

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Cold applied asphalt bitumen dampproofing.
- .2        Drainage panels and protective cover.

**1.2                RELATED SECTIONS**

- .1        Section 31 23 10 - Excavation, Trenching and Backfilling.
- .2        Section 03 30 00 - Cast-In-Place Concrete.
- .3        Section 07 21 15 - Insulation: Perimeter insulation

**1.3                REFERENCES**

- .1        ASTM D41 - Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- .2        ASTM D449 - Asphalt Used in Dampproofing and Waterproofing.
- .3        NRCA (National Roofing Contractors Association) - Roofing and Waterproofing Manual.

**1.4                QUALITY ASSURANCE**

- .1        Applicator: Company specializing in performing the work of this section with minimum five years documented experience.

**1.5                ENVIRONMENTAL REQUIREMENTS**

- .1        Section 01 61 00: Environmental conditions affecting products on site.
- .2        Maintain ambient temperatures above 5 degrees C for 24 hours before and during application until membrane has cured.

**Part 2            Products**

**2.1                COLD ASPHALTIC MATERIALS**

- .1        Asphalt: Fibrated solvent type asphalt coating to Flintguard 710-11 as manufactured by Bakor.
- .2        Asphalt Primer: ASTM D41, compatible with substrate, 910-01 manufactured by Bakor.
- .3        Asphalt Cement: ASTM D2822 Type I.
- .4        Asphaltic Sealing Mastic: Solvent type fibrated plastic cement 810-21 manufactured by Bakor.

## **2.2 ACCESSORIES**

- .1 Protection Board: Rigid insulation specified in Section 07 21 15.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verify substrate surfaces are durable, free of matter detrimental to adhesion or application of dampproofing system.
- .2 Verify items which penetrate surfaces to receive dampproofing are securely installed.

### **3.2 PREPARATION**

- .1 Protect adjacent surfaces not designated to receive dampproofing.
- .2 Clean and prepare surfaces to receive dampproofing in accordance with manufacturer's instructions.
- .3 Do not apply dampproofing to surfaces unacceptable to manufacturer or applicator.
- .4 Apply mastic to seal penetrations, small cracks, or minor honeycomb in substrate.

### **3.3 APPLICATION**

- .1 Prime surfaces in accordance with manufacturer's instructions.
- .2 Apply cold bitumen with mop or roller.
- .3 Apply bitumen in one coat, continuous and uniform.
- .4 Apply from 50 mm below finish grade elevation to top of footings or bottom of grade beam.
- .5 Seal items projecting through dampproofing surface with mastic. Seal watertight.

### **3.4 INSTALLATION - PROTECTION BOARD**

- .1 Place protection board (Insulation) directly against membrane; butt joints.
- .2 Apply protection board to substrate. Scribe and cut boards around projections, penetrations, and interruptions.

**END OF SECTION**

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Board insulation at cavity wall construction, perimeter foundation wall, exterior walls.
- .2        Batt insulation.

**1.2                RELATED SECTIONS**

- .1        Section 04 16 00 - Masonry anchorage and Reinforcing: brick tie insulation attachment.
- .2        Section 06 10 00 - Rough Carpentry.
- .3        Section 07 46 23 - Mineral Fibre Cement Siding.
- .4        Section 07 52 00 - SBS Modified Bituminous Roofing.

**1.3                REFERENCES**

- .1        ASTM C578 - Preformed, Cellular Polystyrene Thermal Insulation.
- .2        ASTM D1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics.
- .3        ASTM D2842 - Water Absorption of Rigid Cellular Plastics.
- .4        ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
- .5        UL 723 - Tests for Surface Burning Characteristics of Building Materials.

**Part 2            Products**

**2.1                INSULATION MATERIALS**

- .1        Rigid Insulation (foundation): CAN/ULC S701-97, Type 4, extruded cellular polystyrene, square edges; thickness as indicated on drawings
  - .1        Acceptable Manufacturers: Dow Chemical; Owens Corning.
- .2        Rigid Insulation ( wall): CAN/ULC S701-97, Type 2, extruded cellular polystyrene, square edges; thickness as indicated on drawings
  - .1        Acceptable Manufacturers: Styrofoam as manufactured by Dow Chemical  
          Celfort by Owens Corning.
- .3        Batt Insulation: ASTM C665; preformed glass fiber batt, roll, blanket; friction fit.
  - .1        Acceptable manufacturers:
    - .1        Owens Corning
    - .2        Johns Manville.
- .4        Batt Insulation (acoustic): ASTM C665; preformed glass fiber batt, roll, blanket; friction fit.

- .1 Acceptable manufacturers:
  - .1 Owens Corning.
  - .2 Johns Manville.

## **2.2 ACCESSORIES**

- .1 Protective Board (Below grade): 3 mm hardboard; masonite.
- .2 Foundation Protective Panel (upper 400 mm): 18 ga. Galvanized steel on 13 mm pwf plywood. Fold steel over top of plywood protection board.
- .3 Metal Furring (Stucco walls): Furring for walls shall be Insulok Thermo-stud furring channels; 0.45 mm thick, 9-90 galvanized finish, complete with Tapcon anchors to suit substrate or framing.
- .4 Metal furring (cement fibre siding); Multi clinch insulation fasteners; galvanized finish; distributed by Johnson Construction Materials.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verify that substrate, adjacent materials, and insulation boards are dry and ready to receive insulation and adhesive.
- .2 Verify substrate surface is flat, free of honeycomb, fins, irregularities, materials or substances that may impede installation.
- .3 Verify insulation boards are unbroken, free of damage, with face membrane undamaged.
- .4 Verify surfaces within walls being insulated have been inspected and approved.

### **3.2 RIGID INSULATION - FOUNDATION PERIMETER**

- .1 Fasten insulation and 12 mm pressure treated plywood protection board to foundation wall with Tapcon concrete fasteners with 25 mm dial washers, 6 per 600 mm x 2400 mm board.
- .2 Cut and fit insulation tight to protrusions or interruptions to the insulation plane.

### **3.3 RIGID INSULATION - EXTERIOR WALLS**

- .1 Cavity Walls: Install insulation horizontally using the polyethylene insulation support component of the masonry tie system specified in Section 04 16 00.
- .2 Stucco walls: Install insulation horizontally using insulok thermo studs insulation fastener 300 mm o.c. horizontally at insulation board joint. Coordinate with insulation supplier for scoring locations on insulation.
- .3 Cement fibre walls: Install insulation horizontally using Multi Clinch insulation fastener strip placed vertically minimum 400 mm o.c at insulation board joint locations to panels. Ensure all fasteners penetrate steel stud backup.

- .4 Place boards in a method to maximize contact bedding. Stagger end joints. Butt edges and ends tight to adjacent board and to protrusions.
- .5 Cut and fit insulation tight to protrusions or interruptions to the insulation plane.
- .6 Place 400 mm wide adhesive vapour sheet at perimeter of wall openings, from adhesive vapour barrier bed to window door frame. Tape seal in place to ensure continuity of vapour barrier and air seal.

### **3.4 BATT INSULATION**

- .1 Install batt insulation locations as noted on drawings without gaps or voids.
- .2 Fit insulation tight in spaces and behind exterior side of mechanical and electrical services leaving no gaps or voids.

### **3.5 ACOUSTIC INSULATION**

- .1 Install acoustic insulation to walls indicated on drawings.
- .2 Fit insulation tight in spaces and tight to one side of mechanical and electrical services leaving no gaps or voids.

END OF SECTION

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Sheet and sealant materials for controlling vapour diffusion.
- .2        Sheet air barriers.

**1.2                RELATED SECTIONS**

- .1        Section 06 10 00 - Rough Carpentry.
- .2        Section 07 52 00 - SBS Modified Bituminous Roofing: Rigid insulation at roof system.
- .3        Section 07 92 00 - Joint Sealant.

**1.3                REFERENCES**

- .1        ASTM C1193 - Standard Guide for Use of Joint Sealants.
- .2        ASTM E96 - Test Methods for Water Vapour Transmission of Materials.
- .3        ASTM C920 - Elastomeric Joint Sealants.
- .4        ASTM E283 - Test Method For Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Difference Across the Specimen..

**1.4                SEQUENCING**

- .1        Sequence Work to permit installation of materials in conjunction with other barrier materials and seals.
- .2        Do not install vapour barriers until items penetrating it are in place.

**1.5                INSPECTION TESTING**

- .1        Coordinate inspection of vapour barrier elements prior to vapour barrier system being covered up by other trades.
- .2        Testing of air / vapour barrier materials will be performed by an independent inspection firm appointed by the City and paid for by the Cash Allowance. Testing will be performed so as to least encumber the performance of the work.
- .3        The City will pay for the cost of one (1) series of tests only, on the areas being evaluated. Pay for costs of additional testing as required due to improper performance of work.
- .4        When work of this section or portions of work are completed to own satisfaction, notify the testing firm to perform tests. Do not proceed with additional portion of work until results have been verified and approved.

- .5 If, during progress of Work, tests indicate that materials do not meet specified requirements, remove defective work, replace and retest at own expense, as directed by the Contract Administrator.

## **1.6 WARRANTY**

- .1 Warranty: Include coverage of installed sealant and sheet materials which fail to achieve air tight seal, exhibit loss of adhesion or cohesion, or do not cure.

## **Part 2 Products**

### **2.1 AIR/VAPOUR BARRIER**

- .1 Membrane type (walls): Self Adhesive: SBS modified bitumen membrane reinforced with glass scrim; 1 mm thick minimum.
  - .1 Acceptable manufacturers: Blueskin SA, manufactured by Bakor; Perma Barrier manufactured by Grace Construction Products; Sealtight Air Shield by W.R.Meadows. Aquabarrier AVB by IKO.
  - .2 Primer to membrane manufacturers recommendations.

### **OR**

- .2 Membrane type (walls): Torch applied: SBS modified bitumen membrane reinforced with glass scrim; 1 mm thick minimum.
  - .1 Acceptable manufacturers: Blueskin TG, manufactured by Bakor; Aquabarrier TG by IKO.
  - .2 Primer to membrane manufacturers recommendations.

### **2.2 MOISTURE BARRIER**

- .1 Moisture Barrier: spun bonded polyolefin or polypropylene
  - .1 Acceptable materials:
    - .1 Tyvek Building Wrap manufactured by Dupont Canada.
    - .2 Typar Housewrap manufactured by Reemay Inc.
    - .3 Styrofoam Weathermate Plus manufactured by Dow Canada.

### **2.3 SEALANTS**

- .1 Sheet vapour Barrier: sealant to membrane manufacturer's recommendations.
- .2 Film vapour barrier: acoustic sealant specified in Section 07 92 00.

### **2.4 ACCESSORIES**

- .1 Tape: permanent acrylic adhering back, polypropylene, 3M Contractors Sheathing Tape.
- .2 Vapour Barrier transition strip: sheet vapour barrier, width to provide minimum 100 mm lap to both roof and wall vapour barriers.

- .3 Sealants: As recommended by membrane manufacturer

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verify condition of substrate and adjacent materials are acceptable for application of the product.

**3.2 PREPARATION**

- .1 Remove loose or foreign matter which might impair adhesion.
- .2 Verify substrate surface is flat, free of honeycomb, fins, irregularities, materials or substances that may impede installation.
- .3 Clean and prime substrate surfaces to receive membrane and sealants in accordance with manufacturers' instructions.

**3.3 INSTALLATION VAPOUR BARRIER – SHEET (self adhered)**

- .1 Prime surfaces to membrane manufacturers recommendations.
- .2 Apply membrane to manufacturers recommendations.
- .3 Apply membrane horizontally starting at bottom of wall and weather lap 50 mm.
- .4 Lap ends 50 mm.
- .5 Roll membrane, including seam with hand roller to ensure full contact.
- .6 Seal membrane where it meets the substrate, at the end of the days work.
- .7 Install vapour barrier transition strip to parapet support prior to construction of parapets and lap wall vapour barrier 100 mm.

**3.4 VAPOUR BARRIER – SHEET (torch applied)**

- .1 Prime surfaces to membrane manufacturers recommendations.
- .2 Apply membrane to manufacturers recommendations.
- .3 Apply membrane horizontally starting at bottom of wall and weather lap 50 mm.
- .4 Cut membrane neatly around projections to form a tight seal. Seal area around any projections with application of sealant.
- .5 Install vapour barrier transition strip to parapet support prior to construction of parapets and lap wall vapour barrier 100 mm.

**3.5 AIR BARRIER**

- .1 Apply air barrier over exterior surfaces walls.
- .2 Lap minimum of 200 mm and seal with tape.
- .3 Fasten to framing or strapping at 600 mm on centre.
- .4 Seal to window and door frames. Seal to all penetrations in exterior walls.

**END OF SECTION**

**Part 1 GENERAL**

**1.1 SECTION INCLUDES**

- .1 Manufactured cement fibre reinforced plank siding.
- .2 Manufactured cement fibre reinforced plank soffits.

**1.2 RELATED SECTIONS**

- .1 Section 06 10 00 - Rough Carpentry.
- .2 Section 07 21 15 - insulation.
- .3 Section 07 28 00 - Air and Vapour Barriers.

**1.3 REFERENCES**

- .1 CSA B111-M: Wire Nails, Spikes and Staples.
- .2 ASTM C1186: Standard Specifications for Grade II, Type A, Non-Asbestos Fibre Cement Flat Sheets.
- .3 ASTM E84: Test of Surface Burning Characteristics of Building Materials.

**1.4 DELIVERY AND STORAGE**

- .1 Deliver materials in original unopened packaging with manufacturers labels intact.
- .2 Store in accordance with manufacturer's instructions.

**1.5 SAMPLES**

- .1 Submit samples to requirements of Section 01 33 00.
- .2 Submit 2 samples 200 x 300 mm in size illustrating siding colour, finish, and style.

**1.6 ACCEPTABLE MATERIALS**

- .1 Where materials are specified by trade name, refer to B6 for procedures to be followed in applying for approval of alternatives.

**Part 2 PRODUCTS**

**2.1 MINERAL FIBRE CEMENT SIDING**

- .1 Lap siding: Composite mineral fiber cement plank siding 6 mm nominal thickness; 3657 lengths for 203 mm exposure. Provide 152 mm exposure for soffits.
  - .1 Acceptable materials: Hardiplank Lap Siding - Timber grained texture as manufactured by James Hardie Building Products.

- .2 Siding to conform to ASTM C1186, ASTM E136; and Fire hazard classifications tested to ASTM E83 as follows:
  - .1 Flame spread: 0
  - .2 Fuel Contributed: 0
  - .3 Smoke Developed: 5
- .3 Finish: Factory prefinished; prime painted with 2 coats of Mason's Select Woodperfect Series coating; colour to be selected from manufacturers standard range of colours.
- .4 Soffit colour to match wall siding colour.
- .5 Sealants: Manufacturers standard sealant, colour to match siding material.
- .6 Screws: hot dipped galvanized or corrosion resistant alloy; type head and lengths as recommended by siding manufacturer for use on applicable substrates. Provide coloured heads to match siding where exposed.

## **2.2 ANTI GRAFFITI COATING**

- .1 Non sacrificial anti graffiti coating with cleaner; VandlguardTen with Vandleguard graffiti cleaner. Provide 2 gallons of cleaner and turn over to City for maintenance purposes.

## **Part 3 EXECUTION**

### **3.1 EXAMINATION**

- .1 Ensure that air barriers and strapping have been installed and approved..
- .2 Ensure that related metal flashings and trim have been installed and approved.

### **3.2 INSTALLATION**

- .1 Install panels in accordance with manufacturer's instructions unless otherwise indicated.
- .2 Install panels using longest practical lengths. Stagger end joints in adjacent coursing. A continuous line of joints is not permitted.
- .3 Cut siding using sharp shears, saws and tools recommended by siding manufacturer. Make cuts true and even free of chips and splinters
- .4 Provide starter strips to produce consistent plank angle.
- .5 Coursing: Install lap siding producing a 203 mm exposure.
- .6 Install siding horizontal and true to line of building.
- .7 Touch up coating at cut ends.
- .8 Lace corner laps as shown on drawings.
- .9 Apply sealant to joints in accordance with siding manufacturers directions.

**3.3 ANTI GRAFFITI COATING**

- .1 Apply anti graffiti coating in strict accordance with manufacturers written instructions.
- .2 Provide test panel for approval prior to applying coating.
- .3 Apply to all siding material on man floor level - refer to east elevation.

**END OF SECTION**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- .1 Sheathing over deck surface, vapour barrier.
- .2 Modified bitumen membrane roofing with protective covering, gypsum board sheathing, vapour barrier, insulation and base flashings.

**1.2 RELATED SECTIONS**

- .1 Section 05 31 00 - Structural Steel Decking.
- .2 Section 06 10 00 - Rough Carpentry.
- .3 Section 07 21 15 - Insulation
- .4 Section 07 28 00 - Air And Vapour Barriers
- .5 Section 07 62 00 - Sheet Metal Flashing and Trim
- .6 Section 07 72 33 - Roof Hatches.
- .7 Section 09 21 16 - Gypsum Board Assemblies.
- .8 Division 22 - Plumbing: Roof openings.
- .9 Division 23 - heating Ventilation and Air Conditioning: Roof openings.
- .10 Division 26 - Electrical: Openings in roof system for electrical equipment.

**1.3 REFERENCES**

- .1 CAN/ULC-701-97- Preformed, Cellular Polystyrene Thermal Insulation.
- .2 ASTM C 79-94 - Specification for Gypsum Sheathing Board.
- .3 CGSB 37-GP-56M-80, Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.
- .4 ASTM C1002 - Steel Drill Screws for the Application of Gypsum Board.
- .5 CRCA (Canadian Roofing Contractors Association) "Roofing Specification"

**1.4 SYSTEM DESCRIPTION**

- .1 Modified Bitumen Conventional Roofing System: Two ply torched on membrane system with vapour barrier, gypsum sheathing, and insulation.

**1.5 QUALITY ASSURANCE**

- .1 Perform Work in accordance with membrane manufacturer's instructions .

## **1.6 QUALIFICATIONS**

- .1 Applicator: Company specializing in performing the work of this section with three years documented experience and approved by system manufacturer.

## **1.7 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code for roof assembly fire hazard requirements.

## **1.8 MANUFACTURERS REPRESENTATIVE**

- .1 The roofing material manufacturer shall delegate a representative to visit the work site at commencement of work and periodically during work in progress
- .2 At all times the contractor shall permit and facilitate access to the work site and roofs to manufacturers representative.

## **1.9 FIRE PROTECTION**

- .1 Adhere to manufacturers fire safety regulations.
- .2 At the end of each work day, survey roof with a heat detector gun to spot any smouldering or concealed fire. Workers must be on site minimum one hour after torch application. Do not apply torch directly to old and dry wood surfaces. Apply Soprema fire guard tape at all parapet and curb junctions, or where there is a risk of flame entering building components.
- .3 Maintain a clean site and have one approved ABC fire extinguisher within 6 meters of each roofing torch. Comply to all safety measures described in technical data sheets. Torches shall not be placed near combustible or flammable products.

## **1.10 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, store, protect, and handle products to site.
- .2 Deliver products in manufacturer's original containers, dry, undamaged, seals and labels intact.
- .3 Store products in weather protected environment, clear of ground and moisture.
- .4 Stand roll materials on end.

## **1.11 ENVIRONMENTAL REQUIREMENTS**

- .1 Do not apply roofing membrane to damp or frozen deck surface.
- .2 Do not apply roofing membrane during inclement weather.
- .3 Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

**1.12 COORDINATION**

- .1 Coordinate the work with installing associated metal flashings as the work of this section proceeds.

**1.13 WARRANTY**

- .1 Provide a 10 year manufacturer's warranty.
- .2 Warranty: Cover damage to building resulting from failure to prevent penetration of water.

**PART 2 PRODUCTS**

**2.1 MANUFACTURERS - MEMBRANE MATERIALS**

- .1 Soprema Waterproofing Inc.
- .2 Other acceptable manufacturers offering equivalent products.
  - .1 Bakor.
  - .2 IKO

**2.2 MEMBRANE MATERIAL**

- .1 Membrane: Asphalt and polymer modifiers of styrene-butadiene-styrene (SBS) type, reinforced with non-woven polyester:
  - .1 Base sheet: Thermofusable surface both sides; 180 g/sq.m. non woven polyester reinforcement; 3 mm thick.
    - .1 Soprema Sopralene Flam 180,
    - .2 IKO Torchflex TP-180 –FF-base
    - .3 Bakor Modified Plus NP 190G T4
  - .2 Base Sheet Stripping: Thermofusable surface both sides; 180 g/sq.m. non woven polyester reinforcement; 3 mm thick.
    - .1 Soprema Sopralene Flam 180.
    - .2 IKO Torchflex TP-FF-base.
    - .3 Bakor Modified Plus NP 180 P/P
  - .3 Membrane Cap Sheet: Thermofusable bottom surface; granule top surface of grey colour; 250 g/sq.m. non woven polyester reinforcement.
    - .1 Soprema Sopralene Flam 250 granules.
    - .2 IKO Torchflex TP-250-cap.
    - .3 Bakor Modified Plus NP250 T4
  - .4 Cap sheet stripping: Thermofusable bottom surface; granule top surface of grey colour; 250 g/sq.m. non woven polyester reinforcement.
    - .1 Sopralene Flam 250 granules.

- .2 IKO Torchflex TP-250-cap.
- .3 Bakor Modified Plus NP250 T4

### **2.3 SHEET MATERIALS**

- .1 Gypsum Sheathing ASTM C630; 13 mm thick; uncoated face, fire rated type.
- .2 Vapour barrier: Membrane type; Self Adhesive; SBS modified bitumen membrane reinforced with glass scrim; 1.5 mm thick minimum.
  - .1 Acceptable manufacturers: Vedagard, manufactured by Bakor; Soprapap'r, manufactured by Soprema; Armorgard, by IKO.
- .3 Protection board: Torchable membrane protection board.
  - .1 IKO Protection board.
  - .2 Bakor Protection Board
- .4 Primer: as recommended by membrane manufacturer.

### **2.4 BITUMINOUS MATERIALS**

- .1 Rubberized sealant( pitch pockets):
  - .1 Polyroof; one part rubberized asphalt.
  - .2 Sopramastic 200; synthetic plasticized with bitumen and solvents.
  - .3 Bakor 840- 10.

### **2.5 INSULATION**

- .1 Insulation: ASTM C1013, polyisocyanurate foam with specially formulated facers; Factory Mutual Class 1;
  - .1 Genflex Roofing Systems - Model Genflex Iso.
  - .2 Dow Thermax
  - .3 Firestone – ISO 95+
  - .4 IKO - Ikootherm
- .2 Insulation: CAN/ULC-701-97- II}, Extruded expanded polystyrene board with natural skin surfaces; Deckmate by manufactured by Dow Chemical. Other acceptable manufacturers Owens Corning.
- .3 Insulation (tapered): ASTM C578 Type II, Molded expanded polystyrene board; manufactured by Plastispan. Other acceptable manufacturers AMC Styrobar.

### **2.6 FLASHINGS**

- .1 Flexible Flashings: Same material as membrane.

## **2.7 ACCESSORIES**

- .1 Sheathing Fasteners: ASTM C1002, steel drill type, for mechanical attachment of gypsum sheathing to metal deck.
- .2 Insulation Fasteners: Appropriate for purpose intended and approved by system manufacturer length required for thickness of material with metal washers.
- .3 Sealants: As recommended by membrane manufacturer.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- .1 Verify that surfaces and site conditions are ready to receive work.
- .2 Verify deck is supported and secured.
- .3 Verify deck is clean and smooth, free of depressions, waves, or projections, properly sloped to drains or valleys.
- .4 Verify deck surfaces are dry and free of snow or ice. Verify flutes of metal deck are clean and dry.
- .5 Verify roof openings, curbs, pipes, conduit, sleeves, ducts, and vents through roof are solidly set, and are in place.

### **3.2 PREPARATION - WOOD DECK**

- .1 Verify flatness and tight joints of wood decking.
- .2 Seal joints of plywood with tape.
- .3 Fill knot holes with latex filler.

### **3.3 PREPARATION - CONCRETE DECK**

- .1 Fill surface honeycomb and variations with cementitious filler.

### **3.4 PREPARATION - METAL DECK**

- .1 Install preformed sound absorbing glass fiber insulation strips supplied by Section 05 10 00, in acoustic deck flutes; in accordance with manufacturer's instructions.
- .2 Install preformed insulation to deck flutes at exterior walls.

### **3.5 GYPSUM BOARD APPLICATION - METAL DECK**

- .1 Lay with gypsum board with long side at right angle to flutes; stagger end joints; provide support at ends.
- .2 Mechanically fasten sheathing at full roof area of roof deck, using 8 fasteners with washers per board.

- .3 Provide 24" of 13 mm 1/2" PWF plywood sheathing to outside edge of deck under parapets.
- .4 Cut sheathing cleanly and accurately at roof breaks and protrusions to provide smooth surface. Tape joints.

### **3.6 VAPOUR BARRIER APPLICATION**

- .1 Vapour Barrier: after priming, apply vapour barrier to gypsum board, lap sides 75 mm and ends 150 mm.
- .2 Extend vapour barrier under cant strips and blocking. Lap flexible flashings over vapour and air barrier of wall construction to provide continuity of vapour and air barrier envelope.

### **3.7 INSULATION APPLICATION**

- .1 Ensure vapour barrier is clean and dry.
- .2 Insulation: Mechanically fasten insulation and torchable protection board to deck with type, quantity and location of fasteners to manufacturers recommendations. Butt insulation tight with adjacent boards at all edges. Apply insulation in two layers (excluding tapered insulation) and stagger joints. Offset joints of protection board with joints of insulation.
- .3 Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- .4 Apply no more insulation than can be covered with membrane in same day.

### **3.8 MEMBRANE APPLICATION**

- .1 Apply membrane and primer in accordance with manufacturer's instructions.
- .2 Apply membrane; lap and seal edges and ends permanently waterproof.
- .3 Apply membrane smooth, free from air pockets, wrinkles, or tears. Ensure full bond of membrane to substrate.
- .4 Torch apply base sheet.
- .5 Torch weld base sheet stripping, nail top edge.
- .6 Torch weld cap sheet to base sheet. Offset cap sheet 300 mm with base sheet.
- .7 Torch weld cap sheet stripping to base stripping. Offset 100 mm with base sheet stripping.
- .8 Base sheet and cap sheet shall have 75 mm side laps and 6" end laps
- .9 Stripping shall have side laps of 75mm..
- .10 Extend membrane over vapour and air barrier of wall construction and seal.

- .11 Seal membrane around roof protrusions and penetrations.
- .12 Install waterproof cut-off to membrane at end of day's operation. Remove cut-off before resuming roofing.

### **3.9 FLASHINGS AND ACCESSORIES**

- .1 Apply flexible sheet base flashings to seal membrane to vertical elements.
- .2 Coordinate installation of roof drains, curbs, and related flashings.
- .3 Seal flashings and flanges of items penetrating or protruding through the membrane.

### **3.10 CLEANING**

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

### **3.11 PROTECTION**

- .1 Protect building surfaces against damage from roofing work.
- .2 Where traffic must continue over finished roof membrane, protect surfaces.

END OF SECTION

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- .1 Coping, parapet, cap, flashings.
- .2 Counterflashings for roof hatches, and fall arrests.
- .3 Roof scuppers.
- .4 Counterflashings at roof mounted equipment and vent stacks.

**1.2 RELATED SECTIONS**

- .1 Section 06 10 00 – Rough Carpentry:
- .2 Section 07 52 00 - SBS Modified Bituminous Roofing
- .3 Section 07 72 33 - Roof Hatches.
- .4 Section 07 92 00 - Joint Sealants.
- .5 Mechanical systems.
- .6 Electrical Systems.

**1.3 REFERENCES**

- .1 ASTM A653/A653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 CRCA (Canadian Roofing Contractors Association) "Roofing Specification"
- .3 SMACNA - Architectural Sheet Metal Manual.

**1.4 SUBMITTALS**

- .1 Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- .2 Submit two samples 200x200 mm in size illustrating metal finish colour.

**1.5 QUALITY ASSURANCE**

- .1 Perform work in accordance with SMACNA standard details and requirements.

**1.6 QUALIFICATIONS**

- .1 Fabricator and Installer: Company specializing in sheet metal flashing work with Five years documented experience.

**1.7 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, store, protect and handle products to site.
- .2 Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- .3 Prevent contact with materials which may cause discolouration or staining.

**1.8 EXISTING CONDITIONS / PROTECTION**

- .1 Exercise care when working on or about roof surfaces to avoid damaging or puncturing membrane or flexible flashings.
- .2 Place plywood panels on roof surfaces to work of this section and on access routes. Keep in place until completion of work.

**PART 2 PRODUCTS**

**2.1 SHEET MATERIALS**

- .1 Pre-Coated Galvanized Steel: ASTM A653/A653M, G90 zinc coating; 0.61 mm core steel, shop pre-coated with 8000 Series Defasco coating, 2 colours as indicated on Drawing A-2.1.

**2.2 ACCESSORIES**

- .1 Fasteners: Same material and finish as flashing metal , with soft neoprene washers.
- .2 Protective Backing Paint: . Bituminous. .
- .3 Sealant: Polyurethane type, specified in Section 07 92 00.

**2.3 FABRICATION**

- .1 Form sections true to shape, accurate in size, square, and free from distortion or defects.
- .2 Fabricate cleats of sheet metal, same material as sheet.
- .3 Form pieces in longest possible lengths.
- .4 Hem exposed edges on underside 13 mm; miter and seam corners.
- .5 Form material with flat lock seams.
- .6 Fabricate corners from one piece with minimum 450 mm long legs; seam for rigidity, seal with sealant.
- .7 Fabricate vertical faces with bottom edge formed outward 6 mm and hemmed to form drip.

**2.4 SCUPPERS**

- .1 Form scuppers from prefinished steel sheet metal.
- .2 Sizes and profiles as indicated.
- .3 Provide necessary fastenings.

**2.5 FINISH**

- .1 8000 series colours as noted on drawings.
- .2 Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 0.4 mm.

**PART 3 EXECUTION**

**3.1 EXAMINATION**

- .1 Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, reglets in place, and nailing strips located.
- .2 Verify roofing termination and base flashings are in place, sealed, and secure.

**3.2 PREPARATION**

- .1 Install starter and edge strips, and cleats before starting installation.

**3.3 INSTALLATION**

- .1 Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted by Contract Administrator
- .2 Apply plastic cement compound between metal flashings and felt flashings.
- .3 Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- .4 Counter-flash all mechanical and electrical items projecting through membrane roofing
- .5 Install prefinished flashing to all locations indicated on drawings.
- .6 Seal metal joints watertight.

**3.4 SCUPPERS**

- .1 Install scuppers as indicated.

END OF SECTION

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Prefabricated roof hatches with integral support curbs, operable hardware, and counterflashings.

**1.2                RELATED SECTIONS**

- .1        Section 07 52 00. - SBS Modified Bituminous Roofing.
- .2        Section 07 62 00 - Sheet Metal Flashing and Trim.
- .3        Section 09 99 00 - Painting .

**1.3                SUBMITTALS FOR REVIEW**

- .1        Submittals: Provide shop drawings and product data on unit construction, sizes, configuration, jointing methods and locations when applicable, and attachment method.

**Part 2            Products**

**2.1                ROOF HATCH VENT**

- .1        Manufacturers:
  - .1        Bilco Roof Hatch
  - .2        Precision Stair Company .
- .2        Unit: 914x762 mm size, single leaf type.
- .3        Integral Steel Curb: 2 mm prime painted steel with 25 mm rigid glass fiber insulation; integral cap flashing to receive roof flashing; extended flange for mounting.
- .4        Flush Steel Cover: 2 mm prime painted steel; 25 mm glass fiber insulation; 0.8 mm steel interior liner; continuous neoprene gasket to provide weatherproof seal.
- .5        Hardware: Cadmium plated finish:
  - .1        Compression spring operator and shock absorbers;
  - .2        Steel manual pull handle for interior and exterior operation;
  - .3        Steel hold open arm with vinyl covered grip handle for easy release,
  - .4        Padlock hasp.
  - .5        Hinges: Heavy duty pintle type.

**2.2                FABRICATION**

- .1        Fabricate components free of visual distortion or defects. Weld corners and joints.
- .2        Provide for removal of condensation occurring within components or assembly.
- .3        Fit components for weather tight assembly.

**Part 3**            **execution**

**3.1**                **INSTALLATION**

- .1        Install in accordance with manufacturer's instructions.
- .2        Coordinate with installation of roofing system and related flashings for weather tight installation.
- .3        Apply bituminous paint on surfaces of units in contact with cementitious materials or dissimilar metals.
- .4        Adjust hinges for smooth operation.

END OF SECTION

**PART 1        General**

**1.1            SECTION INCLUDES**

- .1        Fireproof firestopping materials and accessories.

**1.2            RELATED SECTIONS**

- .1        Section 04 22 00 – Concrete Unit Masonry.
- .2        Section 07 92 00 – Joint Sealants.
- .3        Section 09 21 16 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

**1.3            REFERENCES**

- .1        ULC-S115-1995, Fire Tests of Firestop Systems, Underwriter's Laboratories of Canada (ULC)
- .2        ULC - Fire Hazard Classifications.
- .3        WH (Warnock Hersey) - Certification Listings.
- .4        ULC-S115, Standard Method of Fire Tests of Firestop Systems.

**1.4            SYSTEM DESCRIPTION**

- .1        Firestopping Materials: ULC to achieve a fire rating as noted on Drawings.
- .2        Firestop all interruptions to fire rated assemblies, materials, and components.
- .3        Fire stopping and smoke seal systems: in accordance with CAN4-S115.

**1.5            SUBMITTALS**

- .1        Section 013300 Submittal procedures.
- .2        Product Data: Provide data on product characteristics, performance and limitation criteria.
- .3        Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- .4        Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- .5        Provide cut sheets of each fire stop type with test No. and products installed.

**1.6            QUALIFICATIONS**

- .1        Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.\

## **1.7 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code for fire resistance ratings and surface burning characteristics.
- .2 All fire stopping products to be ULC listed for each system and penetration type.
- .3 Provide certificate of compliance from authority having jurisdiction indicating approval of materials used.

## **1.8 ENVIRONMENTAL REQUIREMENTS**

- .1 Apply materials within the temperature range as recommended by the manufacturer.
- .2 Maintain this temperature before, during, and for 3 days after installation of materials.

## **1.9 SEQUENCING**

- .1 Sequence work to permit firestopping materials to be installed after adjacent and surround work is complete.

## **PART 2 Products**

### **2.1 MATERIALS**

- .1 Fire stopping and smoke seal systems: asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of CAN4-S115 and not to exceed opening sizes for which they are intended in accordance with CAN4-S115.
- .2 Acceptable Manufactures:
  - .1 Tremco Inc.
  - .2 Johns Manville.
  - .3 Hilti.
  - .4 A/D Fire Protection Systems Inc.

### **2.2 ACCESSORIES**

- .1 Primer: Type recommended by firestopping manufacturer for specific substrate surfaces.
- .2 Dam Material: mineral fibreboard, permanent.
- .3 Installation Accessories: Clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

## **PART 3 Execution**

### **3.1 EXAMINATION**

- .1 Verify openings are ready to receive the work of this section.

### **3.2 PREPARATION**

- .1 Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material.
- .2 Remove incompatible materials which may affect bond.
- .3 Install backing or damming materials to arrest liquid material leakage.

### **3.3 APPLICATION**

- .1 Install material at walls or partition openings which contain penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.
- .2 Install firestop materials in accordance with published ULC systems.
- .3 Apply primer and materials in accordance with manufacturer's instructions.
- .4 Apply firestopping material in sufficient thickness to achieve rating to uniform density and texture.
- .5 Place foamed material in layers to ensure homogenous density, filling cavities and spaces. Place sealant to completely seal junctions with adjacent dissimilar materials.

### **3.4 CLEANING**

- .1 Clean adjacent surfaces of firestopping materials.

### **3.5 PROTECTION OF FINISHED WORK**

- .1 Protect adjacent surfaces from damage by material installation.

END -OF SECTION

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1     Preparing substrate surfaces.
- .2     Sealant and joint backing.

**1.2                RELATED SECTIONS**

- .1     Section 07 11 13 - Bituminous Dampproofing: Sealants required in conjunction with dampproofing.
- .2     Section 07 21 15 - Insulation.
- .3     Section 07 28 00 - Air and Vapour Barriers
- .4     Section 07 84 00 - Firestopping: Sealants required in conjunction with firestopping.
- .5     Section 07 52 00 - SBS Modified Bituminous Roofing: Sealants required in conjunction with roofing.
- .6     Section 07 62 00 - Sheet Metal Flashing and Trim: Sealants required in conjunction with metal flashings.
- .7     Section 08 80 00 - Glazing: Sealants required in conjunction with glazing methods.
- .8     Section 09 21 16 - Gypsum Board Assemblies: Sealants required in conjunction with acoustic treatment.

**1.3                REFERENCES**

- .1     CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
- .2     CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
- .3     CAN/CGSB-19.22-M89, Mildew Resistant, Sealing Compound for Tubs and Tiles.
- .4     CAN/CGSB-19.21-M87, Sealing and Bedding Compound Acoustical.
- .5     ASTM D1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.

**1.4                SUBMITTALS**

- .1     Include the following paragraph for submission of physical samples for selection of finish, colour, texture, etc.
- .2     Samples: Submit two samples, 6 x 150 mm in size illustrating sealant colours for selection.

## **1.5 QUALITY ASSURANCE**

- .1 Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

## **1.6 QUALIFICATIONS**

- .1 Applicator: Company specializing in performing the work of this section with minimum Three years documented experience and approved by manufacturer.

## **1.7 ENVIRONMENTAL REQUIREMENTS**

- .1 Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

## **1.8 WARRANTY**

- .1 Provide five year warranty.
- .2 Warranty: Include coverage for installed sealants and accessories which fail to achieve air tight seal, water tight seal, exhibit loss of adhesion or cohesion, or do not cure.

## **Part 2 Products**

### **2.1 SEALANTS**

- .1 Acrylic Sealant (Type A): CAN/CGSB-19.17, paintable; single component, solvent curing, non-staining, non-bleeding, non-sagging; Tremco latex 100. Colour to be selected by Contract Administrator.
- .2 Acoustic Sealant (Type B): CAN/CGSB-19.21, Acoustic grade, single component, solvent release, non-skinning, non-sagging, synthetic rubber, Tremco Acoustic Sealant Grey colour.
- .3 Polyurethane Sealant (Type C): CAN/CGSB-19.13, single component, chemical curing, non-staining, non-bleeding, Elongation Capability 25 percent, non-sagging ; Tremco Dymonic; PRC RC-1; Sonneborn NP-1; Vulkem 931. Colour as selected by Contract Administrator
- .4 Silicone Sealant (Type D): CAN/CGSB-19.22, single component, fungus resistant, acidic curing, non-sagging, non-staining, non-bleeding; General Electric 'Sanitary 1700; Dow Corning 786. Colours as selected by Contract Administrator.

### **2.2 ACCESSORIES**

- .1 Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- .2 Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- .3 Joint Backing: ASTM D1056; round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width.

- .4 Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

### **Part 3 Execution**

#### **3.1 EXAMINATION**

- .1 Verify that substrate surfaces and joint openings are ready to receive work.
- .2 Verify that joint backing and release tapes are compatible with sealant.

#### **3.2 PREPARATION**

- .1 Remove loose materials and foreign matter which might impair adhesion of sealant.
- .2 Clean and prime joints in accordance with manufacturer's instructions.
- .3 Perform preparation in accordance with manufacturer's instructions.
- .4 Protect elements surrounding the work of this section from damage or disfiguration.

#### **3.3 INSTALLATION**

- .1 Install sealant in accordance with manufacturer's instructions.
- .2 Measure joint dimensions and size materials to achieve required 2:1 width/depth ratios.
- .3 Install bond breaker where joint backing is not used.
- .4 Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- .5 Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- .6 Tool joints concave.

#### **3.4 CLEANING**

- .1 Clean adjacent soiled surfaces.

#### **3.5 PROTECTION OF FINISHED WORK**

- .1 Protect finished installation.
- .2 Protect sealants until cured.

#### **3.6 SCHEDULE**

- .1 Apply sealant type 'A' to junctures of millwork items and adjacent building components and perimeter of door frames as directed by Contract Administrator.
- .2 Apply sealant type 'B' in two continuous beads around perimeter of plates, at top, bottom and sides of all acoustic rated partitions.

- .3 Apply double bead sealant type 'B' around designated fire separations ie. before setting top and bottom plates, where studs set around other materials, etc
- .4 Apply sealant Type `C' to exterior condition joints between door frames, window frames, siding components, masonry control joints, etc. and where indicated on drawings.
- .5 Apply sealant Type 'D' to perimeter joints of all sanitary components, vanities, counters, sinks, water closets, shower heads, etc. unless noted otherwise on drawings.

END OF SECTION