

**Part 1 General****1.1 RELATED REQUIREMENTS**

- .1 Section 04 05 00 - Common work results for masonry
- .2 Section 04 05 19 - Masonry anchorage and reinforcing
- .3 Section 06 10 00 - Rough Carpentry
- .4 Section 07 21 13 - Board insulation
- .5 Section 07 21 29.03 - Sprayed insulation – Polyurethane foam
- .6 Section 07 62 00 - Sheet Metal Flashing and Trim
- .7 Section 07 92 00 – Joint Sealing
- .8 Section 08 44 13 - Glazed aluminium curtain walls

**1.2 Reference Standards:**

- .1 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-37-GP-56M (9<sup>th</sup> edition), Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.
  - .2 CAN/CGSB-51.34-34-M86, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.
- .2 American Society for Testing and Materials International (ASTM).
  - .1 ASTM D412-2013, Standard Test Methods for Mechanical Fasteners in Wood.
  - .2 ASTM D903-98 (2010), Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
  - .3 ASTM D1970 / D1970M – 16, Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
  - .4 ASTM D5147/5147M-14, Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material.
  - .5 ASTM E 96/96M-16, Test Methods for Water Vapour Transmission of Materials.
  - .6 ASTM D5590 - 00(2010)e1, Standard Test Method for Determining the Resistance of Paint Films and Related Coatings to Fungal Defacement by Accelerated Four-Week Agar Plate Assay.
  - .7 ASTM E154/154M-08a (2013)e1, Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
  - .8 ASTM E283-04 (2012), Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
  - .9 ASTM E330-02, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls, by Uniform Static Air Pressure Difference.

- .10 ASTM E2178-13, Standard Test Method for Air Permeance of Building Materials.
- .11 ASTM E2357 – 11, Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

### 1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and datasheet and include:
    - .1 Product characteristics.
    - .2 Performance criteria.
    - .3 Limitations.
  - .3 Submit one copy of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS).
- .4 Mock-up:
  - .1 Construct mock-up approximately 6m<sup>2</sup> of sheet vapour retarder / air barrier installation including one lap joint, one inside corner and at one opening. Mock-up may be part of finished work.
  - .2 Mock-up will be used to judge workmanship, substrate preparation, and material application.
  - .3 Locate where indicated.
  - .4 Allow 48 hours for inspection of mock-up by Departmental Representative before proceeding with vapour barrier work.

### 1.4 QUALITY ASSURANCE

- .1 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .3 Instructions: submit manufacturer's installation instructions and comply with written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.
- .4 Membrane must be installed by installer trained and recognized by manufacturer of product to be installed.
- .5 Installer must provide Departmental Representative proof of certification if requested.
- .6 Role of manufacturer's representative:
  - .1 Verify substrate prior to commencing work, during installation of membrane and upon completion of work.
  - .2 As required, provide technical assistance to installer and assist with installing membrane properly.

- .7 Materials: provide and install basic materials for each type of product from same manufacturer.

## **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Storage and protection:
- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver in labelled packaging. Store and handle in accordance with manufacturer's instructions. Protect from weather, extreme temperatures and work site incidents. Remove and dispose of damaged materials in accordance with applicable regulations.

## **1.6 SITE CONDITIONS**

- .1 Site Environmental Requirements:
- .1 Maintain substrate surface to be waterproofed at temperature indicated in written instructions of waterproofing sealant manufacturer.
- .2 Install upon completion of construction work and preparation of substrate, ready to receive waterproofing membrane.
- .3 Protect the plants and vegetation from damage caused by the work.

## **1.7 WASTE MANAGEMENT AND ISPOSAL**

- .1 Separate waste materials for reuse recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Divert unused sealants and caulking to a certified hazardous materials site.
- .4 Do not dispose of unused sealing products into waterways, storm or sanitary sewers, lake or other area representing a health and environmental risk.

## **1.8 EXTENDED WARRANTY**

- .1 For Work of this Section 07 26 00 – Vapour retarders and air barrier, the 12-month warranty period is extended to 60 months.
- .2 Provide a written document jointly prepared and signed by the manufacturer and the installer and issued in the name of Canada, ensuring the work against defects in materials, workmanship and installation for the period specified above.

## **Part 2 Products**

### **2.1 SELF-ADHESIVE MEMBRANE, TYPE 1**

- .1 Transitional membrane, connection and sealing of perimeter of outer openings and sealing tape. SBS modified bitumen composite sheet with cross-laminated polyethylene film, minimum thickness 1.0 mm (40 mils) and suitable width.
- .2 Minimal requirements:
- .1 Air leakage: <0.005 L/s.m<sup>2</sup> @ 75 Pa to ASTM E283-91;

- .2 Water vapour permeance: 1.71 ng/Pa.m<sup>2</sup>.s (0.03 perms) to ASTM E96;
- .3 Low temperature flexibility: -30 °C to CGSB 37-GP-56M;
- .4 Elongation: 200% to ASTM D412-modified.

## 2.2 SELF-ADHESIVE MEMBRANE, TYPE 2

- .1 Through-wall Flashing and Dampproof Course Membrane. Self-adhered membrane consisting of an SBS rubberized asphalt compound, complete with a cross-laminated polyethylene film, of 1mm nominal thickness and appropriate width.
- .2 Minimal requirements :
  - .1 High Temperature Stability - Flow Resistance: 110 deg C, tested to ASTM D5147
  - .2 Air leakage: 0.005 L/s.m<sup>2</sup> @ 75 Pa to ASTM E283;
  - .3 Water vapour permeance: 1.6 ng/Pa.m<sup>2</sup>.s to ASTM E96;
  - .4 Low temperature flexibility: -30°C to CGSB 37-GP-56M.

## 2.3 LIQUID VAPOUR RETARDER AND AIR BARRIER MEMBRANE, TYPE 3:

- .1 One component elastomeric bitumen, trowel or spray applied to a wet film thickness of 3mm and having the following characteristics:
  - .1 Solids By Weight: 55%
  - .2 Air permeability: 0.0006 L/s·m<sup>2</sup> @ 75 Pa., tested to ASTM E2178
  - .3 Tested to ASTM E2357 for Air Leakage of Air Barrier Assemblies
  - .4 Water Vapour Permeance: 5.0 ng/Pa.m<sup>2</sup>.s., tested to ASTM E96
  - .5 Tensile Strength: 820 kPa, tested to ASTM D412
  - .6 Elongation : 800%, tested to ASTM D412
  - .7 Recovery: 90%, tested to CAN/CGSB 37.58
  - .8 Nail Sealability : Pass, tested to ASTM D1970
  - .9 Resistance to Mold, Mildew & Fungal Growth: No Growth, tested tp ASTM D5590
  - .10 Application Temperature: 4 deg C minimum

## 2.4 SELF-ADHESIVE MEMBRANE, TYPE 4:

- .1 Base sheet membrane composed of SBS modified bitumen with a glass mat reinforcement. The surface is sanded. The underface is covered with a release protection film.
- .2 Minimal requirements:
  - .1 Meet CAN/CGSB 37-GP 56;
  - .2 Thicknessr : 2.5mm;
  - .3 Strain energy : 8,4/8,3 KN/m;
  - .4 Breaking strength : 18/16 KN/m;
  - .5 Ultimate elongation : 55 / 56%;
  - .6 Tear resistance : 120N;
  - .7 Static puncture resistance : 380 N;

- .8 Cold bending :
  - .1 Initial: -30 degrés C
  - .2 90 days at 70 degrés C: -30 degrés C

## **2.5 PRIMER FOR SELF-ADHESIVE MEMBRANE**

- .1 Primer composed of SBS synthetic rubbers, adhesion-enhancing resins and volatile solvents. It is used to enhance the adhesion of self-adhesive membranes on various substrates.

## **2.6 ADHESIVE FOR TYPE 4 MEMBRANE**

- .1 SBS modified bitumen based liquid adhesive.

## **2.7 ACCESSORIES**

- .1 Sealant: compatible with vapour retarder materials, recommended by vapour retarder manufacturer.

## **Part 3 Execution**

### **3.1 EXAMINATION AND PREPARATION OF SURFACES**

- .1 Inspect substrate and ensure related work is completed prior to beginning work. Commencement of work constitutes acceptance of installation conditions.
- .2 Ensure surfaces are smooth, dry, free of ice and debris prior to starting work in accordance with manufacturer's prescriptions and recommendations.
- .3 Do not install materials when it is raining or snowing.
- .4 Allow concrete to cure for fourteen (14) days; an adhesion test is recommended prior to installation.
- .5 Provide solid support for cracks bigger than 3.2 mm. Fill cracks using manufacturer's recommended method.
- .6 Cover expansion joints with self-adhering reinforcing membrane 150 mm centred on joint.

### **3.2 LAYING OF TRANSITIONAL MEMBRANE AT JOINTS AND OPENINGS**

- .1 Prime surfaces to receive membrane at rate recommended by membrane manufacturer. Do not prime more than can be covered the same day with membrane. Prime surfaces again if membrane is not applied the same day.
- .2 Cover all interior and exterior angles with 150 mm wide membrane strip centred on corner. Apply directly to primed substrate, removing space between substrate and membrane.
- .3 All window frames, aluminum screens, hollow metal door frames, spandrel panels and interface of different materials to be covered with a strip of self-adhesive membrane.
- .4 Align and place self-adhesive transitional membrane, remove protective film and press firmly into place.

- .5 Lap each strip by 50 mm laterally and transversally.
- .6 Repair tears and holes with suitable membrane. Overlap damaged area minimum 100 mm. Seal patch with sealing compound.
- .7 After entire membrane is glued, apply pressure over surface using rubber roller.
- .8 Carefully examine membrane at the end of each day and prior to installation of liquid vapour retarder and air barrier membrane. Seal top edge of membrane with mastic at the end of the day when rain is forecast or if application is delayed by more than one day.
- .9 Cover small projections (pipes, etc.) with detail membrane and seal with mastic.
- .10 Use sheets of largest practical size to minimize joints.

### 3.3

#### LAYING OF TRANSITIONAL MEMBRANE ON ROOFS

- .1 In places where a transitional membrane is to be installed on a roof, use a metal brush to scratch surface of waterproofing membrane to remove granular layer.
- .2 Prime surfaces to receive membrane at rate recommended by membrane manufacturer. Do not prime more than can be covered the same day with membrane. Prime surfaces again if membrane is not applied the same day.
- .3 Trowel apply the adhesive on the existing roof membrane, 125mm wide along the overlap strip.
- .4 Align and place self-adhesive transitional membrane, leaving a 25mm wide free edge for thermowelding, remove protective film and press firmly into place.
- .5 Lap each strip by 150 mm laterally.
- .6 After entire membrane is glued, apply pressure over surface using rubber roller.
- .7 Seal end of self-adhesive membrane to existing roof membrane by thermowelding 25mm wide.
- .8 Install pre-finished metal protective flashing on top of self-adhesive membrane. Refer to Section 07 62 00 – Sheet Metal Flashing and Trim.

### 3.4

#### THROUGH-WALL FLASHING INSTALLATION

- .1 Prime surfaces to receive membrane at rate recommended by membrane manufacturer. Do not prime more than can be covered the same day with membrane. Prime surfaces again if membrane is not applied the same day.
- .2 Apply through-wall flashing and dampproof coursing membrane in accordance with CSA A371 Masonry Construction for Buildings; along the base of masonry veneer walls, over window, door and other wall openings required to be protected.
- .3 Applications shall form a continuous flashing membrane and shall extend a minimum of 200mm up the back-up wall.
- .4 150mm minimal longitudinal overlap.
- .5 Ensure through-wall flashing membrane extends fully to the exterior face of the exterior masonry veneer. At locations where flashing terminates or intersects wall openings including door frames, “end dam” flashing to protect openings and redirect water out. Trim off excess as directed by the consultant.

- .6 Align and position the leading edge of self-adhering through-wall flashing membrane with the front horizontal edge of the foundation walls, self angles and other substrates to be protected, partially remove protective film and roll membrane over surface and up vertically.
- .7 Press firmly into place. Ensure minimum 50mm overlap at all end and side laps. Promptly roll all laps and membrane to affect the seal.
- .8 Seal junctions with other surfaces to ensure continuity of air/vapour barrier system. Seal membrane penetrated by anchors or other construction element with liquid membrane.
- .9 Apply sealing bead at the end of each work day to top edge of membrane and ends to prevent water infiltration between substrate and membrane.

### **3.5 LAYING OF LIQUID MEMBRANE**

- .1 Ensure that all intramural transitional membranes and flashing membranes are installed correctly before installing liquid membrane.
- .2 Squirt or trowel a continuous unbroken film of air- and vapour-blocking liquid membrane to a thickness of 3 mm of damp film.
- .3 Overlap transitional membranes by at least 50 mm.
- .4 Squirt or trowel air seal around edges of projections to ensure full, continuous covering.
- .5 Let air- and vapour-blocking membrane harden fully before laying insulation.

### **3.6 INSULATION INSTALLATION**

- .1 Coordinate inspection of waterproofing work with Departmental Representative 48 hours in advance prior to installation of insulation.
- .2 Refer to section 07 21 29.03 - Sprayed insulation – Polyurethane foam.

### **3.7 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**