1 General

1.1 **SUMMARY**

.1 **General Requirements**: Conform with requirements of all Sections of Division 01, General Requirements, as it applies to the work of this Section.

1.2 **REFERENCES**

.1 ASTM C957 – Specification for High Solids Content, Cold Liquid-Applied-Elastomeric Waterproofing Membrane with Integral Wearing Surface.

.2 ASTM C1127 – Standard Guide for Use of High Solids Content, Cold Liquid Applied Elastomeric Waterproofing Membrane with an Integral Wearing Surface.

1.3 **QUALITY ASSURANCE**

.1 **Qualifications**: Perform work of this Section only by an applicator of recognized standing who has adequate plant, equipment, and skilled workers to perform it expeditiously, and is known to have been responsible for satisfactory applications similar to that specified during a period of minimum five years.

.2 **Mock-up**: Provide on-site areas minimum 3 m^2, of each coating material with slip resistance specified, for review. Over-coat unacceptable mock-ups with acceptable coating systems.

.3 **Pre-Installation Meetings**: Before work commences, arrange for a site meeting, at which conditions of surfaces and possible adaptations to suit, and use of materials and application procedures shall be discussed between Contractor, Waterproof Coating Subcontractor, Consultant, and representatives of material manufacturers.

1.4 **ACTION SUBMITTALS**

.1 Product Data: For each type of product. Include manufacturer's technical data, application instructions, and recommendations for each traffic coating component required.

.2 Sustainable Design Submittals:

.1 Laboratory Test Reports: For traffic coating products, indicating compliance with requirements for low-emitting materials.

.3 Samples for Initial Selection: For each type of exposed finish required.

.4 Samples for Verification: For each traffic coating system required, 6 inches (150 mm) square, applied to a rigid backing by Installer for this Project.

1.5 **INFORMATIONAL SUBMITTALS**

.1 Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.

.2 Material Certificates: For each traffic coating component, from manufacturer.

.3 Material Test Reports: For each traffic coating system, by a qualified testing agency.

1.6 **CLOSEOUT SUBMITTALS**

.1 Maintenance Data: For traffic coating to include in maintenance manuals.

1.7 **DELIVERY, STORAGE, AND HANDLING**

.1 Package, seal and label each coating material to show manufacturer's and product name, and colour.

.2 Store materials at site in an area specifically set aside for purpose that is locked, ventilated, and maintained at a minimum temperature of 16°C.

.3 Ensure that health and fire regulations are complied with in storage area, and during handling and application.

1.8 **AMBIENT REQUIREMENTS**

.1 Do not apply traffic coating over materials that contain over 4% moisture.

.2 Apply traffic coating only:

.1 With surface temperatures at a minimum of 16 degrees C for 24 hours before, during, and for 48 hours following application, or until cured.

.2 When no dust is being raised.

.3 In well-ventilated and broom clean areas.

.3 Place cloths and other disposable materials that are a fire hazard in closed metal containers and remove from building every night.

.4 Post "No Smoking" signs and ensure that spark-proof electrical equipment is used in areas where inflammable materials are being applied.

2 Products

2.1 **MATERIALS**

.1 Each material used in the application of each traffic coating system shall be as recommended or manufactured by the supplier of the traffic coating system.

.2 Traffic Coating and Base: Combining primer, waterproof membrane and elastomeric slip resistant wearing surface with non-slip surface texture. Minimum 0.965 mm (38 mils) thick, Class A fire resistance or better;

.1 Primer (Optional): two component, polyurethane based coating primer, Durex Uraflex Primer by Durabond Technical Coatings Limited.

.1 Percent solids: 100 percent.

.2 Volatile Organic Content (VOC): zero (0) g/L.

.3 Abrasion Resistance: ASTM D5181, CS-17 wheel; 35 mg loss, 1000 g load, 1000 cycles.

.4 Tensile Modulus: ASTM D638; 2,400 psi.

.5 Elongation: ASTM D638; 100%.

.6 Flexural Modulus: ASTM D790; 4,000 psi.

.7 Mar Resistance: ASTM D5178; 1.0 kg.

.2 Waterproof Membrane: two component, 100 percent solids, solvent free, high solids, self-priming, elastomeric polyurethane waterproof membrane, Uraflex 360NP by Durabond Technical Coatings Limited.

.1 Percent solids: 99 percent.

.2 Volatile Organic Content (VOC): 5 g/L.

.3 Tensile Modulus: ASTM D412; 2,500 psi.

.4 Elongation: ASTM D638; 900 percent.

.5 Low Temperature Flexibility: 1/8" mandrel at -26 degrees C; pass.

.6 Water Absorption: ASTM D570; 0.25 percent.

.7 Shore A Hardness: ASTM D2240; 67.

.8 Pull Off Strength: ASTM D4541; 2.71 MPa (400 psi) over concrete surface.

.9 Water Vapour Transmission: ASTM E96, Procedure B; 0.029 g/hr-m^2 (0.05 grains/ hr-pi^2).

.10 Water Vapour Permeability: ASTM E96; 0.20 Perm In. (0.0025 ng/Pa-s-m^2.

.11 Water Vapour Permeance: ASTM E96; 4.70 x 10^{-5} perm (0.028 ng/ Pa-s-m^2).

.3 Traffic Bearing Topcoat: two component, solvent free, high solids elastomeric polyurethane topcoat, Uraflex 361 Elastomeric Polyurethane Traffic Bearing Topcoat by Durabond Technical Coatings Limited.

.1 Percent solids: 100 percent.

.2 Volatile Organic Content (VOC): zero (0) g/L.

.3 Abrasion Resistance: ASTM D5181, CS-17; 11 mg loss, 1000 g load, 1000 cycles.

.4 Tensile Modulus: ASTM D638; 1,850 psi.

.5 Tear Strength: ASTM D624; 171 lb/ ln in (30 kN/ ln m).

.6 Elongation: ASTM D638; 180 percent.

.7 Flexural Modulus: ASTM D522; 2 mm film passes 12 mm mandrel.

.8 Low Temperature Flexibility: 1/8" mandrel at -26 degrees C; pass.

.9 Water Absorption: ASTM D570; less than 0.5 percent.

.10 Shore Hardness: ASTM D2240; 95.

.11 Chemical Resistance: ASTM D543;

.1 30 percent NaOH: 0.40 percent.

.2 10 percent H_2SO_4: 0.45 percent.

.3 30 percent NaCl: 0.20 percent.

.4 Diesel Fuel: 5.0 percent.

.4 Ultra High Abrasion Resistant Topcoat: two component, solvent free, high solids elastomeric polyurethane topcoat, Uraflex 362 Ultra-High Abrasion Resistant Elastomeric Polyurethane Traffic Bearing Topcoat by Durabond Technical Coatings Limited.

.1 Percent solids: 100 percent.

.2 Volatile Organic Content (VOC): zero (0) g/L.

.3 Abrasion Resistance: ASTM D5181, CS-17; 11 mg loss, 1000 g load, 1000 cycles.

.4 Tensile Modulus: ASTM D638; 1,850 psi.

.5 Tear Strength: ASTM D624; 171 lb/ ln in (30 kN/ ln m).

.6 Elongation: ASTM D638; 30 percent.

.7 Flexural Modulus: ASTM D522; 2 mm film passes 12 mm mandrel.

.8 Low Temperature Flexibility: 1/8” mandrel at -26 degrees C; pass.

.9 Water Absorption: ASTM D570; less than 0.5 percent.

.10 Water Vapour Transmission: ASTM E96; 0.29 metric perm.

.11 Shore Hardness: D; 75.

.12 Chemical Resistance: ASTM D543;

.1 30 percent NaOH: 0.40 percent.

.2 10 percent H_2SO_4: 0.45 percent.

.3 30 percent NaCl: 0.20 percent.

.4 Diesel Fuel: 5.0 percent.

.5 Non-Yellowing Traffic Bearing Topcoat: Two component, UV stable, abrasion resistant, elastomeric polyurethane, Uraflex 375 UV Non-Yellowing Elastomeric Polyurethane Traffic Bearing Topcoat by Durabond Technical Coatings Limited.

.1 Percent solids: 100 percent.

.2 Volatile Organic Content (VOC): zero (0) g/L.

.3 Abrasion Resistance: ASTM D5181, CS-17; 11 mg loss, 1000 g load, 1000 cycles.

.4 Tensile Modulus: ASTM D638; 1,850 psi.

.5 Tear Strength: ASTM D624; 171 lb/ ln in (30 kN/ ln m).

.6 Elongation: ASTM D638; 200 percent.

.7 Flexural Modulus: ASTM D522; 2 mm film passes 12 mm mandrel.

.8 Low Temperature Flexibility: 1/8" mandrel at -26 degrees C; pass.

.9 Water Absorption: ASTM D570; less than 0.5 percent.

.10 Water Vapour Transmission: ASTM E96, 0.29 metric perm.

.11 Shore A Hardness: ASTM D2240; 95.

.12 Chemical Resistance: ASTM D543;

.1 30 percent NaOH: 0.40 percent.

.2 10 percent H_2SO_4: 0.45 percent.

.3 30 percent NaCl: 0.20 percent.

.4 Diesel Fuel: 5.0 percent.

.3 Concrete Repair Material: for cracks, voids, and holes; rapid setting non-shrink grout, as recommended by Durabond Technical Coatings Limited. Reinforcement Mesh: fibreglass woven mesh with alkali resistant latex and polyurethane crack sealant as recommended by Durabond Technical Coatings Limited.

.4 Aggregate: clean graded silica by Durabond Technical Coatings Limited.

.5 **Sealant**: Sealant Type shall be water resistant, compatible with coating material as recommended by Durabond Technical Coatings Limited and applied in accordance with requirements specified in Section 07 92 00.

3 Execution

3.1 EXAMINATION

.1 Verify that specified ambient conditions are ensured before commencing work.

.2 Test surfaces for moisture content to ensure that they are suitable for application.

.3 Ensure that surfaces to receive waterproof floor treatment have been provided as specified in the work of other Sections; that they will not adversely affect execution, permanence, or quality of work; and that they can be put into acceptable condition by means of preparation specified in this Section.

.4 Defective work resulting from application to unsatisfactory surfaces will be considered the responsibility of those performing the work of this Section.

3.2 **PREPARATION**

.1 Following his acceptance of surfaces, waterproof floor treatment applicator shall be responsible for surface preparation. Prepare concrete floors with commercial shot-blast machine over entire area which receive waterproof floor treatment to minimum ICRI CSP 3.

.2 Prepare upturns, curbs, surface protrusions, and other areas not accessible with shot blasting equipment using sandblasting equipment or grinding equipment.

.3 Fill open control joints, and other cracks and voids with material compatible with waterproof floor treatment materials in accordance with ASTM C1127 and as follows.

.1 Apply waterproof membrane minimum 20 mil thickness for minimum 75 mm each side of unfilled visible cracks up to 1.5 mm and filled cracks in concrete surface including control joints and construction joints to receive coating.

.2 Apply minimum 0.635 mm thick wet pre-strips of base coat for non-moving joints and cracks less than 1.5 mm wide, fill and overlap joint and crack minimum 75 mm on each side.

.3 Rout cracks and joints over 1.5 mm wide to minimum 6 mm x 6 mm and blow clean, seal with two component sealant and allow to cure.

.4 Seal voids with sealant and apply base coat at minimum 25 mils to minimum width of minimum 75 mm on each side of joint.

.4 Provide sealant cants at rigidly connected wall/curbs/upturns and floor slab junctions. Form sealant cant into corner junction of all horizontal and vertical surfaces (walls/ curbs/columns). Lay backer rod into corner and apply 25 mm diameter bead of sealant. Tool to from 45 degree cant. Allow sealant to cure.

.5 Cover or mask surfaces adjacent to those receiving waterproof floor treatment to protect work of others and property from damage and soil.

.1 Apply masking tape to vertical surfaces at designed height above sealant cant for clean termination of vertical detail coat. Apply base coat at minimum 25 mils over treated cant up to making tape and minimum 100 mm onto deck surface. Feather onto deck surface.

.6 Flashings:

.1 Provide fluid applied integral flashings at all locations where horizontal surfaces abuts vertical surfaces and all deck projections. Apply waterproof membrane over prepared surfaces at minimum 20 mils and extend minimum 50 mm on vertical surfaces and minimum 100 mm on horizontal surfaces.

.2 Apply minimum 15 mm sealant bead, tool to form cove, and allow to cure prior to coating at projections including posts, pipes, railings, vents and similar locations of through penetrations.

.7 Grind down surface irregularities within 1.5 mm of acceptable tolerance.

.8 Sweep decks clean of debris and remove standing water.

.9 Isolate drains, expansion joints, and surface protrusions with saw cut.

.10 Materials soiled by waterproof floor treatment during application and storage, and from which soil cannot be completely removed, shall be replaced under work of this Section.

.11 Coordinate scope of work daily to complete sections at natural break points, avoid stop and start lines within a section or panel.

.12 Mix materials in accordance with manufacturer's recommendations and printed data sheets.

3.3 **APPLICATION - GENERAL**

.1 Do not apply traffic coating over expansion joints.

.2 Apply waterproof traffic coating with care to ensure that no laps, voids, or other marks or irregularities are visible, and with an appearance of uniform colour, sheen and texture, all within limitations of materials and areas concerned.

.3 Match colours and textures of approved samples.

.4 Make clean true junctions with no visible overlap between adjoining applications of traffic coating.

.5 Chase edge of traffic coating to finish flush with adjacent floor surface.

.6 Apply traffic coating over entire floor areas and extend up vertical surfaces such as walls, columns and curbs to a minimum height of {100 mm}[4"].

.7 Caulk around all pipes and openings made in traffic coating surfaces, with Sealant Type 2, applied in accordance with Section 07 92 00.

3.4 **APPLICATION – WATERPROOF MEMBRANE**

.1 Apply waterproof membrane with 13 mm phenolic core roller or squeegee at minimum uniform thickness of 20 mils DFT (30 mils DFT for exterior applications). Measure and monitor material application thickness with wet film thickness gauge.

.2 Allow waterproof membrane to cure for minimum 8 hours prior to war course application.

.3 Do not apply waterproof membrane when relative humidity is above 80 percent or moisture content of concrete is 4 percent by weight of concrete.

3.5 **APPLICATION – WEAR COURSE**

.1 Application of wear course to follow waterproof membrane installation within maximum 48 hours.

.2 Apply wear course on waterproof membrane application at minimum thickness of 18 mils (460 microns) in parking areas and 25 mils (635 microns) in driving lanes, and 36 mils (915 microns) in heavy traffic areas such as ramps and turning lanes (applied in two coats of 18 mils (460 microns) each). Measure and monitor material application thickness with wet film thickness gauge.

.3 Non-slip surfaces:

.1 Broadcast #16-30 mesh silica sand or aluminium oxide aggregate evenly over entire surface into wet top coat as follows;

.1 Parking lanes: minimum 5 kg/ 10m^2 (10 lbs/ 100 sq ft).

.2 Drive lanes: minimum 13 – 20 kg/10m^2 (30 - 45 lbs/ 100 sq ft).

.3 Turning lanes: minimum 23 – 35 kg/m^2 (50 – 75 lbs/ 100 sq ft).

.2 Allow aggregate/coating matrix to settle, self level and encapsulate aggregate into coating, back roll surface for smooth consistent finish.

.3 Allow wear course to cure for minimum 8 hours before top coating (if specified).

.4 Allow wear course to cure for minimum 72 hours before allowing traffic.

3.6 APPLICATION – UV STABLE TOPCOAT (EXTERIOR ONLY)

.1 Application of topcoat to follow wear course application within maximum 24 hours.

.2 Apply UV stable topcoat at uniform thickness of minimum 10 mils wet using a 13 mm phenolic core roller or notched squeegee over cured wear course. Measure and monitor material application thickness with wet film thickness gauge.

.3 Non-Slip Surfaces:

.1 Broadcast #16-30 mesh silica or aluminium oxide aggregate evenly over surface into wet top coat at minimum 2 – 5 lbs per 100 sq ft.

.2 Allow aggregate/coating matrix to settle, self-level and encapsulate aggregate into coating, back roll surface for smooth consistent finish.

.3 Allow topcoat to cure for minimum 72 hours before allowing traffic.

.4 Pavement markings: Allow 7 days for top coat to cure. Mix pigmentable two component aliphatic urethane in accordance with manufacturer's technical data sheets. Apply uniform coating of line paint to designated areas with 13 mm solvent resistant roller. Allow paint to cure before allowing traffic.

3.7 FIELD QUALITY CONTROL

.1 **Manufacturer's Field Service**: Traffic Coating manufacturer shall supervise application. Submit reports to Consultant and Contractor on findings of each site visit.

3.8 REPAIR

.1 Touch-up and refinish minor defective work. Refinish entire coated surface areas where finish is damaged or otherwise unacceptable.

3.9 CLEANING

.1 Remove promptly as work progresses spilled or spattered materials from surfaces of work performed under other Sections. Clean floors on completion of work. Do not mar surfaces while removing.

.2 Leave storage and mixing areas in same condition as equivalent spaces in project.

3.10 **PROTECTION**

.1 Erect barriers to prevent the entry and presence of persons not performing work of this Section during application of traffic coating, and for 48 hours following completion of application.

3.11 **SCHEDULE**

.1 Light Duty Vehicular (parking stalls) and Pedestrian Traffic Bearing Waterproofing System: minimum designed system thickness 38 mils.

.1 Optional Primer: Durabond Uraflex, 8 mils DFT.

.2 Membrane: Durabond Uraflex 360NP, 20 mils DFT.

.3 Top Coat: Durabond Uraflex 361, 18 mils DFT, with aggregates at 10 – 15 lbs/ 100 sq ft .

.2 Heavy Duty Vehicular (drive aisles) Traffic Bearing Waterproofing System: minimum designed system thickness 45 mils.

.1 Optional Primer: Durabond Uraflex, 8 mils DFT.

.2 Membrane: Durabond Uraflex 360NP, 20 mils DFT.

.3 Top Coat: Durabond Uraflex 361, 25 mils DFT, with aggregates at 30 – 45 lbs/ 100 sq ft.

.3 Extra Heavy Duty Vehicular (turning lanes and ramps) Traffic Bearing Waterproofing System: designed system minimum thickness 56 mils.

.1 Optional Primer: Durabond Uraflex, 8 mils DFT.

.2 Membrane: Durabond Uraflex 360NP, 20 mils DFT.

.3 First Top Coat: Durabond Uraflex 362, 18 mils DFT, with aggregates at 50 – 75 lbs/ 100 sq ft.

.4 Second Top Coat: Durabond Uraflex 362, 18 mils DFT, with aggregates at 5 – 10 lbs/ 100sq ft.

END OF SECTION