - .2 Uniform distribution of aggregates to ensure consistent exposure.
- .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.

2.2 CONCRETE SURFACE RETARDER AND FINISHING AIDS

- .1 Spray Applied, film forming top surface retarder, designed for specific sized aggregates and finish requirements. Color coded to allow for ease of application and verification of grade being used as well as even and complete coverage.
- .2 Acceptable Materials, or approved equivalent:
 - .1 Lithocast Surface Retarder 75 by Scofield (a Sika Brand)
 - .2 Top-Cast Surface Retarder – 150 by GCP Applied Technologies
 - .3 Select-Etch Surface Retarder – SE-150 Green by Brickform

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 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.

3.3 PLACING OF FINISH PAVEMENTS AND CONCRETE BASE COURSES

- .1 Placement of concrete base courses and concrete paving per Section 32 13 13 – Concrete Paving.

3.4 CONCRETE FINISHING

- .1 Exposed Aggregate Finish:
 - .1 Protect all areas, aluminum trim, curbs, borders and adjacent concrete and masonry surfaces, pavers, stones etc. that are not to receive retarder finish prior to concrete placement and retarder application.
 - .2 Concrete Surface Retarder Application:
 - .1 Apply the surface retarder evenly after the concrete reaches its initial set, as per the manufacturer's instructions.
 - .2 Protect the surface from drying or contamination during the curing period specified by the manufacturer.
 - .3 Aggregate Exposure:
 - .1 After the retarder has taken effect (timing per manufacturer), remove the surface paste by pressure washing or brushing.
 - .2 Ensure consistent exposure of the aggregates throughout the surface.

3.5 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