Part 1 General

1.1 GENERAL

.1 Reference Standard(s)

.1 Submit a report, issued by a certified materials testing laboratory, attesting that the specified roofing system was tested in accordance with CSA A123.21-10, Standard test method for the dynamic wind uplift resistance of membrane-roofing systems, or meets FM Approvals Certification for roofing products, by Factory Mutual (FM Global).

.2 Roofing and sheet metal work will be performed in conformance with the roofing manufacturer's written recommendations as well as the requirements of the ULC laboratories Class A.

.3 Membranes must meet or exceed requirements of CGSB 37.56–M (9th Draft), Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.

.4 Membranes must meet or exceed requirements of ASTM D 6162, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fibre Reinforcements.

.5 Membranes must meet or exceed requirements of ASTM D 6164, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.

.6 Polyisocyanurate thermal insulation boards must meet or exceed requirements of CAN/ULC S704-03, Thermal Insulation, Polyurethane and Polyisocyanurate, Boards Faced.

.7 Roofing system must meet or exceed requirements of CAN/ULC-S107-10, Methods of Fire Tests of Roof Coverings, Class A.

.8 ANSI/ASME A112.6.4-2003 – Roof, Deck, and Balcony Drains.

.9 IAPMO IGC 187-2009 Roof Drains with Integral Overflow Drain

.10 LC1021 Roof Drains with Integral Overflow Drain or air Vent

.11 ASTM A 48 - Standard Specification for Grey Iron Castings.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Convene pre-installation meeting one week prior to beginning waterproofing Work, with roofing contractor's representative and Departmental Representative to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building subtrades.

.4 Review manufacturer's installation instructions and warranty requirements.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Provide most recent technical roofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Provide WHMIS MSDS in accordance with Sections 01 35 29.06 - Health and

Safety Requirements, and indicate VOC content for:

.1 Primers.

.2 Asphalt.

.3 Sealers.

.4 Filter fabric.

.3 Provide shop drawings:

.1 Indicate flashing, control joints, insulation details.

.2 Provide layout for tapered insulation.

.4 Samples: submit two samples of roofing membrane. Samples to be standard factory samples.

.5 Manufacturer's Certificate: certify that products meet or exceed specified requirements.

.6 Test and Evaluation Reports: submit laboratory test reports certifying compliance of bitumens and membrane with specification requirements.

.7 Manufacturer's Installation Instructions: indicate special precautions required for seaming the membrane.

.8 Manufacturer's field report: in accordance with Section 01 45 00 - Quality Control.

.9 Reports: indicate procedures followed, ambient temperatures and wind velocity during application.

1.4 COMPATIBILITY

.1 All waterproofing materials will be provided by the same manufacturer.

1.5 TECHNICAL DOCUMENTS

.1 Submit two (2) copies of the most current technical data sheets. These documents must describe the physical properties of materials and explanations about product installation, including restrictions, limitations and other manufacturer recommendations.

1.6 QUALITY ASSURANCE AND ENVIRONMENTAL MANAGEMENT

.1 The manufacturer of elastomeric bitumen products will provide proof of ISO 9001 and ISO 14001 Certifications.

1.7 MANUFACTURER’S REPRESENTATIVE

.1 The roofing product manufacturer can delegate a representative to visit the work site at the start of roofing installation.

.2 The contractor must at all-time enable and facilitate access to the work site by said representative.

1.8 MATERIALS STORAGE AND DELIVERY

.1 All materials will be delivered and stored in their original packaging, in conformance with the requirements described in the manufacturer’s technical documentation.

.2 At all times, materials will be adequately protected and stored in a dry and properly ventilated area, away from any welding flame or spark, and sheltered from the elements and any harmful substances.

.3 Store adhesives and solvent-based mastics at a minimum of 5 °C (41 °F), or higher if required by manufacturer documentation.

.4 Materials delivered in rolls will be carefully stored upright; flashings will be stored to avoid wrinkling, buckling, scratches or any other possible damage.

.5 Avoid gathering construction materials on the roof, which may affect the structural integrity by imposing loads exceeding what is admissible.

1.9 FIRE PROTECTION

.1 Prior to the start of work, conduct a site inspection to ensure its safety in order to minimize fire risks and hazards.

.2 Respect safety measures recommended by the related local authorities.

.3 At the end of each workday, use a heat detector gun to spot any smouldering or concealed fire. Job planning must be organized to ensure workers are still on location at least 2 hours after welding works. An inspection must be performed by an employee of the roofing contractor who specializes in this kind of job at the end of works and, if necessary, with the help of a member of the fire protection service of the city.

.4 Never apply the torch directly to flammable materials.

.5 Throughout roofing installation, maintain a clean site and have a fire hose (when possible) and at least one ULC-approved Class A, B or C fire extinguisher, charged and in perfect operating condition, within 6 m of each torch. Respect all safety measures described in technical data sheets of sealants. Welding torches must never be placed near combustible or flammable products, nor be used where the flame is not visible or cannot be easily controlled.

1.10 WARRANTIES

.1 The membrane manufacturer will issue a written and signed document in the Crown's name, certifying that the roofing membranes are free of manufacturing defects for a period of ten (10) years, starting from the date of completion of membrane installation.

.2 This warranty will cover the removal and replacement of defective roof membrane products, including workmanship. The warranty must remain full and complete for the duration of the period specified. The warranty certificate must reflect these requirements.

.3 Extended Warranty:

.1 For the work of this Section, the 12 month warranty period is extended to 24 months.

.2 The contractor will provide a written and signed document to the owner’s name certifying that the work executed will remain in place and free of waterproofing defect for a two (2) year period from the date of acceptance.

1.11 FIELD CONDITIONS

.1 Ambient Conditions

.1 Do not install roofing when temperature remains below -18 degrees C for torch application, or -5 degrees C to manufacturers' recommendations for mop application.

.2 Minimum temperature for solvent-based adhesive is -5 degrees C.

.3 Minimum temperature for flashing membrane is 5 degrees C.

.4 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.

1.12 SCHEDULE

.1 Contractor to provide a tentative work schedule to identify the phases and duration of the work.

Part 2 Products

2.1 VAPOUR BARRIER

.1 Self-Adhesive Vapour Barrier

.1 Description: Self-adhesive membrane composed of SBS modified bitumen, with a surface screen made of high-density polyethylene laminated between two layers of polyethylene films. The self-adhesive underface is protected with a silicone plastic release film.

2.2 INSULATION

.1 Insulation Boards

.1 Description: two layers of 51 mm closed-cell Polyisocyanurate foam insulation board laminated on both sides with a fiberglass yarn-reinforced organic paper. Compressive strength of 138 kPa.

2.3 PROTECTION BOARDS

.1 Bituminous Board

.1 Description: Semi-rigid roofing support panel composed of a mineral-reinforced asphaltic core between two asphalt-saturated fibreglass liners. Length of 1.22 m, width of 1.52 m and thickness of 3.2 mm.

2.4 MEMBRANES

.1 Base Sheet Membrane for Field Surface, Flashing and Parapets

.1 Description: Membrane composed of SBS modified bitumen and glass mat reinforcement. The surface is covered with a thermo fusible plastic film and the under face is covered with a release protection film. The surface shall be marked with three (3) chalk lines to ensure proper roll alignment.

In conformance with: CGSB 37.56-M (9th Draft).

Properties:	**MD**	**XD**
Thickness	3 mm	
Strain energy (kN/m)	9.0	7.0
Ultimate elongation (%)	60	65
Tear resistance (N)	60	
Static puncture resistance (N)	400	
Dimensional stability (%)	-0.3	0.3
Plastic flow (°C)		≥105
Cold bending at -30 °C		No cracking
Lap joint strength (kN/m)		
Initial	23,5 kN/m	
5 days at 50 °C	24,0 kN/m	
14 days at 70 °C	24,0 kN/m	

.2 Roofing Cap Sheet Membrane for Field Surfaces, Flashing and Parapets

.1 Description: Roofing membrane composed of SBS modified bitumen with a composite reinforcement and elastomeric bitumen. The surface is protected by coloured granules. The underface is covered with a thermo fusible plastic film. In conformance with: ASTM D6162.

Properties:	**MD**	**XD**
Thickness	4 mm	
Strain energy (kN/m)	10.0	10.0
Breaking strength (kN/m)	18.0	16.0
Ultimate elongation (%)	60	65
Tear resistance (N)	75	
Static puncture resistance (N)	420	
Dimensional stability (%)	-0.8	-0.2
Plastic flow (°C)		≥110
Cold bending at -30 °C		No cracking
Lap joint strength (kN/m)		
Initial	27.0 kN/m	
5 days at 50 °C	27.0 kN/m	
14 days at 70 °C	27.0 kN/m	

.3 Colour Choices for Roofing Cap Sheet Membrane Granules

.1 For field surfaces: grey or white. Contractor to provide colour samples to the Departmental Representative for approval.

.4 Starter Roll

.1 Description: Waterproofing membranes composed of SBS modified bitumen, covered with granules on surface, with a 100 mm selvedge on both sides. The underface is covered with a thermofusible plastic film.

.2 In conformance with: CGSB 37.56-M (9th Draft).

.3 Properties:

Properties	**MD**	**XD**
Strain energy (kN/m)	13	10
Breaking strength (kN/m)	25	21
Ultimate elongation (%)	66	93
Tear resistance (N)	118	
Static puncture resistance (N)	432	
Dimensional stability (%)	-0.2	-0.2
Plastic flow (°C)	≥ 110	
Cold bending at -30 °C		No cracking
Lap joint strength (kN/m)		Pass > 4 kN/m

2.5 ACCESSORY MEMBRANES

.1 Cover Strip

.1 Description: Membrane strip made of SBS modified bitumen with a composite reinforcement. Both faces are covered with a plastic thermofusible film. The strip ensures water-tightness in the end laps.

.2 In conformance with: ASTM D6162.

2.6 PRIMER

.1 Primer for Thermofusible Membranes

.1 Description: Primer made of bitumen, volatile solvents and adhesive resins. Used as primer to improve the adhesion of thermofusible waterproofing membranes.

.2 Primer for Self-Adhesive Membranes

.1 Description: Primer composed of SBS synthetic rubber, adhesive resins and volatile solvents. Used as primer to improve the adhesion of self-adhesive membranes.

2.7 PROTECTION BOARDS ADHESIVE

.1 Description: Two-component, quick-setting, low-expansion foam urethane adhesive that can be applied at any temperature.

2.8 FLAME-STOP MEMBRANE

.1 Description: Self-adhesive membrane composed of SBS modified bitumen and a glass mat reinforcement, designed to prevent flames from penetrating into voids, cavities and openings before installing heat-welded membranes.

.2 Description: Membrane composed of a reinforced glass mat coated with oxidized bitumen. Both faces are sanded.

2.9 COMPLIMENTARY WATERPROOFING PRODUCTS

.1 Waterproofing Mastic

.1 Description: Multi-purpose mastic composed of SBS modified bitumen, fibres, mineral fillers and solvents.

.2 Pitch Pocket Filler

.1 Description: Polyurethane pitch pocket system made of pre-fabricated modules of various sizes, with interlocking compounds and solvent-free mastic, composed of two-component urethane and mono-component elastomeric sealant.

.3 Sealing Product

.1 Description: Bitumen/polyurethane waterproofing mono-component resin, with required polyester reinforcement, and as specified in Section 079200 – Joint Sealant.

.4 Granules

.1 Description: Semi ceramic coated coloured granules, by same manufacturer as membrane.

2.10 PIPE VENTS

.1 Description: 305 mm high, Removable cap stack jack flashing (Insulated); 1.6 mm mill finish 1100-0T alloy aluminum, diameter to fit existing pipes, to CSA B272-93, with removable cap, pre-molded urethane insulation liner and EPDM Base Seal, and PVC coated deck flange.

2.11 ACCESS PANEL

.1 Description: 610 mm x 915 mm flush mount, weatherproof, exterior access panel. Frame to be steel, minimum 16 ga., prefinished, or primed for painting. Door to be steel, minimum 18 ga., with integrated locking mechanism and interior release, insulated,

prefinished, or primed for painting. Hinge to be stainless steel, continuous piano hinge. Gasket to be continuous EPDM rubber or similar bulb seal.

2.12 DRAIN

.1 Description: Roof Drains: 100C-90-4ULP-OFS or 100C-45-4ULP-OFS bi-functional roof drain.

.1 Compliance: ANSI/ASME A112.6.4-2003, IAPMO IGC 187-2009 and ICC LC1021.

.2 Body: Patented bi-functional body. Powder coated, ASTM A 48, Class 25 cast iron body with anchor flange and fully cast sump which includes the outlets within the casting. Smooth sump walls for maximum flow ability no boss obstructions. Bolts holes drilled and tapped to 38 mm depth. Designed with separate strainers for both the primary and secondary systems.

.3 Dome Strainer: Cast Iron strainer. Min. free area by drain size: 100 mm-400 cm^2.

.4 Membrane Clamp Ring: 61 mm wide, ASTM A 48, Class 25 cast iron, waterproofing membrane clamp ring with 32 mm min. high integral gravel stop. 4 bolt anchorage and 6 mm nominal drainage free area height.

.5 Pipe Size: 100 mm.

.6 Overflow pipe: removable to facilitate drain rodding if ever required.

.7 Drain bolts: 38 mm long threaded length with anti-seize pre-applied to threads.

2.13 FASTENERS

.1 Description: Factory Mutual approved #14 drill point heavy duty screws with a #3 Phillips truss head. Fasteners shall be coated with a corrosion resistant coating that passes to 30 cycles of the Kesternish Test. Appropriate length to allow a minimum of 25 mm penetration through the underside of wood decks.

2.14 STEEL PLATES

.1 Description: 75 mm galvanized steel insulation plates (circular design) used to mechanically attach insulation boards.

Part 3 Execution

3.1 SURFACE EXAMINATION AND PREPARATION

.1 Surface examination and preparation must be completed in conformance with instructions in the membrane manufacturer’s technical documentation.

.2 Before roofing work begins, the Departmental Representative and roofing foreman will inspect and approve deck conditions (including slopes) as well as flashings at parapets, roof drains, plumbing vents, ventilation outlets and other construction joints. If necessary, a non-conformity notice will be issued to the contractor so that required corrections can be carried out. The start of roofing work will be considered as acceptance of conditions for work completion.

.3 Following roofing system removal, examine wood deck conditions with Departmental Representative and verify areas requiring repair or replacement. Following verification, repair or replace defective areas of wood deck to the acceptance of Departmental Representative.

.4 Do not begin any portion of work before surfaces are clean, smooth, dry, and free of ice and debris. Use of calcium or salt is forbidden for ice or snow removal.

.5 Be sure plumbing, carpentry and all other works have been duly completed.

.6 No materials will be installed during rain or snowfall.

3.2 METHOD OF EXECUTION

.1 Roofing work must be completed in a continuous fashion as surfaces are readied and as weather conditions allows it.

.2 It's preferable to seal all joints that are not covered by a cap sheet membrane the same day. A second cap sheet cannot be installed if any moisture is present in joints.

.3 Ensure waterproofing of roofs at all times, including protection during installation work by other trades and protection as work is completed (e.g. vents, drains, etc.).

3.3 SITE PROTECTION

.1 Protect the exposed surfaces of finished work to avoid damage during roof installation and material transportation. Install walkways made of rigid boards over installed roofing materials to enable passage of people and transport of products. Assume full responsibility for any damage.

3.4 APPLICATION OF PRIMER

.1 Wooden, metallic, concrete, and masonry surfaces or gypsum insulation substrate will receive a coat of primer at a rate of 0.15 to 0.25 L/m^2. All surfaces to be primed must be free of rust, dust or any residue that may hinder adherence. Primed surfaces must be covered with the roofing membrane as soon as possible (on the same day for self-adhesive membranes).

3.5 INSTALLATION OF VAPOUR BARRIER

.1 Prime cleaned wood deck as specified. Primer must be dry prior to the installation of the vapour barrier membrane.

.2 Starting at the bottom of the slope, without adhering the membrane, unroll it onto the substrate for alignment. Do not immediately remove the silicone release film.

.3 Remove one end of the silicone release film and adhere this part of the membrane to the substrate. Remove the remaining release film at a 45º angle to avoid wrinkles in the membrane.

.4 Overlap adjacent rolls of 75 mm and 100 mm. End laps must be 150 mm. Space end laps by at least 300 mm.

3.6 INSTALLATION OF INSULATION

.1 EXAMINATION

.1 Verify that the insulation boards and adjacent materials are compatible.

.2 Ensure vapour retardant membrane is clean and dry.

.3 Verify that substrate is flat, sound, clean, and free of oil, grease, irregularities, materials or substances that may impede adhesive bond.

.2 INSTALLATION

.1 Install two layers of 51 mm of polyisocyanurate insulation boards on all roof areas.

.2 Attach insulation mechanically in conformance with manufacturer's recommendations and CSA A123.21-10 (Standard test method for the dynamic wind uplift resistance of membrane-roofing systems). For number and placement of fasteners namely Loss Prevention Data Sheet 1-29 for fastening to roof perimeters and corners, but no less than eight fasteners on the field, 12 fasteners on the edge and 15 on the corner per 101 mm x 203 mm insulation boards. Se Drawing R-2 for edge and corner dimensions. Fasteners must penetrate a minimum of 19 mm from the top surface of sloped wood deck.

.3 All boards must be installed without any significant variances in level. All end and side-joint gaps that are greater than 3 mm should be filled with spray foam insulation compatible with the polyisocyanurate boards.

.4 Install the longest side of insulation boards parallel to roof perimeter edges.

.5 Cut insulation to fit neatly to perimeter and around penetrations throughout the roof.

.6 Install insulation minimum 75 mm from heat emitting devices, and minimum 50 mm from sidewalls of CAN/ULC-S604 Type A chimneys and CAN/CGA -B149.1 and CAN/CGA- 149.2 Type B and L vents.

.7 All vertical joints between the two rows of insulation boards will be staggered minimum 305 mm.

.8 Install only as many insulation as can be covered in the same day.

3.7 INSTALLATION OF PROTECTION BOARDS

.1 Adhere protection boards using specified adhesive applied in continuous strips spaced 305 mm on the field surface, 228 mm on the perimeter, and 150 mm on corners.

.2 All boards must be in perfect connection, without any significant variances in level, and must be completely adhered to the surface.

.3 Install only as much protection boards as can be covered in the same day.

3.8 INSTALLATION OF FLAME-STOP MEMBRANE

.1 Adhere the membrane directly onto an approved substrate by removing the silicone release film. Flame stop membrane is designed to prevent flames from penetrating into voids, cavities and openings while installing heat-welded membranes.

.2 Unroll the flame-stop membrane onto the insulation, being careful to overlap adjacent selvedges to ensure that the flame will not penetrate the insulation.

3.9 INSTALLATION OF TORCH-APPLIED BASE SHEET ON THE FIELD SURFACE

.1 Unroll base sheet on the substrate, taking care to align the edge of the first selvedge with drain centre (parallel to roof edge).

.2 Cut off corners at end laps to be covered by the next roll.

.3 Weld the base sheet onto prepared substrate.

.4 Each selvedge will overlap the previous one along lines provided for this purpose, and will overlap the ends by 150 mm. Space end laps by a minimum of 305 mm.

.5 Avoid the formation of wrinkles, swellings or fishmouths.

3.10 INSTALLATION OF REINFORCED GUSSETS

.1 Install reinforcing gussets at all inside and outside corners.

.2 Heat-weld the gussets in place after installing base sheet membrane.

3.11 INSTALLATION OF WELDABLE REINFORCING MEMBRANES

.1 Install reinforcing membranes specified according to the typical detailed instructions in the ddocumentation of membrane manufacturer.

3.12 INSTALLATION OF THERMOFUSIBLE CAP SHEET ON FIELD SURFACE

.1 Begin with double-selvedge starter roll. If starter roll is not used, side laps covered with granules must be de-granulated by embedding granules in torch-heated bitumen over a 75-mm width.

.2 Unroll the membrane on the base sheet, taking care to align the edge of the first selvedge with the edge of the roof.

.3 Cut off corners at end laps at areas to be covered by the next roll.

.4 Each selvedge will overlap the previous one along lines provided for this purpose, and will overlap by 150 mm at the ends. Space end laps a minimum of 300 mm.

.5 Heat-weld cap sheet membrane with a torch on the base sheet to create a bleed out of 3 to 6 mm.

.6 During installation, be careful not to overheat the membrane or its reinforcements.

.7 Avoid the formation of wrinkles, swellings or fishmouths.

.8 Avoid walking over finished surfaces; use rigid protective walkways as needed.

3.13 INSTALLATION OF THERMOFUSIBLE CAP SHEET ON FLASHINGS AND PARAPETS

.1 This cap sheet must be installed in one metre (1 m) wide strips.

.2 Each selvedge will overlap the previous one laterally along lines provided for this purpose, and will overlap by 150 mm the field surface. Membranes for flashings must be spaced at least 100 mm with respect to the cap sheet membranes on the field surface, to avoid areas of excessive membrane thickness.

.3 Cut off corners at end laps on areas to be covered by the next roll.

.4 Use a chalk line to draw a straight line on the field surface, 150 mm from flashings and parapets.

.5 Use a torch and round-nose trowel to embed the surface granules in the layer of hot bitumen, starting from the chalk line on the field surface to the bottom edge of the flashing or parapet, as well as on the granulated vertical surfaces to be overlapped.

.6 This cap sheet will be heat-welded directly to the base sheet membrane, proceeding from bottom to top.

.7 Avoid the formation of wrinkles, swellings or fishmouths.

.8 During installation, be careful not to overheat the membrane and its reinforcements.

3.14 WATERPROOFING OF VARIOUS DETAILS

.1 Install waterproofing membranes at various roofing details in conformance with contract drawings and typical details indicated in technical documentation of the manufacturer.

3.15 PIPE VENTS

.1 Install pipe vents in conformance with typical details indicated in technical documentation of the manufacturer.

3.16 INSTALLATION OF ACCESS PANEL

.1 Examine area of receive access door. If found conditions are unsuitable, do not begin installation and notify Departmental Representative immediately.

.2 With approval of Departmental Representative, provide framing as required to suit access panel installation.

.3 For primed surfaces requiring paint, prior to installation, paint with minimum two (2) coats of exterior grade enamel based paint, colour to suit and as approved by Departmental Representative. Follow all manufacturer’s written instructions and warnings. Do not perform painting work on the roof without adequate protection of adjacent items/buildings likely to be affected.

.4 Install access panel according to manufacturer’s written instructions. Install plumb, level, and square.

.5 Adjust panel after installation for proper operation. Clean frame and door.

3.17 INSTALLATION OF DRAIN

.1 Install roof drains in accordance with manufacturer's instructions at locations indicated on the drawings.

.2 Install roof drains plumb, level, and to correct elevation.

.3 Install roof drains using manufacturer's supplied hardware.

END OF SECTION

Part 1 General

1.1 GENERAL CONDITIONS

.1 Scope of Work:

.1 The work to be done in accordance with this section shall include all labour, materials, tools, equipment, construction plant, services, and supervision necessary and required for the execution of the work as described in this document including the following:

.1 Ontario Building Code unless more stringent requirements of National Building Code of Canada apply, including all amendments up to project date.

1.2 REFERENCES

.1 This section, along with the remaining specification sections and drawings, form part of the contract documents and is to be read, interpreted, and coordinated in conjunction with all other parts.

.2 ASTM 653/A653M Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

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

.4 Factory Mutual Loss Prevention Data Sheet 1-49 - latest issue.

.5 Canadian Roofing Contractors Association (CRCA), Roofing Specifications Manual, 2011 Edition.

.6 Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - latest issue All standards and project documents included and as referenced in this specification.

1.3 SUBMITTALS

.1 Provide two of 50 mm x 50 mm samples of each type of flashings to be used on site conforming to the general condition.

1.4 EXTENDED WARRANTY

.1 For the work of this Section, the 12 month warranty period is extended to 24 months.

.2 The metal flashings are to be guaranteed for two (2) years.

Part 2 Products

2.1 SHEET METAL

.1 All exposed metal flashings unless otherwise indicated, shall be pre-painted galvanized sheet steel capable of being formed into a variety of shapes and profiles.

.2 Prefinished Metal:

.1 Finish: Baycoat 10000 Series, or approved equivalent

.2 24 ga. (.700 mm)

.3 Colours: to match existing.

.4 Conform to CAN/CGSB 93.3-M91

2.2 ACCESSORIES

.1 Cutback Asphalt Plastic Cement: conforming to CANCGSB 37.5-M89.

.2 Flexible Flashing: butyl 0.79 mm, temperature of use - 54 C to 120 C, resistance of 8 MPa.

.3 Sealant: To CAN/CGSB-19.24, standard of acceptance: Sikaflex from Sika or similar.

.4 Locking Strip: 20 gauge galvanized sheet metal

.5 Fasteners

.1 Sheet metal screw: Teks by ITW Buildex. Steel with electro-zinc coating. No 8 (4mm diameter) with EPDM washer.

.2 Wood screws: Teks by ITW Buildex. Steel with electro-zinc coating. No. 8 (4mm diameter with oval head).

.3 Hex head screw: Trugrip by ITW Buildex. Steel with Climaseal head (colour match). No. 12 (6mm diameter) head with fully bonded EPDM washer.

.4 Nails: Galvanized steel conforming to CSA B111. Penetrate lower piece of wood by 30mm.

.5 Concrete screws: Confast® Screws with hex washer head and flat countersunk phillips drive, 6 mm diameter x length (minimum 38 mm).

2.3 FABRICATION

.1 Fabricate all metal flashings in accordance with AMCQ recommendations.

.2 Fabricate the flashings in maximum 2.5 m lengths. Provide for expansion at the joints.

.3 Fold back exterior edges 13 mm on apparent surfaces.

.4 Fabricate the elements to be square, to be of precise dimension and to be free of deformation or other defects which may be apparent.

.5 Construct all joints between panels as S-pocket type joints. Lap joints are not acceptable.

.6 Form an exterior and interior drip edges at a maximum 30 and 90 degrees respectively to form a minimum drip clearance distance of 125 and 100 mm.

.7 Fabricate flashings in the shop. Only fabricate mitre joints at flashing corners on site.

.8 Flashings shall be square, true, and accurate to size and free from distortion and other defects detrimental to appearance or performance.

.9 Form sections to maximum 2,440 mm lengths using one piece for each flashing section. Make allowance for expansion at joints.

.10 Metal details, fabrication practices and installation methods shall conform to the applicable requirements of the following:

.1 Factory Mutual Loss Prevention Data Sheet 1-49 - latest issue.

.2 Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - latest issue.

Part 3 Execution

3.1 INSTALLATION

.1 Complete all metal work in conjunction with roofing and flashings so that a watertight condition exists daily.

.2 Metal shall be installed to provide adequate resistance to bending to allow for normal thermal expansion and contraction.

.3 Metal joints shall be watertight.

.4 Metal flashings shall be securely fastened into solid wood blocking. Fasteners shall penetrate the wood nailer a minimum of 25 mm.

.5 Airtight and continuous metal hook strips are required behind metal fascias. Hook strips are to be fastened 300 mm on center into the wood nailer or masonry wall.

.6 Counter flashings shall overlap base flashings at least 100 mm unless otherwise detailed.

.7 Install the sheet metal flashing to AMCQ recommendations. Seal all joints with an appropriate sealant.

.8 Caulk the flashing solidly in place along the entire length of the reglet.

.9 Install metal flashing at expansion joints with minimum 300 mm height as required.

.10 Where expansion joint meets the perimeter, the expansion joint metal flashing should slope to match the height of the parapet metal flashing at perimeter.

.11 Ensure horizontal surfaces have positive slope.

.12 Secure cap or counter flashing with No. 12 (6mm diameter) Hex head screw with EPDM washers at 500mm on-centre. Holes through sheet metal shall be slotted for extension.

3.2 CLEAN-UP

.1 All areas of work are to be cleaned of sheet metal debris, fasteners, etc. to the satisfaction of the Departmental Representative.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 CAN/CGSB-19.6-M87, Caulking Compound, Oil Base.

.2 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.

.3 CGSB 19-GP-14M, Sealing Compound, One Component, Butyl-Poly isobutylene Polymer Base, Solvent Curing.

.4 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.

.5 CAN/CGSB-19.18-M87, Sealing Compound, One Component, Silicone Base, Solvent Curing.

.6 CAN/CGSB-19.21-M87, Sealing and Bedding Compound Acoustical.

.7 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.

1.2 SUBMITTALS

.1 Submit two (2) copies of the most current technical data sheets. These documents must describe the physical properties of materials and explanations about product installation, including restrictions, limitations, and other manufacturer recommendations.

.2 Colour to match metal flashing.

1.3 DELIVERY, STORAGE, AND HANDLING

.1 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.

1.4 ENVIRONMENTAL AND SAFETY 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 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. In general, the substrate materials shall not be less than 5 °C when applied, unless the sealant manufacturer provides written instructions permitting the work, with a list of precautions that must be taken.

.3 Apply sealants to completely dry and clean surfaces.

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

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

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

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

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

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

1.5 EXTENDED WARRANTY

.1 For the work of this Section, the 12 month warranty period is extended to 24 months.

.2 Warranty period: Two (2) years. Correct deficiencies and defects including but not limited to: joint leakage, cracking, melting, shrinkage, sagging, loss of adhesion / cohesion, discoloration, staining, and damage to adjacent finishes.

Part 2 Products

2.1 MATERIALS

.1 Sealant: To CAN/CGSB-19.13,

.2 Compatibility: All materials in a sealant system shall be compatible with each other and with the substrate.

.3 Colours of sealants shall be selected to match the substrate and to be approved by the Departmental Representative.

.4 Primers: As recommended by the sealant manufacturer to assure adhesion of compound and to prevent staining of substrate materials.

.5 Joint Backing: Polyethylene, urethane, neoprene or vinyl, extruded foam recommended by the sealant manufacturer. Circular shape with diameter 25 percent greater than joint width before installation.

.6 Bond Breaker Tape: Pressure sensitive plastic tape, which will not bond to sealants, as supplied or recommended by the sealant manufacturer.

.7 Void Filler: Glass fibre insulation with a nominal density of 14 kg/m^3. Sized for 25% compression.

.8 Cleaning Materials: as recommended by sealant manufacturer.

Part 3 Execution

3.1 EXAMINATION

.1 Inspect existing conditions, and substrates upon which work of this section is dependent. Report to the Departmental Representative in writing any defects or discrepancies. Commencement of work implies acceptance of existing conditions and assuming full responsibility for the finished condition of the work.

.2 Verify, before commencing work, that the joint size, depth, and substrate will not adversely affect execution, performance, or quality of completed work; and that the joints can be sealed in an acceptable condition by means of preparation specified in this section. Verify site conditions together with sealant manufacturer's representative.

.3 Defective works resulting from application to unsatisfactory joint conditions will be considered the responsibility of those performing the work of this section.

3.2 REMOVAL AND PREPARATION

.1 Remove existing sealant and backing material, dust, oil, grease, oxidation, mill scale, coatings, and all other loose material by cutting, brushing, scrubbing, scraping, and / or grinding. Use method of surface preparation suitable for substrate, as recommended by sealant manufacturer, and which does not damage the adjacent surfaces.

.2 Rake out joints, cracks, and crevices to receive sealant, to a depth measuring half the joint width.

.3 Clean down surfaces to be caulked with clean cellulose sponges or rags soaked in solvent recommended by the sealant manufacturer, and wipe dry with clean cloth. Ensure that the solvent does not damage the painted surfaces.

3.3 APPLICATION

.1 Apply sealant where indicated and in compliance with sealant manufacturer's recommendations.

.2 Prime surfaces to receive sealants as required by sealant manufacturer's recommendations to provide a positive and permanent adhesion and to prevent staining prime surfaces prior to installing backing material or bond breaking tape. Apply primers per manufacturer's directions and test substrates for adhesion.

.3 Install backing material in all joints prior to applying sealants. Diameter of the backing material shall be 25 percent more than the width of the joint.

.4 Install backing material to provide a caulked joint meeting the depth requirements as set out in the sealant manufacturer's specifications.

.5 Apply bond breaker tape, prior to applying sealant, where joints are of insufficient size to install backer rod or where recommended by the sealant manufacturer or Departmental Representative. Ensure bond surface area meets the minimum required size recommended by the sealant manufacturer.

.6 Mask, with masking tape, all surfaces adjacent to joints which are likely to become coated with sealant during sealant application.

.7 Fill joints completely to required depths with sealant compound. Use sufficient pressure to fill all voids and joints. Sealant shall bond to both sides of the joints but not to backing material.

.8 Finish joints so that they are smooth and free from ridges, wrinkles, air pockets and embedded foreign materials.

.9 Tool joints to a slightly concave surface.

3.4 CLEANING

.1 Remove masking tape and sealant smears and droppings resulting from work of this section as the work progresses and before it has set. Use recommended cleaners as required.

.2 Clean up and remove from the job site, daily, all rubbish and surplus materials resulting from this work.

END OF SECTION