Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry.

.2 Section 07 92 00 - Joint Sealants.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).

.1 ASTM C661-15(2022): Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by means of a Durometer.

.2 ASTM C836/C836M-18(2022): Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for use with Separate Wearing Course.

.3 ASTM D1863/D1863M-05 (2018): Specification for mineral aggregate used on Built up Roofs

.4 ASTM D412-16(2021): Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension.

.5 ASTM D816-06 (2016): Standard Test Method for Rubber Cements.

.6 ASTM D2370-16(2021): Standard Test Method for Tensile Properties of Organic Coatings.

.7 ASTM E96/E96M-22: Standard Test Methods for Water Vapour Transmission of Materials

.2 Canadian General Standards Board (CGSB).

.1 CGSB 37-GP-52M: Roofing and Waterproofing Membrane, Sheet Applied, Elastomeric.

.3 Canadian Roofing Contractors Association (CRCA).

.1 CRCA Roofing Specifications Manual.

1.3 PERFORMANCE REQUIREMENTS

.1 Provide written declaration to Departmental Representative confirming compatibility of all materials and components.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide following Submittals in accordance with Section 01 33 00 – Submittal Procedures.

.1 Submit two copies of current technical roofing components data sheets describing materials' physical properties.

.2 Submit two copies of manufacturers special handling criteria, installation sequence, and cleaning procedures.

.3 Submit WHMIS MSDS - Material Safety Data Sheets. Indicate VOC content for: primers, adhesives, asphalt or sealers.

1.5 QUALITY ASSURANCE

.1 Submit laboratory test reports in accordance with Section 01 45 00 – Quality Control.

.2 Submit Manufacturer's Certificate, certifying that products meet or exceed specified requirements.

.3 Submit laboratory test reports certifying compliance of asphalt and membrane with specification requirements.

.4 Convene pre-installation meeting one week prior to beginning Work, with roofing contractor's representative.

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Determine co-ordination with other building subtrades.

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

1.6 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 – Submittal Procedures.

.2 Indicate flashing, penetrations field fabricated seams and lapping with existing membranes.

1.7 MOCK UPS

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

.2 Construct mock-up 10 square meters minimum size showing typical lap joint, one inside corner and one outside corner. Accepted mock-up may form part of complete work.

.3 Allow 72 hours for inspection of mock-up by departmental representative before proceeding with roofing work.

1.8 HEALTH AND SAFETY

.1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.9 STORAGE AND HANDLING

.1 Deliver and store Products undamaged in original containers with manufacturer's labels and seals intact.

.2 Store Products in designated areas elevated off the ground and protected from ultra-violet radiation, inclement weather and construction activities.

.3 Store solvent-based liquids away from excessive heat and open flame.

.4 Store adhesives and sealants at temperature above 5 degrees Celsius.

.5 Store membrane rolls on end, dry, and protected from moisture and damage. Cover rolls, insulation and other moisture-sensitive Products with tarpaulins.

.6 Store Products on roof deck in a manner to prevent overloading the structure and properly secured to prevent movement due to wind or other forces.

.7 Store insulation protected from daylight, weather, and deleterious materials.

.8 Handle roofing materials in accordance with manufacturer's written directives, to prevent damage or loss of performance.

1.10 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling.

.2 Collect and separate for disposal steel, paper, plastic, polystyrene and corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

1.11 ENVIRONMENTAL REQUIREMENTS

.1 Do not install waterproofing membranes when air and substrate temperature remains below 5 degrees C or when wind chill gives equivalent cooling effect.

.2 Protect all products not intended for permanent exposure to the elements.

.3 Protect rolls from direct sunlight until ready for use.

.4 Apply waterproofing membranes only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

.5 Do not apply to frozen concrete.

.6 Install waterproofing membranes on dry substrate, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into system.

1.12 WARRANTY

.1 For the Work of this Section the 12 months warranty period prescribed in subsection GC32.1 of General Conditions "C" is extended to 24 months.

Part 2 Products

2.1 PRIMER

.1 Primer: As recommended by membrane manufacturer.

2.2 LIQUID MEMBRANE ADHESIVE, SEAM TAPES, AND PRIMERS

.1 Asphalt modified urethane waterproofing adhesive compatible with waterproofing membrane with the following characteristics:

.1 Low temperature flexibility, -20c,

.2 Crack bridging, no cracks, between (-29&+40c)

.3 Elongation, 950%, ASTM D412

.2 Single component elastomeric for use with vinyl coated mesh for lap reinforcement with the following characteristics:

.1 Asbestos content, none.

.2 Viscosity 25%, 600-2000 Pa-s(600,000-2,000,000 cp).

.3 ASTM Elongation ® 25c, 1000%,

.4 Tensile strength at 25c, ASTM D412.

2.3 WATERPROOFING MEMBRANE

.1 EPDM/SBR Polyester reinforced sheet membrane with the following characteristics .

- .1 Breaking strength, MD 1100 N-XMD 1100 CGSB 37-GP-52
- .2 Minimum Tear Strength, MD 300 N-XMD 300N CGSB 37-GP-52
- .3 Low Temperature Flexibility, No Cracking-40C.
- .4 Dynamic Impact Resistance @ -10 to 23 Pass Rating of 3, CGSB 37-GP-52
- .5 Water Absorption 2.5% CGSB 37GP-52
- .6 Minimum Breaking Strength After Heat Aging, MD 1500 N, XMD 1500 N, CGSB 37GP-52
- .7 Ozone Resistance, No Cracking, CGSB 37GP-52. Lap Joint Strength Before Conditioning 1578 N After Conditioning 1548 N, CGSB 37GP-52 .

.2 Vertical Surface Waterproofing membrane: Waterproofing Membrane: single-component, polymer-modified, cold-applied, liquid waterproofing membrane. Heavy-bodied, high solids, quick drying. Minimum Dry Film Thickness (cured): 60 mils. Membrane shall have the following properties:

- .1 Color: Black.
- .2 Solids: 70%.
- .3 Total Cure Time: 16-24 hours.
- .4 Service Temperature: -29 to -60 degrees C.
- .5 Application Temperature: Minimum +8 degrees C.
- .6 Shore “00” Hardness: to ASTM C836. Passes.
- .7 Adhesion to Concrete: to ASTM C836. Exceeds.
- .8 Low Temperature Flex and Crack Bridging: to ASTM C836. Passes.
- .9 Stability: to ASTM C836. Exceeds.
- .10 Elongation: to ASTM D412. 1500%.
- .11 Water Absorption: to ASTM D1970. 0.7%.
- .12 Water Vapour Transmission: to ASTM E96 (Method B). 0.03 perms.

.3 Horizontal Surface Waterproofing membrane: cold-applied, solvent-free, single-component waterproofing compound. Non shrinking, low VOC content, low odour. Non-cracking in extreme cold. Non-slump due to softening at high temperatures. Complies to ASTM C836. Minimum Dry Film Thickness (cured): 120 mils. Membrane properties as follows:

- .1 Solids Content By Weight: to ASTM C836. 98%.
- .2 Solids Content By Volume: to ASTM C836. 98%.
- .3 Tensile Strength: to ASTM D-2370. 70 psi.
- .4 Elongation: to ASTM D-2370. 440%.
- .5 Water Vapor Transmission: to ASTM E96. 0.07 perm inches.
- .6 Shore 00 Hardness: to ASTM C661. 55.
- .7 Low Temperature Flex: to ASTM D816. -28.9 degrees C. Pass 6.4 mm mandrel.
- .8 Shrinkage: No visible shrinkage after 14 days.
- .9 Service Temperature: -40 to -70 degrees C. Continuous service.
- .10 Application Temperature: Minimum -5° C.

2.4 DRAINAGE / PROTECTION SYSTEM

.1 Geocomposite drainage board: dimple raised, molded polystyrene core bonded to a high strength, polypropylene geotextile fabric. High flow capacity without clogging, high compressive strength. Membrane properties as follows:

- .1 Vertical Application:
  - .1 Fabric weight: 0.1356kg/m2.
  - .2 Flow rate: 0.1019 m/s.
  - .3 Compressive strength (core): 718 kPa.
  - .4 Thickness: 11.1mm.
  - .5 Roll size: 1.2m x 15.2m.
- .2 Horizontal Application:
  - .1 Fabric weight: 0.1356kg/m2.
  - .2 Flow rate: 0.0190 m/s.
  - .3 Compressive strength (core): 1005.5 kPa.
  - .4 Thickness: 11.1mm.
  - .5 Roll size: 1.2m x 15.2m.

2.5 FASTENING

.1 Extruded aluminium continuous termination bar with prepunched holes and screws where indicated on drawings.

.2 Screws and washers as recommended by manufacturer.

Part 3 Execution

3.1 WORKMANSHIP

.1 Do examination, preparation and roofing Work in accordance with the Roofing membrane manufacturer's written instructions and CRCA Roofing Specification Manual.

.2 Comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 EXAMINATION OF SUBSTRATES

.1 Verification of Conditions: examine substrates and immediately inform Departmental Representative in writing of defects. Do not begin surface preparation or installation until unacceptable conditions have been corrected.

.2 Prior to beginning of work ensure:

- .1 Concrete is: 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.
- .2 Ensure that the intersection between the wall and roof assembly is prepared and sealed with a durable rigid material to create a connection point for the transition membrane.

.3 Do not install roofing materials during rain or snowfall.

3.3 SURFACE PREPARATION

.1 Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions.

.2 Do not apply waterproofing to surfaces unacceptable to manufacturer.

.3 Concrete surfaces must be clean, relatively smooth, and free of standing water

.4 Patch all holes and voids and smooth out any surface misalignments.

.5 Remove and patch all concrete form ties.

.6 Treatment of Existing Cracks and All Non-Structural Joints

- .1 Identify and install detailing membrane in all cracks and all non-structural joints.
- .2 Apply a 0.8mm (wet) coat of the fluid applied membrane ensuring that there is a minimum of 75 mm of membrane extending onto the wall in all directions.
- .3 Embed the non-woven reinforcing fabric over the entire area of this membrane and work in using trowel.
- .4 Completely cover the glass mesh with a second coat of the fluid applied membrane at 0.8mm (wet) while the first coat is still wet, again extending 75 mm onto the wall in all directions.

.7 Treatment of Inside & Outside Corners

- .1 Install detailing membrane to create a minimum 18 mm fillet in all inside corners.
- .2 Apply a 0.8mm (wet) coat of the fluid applied membrane ensuring that there is a minimum of 75 mm of membrane extending onto the wall in all directions.
- .3 Embed the non-woven reinforcing fabric over the entire area of this membrane and work in using trowel.
- .4 Completely cover the glass mesh with a second coat of fluid applied membrane at 0.8mm (wet) while the first coat is still wet, again extending 75mm onto the wall in all directions.
- .5 On outside corners subject to backfilling, install reinforced joint tape in lieu of fabric joint tape following the same procedure.

3.4 PRIMING

.1 Apply primer coat of membrane, diluted 4:1 with water if necessary to reduce blistering on concrete surfaces at a coverage rate of 3.78 L per 13.9 square meters by spraying or rolling.

.2 Allow primer coat to dry before proceeding to membrane application..

3.5 VERTICAL SURFACES MEMBRANE APPLICATION

.1 Apply waterproofing membrane system in accordance with manufacturer's instructions.

.2 Apply by trowel or flat bladed squeegee to obtain uniform and consistent thickness. Minimum dry film thickness of 60 mils.

.3 Complete all spreading and levelling within 15 minutes.

.4 Frequently inspect surface area with a wet mil gauge to ensure consistent thickness.

.5 Test adhesion and film thickness regularly. Apply second coat the next day where thickness is less than specified.

3.6 HORIZONTAL SURFACES MEMBRANE APPLICATION

.1 Apply waterproofing membrane system in accordance with manufacturer's instructions

.2 Apply by trowel or flat bladed squeegee to obtain uniform and consistent thickness. Minimum dry film thickness of 60 mils. Apply second coat as soon as possible with no more than eight hours between coats providing a minimum total thickness of 120 wet mils.

.3 Complete all spreading and levelling within 15 minutes.

.4 Frequently inspect surface area with a wet mil gauge to ensure consistent thickness.

.5 Test adhesion and film thickness regularly.

3.7 INSULATION APPLICATION

.1 Apply insulation to exterior face of waterproofing membrane in accordance with Section 07 21 13 - Board Insulation.

.2 Apply insulation after membranes have cured as recommended by Membrane Manufacturer. Install with parallel rows. Insulation to be loose laid in parallel rows with ends staggered. Joints to be uniform and tight.

3.8 DRAINAGE SYSTEM APPLICATION

.1 Ensure insulation is undamaged before application of protection board Section 07 21 13 - Board Insulation..

.2 Vertical Application.

.1 Unroll drainage board with flat, core side against the wall insulation. Drainage board can be fastened at the top side with a suitable mechanical fastening system that is compatible with the substrate.

.2 Adhere remainder of drainage board with mastic, compatible with installation.

.3 Overlap the flat side core lip with second sheet of drainage board to provide a continuous drainage layer (shingle fashion). Ensure excess filter fabric is overlapped with this next sheet.

.3 Horizontal Application.

.1 Unroll drainage board and apply from high point to low point ensuring that overlap is in such a way so that water runs with the overlap.

.2 Add appropriate ballast as needed to hold down drainage board.

.3 Backfill immediately using care to avoid damaging drainage layer and to ensure permanent placement of the drainage board.

3.9 MEMBRANE FLASHINGS

.1 Install flashings to ensure the roof is watertight at the end of each Working Day.

.2 Extend new and existing flashing membranes minimum 100 mm over roof membrane.

.3 Extend flashing membranes minimum 200 mm up vertical surfaces.

.4 Secure flashings at 200 mm OC. Secure vertical flashings with termination bar.

.5 Overcoat lap edges with end lap stripping adhesive and membrane.

.6 Wall Flashing

.1 Seal exposed joint between the wall and roof deck for airtight seal.

.2 Adhere elastomeric sheeting completely to flashing surface, cant and roofing with flashing adhesive.

.3 Ensure complete bond and continuity without wrinkles or voids. Lap sheeting ends 100 mm and adhere with flashing adhesive.

.4 Elastomeric sheeting width: sufficient to extend at least 150 mm beyond toe of cant onto roof surface and 200 mm above the roof surface.

.5 Secure top of elastomeric sheeting to vertical plane with termination bar. Mechanically fasten 200 mm OC. Overcoat bar with end lap stripping adhesive and membrane.

.7 Building Expansion Joints

.1 Fill joint with Asphalt Board.

.2 Install elastomeric sheeting centred over expansion joint.

.3 Fully adhere sheeting to horizontal and vertical blocking surfaces with flashing adhesive. Press sheeting into adhesive. Ensure complete bond and continuity without wrinkles or voids.

.4 Elastomeric Sheeting Width: Sufficient to extend onto adjacent roofing minimum 150 mm.

.5 Lap sheeting ends 100 mm and adhere with flashing adhesive.

3.10 FIELD QUALITY CONTROL

.1 Inspection and testing of roofing application will be carried out by testing laboratory designated by Departmental Representative.

.2 Departmental Representative will pay for tests.

.3 Membrane manufacturer to provide full time supervision to ensure proper application.

3.11 CLEANING

.1 Remove bituminous markings from finished surfaces.

.2 In areas where finished surfaces are soiled caused by work of this section, consult manufacturer of surfaces for cleaning advice and complying with their written instructions.

.3 Repair or replace defaced or disfigured finishes caused by work of this section.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 07 13 53 –Elastomeric Sheet Waterproofing

.2 Section 07 27 10 - Air Barriers.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).

.1 ASTM C578-19. Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

.2 Underwriters Laboratories of Canada (ULC).

.1 CAN/ULC-S701-11. Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.1 Submit manufacturer's printed product literature, specifications and data sheet.

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets. Indicate VOC's insulation products and adhesives.

.3 Submit manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

.1 Submit certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.3 Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials. Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal all paper, plastic, polystyrene and corrugated cardboard packaging material in appropriate on-site container for recycling in accordance with Waste Management Plan.

Part 2 Products

2.1 INSULATION

.1 Exterior wall insulation: Type 4 extruded polystyrene to ASTM C578 and CAN/ULC-S701. Lightweight and water repellent. Engineered for foundation wall application.

.1 Thermal Resistance per 25 mm thickness: RSI 0.87.
.2 Compressive Strength: 175 kPa.
.3 Water Absorption: by volume, max. 0.1 %.
.4 Water Vapor Permeance: max. 1.1 perm.
.5 Maximum Use Temperature: 74 degrees C.
.6 Thickness: as noted on drawings.
.7 Size: 406 x 2438 mm.
.8 Edges: shiplap.

.2 Adhesive: non solvent based, as recommended by insulation manufacturer.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 WORKMANSHIP

.1 Install insulation after building substrate materials are dry.

.2 Install insulation to maintain continuity of thermal protection to building elements and spaces.

.3 Fit insulation tight to openings and items penetrating insulation layer and other protrusions.

.4 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of chimneys and vents.

.5 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.

.6 Do not enclose insulation until it has been inspected and approved by Departmental Representative.

3.3 EXAMINATION

.1 Examine substrates and immediately inform Departmental Representative in writing of defects.

.2 Prior to commencement of work ensure substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.

3.4 FOUNDATION WALL INSULATION

.1 Apply adhesive to outer surface of air barrier membrane in accordance with membrane manufacturer's recommendations.

.2 Imbed polystyrene insulation boards into adhesive prior to skinning of adhesive. Install boards tightly between horizontal rows of masonry anchors.

.3 Bond a continuous 150 mm wide strip of air barrier membrane over expansion joints using compatible adhesive and primer before application of insulation.

3.5 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

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Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 07 92 00 - Joint Sealants.

1.2 REFERENCES

.1 American Association of Textile Chemists and Colorists. (AATCC).

.1 AATCC 127-2017. Water Resistance: Hydrostatic Pressure Test.

.2 American Society for Testing and Materials International (ASTM).

.1 ASTM D882-18. Standard Test Method for Tensile Properties of Thin Plastic Sheeting.

.2 ASTM E96/E96M-22. Standard Test Methods for Water Vapor Transmission of Materials.

.3 ASTM E1677-19. Standard Specification for an Air Retarder (AR) Material or System for Low-Rise Framed Building Walls.

.3 National Air Barrier Association (NABA). Professional Contractor Quality Assurance Program.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit manufacturer’s product data sheets in accordance with Section 01 33 00 - Submittal Procedures. Submit manufacturer’s complete installation instructions.

1.4 QUALITY ASSURANCE

.1 Perform Work in accordance with NABA Professional Contractor Quality Assurance Program.

.2 Maintain one copy of documents on site.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver, store and handle materials in accordance with manufacturer’s written instructions.

.3 Avoid spillage. Immediately notify Departmental Representative if spillage occurs and start clean up procedures. Clean spills and leave area as it was prior to spill.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with the Waste Reduction Workplan as specified in Section 01 74 19 - Construction / Demolition Waste Management.

.2 Place materials defined as hazardous or toxic waste in designated containers. Ensure emptied containers are sealed and stored safely for disposal away from children.

1.7 PROJECT ENVIRONMENTAL REQUIREMENTS

.1 Do not install solvent curing sealants or vapour release adhesive materials in enclosed spaces without ventilation.

.2 Ventilate enclosed spaces.

.3 Maintain temperature and humidity recommended by materials manufactures before, during and after installation.

1.8 SEQUENCING

.1 Sequence work to permit installation of materials in conjunction with related materials and seals.

Part 2 Products

2.1 SHEET MATERIALS

.1 Air / Vapour Barrier membrane: self adhering membrane consisting of an SBS rubberized asphalt compound integrally laminated to cross laminated, high-density polyethylene film. Nominal total thickness: 1.0 mm, roll length 23 m. Tensile strength of film: 40 MPa. Self sealing. Specifically designed to be self-adhered to a prepared substrate, providing an air/vapour/water barrier. Provide in maximum practical widths to suit location on wall or roof deck. Provide in regular and low temperature versions to suit application conditions.

.2 Transition membranes: by same manufacturer as SBS A/V barrier membrane. Self adhering SBS membrane and flashings. Purpose designed for use in creating continuous seal to elements penetrating exterior air / vapour barrier membrane.

.3 Adhesive: by same manufacturer as SBS A/V barrier membrane. To CGSB 71-GP-24M, Type II. Trowel consistency, synthetic rubber-based insulation adhesive. Solvent-type, smooth-spreading adhesive that can be applied at temperatures down to minus 12°C. High initial strength, early set to create a strong, resilient bond. For bonding rigid board insulations specified in Section 07 21 13 - Board Insulation to air / vapour barrier membrane.

.4 Air Barrier membrane: Commercial grade, flash spunbonded olefin, non-woven, Non-perforated secondary weather resistant Air Barrier.

- .1 Thickness: 0.20 mm thick.
- .2 Tensile strength: 7.61 N/mm.
- .3 Water vapour permeance: 1020 ng/Pa/square meter.
- .4 Air Penetration: to ASTM E1677. Type 1.0.005 L/m^2 @ 75 pa.
- .5 Water Vapour Transmission: to ASTM E96, method B: 28 perms (200g/sq m/24 hours).
- .6 Water Penetration Resistance: to AATCC Test Method 127. 280 cm.
- .7 Breaking Strength: to ASTM D882, Method A. 0.68/0.63 (kgs/mm).
- .8 Tear Resistance: to ASTM D1117. 5.4/4.5 kgs.
- .9 Weight: 91.85g/square meter.
- .10 UV light exposure: 270 days.

.5 Air Barrier Accessories: by same manufacturer as Air Barrier. Specifically designed for use with olefin membrane.

.1 Tape: 75 mm wide, self adhering olefin membrane. For sealing joints and edges of membrane to building structure and elements penetrating membrane.

.2 Cap Screws: 42 mm rust resistant screws with 50 mm diameter plastic cap or manufacturer approved 50 mm metal gasketted washer.

.3 Flashing membranes: Flexible membrane flashing materials penetrations.

2.2 SEALANTS

.1 Sealants and primer: as recommended by barrier manufacturer. Appropriate to application.

.2 Thinner and Cleaner: Non-corrosive type as recommended by manufacturer. Compatible with adjacent materials.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that surfaces and conditions are ready to accept the Work of this section.

.2 Ensure all surfaces are clean, dry, sound, smooth, continuous and comply with air barrier manufacturer’s requirements.

.3 Report any unsatisfactory conditions to Departmental Representative in writing.

.4 Do not start work until deficiencies have been corrected. Commencement of Work implies acceptance of conditions.

3.2 PREPARATION

.1 Remove loose or foreign matter which might impair adhesion of materials.

.2 Ensure all substrates are clean of oil or excess dust; all masonry joints struck flush, and open joints filled; and all concrete surfaces free of large voids, spalled areas or sharp protrusions.

.3 Ensure all substrates are free of surface moisture prior to application of primer and self-adhesive membrane.

.4 Ensure metal closures are free of sharp edges and burrs.

.5 Prime substrate surfaces to receive membrane in accordance with manufacturer's instructions.

3.3 INSTALLATION

.1 Install materials in accordance with manufacturer's instructions.

.2 Apply primer and install self adhesive Air / Vapour Barrier membrane to masonry or concrete materials. Caulk openings, penetrations and joints with transition membranes with sealant to ensure complete seal. Position lap seal over firm bearing.

.3 Install Air Barrier membrane over insulation. Secure to structural framing with sealant and self tapping screws with large head washers. Caulk openings, penetrations and

joints with transition membranes with sealant to ensure complete seal. Position lap seal over firm bearing.

.4 Lap sheets onto roof vapour barrier and seal with sealant. Caulk to ensure complete air seal. Position lap seal over firm bearing.

.5 Install SBS transition membranes between wall Air / Vapour barrier membrane and window and door frames. Caulk to ensure complete seal. Position lap seal over firm bearing.

.6 Install tape transition membrane to seal between wall Air Barrier membrane and window and door frames. Caulk to ensure complete seal. Position lap seal over firm bearing.

.7 Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

3.4 PROTECTION OF WORK

.1 Protect finished Work in accordance with Section 01 61 00 - Common Product Requirements.

.2 Do not permit adjacent work to damage work of this section.

.3 Ensure finished Work is protected from climatic conditions.

3.5 SCHEDULES

.1 Wall Air / Vapour barrier over concrete: self adhesive SBS membrane.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American Society for Testing and Materials (ASTM International).

.1 ASTM A123.3-05(R2015): Asphalt Saturated Organic Roofing Felt

.2 ASTM A653/A653M-20. Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.3 ASTM D523-14(2018). Standard Test Method for Specular Gloss.

.4 ASTM D822/D822M-13(2018) Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

.2 Canadian Roofing Contractors Association (CRCA).

.1 Roofing Specifications Manual 2005.

.3 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-37.5-M89. Cutback Asphalt Plastic Cement.

.4 Canadian Standards Association (CSA International).

.1 CSA-A123.3-05 (R2015). Asphalt Saturated Organic Roofing Felt.

1.2 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, colour and finish.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 19 - Construction / Demolition Waste Management.

.2 Divert unused metal materials from landfill to metal recycling facility as approved by Departmental Representative.

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

Part 2 Products

2.1 PREFINISHED STEEL SHEET

.1 Sheet steel: to ASTM A653/A653M. Factory prefinished steel with polyvinylidene fluoride finish system. Series 10 000. Minimum 0.71 mm thick or as indicated.

.1 Class F1S.

.2 Colours: Two colours will be selected by Departmental Representative from manufacturer's complete and extended range of colours.

.3 Specular gloss: 30 units +/- in accordance with ASTM D523.

.4 Coating thickness: not less than 22 micrometers.

.5 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 2500 hours.

.2 Humidity resistance exposure period 5000 hours.

2.2 ACCESSORIES

.1 Plastic cement: to CAN/CGSB 37.5.

.2 Underlay for metal flashing: No. 15 perforated asphalt felt to CSA A123.3.

.3 Sealants: as specified in Section 07 92 10 - Joint Sealants.

.4 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.

.5 Fasteners: self drilling cap screws with nylon caps and rubber washers of same colour as sheet metal being secured. Length and thickness suitable for metal flashing application.

.6 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 and as detailed.

.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.

2.4 METAL FLASHINGS

.1 Form flashings, copings and fascias to profiles indicated of 0.71 mm thick prefinished sheet steel or as indicated in the drawings.

2.5 REGLETS AND CAP FLASHINGS

.1 Form recessed and surface mounted reglets, metal cap flashing of 0.71 mm thick prefinished sheet steel as indicated in the drawings in accordance with CRCA FL series details. Provide slotted fixing holes and steel/plastic washer fasteners. Cover face and ends with plastic tape.

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.

.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. Flash joints using S-lock forming tight fit over hook strips or as detailed.

.5 Lock end joints and caulk with sealant.

.6 Install surface mounted reglets true and level, and caulk top of reglet with sealant.

.7 Insert metal flashing into reglets, under cap flashing to form weather tight junction.

.8 Turn top edge of flashing into recessed reglet or mortar joint minimum of 25 mm. Lead wedge flashing securely into joint.

.9 Caulk flashing at reglet cap flashing with sealant.

END OF SECTION

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Part 1 General

1.1 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM C919-19. Standard Practice for Use of Sealants in Acoustical Applications.

.2 ASTM C920-18. Standard Specification for Elastomeric Joint Sealants.

.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.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit product data, samples and Installation Instructions in accordance with Section 01 33 00 - Submittal Procedures.

.2 Manufacturer's Product Data to describe.

.1 Each type of sealing compound specified.

.2 Primers.

.3 Compatibility when different sealants are in contact with each other.

.3 Submit duplicate samples of each type of material and colour.

.4 Cured samples of exposed sealants for each colour where required.

.5 Submit complete installation instructions for each product specified. Indicate special handling criteria, surface preparation procedures, application sequence and cleaning procedures.

1.3 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.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction / Demolition Waste Management.

.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 Waste Management Plan.

.4 Place materials defined as hazardous or toxic in designated containers. Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.

.5 Handle and dispose of hazardous materials in accordance with appropriate Federal, Provincial and Municipal regulations.

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

1.5 PROJECT CONDITIONS

.1 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use. Do not proceed with installation of joint sealants under following conditions:

.1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.

.2 When joint substrates are wet.

.2 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

.3 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.6 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 Departmental Representative will arrange for ventilation system to be operated on maximum outdoor air and exhaust during installation of caulking and sealants. Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.

Part 2 Products

2.1 SEALANT MATERIALS

.1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.

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

.3 Where sealants are qualified with primers use only these primers.

2.2 SEALANT MATERIAL DESIGNATIONS

.1 Sealant TYPE A: one-component, medium-modulus, neutral cure silicone. To ASTM C920, Type S, Grade NS, Class 50. Use NT, M, G, A and O.

.2 Backer Rods: oversized 30 - 50 %. Shore A hardness of 20. Tensile strength of 830 - 900 KPa.

.1 Vertical Surfaces: extruded polyolefin rod.

.2 Horizontal Surfaces: extruded closed cell polyurethane foam. Standard Backer Rod.

.3 High Density Foam: 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^3 density, or neoprene foam backer, size as recommended by manufacturer.

.3 Bond Breaker: pressure sensitive polyethylene plastic tape. Formulated so that sealant will not bond. For installation where minimum joint depth cannot be obtained.

2.3 SEALANT SELECTION

.1 Perimeters of exterior openings where frames meet exterior facade of building (i.e. brick, block): Sealant TYPE A.

.2 Expansion and control joints in exterior surfaces of poured-in-place concrete walls: Sealant TYPE A.

.3 Control and expansion joints in exterior surfaces of unit masonry walls: Sealant TYPE A.

.4 Seal interior perimeters of exterior openings as detailed on drawings: Sealant TYPE A.

.5 Control and expansion joints on the interior of exterior poured-in place concrete walls: Sealant TYPE A.

.6 Control and expansion joints on the interior of exterior surfaces of unit masonry walls: Sealant TYPE A.

.7 Interior control and expansion joints in floor surfaces: Sealant TYPE C.

2.4 CLEANERS AND PRIMERS

.1 Cleaner: non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

.2 Primer: as recommended by manufacturer for specific sealant specified.

Part 3 Execution

3.1 PROTECTION

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

3.2 SURFACE PREPARATION

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

.5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

.1 Apply bond breaker tape where required to manufacturer's instructions.

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

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

3.6 APPLICATION

.1 Sealant.

- .1 Apply sealant in accordance with manufacturer's written instructions.
- .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
- .3 Apply sealant in continuous beads.
- .4 Apply sealant using gun with proper size nozzle.
- .5 Use sufficient pressure to fill voids and joints solid.
- .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
- .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
- .8 Remove excess compound promptly as work progresses and upon completion.

.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 Cleanup.

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

END OF SECTION