

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 04 05 23 – Masonry Accessories.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM).
 - .1 ASTM D412-06AE2: Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
 - .2 ASTM D882-10: Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
 - .3 ASTM E154-08A: Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
- .2 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-37.58-M86 Membrane, Elastomeric, Cold-Applied Liquid, for Non-Exposed Use in Roofing and Waterproofing.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide 3 copies of most recent technical waterproofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Provide three copies of WHMIS MSDS.
- .3 Samples: submit 3 samples 300 mm x 300 mm.
- .4 Manufacturer's Installation Instructions.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Provide and maintain dry, off-ground weatherproof storage.
- .2 Handle waterproofing materials in accordance with manufacturer's written directives, to prevent damage or loss of performance.
- .3 Store and manage hazardous materials in accordance with Section 01 35 30 - Health and Safety Requirements.
- .4 Packaging Waste Management: remove in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

- .2 Fold up metal banding, flatten and place in designated area for recycling.

1.5 FIELD CONDITIONS

- .1 Ambient Conditions
 - .1 As recommended by the manufacturer.

Part 2 Products

2.1 PERFORMANCE CRITERIA

- .1 Waterproofing System: capable of resisting moisture/water.
- .2 Compatibility between components of waterproofing system is essential. Provide written declaration to Departmental Representative stating that materials and components, as assembled in system, meet this requirement.

2.2 MEMBRANE

- .1 Type 1 Membrane:
 - .1 Styrene-Butadiene-Styrene (SBS) modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film, for use as foundation waterproofing.
 - .1 Membrane Thickness: 1 mm (40 mils).
 - .2 Film Thickness: 4.0 mils.
 - .3 Service Temperature: Minus 40 C to 70 C.
 - .4 Elongation (ASTM D412): 200% minimum.
 - .5 Tensile Strength (ASTM D882): 35 MPa minimum.
 - .6 Puncture resistance (ASTM E154): 178 N minimum.
 - .7 Water tightness (CAN/CGSB-37.58-M86): Pass
- .2 Type 2 Membrane:
 - .1 Styrene-Butadiene-Styrene (SBS) rubberized asphalt complete with a cross-laminated polyethylene film, for use as waterproofing over C3 tunnel.
 - .1 Membrane Thickness: 1.5 mm (60 mils).
 - .2 Film Thickness: 4.0 mils.
 - .3 Service Temperature: Minus 40 C to 70 C.
 - .4 Elongation (ASTM D412): 300% minimum.
 - .5 Tensile Strength (ASTM D882): 35 MPa minimum.
 - .6 Peel strength (ASTM D903): 1500 N/m minimum.
 - .7 Puncture resistance (ASTM E154): 220 N minimum.
 - .8 Water tightness (CAN/CGSB-37.58-M86): Pass
- .3 High temperature - Styrene-Butadiene-Styrene (SBS) modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film, for use under cap stones.
 - .1 Top surface: Cross laminated Polyethylene (hot melt coated). Bottom surface: Siliconized Kraft Paper.

- .2 Membrane Thickness: 1 mm (40 mils).
- .3 Film Thickness: 4.0 mils.
- .4 Elongation (ASTM D412): 250% minimum.
- .5 Tensile Strength (ASTM D412): 600 psi minimum.
- .6 Self-healing when punctured by mechanical fasteners.

2.3 ADHESIVE PRIMER

- .1 Adhesive for securing membrane as recommended by the manufacturer.

2.4 FASTENING BARS AND FASTENERS

- .1 Sizing as recommended by the manufacturer.
- .2 Provide in stainless steel.

Part 3 Execution

3.1 QUALITY OF WORK

- .1 Do examination, preparation and waterproofing Work in accordance with manufacturer's directions and as indicated.
- .2 Do priming for in accordance with manufacturer's written recommendations.

3.2 EXAMINATION OF CONDITIONS

- .1 Verification of Conditions:
 - .1 Inspect with Departmental Representative substrate conditions to determine readiness to proceed.
- .2 Evaluation and Assessment: prior to beginning of work ensure:
 - .1 Substrate is firm, straight, smooth, dry, free of snow, ice or frost, and swept clean of dust and debris. Do not use calcium or salt for ice or snow removal.
- .3 Do not install waterproofing materials during rain or snowfall.

3.3 PROTECTION OF IN-PLACE CONDITIONS

- .1 Cover adjacent work.

3.4 PRIMING AND INTALLATION OF MEMBRANE

- .1 Apply primer to substrate at the rate recommended by manufacturer.
- .2 Membrane:
 - .1 Complete installation of membrane prior to installing masonry.
 - .2 Lap membrane sheet minimum 100 mm and seal.

- .3 Properly secure membrane to their support, without sags, blisters, fishmouths or wrinkles.
- .4 Do Work in accordance with manufacturer's recommendations.
- .5 Allow slight space between slabs to permit drainage of surface water.
- .6 Shim up as required to obtain smooth surface transition from slab to slab.
- .3 See Section 04 05 23 – Masonry Accessories for additional requirements.

3.5 CLEANING

- .1 In areas where finished surfaces are soiled caused by work of this section, consult manufacturer of surfaces for cleaning advice and complying with their documented instructions.
- .2 Waste Management: separate waste materials for in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 04 05 10 - Common Work Results for Masonry.

1.2 REFERENCES

- .1 Canadian General Standards Board (CGSB)
 - .1 CGSB 19-GP-5M-1984, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Incorporating Amendment No. 1).
 - .2 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
 - .3 CGSB 19-GP-14M-1984, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing.
 - .4 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
 - .5 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.
- .2 General Services Administration (GSA) - Federal Specifications (FS)
 - .1 FS-SS-S-200-E(2)1993, Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

1.3 SUBMITTALS

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Manufacturer's product to describe.
 - .1 Caulking compound.
 - .2 Primers.
 - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
- .3 Submit 3 copies of sealant manufacturer's colour chart for selection of colour by Departmental Representative.
- .4 Submit 3 samples of each type of material and colour chosen by Departmental Representative.
- .5 Submit manufacturer's instructions.
 - .1 Instructions to include installation instructions for each product used.

1.4 QUALITY ASSURANCE/MOCK-UP

- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.

- .2 Construct mock-up to show location, size, shape and depth of joints complete with back-up material, primer, caulking and sealant.
- .3 Locate where directed by Departmental Representative.
- .4 Allow 72 hours for inspection of mock-up by Departmental Representative before proceeding with sealant work.
- .5 When accepted, mock-up will demonstrate minimum standard of quality required for this Work. Approved mock-up may remain as part of finished Work if approved by the Departmental Representative.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.
- .3 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

1.6 PROJECT CONDITIONS

- .1 Environmental Limitations:
 - .1 Do not proceed with installation of joint sealants under following conditions:
 - .1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.
 - .2 When joint substrates are wet.
- .2 Joint-Width Conditions:
 - .1 Do not proceed with installation of joint sealants where joint widths are narrower or wider than those allowed by joint sealant manufacturer for applications indicated.
- .3 Joint-Substrate Conditions:
 - .1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.7 ENVIRONMENTAL REQUIREMENTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Labour Canada.
- .2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

- .3 Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.

Part 2 Products

2.1 SEALANT MATERIALS

- .1 Where sealants are qualified with primers use only these primers.
- .2 For installation to masonry, sealants and their primers are not to stain the masonry.

2.2 SEALANT MATERIAL DESIGNATIONS

- .1 Type 1: Urethanes One Part.
 - .1 Semi-Self-Levelling to CAN/CGSB-19.13, Type 1.
 - .2 Sanded surface as part of manufactured system.
 - .3 Colour to approval of Departmental Representative.
- .2 Preformed Compressible and Non-Compressible back-up materials.
 - .1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
 - .1 Extruded closed cell foam backer rod.
 - .2 Size: oversize 30 to 50 %.
 - .2 Neoprene or Butyl Rubber.
 - .1 Round solid rod, Shore A hardness 70.
 - .3 High Density Foam.
 - .1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m³ density, or neoprene foam backer, size as recommended by manufacturer.
 - .4 Bond Breaker Tape.
 - .1 Polyethylene bond breaker tape which will not bond to sealant.

2.3 SEALANT SELECTION

- .1 Joints in masonry and concrete construction: Sealant Type: 1.

2.4 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.
- .2 Primer: as recommended by manufacturer.

Part 3 Execution

3.1 PROTECTION

- .1 Protect installed Work of other trades from staining or contamination.

3.2 SURFACE PREPARATION

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4 Ensure joint surfaces are dry and frost free.
- .5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

- .1 Apply bond breaker tape where required to manufacturer's instructions.
- .2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

- .1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 APPLICATION

- .1 Sealant.
 - .1 Apply sealant in accordance with manufacturer's written instructions.
 - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
 - .3 Apply sealant in continuous beads.
 - .4 Apply sealant using gun with proper size nozzle.
 - .5 Use sufficient pressure to fill voids and joints solid.

- .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
- .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
- .8 Remove excess compound promptly as work progresses and upon completion.
- .9 Apply sanded surface as recommended by the manufacturer.
- .2 Curing.
 - .1 Cure sealants in accordance with sealant manufacturer's instructions.
 - .2 Do not cover up sealants until proper curing has taken place.

3.7

CLEANUP.

- .1 Clean adjacent surfaces immediately and leave Work neat and clean.
- .2 Remove excess and droppings, using recommended cleaners as work progresses.
- .3 Remove masking tape after initial set of sealant.

END OF SECTION