

## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 07 62 00 - Sheet Metal Flashing and Trim.

### **1.2 REFERENCES**

- .1 Canadian General Standards Board (CGSB):
  - .1 CAN/CGSB-37.29-M89, Rubber-Asphalt Sealing Compound.
  - .2 CGSB 37-GP-56M-80(+Amdt.1985), Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.
- .2 Canadian Roofing Contractors Association (CRCA):
  - .1 CRCA Roofing Specifications Manual-1997.
- .3 Department of Justice Canada (Jus):
  - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .4 Factory Mutual (FM Global):
  - .1 FM Approvals - Roofing Products.
- .5 Health Canada / Workplace Hazardous Materials Information System (WHMIS):
  - .1 Material Safety Data Sheets (MSDS).
- .6 Transport Canada (TC):
  - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).

### **1.3 PERFORMANCE REQUIREMENTS**

- .1 Compatibility between components of roofing system is essential. Provide written declaration to the Departmental Representative stating that materials and components, as assembled in system, meet this requirement.

### **1.4 SUBMITTALS**

- .1 Submittals in accordance with Section 01 33 00 – Submittals.
- .2 Submit two copies of the most recent technical roofing components data sheets describing materials' physical properties.
- .3 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 35 28 "Health and Safety Requirements".
  - .1 Indicate VOC content for:
    - .1 Primers.
    - .2 Asphalt.
    - .3 Sealers.
- .4 Manufacturer's Installation Instructions: indicate special precautions required for seaming the membrane.
- .5 Manufacturer's Certificate: certify that products meet or exceed specified requirements.

1.5 HEALTH AND SAFETY

- .1 Do construction occupational health and safety in accordance with Section 01 35 29 - Health and Safety Procedures.

1.6 STORAGE AND HANDLING

- .1 Provide and maintain dry, off-ground weatherproof storage.
- .2 Store rolls membrane in upright position. Store membrane rolls with selvage edge up.
- .3 Remove only in quantities required for same-day use.
- .4 Place plywood runways over completed Work to enable movement of material and other traffic.
- .5 Store membrane, adhesives, sealants and other similar materials at a minimum of +5°C.
- .6 Store insulation protected from daylight, weather and deleterious materials.
- .7 Handle roofing materials in accordance with manufacturer's written directives, to prevent damage or loss of performance.
- .8 Store and manage hazardous materials in accordance in a safe manner.

1.7 PROTECTION

- .1 Fire Extinguishers: For each torch applicator, maintain on the roof within 6 m of the torch applicator, one cartridge operated type or stored pressure rechargeable type with hose and shut-off nozzle, ULC labeled for A, B and C class protection, size as recommended by the roofing inspector.
- .2 Maintain fire watch for 1 hour after each day's roofing operations cease.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 "Building Construction/ Demolition Waste Management and Disposal".
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with the Waste Management Plan.
- .4 Separate for reuse and recycling and place in designated containers metal and plastic waste in accordance with the Waste Management Plan.
- .5 Place materials defined as hazardous or toxic in designated containers.

- .6 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.
- .7 Clearly label the location of salvaged material's storage areas and provide barriers and security devices.
- .8 Ensure emptied containers are sealed and stored safely.
- .9 Divert unused metal materials from landfill to metal recycling facility as approved by the Departmental Representative.
- .10 Divert unused aggregate materials from landfill to a local facility for reuse as approved by the Departmental Representative.
- .11 Unused hazardous materials must be disposed of at an official hazardous material collections site as approved by the Departmental Representative.
- .12 Unused adhesive, sealant and asphalt materials must not be disposed of into the sewer system, into streams, lakes, onto the ground or in other location where it will pose a health or environmental hazard.
- .13 Dispose of unused adhesive, sealant and asphalt materials at an official hazardous material collections site approved by the Departmental Representative.
- .14 Divert unused gypsum materials from landfill to a recycling facility as approved by the Departmental Representative.
- .15 Fold up metal banding, flatten and place in designated area for recycling.

#### 1.9 ENVIRONMENTAL REQUIREMENTS

- .1 Do not install roofing when temperature remains below -18°C for torch application, or -5°C for mop application.
- .2 Minimum temperature for solvent-based adhesive is -5°C.
- .3 Install roofing on dry deck, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system.

## **PART 2 - PRODUCTS**

### 2.1 MEMBRANE

- .3 Base Sheet Stripping (flashing): Thermofusible elastomeric bitumen (SBS modified bitumen) reinforced with a glass fibre reinforcement, top face covered with a thermofusible plastic film, underside covered with a silicone release plastic film protecting the self-adhesive underface; conforming to CGSB 37-GP-56M, Type 2, Class P, Grade 1. Thickness 2.6 mm.
  - .1 Apply membrane by self-adhesion on primed substrate.

- .2 Components:
  - .1 Reinforcement: Non-woven polyester 130 g/m<sup>2</sup>.
  - .2 Modified bitumen: Mix of selected bitumen and SBS thermoplastic polymer.
  - .3 Primer: As recommended by the system manufacturer.
- .2 Cap Sheet Stripping (Flashing): Thermofusible elastomeric bitumen (SBS modified bitumen) reinforced with a non-woven polyester reinforcement, topside self-protected with coloured granules, underside protected by a thermofusible plastic film, conforming to CGSB 37-GP-56M, Type 2, Class C, Grade 2. Thickness 4.0 mm.
  - .1 Apply membrane by torching only.
  - .2 Components:
    - .1 Reinforcement: Non-woven polyester 250 g/m<sup>2</sup>.
    - .2 Modified bitumen: Mix of selected bitumen and SBS thermoplastic polymer.
  - .3 Colour: Surface colour (granules) to be selected by the Departmental Representative from the manufacturer's complete colour range.

## 2.2 SEALERS

- .1 Sealing compound: to CAN/CGSB-37.29, rubber asphalt type.

## 2.3 CARPENTRY

- .1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
  - .3 CAN/CSA-O141.
  - .4 NLGA Standard Grading Rules for Canadian Lumber.
- .2 Furring, blocking, nailing strips, grounds, cants:
  - .1 S4S.
  - .2 Board sizes: "Standard" or better grade.
  - .3 Dimension sizes: "Standard" light framing or better grade.
- .3 Panel materials:
  - .1 Douglas fir plywood (DFP): to CSA O121, standard construction.
  - .3 Canadian softwood plywood (CSP): to CSA O151, standard construction.
- .4 Accessories:
  - .1 Nails, spikes and staples: to CSA B111.
  - .2 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.

## PART 3 - EXECUTION

### 3.1 WORKMANSHIP

- .2 Do examination, preparation and roofing Work in accordance with Roofing Manufacturer's Specification Manual and CRCA Roofing Specification Manual, particularly for fire safety precautions.
- .3 Construct the interface of the walls and roof assemblies to ensure continuity of air barrier, as indicated.

- .3 Make assembly, component and material connections in consideration of appropriate design loads.

### 3.2 INSTALLATION GENERAL

- .1 Do not install materials under conditions of rain, snow or fog.
- .2 Install roofing elements on clean and dry surfaces, in accordance with the manufacturer's requirements and recommendations.
- .3 Perform work on a continuous basis as surface and weather conditions allow.
- .4 Protect adjoining surfaces against any damage that could result from the roofing installation.

### 3.3 EQUIPMENT

- .1 Maintain all equipment and tools in good working order.
- .2 Use torch types recommended by the membrane manufacturer.

### 3.4 EXAMINATION OF CONDITIONS

- .1 With the Departmental Representative, inspect conditions including parapets, to determine readiness to proceed.
- .2 Prior to beginning of work ensure:
  - .1 substrate and all parts of the structure that are to be covered with roofing membrane possess a smooth surface with an even finish, free of excessive moisture, ridges, hollows and sharp corners;
  - .2 substrates are 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 substrates are free of contamination by materials which could affect the adhesion of the roofing or the physical integrity of the membrane itself;
  - .4 curbs have been built;
- .3 Do not proceed with the work until unsatisfactory conditions have been corrected to the satisfaction of the installer.
- .4 Do not install roofing materials during rain or snowfall.

### 3.5 PROTECTION

- .1 Cover walls, walks and adjacent work where materials hoisted or used.
- .2 Use warning signs and barriers. Maintain in good order until completion of Work.
- .3 Clean off drips and smears of bituminous material immediately.
- .4 Protect roof from traffic and damage. Comply with precautions deemed necessary by the Departmental Representative.

- .5 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed work and materials out of storage.

### 3.6 PRIMER APPLICATION

- .1 Treat all surfaces to be roofed, with primer to improve adhesion. Apply by brush or roller at the rate recommended by the manufacturer.
- .2 Note that the drying time of the primer is related to the ambient temperature and may vary from a few hours to a whole day. Do not proceed until the primer is dry.

### 3.7 ROOF MEMBRANE APPLICATION

- .1 Base sheet stripping (flashing) membrane application:
  - .1 Ensure that primer coating is dry before application of the base sheet stripping.
  - .2 Lay base sheet stripping in strips 1 metre wide to the vertical surfaces, extending on to the flat surface of the roof a minimum of 100 mm. Side laps shall be 75 mm and shall be staggered a minimum of 100 mm with the laps of the base sheet.
  - .3 Install the self-adhesive base sheet stripping, in accordance with the manufacturer's instructions.
  - .4 Roll the entire surface to make sure the membrane is properly adhered, without air pockets, wrinkles, fishmouths or tears.
  - .5 After installation of the membrane, check all lap seams by running a trowel along the seam.
  - .6 Nail the base sheet top edge to the substrate at 300 mm o.c. in accordance with the manufacturer's recommendations.
- .2 Cap sheet stripping (flashing) installation:
  - .1 Torch weld cap flashing membrane in place.
  - .2 Lay membrane in strips one metre wide. Side laps to be 75 mm, staggered at least 300 mm relative to the cap sheet.
  - .3 At parapets and curbs, membrane to extend 150 mm out onto the roof, up the back face of the parapet, over the top of the parapet and terminate 50 mm down the outer face of the parapet unless indicated otherwise.
  - .4 At other vertical surfaces membrane to extend 150 mm out onto the roof, over the cant strip, up the back face of the parapet to the elevation indicated or where required for a complete, watertight installation.
  - .5 Torch-weld reinforcement stripping directly onto its support from bottom to top. Torch-welding shall soften the underside of the reinforcement stripping without overheating, resulting in a uniform adhesion over the entire surface.
  - .6 Take care not to burn the membrane and its respective reinforcements.
  - .7 Make sure the membrane is properly welded, without air pockets, wrinkles, fishmouths or tears.
  - .8 During installation, avoid asphalt seepage greater than 5 mm at seams.

- .9 Nail the top edge in accordance with the manufacturer's recommendations.
- .10 After installation of the membrane, check all lap seams by running a trowel along the seam.

### 3.8 FLASHINGS

- .1 Install metal flashings in accordance with details and Section 07 62 00 "Sheet Metal Flashing and Trim".
- .2 Install all items required for a complete project.

### 3.9 FIELD QUALITY CONTROL

- .1 Inspection and testing of the roofing installation will be carried out by a testing laboratory designated by the Departmental Representative.
- .2 Cooperate with the roofing inspector. Provide at least 48 hours notice of commencement of each phase of the work. Provide the inspector with unlimited access to the work.
- .3 The Departmental Representative will pay for the initial tests. The cost of re-inspection and retesting necessitated by failure to meet specification requirements on the initial inspection/test shall be paid by the Contractor.

### 3.10 CLEANING

- .1 Remove bituminous markings from finished surfaces.
- .2 In areas where finished surfaces are soiled caused by work of this section, consult the manufacturer of surfaces for cleaning advice and comply with their documented instructions.
- .3 Repair or replace defaced or disfigured finishes caused by work of this Section.

**END OF SECTION**

## **PART 1 - GENERAL**

### 1.1 RELATED SECTIONS

- .1 Section 01 74 21 – Construction/ Demolition Waste Management and Disposal.
- .2 Section 07 52 00 – Modified Bituminous Membrane Roofing.
- .3 Section 07 92 10 – Joint Sealing.

### 1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM International)
  - .1 ASTM A879 / A879M – 12, Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface.
  - .2 ASTM A792 / A792M – 10, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
  - .3 ASTM B32-08, Standard Specification for Solder Metal.
  - .4 ASTM B127 - 05(2009), Standard Specification for Nickel-Copper Alloy (UNS N04400) Plate, Sheet, and Strip.
  - .5 ASTM B370-12, Standard Specification for Copper Sheet and Strip for Building Construction.
  - .6 ASTM D523-08, Standard Test Method for Specular Gloss.
  - .7 ASTM D822-01 (2006), Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
- .2 Canadian Roofing Contractors Association (CRCA):
  - .1 Roofing Specifications Manual.
- .3 Canadian Standards Association (CSA):
  - .1 CSA-A123.3-05 (R2010), Asphalt Saturated Organic Roofing Felt.
  - .2 CSA-B111-1974 (R2003), Wire Nails, Spikes and Staples.
- .4 Canadian General Standards Board
  - .1 CAN/CGSB-37-GP-11M, Application of Cutback Asphalt Plastic Cement.
  - .2 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.
- .5 The Society for Protective Coatings (SSPC):
  - .1 SSPC-Paint 33-2006, Paint Specification No. 33: Coal Tar Mastic, Cold-Applied.
  - .2 SSPC-Paint System 10.02 (2004), Paint System No. 10.02, Cold-Applied Coal Tar Mastic System.

### 1.3 SUBMITTALS

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit duplicate 150 mm x 150 mm samples of each type of sheet metal material, colour and finish.

#### 1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/ Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with the Waste Management Plan.
- .4 Place materials defined as hazardous or toxic in designated containers.
- .5 Ensure emptied containers are sealed and stored safely for disposal away from children.
- .6 Divert unused metal materials from landfill to a metal recycling facility as approved by the Departmental Representative.
- .7 Unused sealant material must be disposed of at an official hazardous material collections site as approved by the Departmental Representative.
- .8 Unused sealant material must not be disposed of into the sewer system, into streams, lakes, onto the ground or in another location where it will pose a health or environmental hazard.
- .9 Fold up metal banding, flatten and place in a designated area for recycling.

### **PART 2 - PRODUCTS**

#### 2.1 SHEET METAL MATERIALS

- .1 Salvaged Copper Sheet: existing copper sheet flashing, carefully removed, salvaged, and stored for reinstallation.
- .2 Prefinished steel sheet: galvanized sheet steel, pre-treated, primed and finish coated with factory applied silicone modified polyester:
  - .1 Class F2S.
  - .2 Steel gauge: 0.91 mm (20 ga.)
  - .3 Colour to match colour of existing brick masonry – colour to be selected by Departmental Representative from manufacturer's standard range.
  - .4 Specular gloss: 30 units +/- 5 in accordance with ASTM D 523.
  - .5 Coating thickness: not less than 25 micrometres.
  - .6 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20 % to ASTM D 822 as follows:
    - .1 Outdoor exposure period 1,000 hours.
    - .2 Humidity resistance exposure period 1,000 hours.

#### 2.2 ACCESSORIES

- .1 Isolation coating: alkali resistant bituminous paint to SSPC Paint-33.

- .2 Plastic cement: to CAN/CGSB-37-GP-11M.
- .3 Underlayment for prefinished metal flashing: to CAN/CGSB-51.32-M77, asphalt laminated 3.6 to 4.5 kg kraft paper, or No. 15 perforated asphalt felt to CSA A123.3.
- .4 Sealant: Type A sealant as specified in Section 07 92 10 - Joint Sealing.
- .5 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured and as required to provide rigid support and positive securement for metal flashings.
- .6 Fasteners (for prefinished metal flashings): to CSA B111, non-corrosive, of same material as sheet metal of length and thickness suitable for application. For masonry substrate, use stainless steel anchors in nylon shields or other non-corrosive metal as recommended by sheet manufacturer.
- .7 Washers: of same material as sheet metal, 1 mm thick with rubber packings.
- .8 Rivets: 3mm to 5 mm diameter with solid copper mandrels and washers.
- .9 Solder: to ASTM B 32, 50/50, tin/lead solder with rosin flux.
- .10 Flux: rosin, cut hydrochloric acid or commercial preparation suitable for materials to be soldered.

### 2.3 FABRICATION - METAL FLASHINGS

- .1 Fabricate metal flashings and other sheet metal work in accordance with applicable CRCA 'FL' series details, details shown on the drawings, and the applicable requirements of other recognized industry practices.
- .2 Form pieces in 2400 mm maximum lengths. Make allowance for expansion at joints.
- .3 Hem exposed edges on underside 12 mm. Mitre and seal corners with sealant.
- .4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .5 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- .1 Install sheet metal work in accordance with CRCA FL series details, and as detailed.

- .2 Use concealed fastenings except where approved before installation. Provide for thermal expansion of units. Set units true to lines and levels as indicated.
- .3 Install flashing units with watertight and weatherproof laps, joints and seams. Lock end joints of metal flashings and caulk with sealant inside of joint, prior to assembly.
- .4 Provide underlay under sheet metal. Secure in place and lap joints 100 mm.
- .5 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs. Flash joints using S-lock seams forming tight fit over hook strips, as detailed.
- .6 Insert metal flashing into reglets and under cap flashings to form weathertight junctions.
- .7 Turn top edge of flashing into a recessed reglet or mortar joint a minimum depth of 25 mm. Lead wedge the flashing securely into the joint.
- .8 Caulk flashings at reglets and cap flashings with sealant. Refer to Section 07 92 10 - Joint Sealing.
- .9 Imperfections in metal flashing work such as holes, dents, creases, or oil canning will not be accepted.

### 3.2 CLEANING

- .1 Clean exposed copper and metal flashing surfaces. Remove all substances that might cause discolouration of metal.
- .2 Protect completed flashings to prevent damage or deterioration until completion of construction.

**END OF SECTION**

**PART 1 – GENERAL**

**1.1 RELATED SECTIONS**

- .1 Section 04 05 00 – Common Work Results for Masonry.
- .2 Section 07 62 00 - Sheet Metal Flashing and Trim.

**1.2 REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM C 919-12, Standard Practice for Use of Sealants in Acoustical Applications.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-19.13-M87, Sealing Compound, One Component, Elastomeric, Chemical Curing.
  - .2 CAN/CGSB-19.17-M90, One-Component, Acrylic Emulsion Base Sealing Compound.
  - .3 CAN/CGSB-19.24-M90, Multicomponent, Chemical-Curing Sealing Compound.
- .3 Department of Justice Canada (Jus)
  - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .5 Transport Canada (TC)
  - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).
- .6 Underwriters' Laboratories of Canada (ULC):
  - .1 CAN/ULC-S102-03, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

**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 samples in accordance with Section 01 33 00 – Submittal Procedures.
- .4 Submit duplicate samples of each type of material and colour.
- .5 Cured samples of exposed sealants for each colour where required to match adjacent material.

- .6 Submit manufacturer's instructions in accordance with Section 01 33 00 – Submittal Procedures. 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 – Testing and 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 Mock-up will be used to judge workmanship, substrate preparation, operation of equipment and material application.
- .4 Locate where directed.
- .5 Allow 24 hours for inspection of mock-up by the Departmental Representative before proceeding with sealant work.
- .6 When accepted, mock-up will demonstrate minimum standard of quality required for this Work. The accepted mock-up may remain as part of the finished Work.

#### 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.

#### 1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 – Construction/ Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with the Waste Management Plan.
- .4 Place materials defined as hazardous or toxic in designated containers.
- .5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .6 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
- .7 Divert unused joint sealing material from landfill to an official hazardous material collections site approved by the Departmental Representative.

- .8 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.
- .9 Fold up metal banding, flatten, and place in designated area for recycling.

## 1.7 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°C.
    - .2 When joint substrates are wet.
  - .2 Joint-Width Conditions:
    - .1 Do not proceed with installation of joint sealants where joint widths are less 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.

## 1.8 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 the Departmental Representative by use of approved portable supply and exhaust fans.

## **PART 2 - PRODUCTS**

### 2.1 SEALANT MATERIALS

- .1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant.
- .2 When low toxicity caulks are not possible, confine usage to areas which off-gas to exterior or are contained behind air barriers.
- .3 Where sealants are qualified with primers use only these primers.

## 2.2 SEALANT MATERIAL DESIGNATIONS

- .1 Sealant (Type "A"): Silicone, low modulus, high performance, one part, neutral curing, non-staining, construction grade, to CAN/CGSB-19.13-M87. Colour to match adjacent finishes to the approval of the Departmental Representative.
- .2 Sealant (Type "B"): Silicone, low modulus, high performance, one part, neutral curing, non-staining, construction grade, to CAN/CGSB-19.13-M87. Colour to match adjacent finishes to the approval of the Departmental Representative.
- .3 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/m<sup>3</sup> 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.
- .4 Joint Cleaner.
  - .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

## 2.3 SEALANT SELECTION

- .1 Apply sealant Type "A" at the following exterior locations:
  - .1 Between dissimilar (porous) materials in exposed locations except where specifically indicated otherwise.
  - .2 At perimeter of non-porous to porous materials (aluminum window frames, brick masonry, etc.).
  - .3 Perimeters of exterior openings where frames meet exterior facade of building (i.e. stone masonry).
  - .4 Sealant joints in exterior surfaces of stone masonry.
- .2 Apply sealant Type "B" at the following exterior locations:
  - .1 Between dissimilar (non-porous) materials in exposed locations except where specifically indicated otherwise.
  - .2 Perimeters of non-porous materials (metal to metal joints, aluminium window frames, metal flashings and other non-porous materials, etc.).
  - .3 Exterior joints in sheet metal work, including sheet metal flashing, and where not otherwise specified.

2.4 JOINT CLEANER

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

.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 CLEANING**

- .1 Upon completion of the work of this Section remove from the premises all surplus material, dirt and debris caused by the work of this Section and leave the installation clean.

.2 Cleanup:

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

**END OF SECTION**