
PART 1 - GENERAL

<u>1.1 Section Includes</u>	.1	Materials and installation for use as asphalt based membrane dampproofing.
<u>1.2 Related Sections</u>	.1	Section 01 33 00 - Submittal Procedures.
<u>1.3 References</u>	.1	Canadian General Standards Board (CGSB) .1 CAN/CGSB-37.2-M88, Emulsified Asphalt, Mineral-Colloid Type, Unfilled, for Dampproofing and Waterproofing and for Roof Coatings. .2 CAN/CGSB 37.3-M89, Application of Emulsified Asphalts for Dampproofing or Waterproofing. .3 CAN/CGSB 37.5-M89, Cutback Asphalt Plastic Cement. .4 CGSB 37-GP-6Ma-83, Asphalt, Cutback, Unfilled, for Dampproofing. .5 CGSB 37-GP-9Ma-83, Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing. .6 CGSB 37-GP-11M-76(R1984), Application of Cutback Asphalt Plastic Cement. .7 CGSB 37-GP-12Ma-84, Application of Unfilled Cutback Asphalt for Dampproofing. .8 CGSB 37-GP-15M-76(R1984), Application of Asphalt Primer for Asphalt Roofing, Dampproofing and Waterproofing. .9 CAN/CGSB 37.16-M89, Filled, Cutback, Asphalt for Dampproofing and Waterproofing. .10 CAN/CGSB 37.28-M89, Reinforced Mineral Colloid Type, Emulsified Asphalt for Roof Coatings and for Waterproofing. .11 CGSB 37-GP-36M-76, Application of Filled Cutback Asphalts for Dampproofing and Waterproofing. .12 CGSB 37-GP-37M-77, Application of Hot Asphalt for Dampproofing or Waterproofing.
	.2	Canadian Standards Association (CSA International) .1 CSA A123.4-98, Bitumen for Use in Construction of Built-Up Roof Coverings and Dampproofing and Waterproofing Systems.
	.3	Health Canada .1 Workplace Hazardous Materials Information System (WHMIS) .1 Material Safety Data Sheets (MSDS).
	.4	National Research Council Canada (NRC)/Institute for Research in Construction (IRC) .1 Canadian Construction Materials Centre (CCMC)

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- 1.4 Submittals
- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 35 30 - Health and Safety Requirements.
 - .3 Submit product data sheets for dampproofing products. Including:
 - .1 Product characteristics.
 - .2 Performance criteria.
 - .3 Application methods.
 - .4 Limitations.
 - .4 Evidence that extruded polystyrene insulation is CFC free.
- 1.5 Quality Assurance
- .1 To ensure system compatibility all waterproofing components shall be supplied by single-source manufacturer.
 - .2 Waterproofing Contractor must have at least 10 years experience installing rubberized asphalt waterproofing membrane systems.
- 1.6 Delivery, Storage and Handling
- .1 Deliver, handle, store and protect materials in accordance with Section 01 00 10 – General Instructions.
 - .2 Provide and maintain dry, off-ground weatherproof storage.
 - .3 Store materials on supports to prevent deformation.
 - .4 Remove only in quantities required for same day use.
 - .5 Store materials in accordance with manufacturer's written instructions.
- 1.7 Waste Management and Disposal
- .1 Separate waste materials for reuse and recycling in accordance with Section 01 00 10 - General Instructions.
 - .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
 - .3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
 - .4 Ensure emptied containers are sealed and stored safely.
 - .5 Fold up metal banding, flatten and place in designated area for recycling.
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1.8 Project/Site Environmental Requirements

- .1 Temperature, relative humidity, moisture content.
 - .1 Apply dampproofing materials only when surfaces and ambient temperatures are within manufacturers' prescribed limits.
 - .2 Do not proceed with Work when wind chill effect would tend to set bitumen before proper curing takes place.
 - .3 Maintain air temperature and substrate temperature at dampproofing installation area above 5 degrees C for 24 hours before, during and 24 hours after installation.
 - .4 Do not apply dampproofing in wet weather.
- .2 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of asphalt, sealing compounds, primers and caulking materials.
- .3 Ventilation: Vapours from the solvent based primer and mastic must be properly ventilated.
 - .1 Ventilate area of Work as directed by Departmental representative by use of approved portable supply and exhaust fans.
 - .2 Provide continuous ventilation during and after dampproofing application. Run ventilation system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of dampproofing installation.

PART 2 - PRODUCTS2.1 Materials

- .1 Asphalt Membrane:
 - .1 A filled, hot fluid applied, rubberized asphalt waterproofing membrane.
 - .1 Acceptable material shall meet to the following:
 - .1 Water vapour permeance: to CGSB 37.50M and ASTM-E-96, Procedure E.
 - .2 Flashpoint: to CAN CGSB 37.50M and ASTM-D-92.
 - .3 Water absorption: to CGSB 37.50M.
 - .4 Low temperature flexibility (-25°C): to CAN/CGSB 37.50M - No cracking of material permitted.
 - .5 Crack bridging capability (-25°C): to CAN/CGSB 37.50M - No cracking, splitting or or loss of adhesion.
 - .6 Solid content: 100% - without solvent.
 - .7 Installation to meet CAN/CGSB 37-GP-51M.

- .2 Concrete Primer:
 - .1 A low-VOC penetrating concrete Primer/Surface conditioner.
 - .1 Acceptable material shall meet to the following:
 - .1 CGSB.37-GP-9Ma
- .3 Separation /Protection sheet:
 - .1 Bituminous protection sheet with synthetic fibre reinforcement.
 - .2 2.0mm thick (min).
 - .3 Both sides sanded.
- .4 Surface sealers may not be manufactured or formulated with aromatic solvents formaldehyde halogenated solvents mercury lead cadmium hexavalent chromium and their compounds

PART 3 - EXECUTION

3.1 Preparation

- .1 Before applying membrane dampproofing products:
 - .1 Surfaces should be structurally sound and free of voids, spalled areas, loose aggregate and sharp protrusions.
 - .1 Remove all contaminants such as grease, oils and waxes from exposed surfaces.
 - .2 Remove dust, dirt, loose stone and debris.
 - .2 Concrete must be properly dried as per Manufacturer's instructions.

3.2 Application

- .1 Do dampproofing in accordance with CAN/CGSB-37.3 CGSB 37-GP-12Ma CGSB 37-GP-36M CGSB 37-GP-37M except where specified otherwise.
- .2 Do sealing work in accordance with CGSB 37-GP-11M except where specified otherwise.
- .3 Do priming of surface in accordance with CGSB 37-GP-15M except where specified otherwise.
- .4 Apply primer:
 - .1 Apply by spray at rate recommended by Manufacturer.
 - .2 Allow primer to dry one hour minimum.
- .5 Apply waterproofing membrane as per Manufacturer's instructions and specifications.
 - .1 Provide detailing and flashing in accordance with Manufacturer's Guideline details, prior to installing membrane over substrate.
 - .2 All cracks, non-moving joints and junctions, with

openings of 1.5 mm or less, shall be reinforce with a minimum 150 mm wide strip of fabric reinforcement embedded in membrane. All cracks, non-moving joints and junctions, with openings greater than 1,5 mm, shall be reinforced with an uncured neoprene reinforcing sheet embedded in membrane.

.3 All junctions to curbs penetrations and turndowns shall be reinforced with uncured neoprene reinforcing sheet.

.4 At roof drains, a minimum 450 mm square uncured neoprene reinforcing sheet shall be centered over the drain, completely embedded in membrane and secured with clamping ring.

.5 Apply separation / protection sheet layer on to the fluid applied membrane while it is hot and per Manufacturer's instructions to ensure correct bond.

.6 Overlap separation / protection sheet layers 50mm (min) - 75mm (max).

3.3 Protection

- .1 Protect membranes to avoid damage from other trades, construction materials and backfill.
- .2 Provide surface protection in temperatures above 25°C to avoid blistering.

END OF SECTION

PART 1 - GENERAL

- 1.1 Related Work
- .1 Section 01 33 00 - Submittal Procedures.
 - .2 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
 - .3 Joint Sealing: Section 07 92 10
- 1.2 References
- .1 The Aluminum Association Inc. (AA)
 - .1 Aluminum Sheet Metal Work in Building Construction-2000.
 - .2 AA DAF45-97, Designation System for Aluminum Finishes.
 - .2 American Society for Testing and Materials (ASTM International)
 - .1 ASTM A 167-99 (2004), Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .2 ASTM A 240/A240M-08A, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
 - .3 ASTM A 591/A591M-98, Standard Specification for Steel Sheet, Electrolytic Zinc-Coated, for Light Coating Mass Applications.
 - .4 ASTM A 606-04, Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.
 - .5 ASTM A 653/A653M-08, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .6 ASTM A 792/A792M-08, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - .7 ASTM B 32-08, Standard Specification for Solder Metal.
 - .8 ASTM B 370-03, Standard Specification for Copper Sheet and Strip for Building Construction.
 - .9 ASTM D 523-08, Standard Test Method for Specular Gloss.
 - .10 ASTM D 822-01(2006), Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
 - .3 Canadian Roofing Contractors Association (CRCA)
 - .1 Roofing Specifications Manual 1997.
 - .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic
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Cement.

.2 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.

.3 CAN/CGSB-93.1-M85, Sheet Aluminum Alloy, Prefinished, Residential.

.5 Canadian Standards Association (CSA International)

.1 CSA A123.3-05, Asphalt Saturated Organic Roofing Felt.

.2 CSA-A440-00/A440.1-00 (R2005)- A440-00, Windows / Special Publication A440.1-00, User Selection Guide to CSA Standard A440-00, Windows.

.3 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

1.3 Samples

.1 Submit shop drawings in accordance with Section 01 30 00 - Submittal Procedures.

.2 Submit duplicate 50 x 50 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, corrugated cardboard, packaging material for recycling in accordance with 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 metal recycling facility as approved by Departmental Representative.

.7 Unused paint and sealant material must be disposed of at an official hazardous material collections site as approved by Departmental representative.

.8 Unused paint and 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.

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

PART 2 - PRODUCTS

2.1 Materials

- .1 Prefinished galvanized steel sheet, plain pattern, 0.61 mm minimum thickness, with factory applied finish.
 - .1 Galvanizing to ASTM A875/A875M-02a Standard Specification for Steel Sheet, Zinc-5% Aluminum Alloy-Coated by the Hot-Dip Process.
 - .2 Finish: Colours: To match existing.
 - .3 Coating thickness: not less than 25 micrometres.
 - .4 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20% to ASTM D822 as follows:
 - .1 Outdoor exposure period 1000 hours.
 - .2 Humidity resistance exposure period 1000 hours.
 - .5 Appearance and properties of anodized finishes designated by the Aluminum Association as Architectural Class 1, Architectural Class 2, and Protective and Decorative shall meet requirements of CAN/CSA-A440/A440.1, for coating Classes 1, 2 and 3 respectively.
- .2 Rigid conduit flashing: For 25mm dia. pressure relief pipe penetration at roof.
 - .1 305mm high; mill finish 1100 OT alloy aluminum
- .3 Thickness specified for prefinished aluminum sheet applies to base metal.

2.2 Accessories

- .1 Isolation coating: alkali resistant bituminous paint.
- .2 Plastic cement: to CAN/CGSB 37.5.
- .3 Sealants: Refer to Section 07 92 10 - Joint Sealing.
- .4 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.
- .5 Fasteners: of same material as sheet metal, to CSA B111, ring thread flat head roofing nails of length and thickness suitable for metal flashing application.
- .6 Washers: of same material as sheet metal, 1 mm thick with rubber packings.
- .7 Touch-up paint: as recommended by prefinished material manufacturer.

2.3 Fabrication

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

PART 3 - EXECUTION

3.1 Installation

- .1 Install sheet metal work as detailed.
- .2 Use concealed fastenings except where approved before installation.
- .3 Provide underlay under sheet metal. Secure in place and lap joints 100 mm.
- .4 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs.
- .5 Lock end joints and caulk with sealant.
- .6 Caulk cap flashing with sealant as indicated in Specification Section 07 92 10.

END OF SECTION

PART 1 - GENERAL

- 1.1 Related Sections
- .1 Section 01 00 10 - General Instructions.
 - .2 Section 01 33 00 - Submittal Procedures.
 - .3 Section 01 35 29.06 - Health and Safety Requirements.
 - .4 Section 01 78 00 - Closeout Submittals.
 - .5 Section 01 74 11 - Cleaning.
 - .6 Fire stopping and smoke seals of associated mechanical assemblies as may be specified in Division 22 and 23.
- 1.2 References
- .1 Underwriter's Laboratories of Canada (ULC)
 - .1 ULC-S115-2005, Fire Tests of Firestop Systems.
- 1.3 Samples
- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit duplicate 300 x 300 mm samples showing actual firestop material proposed for project.
- 1.4 Shop Drawings
- .1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures
 - .2 Submit shop drawings to show proposed material, reinforcement, anchorage, fastenings and method of installation. Construction details should accurately reflect actual job conditions.
 - .3 Submit manufacturer's product data for materials and prefabricated devices, providing descriptions are sufficient for identification at job site. Include manufacturer's printed instructions for installation.
- 1.5 Waste Management and Disposal
- .1 Separate and recycle waste materials.
 - .2 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.
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PART 2 - PRODUCTS

2.1 Materials

- .1 Fire stopping and smoke seal systems: in accordance with ULC-S115.
 - .1 Asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of ULC-S115 and not to exceed opening sizes for which they are intended.
 - .2 Penetrations at vertical and horizontal separations using steel pipe up to 50 mm diameter:
 - .1 Service penetration firestop components: certified by ULC in accordance with ULC-S115 and listed in ULC Guide No. 40 U19.13 and ULC Guide No. 40 U19.15 under the Label Service of ULC
 - .2 ULC System no. SP160 or approved equivalent.
- .2 Fire-resistance rating of installed fire stopping assembly in accordance with the Ontario Building Code.
- .3 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control:
 - .1 Elastomeric seal.
- .4 Primers: to manufacturer's recommendation for specific material, substrate, and end use.
- .5 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.
- .6 Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.

PART 3 - EXECUTION

3.1 Preparation

- .1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials:
 - .1 Ensure that substrates and surfaces are clean, dry and frost free.
 - .2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.
 - .3 Maintain insulation around pipes and ducts penetrating fire separation without interruption to vapour barrier.
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- .4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.
- 3.2 Installation
- .1 Install fire stopping and smoke seal material and components in accordance with ULC certification and manufacturer's instructions.
- .2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
- .3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
- .4 Tool or trowel exposed surfaces to a neat finish.
- .5 Remove excess compound promptly as work progresses and upon completion.
- 3.3 Inspection
- .1 Notify Departmental Representative when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.
- 3.4 Schedule
- .1 Firestop and smoke seal at:
- .1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
 - .2 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
 - .3 Rigid ducts: greater than 129 cm: fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.
- 3.5 Clean Up
- .1 Remove excess materials and debris and clean adjacent surfaces immediately after application.
- .2 Remove temporary dams after initial set of fire stopping and smoke seal materials.

END OF SECTION

PART 1 - GENERAL

<u>1.1 Summary</u>	.1	This Section specifies caulking and sealants not specified in other Sections.
	.2	Refer to other sections for other caulking and sealants.
<u>1.2 Related Work</u>	.1	Section 01 33 00 - Submittal Procedures.
	.2	Section 07 62 00 - Metal Flashing and Trim.
<u>1.3 References</u>	.1	American Society for Testing and Materials (ASTM):
	.1	ASTM C679-03 - Standard Test Method for Tack-Free Time of Elastomeric Sealants.
	.2	ASTM C719-03(2005) - Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).
	.3	ASTM C794-06 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.
	.4	ASTM C920-08 - Elastomeric Joint Sealants.
	.5	ASTM C1135-00(2005) - Standard Test Method for Determining Tensile Adhesion Properties of Structural Sealants.
	.6	ASTM C1193-09 - Standard Guide for Use of Joint Sealants.
	.7	ASTM C1248-08 - Standard Test Method for Staining Porous Substrate by Joint Sealants.
	.8	ASTM C1330-02 - Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
	.9	ASTM D412-06 - Standard Test Method for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension.
	.10	ASTM D2202-00(2006) - Standard Test Method for Slump of Sealants.
<u>1.4 Samples</u>	.1	Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
	.2	Submit duplicate samples of each type of material and colour.
<u>1.5 Delivery, Storage, and Handling</u>	.1	Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture and water.
<u>1.6 Environmental and Safety Requirements</u>	.1	Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use,

handling, storage, and disposal of hazardous materials; and regarding labeling and provision of material safety data sheets 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 Provide protection from direct sunlight for work in progress and during curing of sealant.

1.7 Waste Management and Disposal

.1 Separate and recycle waste materials in accordance with the Waste Reduction Workplan.

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely for disposal away from children.

.4 Dispose of surplus chemical and finishing materials in accordance with federal, provincial and municipal regulations.

.5 Separate corrugated cardboard in accordance with the Waste Management Plan and place in designated areas for recycling.

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

.7 Return solvent and oil soaked rags for contaminant recovery and laundering or for proper disposal.

.8 Use the least toxic sealants, adhesives, sealers, and finishes necessary to comply with the requirements of this section.

.9 Close and seal tightly all partly used sealant containers and store protected in well ventilated fire-safe area at moderate temperature.

.10 Place used hazardous sealant tubes and other containers in areas designated for hazardous materials.

1.8 Workmanship

.1 The following shall be judged defective materials or workmanship: leakage, hardening, cracking, crumbling, non-staining of adjacent surfaces, melting, shrinkage, running of sealant, loss of adhesion or staining of adjacent work or surfaces.

PART 2 - PRODUCTS

- 2.1 Sealant Materials
- .1 Sealants acceptable for use on this project must be listed on CGSB Qualified Products List issued by CGSB Qualification Board for Joint Sealants. Where sealants are qualified with primers use only these primers.
 - .2 Exterior weatherproofing sealant products should be validated by the Sealant Weatherproofing Restoration Institute (www.SWRIONLINE.com)
 - .3 All Sealant shall meet or exceed requirements of ASTM C920, Type S, Grade NS, Class 50, Use NT, G, M, A, and O. Single Component Neutral cure Silicone:
 - .1 Joints (exterior walls), between aluminum and masonry, between pressed steel and masonry:
 - .1 Shall meet additional requirements of ASTM C679, ASTM C639, ASTM C794, ASTM C1135 and ASTM C719.
 - .2 Colour to selection of Departmental Representative.
 - .2 Joints (interior):
 - .1 Shall meet additional requirements of ASTM C639 and ASTM C719.
 - .2 Colour to selection of Departmental Representative.
 - .4 Sealants and caulking compounds must:
 - .1 meet or exceed all applicable governmental and industrial safety and performance standards; and
 - .2 be manufactured and transported in such a manner that all steps of the process, including the disposal of waste products arising therefrom, will meet the requirements of all applicable governmental acts, by laws and regulations including, for facilities located in Canada, the fisheries Act and the Canadian Environmental Protection Act (CEPA).
 - .5 Sealant and caulking compounds must not be formulated or manufactured with: aromatic solvents, fibrous talc or asbestos, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium, barium or their compounds, except barium sulfate.
 - .6 Sealant and caulking compounds must not contain a total of volatile organic compounds (VOCs) in excess of 5% by weight as calculated from records of the amounts of constituents used to make the product.
 - .1 VOC not to exceed 250g/l.
 - .7 Sealant and caulking compounds must be accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance, and information
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describing proper disposal methods.

- .8 When low toxicity caulks are not possible, confine usage to areas which off-gas to the exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off-gas time.

2.2 Back-up Materials

- .1 Polyethylene, Urethane, Neoprene or Vinyl Foam
 - .1 Extruded closed cell foam backer rod.
 - .2 Size: oversize 30 to 50%.
- .2 Bond Breaker Tape
 - .1 Polyethylene bond breaker tape which will not bond to sealant.

2.3 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 Preparation of Joint Surfaces

- .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 Remove rust, mill scale and coatings from ferrous metals by wirebrush, grinding or sandblasting.
 - .4 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.
 - .5 Ensure joint surfaces are clean and dry.
 - .6 Prepare surfaces in accordance with manufacturer's directions.
 - .7 Before commencing with sealing, test material for indication
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- of staining or poor adhesion.
- 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 Install joint filler to achieve correct joint depth and shape.
- 3.5 Mixing .1 Mix materials in strict accordance with sealant manufacturer's instructions
- 3.6 Application .1 Sealant:
- .1 Commence sealing only after adjacent surfaces have been finished.
- .2 Apply sealant in accordance with manufacturer's instructions.
- .3 Apply sealant in continuous beads.
- .4 Compress joint backing material not less than 30%.
- .5 Ensure that the correct sealant depth to width ratio is maintained.
- .6 Apply sealant using gun with proper size nozzle.
- .7 Use sufficient pressure to fill voids and joints solid.
- .8 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
- .9 Tooling:
- .1 Tool exposed surfaces to give slightly concave shape - superficial pointing with skin bead is not acceptable.
- .2 Dry tooling preferred however if wet tooling always begin vertical joints from the bottom and work upwards.
- .3 If wet tooling, wet tools directly.
- .1 Never spray water directly at sealant bead surfaces.
- .10 Bed all thresholds on two continuous beads of bituminous sealant.
- .11 Remove excess compound promptly as work progresses and upon completion. Do not use chemicals, scrapers or other tools which affect finish of adjacent surface.
- .2 Curing.
- .1 Cure sealants in accordance with sealant manufacturer's instructions.
- .2 Do not cover up sealants until proper curing has taken place.
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- .3 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.

3.7 Location of Work

- .1 Work shall include, but shall not be limited to:
 - .1 All joints in prefinished metal flashing, trims and roof accessories not covered under other Sections.
 - .2 Junction between pipes and other items passing through roofing.

END OF SECTION
