

## **PART 1 - GENERAL**

### **1.1 REFERENCES**

All reference standards shall be current issue or latest revision at the date of building permit issue. This specification refers to the following standards, specifications or publications:

- .1 American Society for Testing and Materials (ASTM)
  - .1 ASTM C165, Standard Test Method for Measuring Compressive Properties of Thermal Insulations.
  - .2 ASTM C303, Standard Test Method for Dimensions and Density of Preformed Block and Board-Type Thermal Insulation.
  - .3 ASTM C612, Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
- .3 Underwriters Laboratories of Canada (ULC)
  - .1 CAN/ULC S102, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
  - .1 CAN/ULC-S702, Standard for Thermal Insulation, Mineral Fibre, for Buildings.

### **1.2 WASTE MANAGEMENT AND DISPOSAL**

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE CRITERIA**

- .1 Board insulation for continuous insulation systems: To ASTM C612, Type IVB.
  - .1 Fire performance:
    - .1 Non-combustibility: To CAN/ULC S114.
    - .2 Surface Burning Characteristics: To CAN/ULC S102.
      - .1 Flame spread: 0.
      - .2 Smoke developed: 0.
  - .2 Thermal resistance (RSI value/25.4 mm at 24 ° C: [0.70] m<sup>2</sup>K/W to ASTM C518.
  - .3 Moisture resistance:
    - .1 Moisture sorption: 0.28 % maximum to ASTM C1104/C1104M.
    - .2 Water vapour transmission: 2160 ng/Pa·s·m<sup>2</sup> to ASTM E96, Desiccant Method.
    - .3 Water absorption: 1.2 % to ASTM C209.
  - .4 Dimensional stability: 0.38 % maximum linear shrinkage at 650 °C to ASTM C356.
  - .5 Corrosive resistance:
    - .1 Steel to ASTM C665: Non-corrosive.
    - .2 Stainless steel to ASTM C795: Non-corrosive.
  - .6 Density: 176 kg/m<sup>3</sup> to ASTM C303.
  - .7 Compressive strength: To ASTM C165.
    - .1 58 kPa at 10 %.
    - .2 90 kPa at 25 %.
  - .8 Recycled content: 16% minimum.
  - .9 Fungi resistance: To ASTM C1338.

### **2.2 MATERIALS**

- .1 Non-combustible, rigid, water repellent, mineral wool insulation board to ASTM C612, Type-IVB.
  - .1 Size: 610 x 1219 mm.
  - .2 Thickness: to meet specified RSI values indicated on drawings.
  - .3 Acceptable Material: ROXUL Inc., COMFORTBOARD™ 110.

### **2.3 ACCESSORIES**

- .1 Mechanical fasteners in accordance with insulation manufacturer's written recommendations.

## **PART 3 - EXECUTION**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: 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 around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other protrusions.
- .4 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.
- .5 Offset both vertical and horizontal joints in multiple layer applications.
- .6 Do not enclose insulation until it has been inspected and approved by Contract Administrator.

### **3.3 EXAMINATION**

- .1 Examine substrates and immediately inform Contract Administrator in writing of defects.
- .2 Prior to commencement of work ensure:
  - .1 Substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.

### **3.4 PERIMETER FOUNDATION INSULATION**

- .1 Exterior application: extend boards as indicated. Install on exterior face of perimeter foundation wall with metal channels as indicated.

### **3.5 RIGID INSULATION**

- .1 Mechanically secure insulation for the building facade prior to installation of the air barrier. Install on exterior face of perimeter foundation wall with metal channels as indicated.

### **3.6 CLEANING**

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

**End of Section**

## **PART 1 - GENERAL**

### **1.1 REFERENCES**

All reference standards shall be current issue or latest revision at the date of building permit issue. This specification refers to the following standards, specifications or publications:

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C 553, Specification for Mineral Fibre Blanket Thermal Insulation for Commercial and Industrial Applications.
  - .2 ASTM C 1320, Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.

### **1.2 WASTE MANAGEMENT AND DISPOSAL**

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard] packaging material for recycling.

## **PART 2 - PRODUCTS**

### **2.1 INSULATION**

- .1 Batt and blanket mineral fibre: to ASTM C 665, Type 1 thickness as indicated.
  - .1 Acceptable material: Owen Corning Fiberglas Pink R22 Friction Fit Batts for exterior wall thermal insulation.

## **PART 3 - EXECUTION**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

### **3.2 INSULATION INSTALLATION**

- .1 Install insulation to maintain continuity of thermal protection to building elements and spaces.
- .2 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.
- .3 Do not compress insulation to fit into spaces.
- .4 Keep insulation minimum 75mm from heat emitting devices such as recessed light fixtures, chimneys and vents as per manufacturer's instructions.
- .5 Do not enclose insulation until it has been inspected and approved by Contract Administrator.

### **3.3 CLEANING**

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

**End of Section**

## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 01 45 00 - Quality Control.
- .2 Section 01 51 00 - Temporary Utilities.

### **1.2 REFERENCES**

All reference standards shall be current issue or latest revision at the date of building permit issue. This specification refers to the following standards, specifications or publications:

- .1 Canadian Urethane Foam Contractors' Association Inc. (CUFCA)
- .2 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC-S101, Fire Endurance Tests of Building Construction and Materials.
  - .2 CAN/ULC-S102, Surface Burning Characteristics of Building Materials and Assemblies.
  - .3 CAN/ULC-S705.1, Standard for Thermal Insulation Spray Applied Rigid Foam, Medium Density, Material Specification.
  - .4 CAN/ULC-S705.2, Standard for Thermal Insulation Spray Applied Rigid Foam, Medium Density, Installer's Responsibilities-Specification.

### **1.3 TEST REPORTS**

- .1 Submit test reports in accordance with CAN/ULC-S101 for fire endurance and CAN/ULC-S102 for surface burning characteristics.

### **1.4 QUALITY ASSURANCE**

- .1 Applicators to conform to CUFCA Quality Assurance Program.

### **1.5 MOCK-UP**

- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Construct mock-up 10 m<sup>2</sup> minimum, of spray in place urethane foam insulation including one inside corner and one outside corner. Mock-up may be part of finished work.
- .3 Allow 24 hours for inspection of mock-up by Contract Administrator.

### **1.6 SAFETY REQUIREMENTS**

- .1 Protect workers as recommended by CAN/ULC-S705.2 and manufacturer's recommendations:
  - .1 Workers must wear gloves, respirators, dust masks, eye protection and protective clothing when applying foam insulation.
  - .2 Workers must not eat, drink or smoke while applying foam insulation.

### **1.7 PROTECTION**

- .1 Ventilate area in accordance with Section 01 51 00 - Temporary Utilities.
- .2 Ventilate area to receive insulation by introducing fresh air and exhausting air continuously during and 24 hour after application to maintain non-toxic, unpolluted, safe working conditions.
- .3 Provide temporary enclosures to prevent spray and noxious vapours from contaminating air beyond application area.
- .4 Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting of insulation materials.

### **1.8 ENVIRONMENTAL REQUIREMENTS**

- .1 Apply insulation only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

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## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Insulation: spray polyurethane to CAN/ULC-S705.1. Minimum RSI 1 per 25mm (R6 per 1").  
Acceptable manufacturers:
  - .1 Owens Corning.
  - .2 Dow.
  - .3 Polyurethane Foam Systems Inc. (PFSI).
  - .4 Foam-Lok as supplied by Lapolla Canada Industries.
- .2 Primers: in accordance with manufacturer's recommendations for surface conditions.

## **PART 3 - EXECUTION**

### **3.1 APPLICATION**

- .1 Apply insulation to clean surfaces in accordance with CAN/ULC-S705.2 and manufacturer's printed instructions. Use primer where recommended by manufacturer.
- .2 Apply sprayed foam insulation in thickness or insulation value as indicated.

**End of Section**

## **PART 1 - GENERAL**

### **1.1 SECTION INCLUDES**

- .1 Materials and installation methods providing primary air/vapour barrier materials and assemblies.
- .2 Air/vapour barrier materials to provide continuous seal between components of building envelope and building penetrations.

### **1.2 RELATED SECTIONS**

- .1 Section 06 10 10 - Rough Carpentry.
- .2 Section 07 21 16 - Blanket Insulation.
- .3 Section 07 92 10 - Joint Sealing.

### **1.3 REFERENCES**

All reference standards shall be current issue or latest revision at the date of building permit issue. This specification refers to the following standards, specifications or publications:

- .1 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-19.13M, Sealing Compound, One Component, Elastomeric Chemical Curing.
- .2 Manitoba Building Code, Part 5 - Environmental Separation
- .3 Sealant and Waterproofer's Institute - Sealant and Caulking Guide Specification.

### **1.4 SUBMITTALS**

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Provide drawings of special joint conditions.
- .2 Submit manufacturer's product data sheets in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Submit manufacturer's installation instructions in accordance with Section 01 33 00 - Submittal Procedures.

### **1.5 QUALITY ASSURANCE**

- .1 Perform Work in accordance with Sealant and Waterproofer's Institute - Sealant and Caulking Guide Specification requirements for materials and installation.
- .2 Perform Work in accordance with National Air Barrier Association - Professional Contractor Quality Assurance Program and requirements for materials and installation.
- .3 Maintain one copy of documents on site.

### **1.6 MOCK-UP**

- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Construct typical exterior wall 3 m long by 3 m wide, incorporating window and door frame, insulation and building corner condition; illustrating materials interface and seals.
- .3 Allow 72 h for inspection of mock-up by Contract Administrator before proceeding with air/vapour barrier Work.

### **1.7 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.

### **1.8 SEQUENCING**

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

### **1.9 WARRANTY**

- .1 Warranty: Include coverage of installed sealant and sheet materials which fail to achieve air tight

and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

## **PART 2 - PRODUCTS**

### **2.1 SHEET MATERIALS**

- .1 Non-woven, spunbonded polyolefin sheet.
  - .1 Standard of Acceptance: Tyvek® CommercialWrap®.

### **2.2 SEAM SEALS**

- .1 Joint sealing tape: air resistant pressure sensitive adhesive tape, type recommended by air barrier manufacturer, 50 mm wide for lap joints and perimeter seals.

### **2.3 ACCESSORIES**

- .1 As recommended by sheet material manufacturer.

## **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 the Contract Administrator 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 metal closures are free of sharp edges and burrs.

### **3.3 INSTALLATION**

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

### **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 Sheet Seal Type 1 (Commercial Wrap): to be applied to exterior wall assemblies.

**End of Section**

## **PART 1 - GENERAL**

### **1.1 SECTION INCLUDES**

- .1 Materials, preparation and application to complete the Work as shown on the drawings and as specified herein to bridge and seal the following air leakage pathways and gaps:
  1. Connections of the walls to the roof air barrier.
  2. Connections of the walls to the foundations.
  3. Seismic and expansion joints.
  4. Openings and penetrations of window and door frames, store front, curtain wall.
  5. Piping, conduit, duct and similar penetrations.
  6. Masonry ties, screws, bolts and similar penetrations.
  7. All other air leakage pathways in the building envelope.
- .2 Materials and installation methods of the primary air/vapor barrier membrane system and accessories.
- .3 Materials and installation methods of through-wall flashing membranes.

### **1.2 RELATED SECTIONS**

- .1 Section 01 45 00 - Quality Control.
- .2 Section 03 30 00 - Cast-in-Place Concrete.
- .3 Section 04 05 10 - Common Work Results for Masonry.
- .4 Section 07 62 00 - Sheet Metal Flashing and Trim.

### **1.3 REFERENCES**

All reference standards shall be current issue or latest revision at the date of building permit issue. This specification refers to the following standards, specifications or publications:

- .1 American Society for Testing and Materials International (ASTM)
  1. ASTM E2357, Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
  2. ASTM E2178, Standard Test Method for Air Permeance of Building Materials.
  3. ASTM E283, Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
  4. E1677, Specification for Air Retarder (AR) Material or System for Low-Rise Framed Building Walls
  5. ASTM E330, Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
  6. ASTM E331, Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
  5. ASTM E96, Water Vapor Transmission of Materials.
- .1 Canadian General Standards Board (CGSB)
  - .1 CGSB 37-GP-56M: Membrane, Modified, Bituminous, Prefabricated, and Reinforced.
  - .2 CAN/CGSB-51.33, Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building Construction.

### **1.4 QUALITY ASSURANCE**

- .1 Mock-Ups:
  - .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
  - .2 Where directed by Contract Administrator, construct typical exterior wall panel, 6 foot long by 6 foot wide, incorporating substrate, window frame, attachment of insulation and showing air barrier membrane application details.
  - .3 Mock-up will be used to judge workmanship, substrate preparation, and material application.
  - .4 Locate where directed.
  - .5 Allow 48 hours for inspection of mock-up by Contract Administrator before proceeding with vapour barrier work.

- .2 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.
- .3 Allow access to Work site by the air barrier membrane manufacturer's representative.
- .4 Components used shall be sourced from one manufacturer, including sheet membrane, air barrier sealants, primers, mastics, and adhesives

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

- .1 Refer to current Product MSDS for proper storage and handling.
- .2 Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.
- .3 Store role materials on end in original packaging. Protect rolls from direct sunlight until use.
- .4 Store air barrier membranes, adhesives and primers at temperatures of 5° C minimum.
- .5 Keep solvent away from open flame or excessive heat.

#### **1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 Collect and separate for disposal paper and plastic, packaging material for recycling.

### **PART 2 - PRODUCTS**

#### **2.1 MATERIALS**

- .1 Self-adhered, SBS Rubberized Asphalt sheet to CAN/CGSB-51.33, Type I Water Vapor Permeance.
  - .1 Vapor permeance: 0.03 perms to ASTM E96.
  - .2 Primers and adhesives: as per manufacturer's written instructions.
  - .3 Acceptable material: Blueskin SA and Blueskin SA LT by Henry.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- .1 Verify that surfaces and conditions are ready to accept the Work of this section. Notify Contract Administrator in writing of any discrepancies. Commencement of the work or any parts thereof shall mean acceptance of the prepared substrates.
- .2 All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill spalled areas in substrate to provide an even plane. Strike masonry joints flush.
- .3 Where curing compounds are used they must be clear resin based without oil, wax or pigments.
- .4 Do not proceed with application of membrane when rain is expected within 24 hours.
- .5 Condition materials to room temperature prior to application to facilitate handling.

#### **3.2 SURFACE PREPARATION**

- .1 Surfaces must be sound, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill spalled areas in substrate to provide an even plane.
- .2 New concrete should be cured for a minimum of 14 days and must be dry before air/vapor barrier membranes are applied.
- .3 Ensure all preparatory Work is complete prior to applying primary air/vapor barrier membrane.
- .4 Mechanical fasteners used to secure sheathing boards or penetrate sheathing boards shall be set flush with sheathing and fastened into solid backing.

- .5 Apply primer at rate recommended by manufacturer to all areas to receive self-adhering sheet air/vapor barrier membrane and or through-wall flashing membrane as indicated on drawings by roller or spray and allow minimum 30 minute open time. Primed surfaces not covered by self-adhering membrane or self-adhering through-wall flashing membrane during the same working day must be re-primed.

### **3.3 INSTALLATION**

- .1 Perform Work in accordance with manufacturer's written instructions and this specification.
- .2 Use sheets of largest practical size to minimize joints.
- .3 Seal inside and outside corners with a strip of self-adhering air/vapour barrier membrane extending a minimum of 3 inches on either side of the corner detail.
  1. Prime surfaces as per manufacturers' instructions and allow to dry.
  2. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.
  3. Roll all laps and membrane with a counter top roller to ensure seal.
- .4 Transition areas: Tie-in to structural beams, columns, floor slabs and intermittent floors, parapet curbs, foundation walls, roofing systems and at the interface of dissimilar materials as indicated in drawings with self-adhering air/vapor barrier membrane.
  1. Prime surfaces as per manufacturers' instructions and allow to dry.
  2. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Provide minimum 3 inch lap to all substrates.
  3. Ensure minimum 2 inch overlap at all end and side laps of membrane.
  4. Roll all laps and membrane with a counter top roller to ensure seal.
- .5 Wrap rough openings with self-adhered air/vapor barrier membrane as detailed.
  1. Prime surfaces as per manufacturers' instructions and allow to dry.
  2. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.
  3. Roll all laps and membrane with a counter top roller to ensure seal.
- .6 Main areas: Apply self-adhering air/vapor barrier membrane complete and continuous to prepared and primed substrate in an overlapping shingle fashion and in accordance with manufacturer's recommendations and written instructions. Stagger all vertical joints.
  1. Prime surfaces as per manufacturers' instructions and allow to dry.
  2. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inch overlap at all end and side laps of membrane.
  3. Roll all laps and membrane with a counter top roller to ensure seal.
  4. At the end of each days work, seal the top edge of the membrane where it meets the substrate with termination sealant.

### **3.4 FIELD QUALITY CONTROL**

- .1 Notify Contract Administrator when sections of Work are complete to allow review prior to covering air/vapor barrier system.

### **3.5 PROTECTION**

- .1 Damp substrates must not be inhibited from drying out. Do not expose the backside of the substrate to moisture or rain.
- .2 Cap and protect exposed back-up walls against wet weather conditions during and after application of membrane.
- .3 Air/vapor barrier membrane is not designed for permanent exposure. Good practice calls for covering as soon as possible.

### **3.6 CLEANING**

- .1 Upon completion and verification of performance of installation, remove surplus materials,

excess materials, rubbish, tools and equipment.

**3.7 SCHEDULES**

- .1 Sheet Seal Type 1 (Bakor Blueskin SA): to be applied to exterior masonry wall assemblies.
- .2 Sheet Seal Type 2 (Bakor Blueskin SA): to be applied to roof membrane below standing seam roof system.

**End of Section**

## **PART 1 - GENERAL**

### **1.1 SECTION INCLUDES**

- .1 Requirements for the installation of preformed metal cladding/siding.

### **1.2 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 07 92 10 - Joint Sealing.

### **1.3 REFERENCES**

All reference standards shall be current issue or latest revision at the date of building permit issue. This specification refers to the following standards, specifications or publications:

- .1 American National Standards Institute (ANSI).
  - .1 ANSI B18.6.4, Thread Forming and Thread Cutting Tapping Screws and Metallic Drive Screws.
- .2 American Society for Testing and Materials International, (ASTM).
  - .1 ASTM D 2369, Test Method for Volatile Content of Coatings.
  - .2 ASTM D 2832, Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.
  - .3 ASTM D 5116, Guide For Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products.
- .3 Canadian General Standards Board (CGSB).
  - .1 CAN/CGSB-51.32, Sheathing, Membrane, Breather Type.
  - .2 CAN/CGSB-93.2, Prefinished Aluminum Siding, Soffits and Fascia, for Residential Use.
  - .3 CAN/CGSB-93.3, Prefinished Galvanized and Aluminum-Zinc Alloy Steel Sheet for Residential Use.
  - .4 CAN/CGSB-93.4, Galvanized and Aluminum-Zinc Alloy Coated Steel Siding Soffits and Fascia, Prefinished, Residential.
  - .5 CGSB 93.5, Installation of Metal Residential Siding, Soffits and Fascia.
- .4 Canadian Standards Association (CSA International).
  - .1 CSA B111, Wire Nails, Spikes and Staples.
- .5 Environmental Choice Program (ECP).
  - .1 CCD-045, Sealants and Caulking Compounds.

### **1.4 SUBMITTALS**

- .1 Shop Drawings:
  - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Indicate dimensions, profiles, attachment methods, schedule of wall elevations, trim and closure pieces, soffits, fascia, metal furring, and related work.
- .2 Samples:
  - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Submit duplicate 300mm x 300 mm samples of siding material, of colour and profile specified.
- .3 Manufacturer's Instructions:
  - .1 Submit manufacturer's installation instructions.

### **1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 Divert unused caulking, sealants, and adhesive materials from landfill through disposal at hazardous material depot.

## **PART 2 - PRODUCTS**

### **2.1 ALUMINUM CLADDING COMPONENTS**

- .1 Fascia and exposed trim: to CAN/CGSB-93.2, Type C, Class 1

- .1 Colour: to match roof finish
- .2 Gloss: medium.
- .3 Profile: flat sheet 'V' crimped for stiffness.
- .4 Pattern: plain surface.
- .5 Thickness: .635mm.

## **2.2 STEEL CLADDING AND COMPONENTS**

- .1 Prefinished Metal Cladding: to CAN/CGSB-93.2.

## **2.3 ACCESSORIES**

- .1 Exposed trim: inside corners, outside corners, cap strip, drip cap, undersill trim, starter strip and window/door trim of same material, colour and gloss as cladding, with fastener holes pre-punched.

## **2.4 FASTENERS**

- .1 Screws: ANSI B18.6.4. Self tapping, nylon coated head screws with neoprene washer. Colour to match metal colour.

## **2.5 CAULKING**

- .1 Sealants: See Section 07 92 10 - Joint Sealing.

## **2.6 SHEATHING PAPER**

- .1 Exterior wall sheathing paper: to CAN2-51.32 spunbound olefin type as indicated. See Section 07 27 10 Air Barriers.

# **PART 3 - EXECUTION**

## **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

## **3.2 INSTALLATION**

- .1 Install cladding in accordance with CGSB 93.5, and manufacturer's written instructions
- .2 Install one layer exterior wall sheathing paper horizontally by stapling and lapping edges 150mm.
- .3 Install continuous starter strips, inside and outside corners, edgings, soffit, drip, cap, sill and window/door opening flashings as indicated.
- .4 Install outside corners, fillers and closure strips with carefully formed and profiled work.
- .5 Install fascia cladding as indicated.
- .6 Maintain joints in exterior cladding, true to line, tight fitting, hairline joints.
- .7 Attach components in manner not restricting thermal movement.
- .8 Caulk junctions with adjoining work in accordance with Section 07 92 10 - Joint Sealing.

## **3.3 CLEANING**

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

**End of Section**

## **PART 1 - GENERAL**

### **1.1 SECTION INCLUDES**

- .1 Materials and installation methods providing primary air/vapour barrier materials and assemblies.
- .2 Air/vapour barrier materials to provide continuous seal between components of building envelope and building penetrations.

### **1.2 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 07 62 00 - Sheet Metal Flashing and Trim.
- .3 Section 07 92 10 - Joint Sealing.
- .4 Section 09 91 13 - Exterior Painting.

### **1.3 REFERENCES**

All reference standards shall be current issue or latest revision at the date of building permit issue. This specification refers to the following standards, specifications or publications:

- .1 American Society for Testing and Materials International, (ASTM).
  - .1 ASTM D 5116, Standard Guide For Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products.
- .2 Canadian General Standards Board (CGSB).
  - .1 CAN/CGSB-11.3, Hardboard.
  - .2 CAN/CGSB-51.32, Sheathing, Membrane, Breather Type.
- .3 Canadian Standards Association (CSA International).
  - .1 CSA B111, Wire Nails, Spikes and Staples.
  - .2 CSA O121, Douglas Fir Plywood.
  - .3 CSA O151, Canadian Softwood Plywood.
  - .4 CAN/CSA-Z808, A Sustainable Forest Management System: Guidance Document.
- .4 Environmental Choice Program (ECP).
  - .1 CCD-045, Sealants and Caulking Compounds.
- .5 National Lumber Grades Authority (NLGA).
  - .1 NLGA Standard Grading Rules for Canadian Lumber.

### **1.4 SUBMITTALS**

- .1 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Samples:
  - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Submit duplicate 300 x 300 mm size profile specified.
- .3 Manufacturer's Instructions:
  - .1 Submit manufacturer's installation instructions.

### **1.5 QUALITY ASSURANCE**

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

### **1.6 MOCK-UP**

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

- .2 Construct typical exterior wall 3 m long by 3 m wide, incorporating window frame, insulation and building corner condition; illustrating materials interface and seals.
- .3 Allow 72 h for inspection of mock-up by Contract Administrator before proceeding with air/vapour barrier Work.

#### **1.7 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.

#### **1.8 SEQUENCING**

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

### **PART 2 - PRODUCTS**

#### **2.1 MATERIALS**

- .1 Lumber siding:
  - .1 Boards: Ipe species #1 grade, 19mm thickness, 140mm width, c/w concealed fastening system.
- .2 Accessories: exposed trim, closures, cap pieces of manufacturer's standard, matching finish.
- .3 Exterior wall sheathing paper: to CAN/CGSB-51.32 spunbonded olefin, as indicated.
- .4 Fasteners: "Ipe Clip Extreme" concealed fastener c/w 2.38mm gap spacing as manufactured by Ipe Clip Fastener Company or approved equal.
- .5 Sealants: see Section 07 92 10.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- .1 Verify that surfaces and conditions are ready to accept the Work of this section.
- .2 Report any unsatisfactory conditions to the Contract Administrator in writing.
- .3 Do not start work until deficiencies have been corrected. Commencement of Work implies acceptance of conditions.

#### **3.2 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

#### **3.3 INSTALLATION**

- .1 Install one layer sheathing paper horizontally, lapping edges 100 mm.
- .2 Install sill flashings, starter strips, inside corner flashings, edgings and flashings over openings.
- .3 Fasten wood siding in straight, aligned lengths to channels at 610 mm on centre maximum using concealed fastener at each fixing location. Stagger butt joints not less than 800 mm and distribute evenly over wall faces. Cut butt joints at 45 degrees and for vertical siding slope to outside.

#### **3.4 CLEANING**

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

**End of Section**

## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 45 00 - Quality Control.
- .3 Section 07 92 10 - Joint Sealing.

### **1.2 REFERENCES**

All reference standards shall be current issue or latest revision at the date of building permit issue. This specification refers to the following standards, specifications or publications:

- .1 American Society for Testing and Materials International, (ASTM).
  - .1 ASTM A 167, Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
  - .2 ASTM A 653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 Canadian General Standards Board (CGSB).
  - .1 CAN/CGSB-37.5, Cutback Asphalt Plastic Cement.
  - .2 CAN/CGSB-37.29, Rubber-Asphalt Sealing Compound.
  - .3 CAN/CGSB-51.32, Sheathing, Membrane, Breather Type.

### **1.3 SUBMITTALS**

- .1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate arrangements of sheets and joints, types and locations of fasteners and special shapes and relationship of panels to structural frame.
- .3 If requested, submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Submit 300 x 300 mm samples of each sheet metal material.

## **PART 2 - PRODUCTS**

### **2.1 PREFINISHED STEEL SHEET**

- .1 Prefinished steel roof panels.  
Standard of Acceptance: SSR24 system as manufactured by Behlen or approved equal. .635mm (24ga) thickness, 400mm panel width. Finish to be Galvalume Plus AZ180 finish.
- .2 Flashing, Trim And Closures: Same material, gauge and finish as adjacent wall and roof panels. Fastenings shall be as specified for wall and roof panels. Form or mold closure strips to match configuration of the roofing or siding. Install closures wherever necessary to insure weather tight construction.

### **2.2 ACCESSORIES**

- .1 Except as indicated as work of another specification section, provide components required for a complete roof system, including trim, copings, fascias, ridge closures, clips, seam covers, battens, flashings, gutters, sealants, gaskets and closure strips. Match materials and finishes of roof.
- .2 Isolation coating: alkali resistant bituminous paint.
- .3 Plastic cement: to CAN/CGSB-37.5.
- .4 Underlay: self adhered modified bituminous membrane.  
Standard of Acceptance: Blueskin SA or approved equal.
- .5 Sealant: asbestos-free sealant, compatible with systems materials, recommended by system manufacturer.
- .6 Rubber-asphalt sealing compound: to CAN/CGSB-37.29.
- .7 Washers: of same material as sheet metal, 1 mm thick with rubber packings.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

- .1 Use concealed fastenings except where approved by Contract Administrator before installation.
- .2 Provide underlay under sheet metal roofing. Secure in place and lap joints 100 mm minimum.
- .3 Install sheet metal roof panels as per manufacturers requirements.
- .4 Flash roof penetrations, and adjacent walls with material matching roof panels, and make watertight.
- .5 Form seams in direction of water-flow and make watertight.

**End of Section**

## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.

### **1.2 REFERENCES**

All reference standards shall be current issue or latest revision at the date of building permit issue. This specification refers to the following standards, specifications or publications:

- .1 The Aluminum Association Inc. (AA)
  - .1 Aluminum Sheet Metal Work in Building Construction.
  - .2 AA DAF45, Designation System for Aluminum Finishes.
- .2 American Society for Testing and Materials (ASTM International)
  - .1 ASTM A 167, Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
  - .2 ASTM A 653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .3 ASTM A 792/A792M, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- .3 Canadian Roofing Contractors Association (CRCA)
  - .1 Roofing Specifications Manual.
- .4 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-37.5, Cutback Asphalt Plastic Cement.
  - .2 CAN/CGSB-51.32, Sheathing, Membrane, Breather Type.
  - .3 CAN/CGSB-93.1, Sheet Aluminum Alloy, Prefinished, Residential.
- .5 Canadian Standards Association (CSA International)
  - .1 CSA A123.3, Asphalt Saturated Organic Roofing Felt.
  - .2 CSA B111, Wire Nails, Spikes and Staples.

## **PART 2 - PRODUCTS**

### **2.1 SHEET METAL MATERIALS**

- .1 Zinc coated steel sheet: .635mm (24 ga) thickness, commercial quality to ASTM A 653/A653M, with Z275 designation zinc coating.

### **2.2 PREFINISHED STEEL SHEET**

- .1 Prefinished steel with factory applied polyvinylidene fluoride.
  - .1 Class F1S.
  - .2 colour selected by Contract Administrator from manufacturer's standard range.
  - .3 Coating thickness: not less than 22 micrometres.
  - .4 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20% to ASTM D 822 as follows:
    - .1 Outdoor exposure period 2500 hours.
    - .2 Humidity resistance exposure period 5000 hours.
- .2 Prefinished steel with factory applied galvalume finish.
  - .1 Thickness and finish to match roof system.

### **2.3 ACCESSORIES**

- .1 Isolation coating: alkali resistant bituminous paint.
- .2 Plastic cement: to CAN/CGSB 37.5.
- .3 Underlay for metal flashing: No. 15 perforated asphalt felt to CSA A123.3.
- .4 Sealants: as per Section 07 92 10 - Joint Sealing.
- .5 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.

- .6 Fasteners: of same material as sheet metal, to CSA B111, flat head roofing nails of length and thickness suitable for metal flashing application.
- .7 Washers: of same material as sheet metal, 1 mm thick with rubber packings.
- .8 Touch-up paint: as recommended by prefinished material manufacturer.

#### **2.4 FABRICATION**

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

#### **2.5 METAL FLASHINGS**

- .1 Form flashings, copings and fascias to profiles indicated of .635mm (24 ga) thick prefinished steel.

#### **2.6 PANS**

- .1 Form pans to receive roofing plastic from .635mm (24 ga) thick galvanized steel sheet metal with minimum 75 mm upstand above finished roof and 100 mm continuous flanges with no open corners. Solder joints. Make pans minimum 50 mm wider than member passing through roof membrane.

#### **2.7 CAP FLASHINGS**

- .1 Form metal cap flashing of 0.61 mm thick sheet metal for base flashings as detailed. Provide slotted fixing holes and steel/plastic washer fasteners. Cover face and ends with plastic tape.

#### **2.8 SCUPPERS AND DOWNPIPES**

- .1 Form scuppers and upper downpipes from .635mm (24 ga) thick prefinished steel sheet metal to match roofing material.
- .2 Sizes and profiles as indicated.
- .3 Provide goosenecks, outlets, strainer baskets and necessary fastenings.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

- .1 Install sheet metal work as detailed.
- .2 Use concealed fastenings except where approved before installation.
- .3 Provide underlay under sheet metal. Secure in place and lap joints 100 mm.
- .4 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs. Flash joints as detailed.
- .5 Lock end joints and caulk with sealant.
- .6 Install pans, where shown around items projecting through roof membrane.

#### **3.2 EAVES TROUGHS AND DOWNPIPES**

- .1 Install eaves troughs and secure to building at 610 mm on centre with eaves trough spikes through spacer ferrules. Slope eaves troughs to downpipes as indicated. Seal joints watertight.

- .2 Install upper downpipes and provide goosenecks back to wall. Secure downpipes to wall with straps and connect to miscellaneous steel downpipes.
- .3 Install splash pans as indicated.

**End of Section**

## **PART 1 - GENERAL**

### **1.1 RELATED WORK**

- .1 Fire stopping and smoke seals within mechanical assemblies (ie. inside ducts, dampers) and electrical assemblies (ie. inside cable trays) are specified in those sections respectively.

### **1.2 REFERENCES**

All reference standards shall be current issue or latest revision at the date of building permit issue. This specification refers to the following standards, specifications or publications:

- .1 Underwriter's Laboratories of Canada (ULC)
  - .1 ULC-S115, Fire Tests of Firestop Systems.

### **1.3 SHOP DRAWINGS**

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit shop drawings (commonly called ULC Design Sheets) of each penetration type to show proposed material, reinforcement, anchorage, fastenings and method of installation. Construction details must accurately reflect actual job conditions.

### **1.4 PRODUCT DATA**

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit manufacturer's product data for materials and prefabricated devices, providing descriptions are sufficient for identification at job site. Include manufacturer's printed instructions for installation.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Fire stopping and smoke seal systems: in accordance with ULC-S115.
  - .1 Asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of ULC-S115 and not to exceed opening sizes for which they are intended [and conforming to special requirements specified in 3.5.
  - .2 Firestop system rating: to match wall for floor assembly requirements.
- .2 Service penetration assemblies: certified by ULC in accordance with ULC-S115 and listed in ULC Guide No.40 U19.
- .3 Service penetration firestop components: certified by ULC in accordance with ULC-S115 and listed in ULC Guide No.40 U19.13 and ULC Guide No.40 U19.15 under the Label Service of ULC.
- .4 Fire-resistance rating of installed firestopping assembly in accordance with NBC.
- .5 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.
- .6 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.
- .7 Primers: to manufacturer's recommendation for specific material, substrate, and end use.
- .8 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.
- .9 Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.
- .10 Sealants for vertical joints: non-sagging.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- .1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials. Ensure that substrates and surfaces are clean, dry and frost free.
- .2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.
- .3 Maintain insulation around pipes and ducts penetrating fire separation.
- .4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

### **3.2 INSTALLATION**

- .1 Install fire stopping and smoke seal material and components in accordance with ULC certification and manufacturer's instructions.
- .2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
- .3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
- .4 Tool or trowel exposed surfaces to a neat finish.
- .5 Remove excess compound promptly as work progresses and upon completion.

### **3.3 INSPECTION**

- .1 Notify Contract Administrator when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.

### **3.4 SCHEDULE**

- .1 Firestop and smoke seal at:
  - .1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
  - .3 Top of fire-resistance rated masonry and gypsum board partitions.
  - .4 Intersection of fire-resistance rated masonry and gypsum board partitions.
  - .5 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.
  - .6 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
  - .7 Openings and sleeves installed for future use through fire separations.
  - .8 Around mechanical and electrical assemblies penetrating fire separations.
  - .9 Rigid ducts: greater than 129 cm<sup>2</sup>: fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

### **3.5 CLEAN UP**

- .1 Remove excess materials and debris and clean adjacent surfaces immediately after application.
- .2 Remove temporary dams after initial set of fire stopping and smoke seal materials.

**End of Section**

## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 45 00 - Quality Control.

### **1.2 REFERENCES**

All reference standards shall be current issue or latest revision at the date of building permit issue. This specification refers to the following standards, specifications or publications:

- .1 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM C 919, Standard Practice for Use of Sealants in Acoustical Applications.
- .2 Canadian General Standards Board (CGSB)
  - .1 CGSB 19-GP-5M, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
  - .2 CAN/CGSB-19.13, Sealing Compound, One-component, Elastomeric, Chemical Curing.
  - .3 CGSB 19-GP-14M, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).
  - .4 CAN/CGSB-19.17, One-Component Acrylic Emulsion Base Sealing Compound.
  - .5 CAN/CGSB-19.24, Multi-component, Chemical Curing Sealing Compound.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

### **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 PROJECT CONDITIONS**

- .1 Environmental Limitations:
  - .1 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 Joint-Width Conditions:
  - .1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
- .3 Joint-Substrate Conditions:
  - .1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

## **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 offgas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize offgas time.
- .3 Where sealants are qualified with primers use only these primers.

## **2.2 SEALANT MATERIAL DESIGNATIONS**

- .1 Urethanes Two Part.
  - .1 Self-Leveling to CAN/CGSB-19.24, Type 1, Class B, colour as selected.
  - .2 Acceptable material: Tremco THC 900, Vulkem 245
- .2 Urethanes Two Part.
  - .1 Non-Sag to CAN/CGSB-19.24, Type 2, Class B, colour as selected
  - .2 Acceptable material: Tremco Dymeric 240, Vulkem 227
- .3 Urethanes One Part.
  - .1 Self-Leveling to CAN/CGSB-19.13, Type 1, colour as selected
  - .2 Acceptable material: Vulkem 45
- .4 Urethanes One Part.
  - .1 Non-Sag to CAN/CGSB-19.13, Type 2, colour as selected
  - .2 Acceptable material: Tremco Dymonic, Vulkem 116, Vulkem 431
- .5 Silicones One Part.
  - .1 To CAN/CGSB-19.13.
    - .1 Acceptable material: Tremco Spectrum 2 or 3, GE Silpruf 2000
  - .2 To CAN/CGSB-19.22 (Mildew resistant).
    - .1 Acceptable material: Tremco Tremsil 200, GE SCS 1700 Sanitary
- .6 Acrylics One Part.
  - .1 To CGSB 19-GP-5M.
  - .2 Acceptable material: Tremco 555
- .7 Acrylic Latex One Part.
  - .1 To CAN/CGSB-19.17.
  - .2 Acceptable material: Tremflex 834
- .8 Acoustical Sealant.
  - .1 To CAN/CGSB-19.21.
  - .2 Acceptable material: Tremco Acoustic Sealant
- .9 Butyl.
  - .1 To CGSB 19-GP-14M.
  - .2 Acceptable material: Tremco Butyl
- .10 Preformed Compressible and Non-Compressible back-up materials.
  - .1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
    - .1 Extruded closed cell foam backer rod.
    - .2 Size: oversize 30 to 50 %.
  - .2 Neoprene or Butyl Rubber.
    - .1 Round solid rod, Shore A hardness 70.
  - .3 High Density Foam.
    - .1 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 density, or neoprene foam backer, size as recommended by manufacturer.
  - .4 Bond Breaker Tape.
    - .1 Polyethylene bond breaker tape which will not bond to sealant.

## **2.3 SEALANT SELECTION**

- .1 Perimeters of exterior openings where frames meet exterior facade of building (ie. brick, block, precast masonry): Sealant type: 2.2.4
- .2 Cornice and wash (or horizontal surface joints): Sealant type: 2.2.4
- .3 Exterior joints in horizontal wearing surfaces: Sealant type: 2.2.4
- .4 Seal interior perimeters of exterior openings as detailed on drawings: Sealant type: 2.2.7
- .5 Perimeters of interior frames, as detailed and itemized: Sealant type: 2.2.4

- .6 Interior masonry vertical control joints (block-to-block, block-to-concrete, and intersecting masonry walls): Sealant type: 2.2.4
- .7 Perimeter of bath fixtures (e.g. sinks, tubs, urinals, stools, waterclosets, basins, vanities): Sealant type: 2.2.5.2
- .8 Exposed interior control joints in drywall: Sealant type: 2.2.4

#### **2.4 JOINT CLEANER**

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.
- .2 Primer: as recommended by manufacturer.

### **PART 3 - EXECUTION**

#### **3.1 PROTECTION**

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

#### **3.2 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**