Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 08 99 - Rough Carpentry for Minor Works.

.2 Section 08 11 13 - Standard Metal Doors and Frames.

.3 Section 08 51 13 - Aluminum Windows.

.4 Section 09 21 16 - Gypsum Board Assemblies.

1.2 REFERENCES

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

.1 ASTM C612-04(2019), Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

.2 ASTM C665-2017, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

.3 ASTM C1320-2020, Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.

.4 ASTM D2369-2020, Standard Test Method for Volatile Content of Coatings.

.2 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S701.1-2022, Thermal Insulation, Polystyrene Boards.

.2 CAN/ULC-S702.1-2021, Thermal Insulation, Mineral Fibre for Buildings.

.3 CAN-ULC-S710.1-2019, Standard for Thermal Insulation - Bead - Applied One Component Polyurethane Air Sealant Foam, Part 1.

.4 CAN-ULC-S710.2-2011, Standard for Thermal Insulation - Bead-Applied One Component Polyurethane Air Sealant Foam, Part 2.

1.3 SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Product Data: Submit product data and manufacturer's installation recommendations for each product specified.

1.4 QUALITY ASSURANCE

.1 Installer Qualifications: Qualified by manufacturer to install manufacturer's products, and who has completed installations similar in design, scope and scale to those indicated for this Project.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

.2 Protect from exposure to harmful environmental conditions at temperature and humidity conditions recommended by manufacturer.

Part 2 Products

2.1 RIGID INSULATION

.1 Type 3 Rigid Extruded Polystyrene Insulation (XPS): to CAN/ULC-S701, Type 3, closed-cell polystyrene:

.1 Thickness: as indicated on Drawings.

.2 Thermal Resistance: RSI 0.87 per 25 mm of thickness (R5 per inch).

.3 Compressive Strength: to ASTM D1621, 140 kPa (20 psi) minimum.

.4 Water Vapour Permeance: to ASTM E96, 49 ng/Pa.s.m² (0.85 perm).

.5 Water absorption: to ASTM D2842, 0.70 % by volume maximum.

.6 Air Permeance Rating: 0.0010L/S m2 @ 75 Pa pressure

.2 Type 4 Rigid Extruded Polystyrene Insulation (XPS): to CAN/ULC-S701, Type 4, ship lapped edge for single layer applications:

.1 Compressive Strength: standard density 210 kPa (30 psi).

.2 Thickness: as indicated on Drawings.

2.2 CONCRETE-FACED RIGID INSULATION

.1 Concrete-Faced Rigid Insulation: 50 mm thickness unless noted otherwise.

.1 Face: Minimum 8 mm latex modified concrete top face laminate

.2 Insulation: Extruded polystyrene board to CAN/ULC-S701, Type 4, compressive strength 275 kPa, ship lapped edge, thickness as indicated.

.3 Fasteners: Proprietary attachment clips, galvanized finish.

.4 Trim: Provide corners and trim pieces, galvanized finish.

.5 Acceptable Products: T.Clear WallGUARD Panels, TechCrete CFI Panels.

2.3 2.3 FOAM SEALANT

.1 Expanding Foam Insulation and Sealant: CAN/ULC-S710.1, single component, low- expanding polyurethane foam. Compatible with specified rigid insulation.

.1 Acceptable Products: DAPtex Latex Multi-Purpose, DOW Enerfoam, Hilti CF812.

2.4 ATTACHMENT DEVICES AND RELATED ACCESSORIES

.1 Adhesive: polyurethane construction adhesive, resistant to freezing.

.2 Impaling Pins and Clips: Corrosion-resistant spindle anchor and self-locking washer type consisting of perforated metal plates with spindle welded to center and self-locking washers.

.3 Adhesive for Wall Insulation: type recommended by insulation manufacturer for environmental conditions at time of application.

Part 3 Execution

3.1 EXAMINATION

.1 Examine the areas and conditions where building insulation is to be installed and identify any conditions detrimental to the proper and timely completion of the work.

.2 Do not proceed with the work until unsatisfactory conditions are corrected.

3.2 PREPARATION

.1 Clean substrates of substances harmful to insulation or vapour retarders, including removing projections capable of puncturing vapour retarders or interfering with insulation attachment.

.2 Clean all surfaces free of dirt, grime, grease, oil or other substances which would be detrimental to proper bond of adhesives.

3.3 INSTALLATION - GENERAL

.1 Install insulation after building substrate materials are dry.

.2 Comply with insulation manufacturer's written instructions and recommendation applicable to products and application indicated.

.3 Install insulation in largest possible size to cover areas indicated on Drawings, closely butted together at sides, ends, and against walls, and structural members.

.4 Extend insulation to the full thickness shown over entire area to be insulated. Neatly cut and fit insulation tightly around obstructions, projections such as pipes, conduits, hangers and other elements, and fill voids with insulation. Remove debris in conflict with insulation installation.

.5 Fit insulation tight around and behind electrical boxes, plumbing and heating pipes and ducts.

.6 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures.

.7 Do not install any insulation that becomes damaged during the course of installation or is no longer in a physical condition to function for the use intended and replace with new material.

.8 Exercise care to avoid damage and soiling of faces on insulation units which will remain exposed to view. Abut joints accurately with adjoining surfaces set flush.

.9 Attach insulation in a manner to ensure stability and eliminate sagging.

.10 Apply a single layer of insulation to the required thickness, unless a double layer is required, to make up the total thickness shown.

.11 Concealed layers of material must not have a vapour retarder facing.

.12 Offset both vertical and horizontal joints in multiple layer applications.

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

3.4 INSTALLATION OF RIGID INSULATION ON EXTERIOR WALLS

.1 Provide Type 3 XPS insulation.

.2 Secure to framing using fasteners as recommended by manufacturer.

.3 Install boards in full sheets wherever possible; minimize cutting and waste.

.4 Cut and fit insulation tight to protrusions or interruptions to the insulation plane.

.5 Foam fill voids with foam sealant.

3.5 INSTALLATION OF EXPOSED CONCRETE-FACED RIGID INSULATION AT FOUNDATION PERIMETER

.1 Secure using manufacturer's clip system.

.2 Install boards on foundation wall vertically.

.3 Butt edges and ends tight to adjacent board and to protrusions.

.4 Cut and fit insulation tight to protrusions or interruptions to the insulation plane.

.5 Provide manufacturers recommended metal trim and flashing to terminations.

3.6 INSTALLATION OF RIGID INSULATION UNDER CONCRETE SLABS

.1 Provide Type 4 XPS standard compressive strength.

.2 Place insulation under slabs on grade after base for slab has been compacted.

.3 Install boards in full sheets wherever possible; minimize cutting and waste.

.4 Cut and fit insulation tight to protrusions or interruptions to the insulation plane.

.5 Prevent insulation from being displaced or damaged while placing vapour barrier, in- floor heat system, reinforcing and placing slab.

.6 Foam fill voids with foam sealant.

.7 Coordinate work with placement of vapour barrier by Section 07 26 16.

3.7 INSTALLATION OF RIGID INSULATION OVER SUBSURFACE INSTALLATIONS AND UTILITIES

.1 Provide Type 4 XPS standard compressive strength.

.2 Place insulation over civil work after backfill has been compacted and leveled.

.3 Cut and fit insulation tight to protrusions or interruptions to the insulation plane.

.4 Prevent insulation from being displaced or damaged.

3.8 INSTALLATION OF EXPANDING FOAM SEALANT

.1 Apply expanding foam to fill irregular voids and cracks and to interface with building envelope, and around doors, windows, louvres and other openings in exterior walls.

.2 Apply sealant to locations shown on Drawings.

.3 Apply expanding foam in accordance with CAN/ULC S710.2 and the manufacturer's written instructions.

.4 Apply foam to underside of roof drains and adjacent roof deck.

.5 Foam fill shim spaces around perimeter of openings for frames of doors, windows and curtain walls.

.6 Foam fill annular space around pipes, electrical boxes, conduits, etc, in insulated walls and roofs.

.7 Finished surface of foam to be free of voids and imbedded foreign objects. Maintain cured skin.

.8 Remove masking materials and over spray from adjacent areas immediately after foam surface has hardened.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Blown cellulose insulation.

.2 Baffles for protection of soffit ventilation.

1.2 REFERENCES

.1 Cellulose Insulation Manufacturers Association (CIMA).

.1 CIMA Technical Bulletin #2, Standard Practice for Installing Cellulose Building Insulation.

.2 CIMA Technical Bulletin #3, Standard Practice for the Installation of Sprayed Cellulosic Wall Cavity Insulation.

.2 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S703-09(R2020) - Standard for Cellulose Fibre Insulation for Buildings.

1.3 SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Product Data: Submit product data and manufacturer's installation recommendations for each product specified.

1.4 QUALITY ASSURANCE

.1 Installer Qualifications: Qualified by manufacturer to install manufacturer's products, and who has completed installations similar in design, scope and scale to those indicated for this Project.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

.2 Protect from exposure to harmful environmental conditions at temperature and humidity conditions recommended by manufacturer.

Part 2 Products

2.1 BLOWN-IN INSULATION

.1 Cellulose: to CAN/ULC-S703, CCMC listed, fiberized paper, pneumatically injected, EcoLogo certified;

.1 Thickness: Thickness to achieve R-Value indicated or to fill stud cavity.

2.2 ACCESSORIES

.1 Preformed Baffles: Polystyrene, 50 mm profile, 610 mm wide unless narrower size required to suit truss spacing.

Part 3 Execution

3.1 EXAMINATION

.1 Examine the areas and conditions where building insulation is to be installed and identify any conditions detrimental to the proper and timely completion of the work.

.2 Do not proceed with the work until unsatisfactory conditions are corrected.

3.2 PREPARATION

.1 Install baffles to locations indicated to maintain 50 mm clear ventilation between insulation and roof sheathing.

3.3 INSTALLATION - GENERAL

.1 Comply with insulation manufacturer's written instructions and recommendation applicable to products and application indicated.

.2 Fit insulation tight around and behind electrical boxes, plumbing and heating pipes and ducts.

.3 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures.

.4 Do not install any insulation that becomes damaged during the course of installation or is no longer in a physical condition to function for the use intended and replace with new material.

3.4 INSTALLATION OF BLOWN-IN INSULATION

.1 Install in accordance with manufacturer's written instructions and to CIMA Technical Bulletin #2 and #3.

.2 Prevent insulation from blocking ventilation soffits.

.3 Pneumatic placement machine should be set as recommended by the machine manufacturer.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Sheet vapour barrier on warm side of ceilings.

1.2 RELATED SECTIONS

.1 Section 07 21 00 - Building Insulation.

.2 Section 07 92 00 - Joint Sealants.

1.3 REFERENCES

.1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.

1.4 SUBMITTALS

.1 Section 01 33 00: Submission procedures.

.2 Product Data: Provide data indicating material characteristics, performance criteria, and limitations.

.3 Manufacturer's Installation Instructions: Indicate preparation and installation requirements, techniques.

1.5 SEQUENCING

.1 Sequence Work to permit installation of materials in conjunction with other retardant materials and seals, and air barrier assemblies.

.2 Do not install vapour barrier until items penetrating it are in place.

Part 2 Products

2.1 SHEET MATERIALS

.1 Polyethylene Vapour Barrier: Listed to CAN/CGSB-51.34M, translucent polyethylene film, 6 mil thick.

2.2 ACCESSORIES

.1 Seam tape: pressure sensitive type recommended by manufacturer.

.2 Sealant: Acoustical Sealant, compatible with polystyrene, specified in Section 07 92 00.

Part 3 Execution

3.1 PREPARATION

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

3.2 POLYETHYLENE VAPOUR BARRIER

.1 Install vapour barrier without gaps or voids. Lap joints minimum 150 mm and seal with butyl sealant.

.2 Patch all holes and tears.

.3 Place vapour barrier so that it is on the warm side of the insulation.

.4 Adhere vapour barrier to framing and furring using acoustical sealant. Ensure that all fasteners used for interior finish panels penetrate through sealant bead to maintain vapour barrier continuity.

.5 Extend vapour barrier tight to full perimeter of adjacent window and door frames and other items interrupting the plane of membrane.

.6 Seal in place with acoustical sealant.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Vapour barrier under concrete slabs.

1.2 RELATED SECTIONS

.1 Section 07 92 00 - Joint Sealants.

1.3 REFERENCES

.1 ASTM C1193-2016 - Standard Guide for Use of Joint Sealants.

.2 ASTM E96/E96M-2021 - Standard Test Methods for Water Vapour Transmission of Materials.

.3 ASTM E283/E283M-2019 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

.4 ASTM E1643-2018a - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

.5 ASTM E1745-2017 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

.6 ASTM E1993/E1993M-98(2020) - Standard Specification for Bituminous Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.

1.4 DEFINITION

.1 Vapour Barrier: A material or assembly of materials that resists water vapour diffusion through it.

1.5 SUBMITTALS

.1 Section 01 33 00: Submission procedures.

.2 Product Data:

.1 Provide data indicating material characteristics, performance criteria, and limitations.

.2 Submit for each sealant product used for site installation, and supplied by this Section.

.3 Manufacturer's Installation Instructions: Indicate preparation and installation requirements, techniques.

1.6 SEQUENCING

.1 Sequence Work to permit installation of materials in conjunction with other retardant materials and seals, and air barrier assemblies.

.2 Do not install vapour barrier until items penetrating it are in place.

Part 2 Products

2.1 SHEET MATERIALS

.1 Underslab Vapour Barrier: Polyolefin film to ASTM E1745, Class A, minimum 10 mil thickness, for underslab applications;

.1 Acceptable Products: Moistop Ultra 10 by Fortifiber, VaporBlock 10 by Raven Industries, or Perminator 10 by W.R. Meadows, Viper Vaporcheck 10 mil by Soprema.

2.2 ACCESSORIES

.1 Seam tape: pressure sensitive type recommended by manufacturer.

.2 Pipe Boot: Construct pipe boots from vapour barrier material and pressure sensitive tape per manufacturer's instructions; alternatively, provide manufacturers' pre-moulded pipe boot.

.3 Sealant: Manufacturer's recommended acoustical or butyl sealant; Refer to Section 07 92 00.

Part 3 Execution

3.1 PREPARATION

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

.2 Clean and prime substrate surfaces to receive adhesive and sealants in accordance with manufacturers' written instructions.

.3 Ensure that all penetrating items are in place prior to commencing work of this Section.

3.2 UNDERSLAB VAPOUR BARRIER INSTALLATION

.1 Install in accordance with manufacturer's written instructions and ASTM E1643 to provide vapour seal without voids or open seams.

.2 Unroll vapour barrier with long dimension parallel with direction of concrete slab pour.

.3 Lap vapour barrier over footings and seal to foundation walls and grade beams.

.4 Overlap joints 150 mm and seal with tape or sealant in accordance with manufacturer's written instructions.

.5 Seal around mechanical and electrical services, support columns or other penetrations with pipe boot unless otherwise noted by manufacturer's written instructions; seal around other penetrations to maintain integrity of vapour barrier in accordance with manufacturer's written instructions.

.6 Repair damaged areas by cutting patches of vapour barrier, overlapping damaged area 150 mm and taping four sides with tape.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Self-adhesive membranes and accessories for air and vapour barrier continuity.

1.2 RELATED SECTIONS

.1 Section 06 08 99 - Rough Carpentry for Minor Works.

.2 Section 08 11 13 - Standard Metal Doors and Frames.

.3 Section 08 51 13 - Aluminum Windows.

1.3 REFERENCES

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

.1 ASTM D4263-83(2018), Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.

.2 ASTM D4541-2017, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.

.3 ASTM E96/E96M-2021, Standard Test Methods for Water Vapor Transmission of Materials.

.4 ASTM E283/E283M-2019, Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

.5 ASTM E783-02(2018), Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.

.6 ASTM E1105-2015, Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference.

.7 ASTM E1186-2017, Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems.

1.4 PERFORMANCE REQUIREMENTS

.1 Connections to Adjacent Materials: Provide connections to prevent air leakage and vapour migration at the following locations:

.1 Foundation and walls, including penetrations, ties and anchors.

.2 Walls, windows, curtain walls, storefronts, louvers or doors.

.3 Different wall assemblies, and fixed openings within those assemblies.

.4 Wall and roof connections.

.5 Floors over unconditioned space.

.6 Walls, floor and roof across construction, control and expansion joints.

.7 Walls, floors and roof to utility, pipe and duct penetrations.

.8 Seismic and expansion joints.

.9 All other leakage pathways in the building envelope.

1.5 SUBMITTALS

.1 Section 01 33 00: Submission procedures.

.2 Product Data: Provide data indicating material characteristics, performance criteria, and limitations. Include data sheets for membrane, primers, and sealants.

.3 Manufacturer's Installation Instructions: Indicate preparation, installation requirements and techniques, and product storage and handling criteria.

1.6 QUALIFICATIONS

.1 Applicator: Company specializing in performing the work of this section with minimum 5 years documented experience.

1.7 PRE-INSTALLATION MEETING

.1 Convene one week prior to commencing work of this section.

1.8 ENVIRONMENTAL REQUIREMENTS

.1 Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.

.2 Do not apply AVB membrane to damp or wet substrates.

.3 Do not install AVB membrane in snow, rain, fog or mist.

1.9 COORDINATION

.1 Coordinate the work of this section with all sections referencing this section.

1.10 WARRANTY

.1 Material Warranty: Provide manufacturer’s standard product warranty.

Part 2 Products

2.1 AIR AND VAPOUR BARRIER MEMBRANE

.1 AVB Membrane: Self-adhered AVB membrane, SBS-modified, minimum 1.0 mm (40 mil) thickness, field-cut to suit, formulated for temperatures at time of application.

.1 Top face of membrane to be compatible with subsequent coverings.

.2 Provide primer and lap sealant as supplied by manufacturer.

.3 Acceptable Products:

.1 Henry Bakor Blueskin SA and TWF.

.2 Soprema Sopraseal Stick 1100T and WFM.

.3 IKO AquaBarrier AVB and TWF.

2.2 ACCESSORIES

.1 Penetration and Termination Sealant and Mastic: elastomeric, trowel grade or gunnable material supplied by AVB membrane manufacturer.

Part 3 Execution

3.1 EXAMINATION

.1 Examine substrates, areas, and conditions under which air and vapour barrier assemblies will be applied, with Applicator present, for compliance with requirements.

.2 Verify that surfaces and conditions are suitable prior to commencing work of this section. Do not proceed with installation until unsatisfactory conditions have been corrected.

.3 Ensure that surfaces are sound, dry, even, and free of oil, grease, dirt, excess mortar or other contaminants

.4 Ensure that concrete surfaces are cured and dry, smooth without large voids, spalled areas or sharp protrusions.

.5 Ensure that masonry joints are flush and completely filled with mortar, and all excess mortar sitting on masonry ties has been removed.

.6 Verify substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D4263 and take suitable measures until substrate passes moisture test.

.7 Verify sealants used in sheathing are compatible with AVB membrane. Perform field peel-adhesion test on materials to which sealants are adhered.

.8 Do not install AVB membrane until items penetrating it are in place.

.9 Notify Departmental Representative in writing of anticipated problems using AVB membrane over substrate prior to proceeding.

3.2 SURFACE PREPARATION

.1 Clean, prepare, and treat substrate according to AVB membrane manufacturer's written instructions.

.2 Prime masonry and concrete substrates with conditioning primer.

.3 Prime glass-fiber surfaced gypsum sheathing with an adequate number of coats to achieve required bond, with adequate drying time between coats.

.4 Prime sheathing, wood, metal, and painted substrates with primer.

.5 Apply primer at rate recommended by manufacturer prior to membrane installation. Allow primer to dry completely before membrane application. Apply as many coats as necessary for proper adhesion.

.6 Perform membrane adhesion tests over each substrate to which AVB membrane is to be installed.

.7 Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through air and vapour barrier and at protrusions.

3.3 INSTALLATION

.1 Install AVB membrane to provide continuity throughout the building envelope. Install materials in accordance with manufacturer's written recommendations and the following:

.1 When membrane is properly positioned, press into place and roll membrane with roller immediately after placement.

.2 Overlap adjacent sheets in accordance with manufacturer's written recommendations. Roll seams with roller.

.3 Seal around all penetrations with termination mastic, sealant, or membrane tape in accordance with manufacturer’s written recommendations.

.4 Install transition membrane through built-up assemblies at building intersections and roof-to-wall intersections. Coordinate with applicable sections.

.5 Install transition membrane between window and door frames and other openings indicated, and adjacent vapour barrier and seal edges with sealant. Position laps over firm bearing.

.6 Connect AVB membrane continuously to roof vapour barrier, concrete below- grade structures, windows, curtain wall, storefront, louvers, exterior doors and other intersection conditions.

.7 Provide transition membrane at changes in substrate plane under AVB membrane to eliminate sharp inside corners and to smooth transition from one plane to another.

.8 Provide mechanically fastened non-corrosive metal sheet to span gaps in substrate plane and to smooth transition from one plane to another. Continuously support AVB membrane at all transitions.

.9 Provide backup for AVB membrane at deflection and control joints to accommodate anticipated movement.

.10 Provide transition at expansion and seismic joints assemblies.

3.4 CLEANING AND PROTECTION

.1 Protect air and vapour barrier assemblies from damage during application and remainder of construction period, according to manufacturer's written instructions.

.2 Do not allow materials to come in contact with chemically incompatible materials.

.3 Do not expose AVB membrane to sunlight longer than recommended by the manufacturer.

.4 Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Preformed metal liner panels for ceilings, including miscellaneous support framing and furring.

1.2 RELATED SECTIONS

.1 Section 07 92 00 - Joint Sealants.

1.3 REFERENCES

.1 ASTM A167-99(2009) - Stainless and Heat-Resisting Chromium Nickel Steel Plate, Sheet, and Strip.

.2 ASTM A606/A606M-2018 - Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot- Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.

.3 ASTM A653/A653M-2020 - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy- Coated (Galvannealed) by the Hot-Dip Process.

1.4 SYSTEM DESCRIPTION

.1 System: Preformed and prefinished metal siding system of specified profile, complete with support framing, channels and furring; site assembled.

1.5 DESIGN REQUIREMENTS

.1 Components: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall.

.2 Maximum Allowable Deflection of Panel: 1/90 of span.

.3 Movement: Accommodate movement within system without damage to components or deterioration of seals, movement within system; movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; deflection of structural support framing.

.4 Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.

1.6 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submission procedures.

.2 Shop Drawings: Indicate dimensions, layout, joints, construction details, methods of anchorage.

.3 Samples: Submit two samples of siding, 200 x 200 mm in size illustrating finish colour, sheen, and texture.

1.7 QUALITY ASSURANCE

.1 Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three (3) years documented experience.

.2 Installer: Company specializing in performing the work of this section with minimum three (3) years documented experience.

1.8 DELIVERY, STORAGE, AND PROTECTION

.1 Section 01 61 00: Transport, handle, store, and protect products.

.2 Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.

.3 Store prefinished material off ground protected from weather, to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

.4 Prevent contact with materials which may cause discolouration or staining.

Part 2 Products

2.1 INTERIOR LINER PANELS

.1 Interior Wall Liner Profile: 26 gauge steel thickness, prepainted galvanized steel sheet;

.1 Acceptable Profile: Agway Diamond Rib, Ideal Roofing Commercial Rib, Vicwest Grand Rib or approved equal.

.2 Colour: Standard White.

2.2 COMPONENTS

.1 Supports: Framing, hat channels; 18 gauge galvanized steel, sizes and profiles indicated.

.2 Internal and External Corners: Same material and thickness as exterior sheets; profile as noted and to suit system; shop cut and factory mitred to required angles. Mitred internal corners to be back braced with precoated sheet stock to maintain continuity of profile.

.3 Expansion Joints: Same material, thickness and finish as exterior sheets type, of profile to suit system.

.4 Trim, Closure Pieces, Caps, Flashings, Fascias, and Infills: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

2.3 ACCESSORIES

.1 Gaskets: Manufacturer's standard type suitable for use with system, permanently resilient; ultraviolet and ozone resistant; colour as selected.

.2 Closures: Foam and metal closures to suit profiles indicated, to provide complete weathertight barrier.

.3 Sealants: Silicone type; refer to Section 07 92 00, colours to match adjacent siding panels.

.4 Fasteners: Manufacturer's standard type to suit application; with soft neoprene washers, steel, hot dip galvanized; fastener cap same colour as exterior panel. Exposed fasteners same finish as panel system.

.5 Field Touch-up Paint: As recommended by panel manufacturer.

2.4 FABRICATION

.1 Form sections true to shape, accurate in size, square, and free from distortion or defects.

.2 Form pieces in longest practicable lengths.

.3 Fabricate corners in one continuous piece with minimum 450 mm returns.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that building framing members are ready to receive panel system.

3.2 INSTALLATION

.1 Install siding system in accordance with manufacturer's written instructions.

.2 Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.

.3 Fasten siding to structural supports; aligned, level, and plumb.

.4 Locate joints over supports. Lap panel ends minimum 50 mm.

.5 Install siding with no exposed site-cut or unpainted edges.

.6 Provide expansion joints where required or recommended by manufacturer.

.7 Use concealed fasteners unless otherwise approved by Departmental Representative.

.8 Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.3 TOLERANCES

.1 Maximum Offset From True Alignment Between Adjacent Members Butting or In Line: 1.5 mm.

.2 Maximum Variation from Plane or Location Indicated on Drawings: 6 mm.

3.4 CLEANING

.1 Remove site cuttings from finish surfaces.

.2 Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 ASTM International

.1 ASTM A653/A653M-2020, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM A792/A792M-2021a, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot Dip Process.

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

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

.2 CSA International

.1 CSA A123.3-05(R2020), Asphalt Saturated Organic Roofing Felt.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for sheet metal roofing and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Provide Shop Drawings for brake formed flashings required for wall intersections, edge of roofing, gutters and rain water system.

.2 Indicate sheet thickness, flashing dimensions and fastenings. Include anchorage, expansion joints and other provisions for thermal movement.

.4 Samples:

.1 Submit duplicate 300 x 300 mm samples of each sheet metal material.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect sheet metal roofing from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 SHEET METAL MATERIALS

.1 Prefinished Steel Sheet: to ASTM A653/A653M, commercial quality with Z275 coating, smooth surface, prefinish as specified, 0.76 mm minimum base metal thickness.

2.2 PREFINISHED STEEL SHEET

.1 Prefinished steel with factory applied silicone modified polyester.

.1 Class F1S.

.2 Profile: Preformed steel sheet with 38 mm high interlocking side laps, nominal 406 mm wide sheet, no intermediate ribs, field bend and mitre all corners;

.3 Black colour selected by Departmental Representative from manufacturer's full range.

.4 Specular gloss: 30 units +/-5 to ASTM D523.

.5 Coating thickness: 25 micrometres minimum.

.6 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20 % to ASTM D822 as follows:

.1 Outdoor exposure period 1000 hours minimum.

.2 Humidity resistance exposure period 1000 hours minimum.

2.3 ACCESSORIES

.1 Snow Guard: Pre-engineered sliding snow guard system; mounted to standing seam ribs without penetration of sheet metal roofing.

.1 Colour: Black to match sheet metal roofing.

.2 Acceptable Product: S-5 System consisting of S-5-S Clamps, ColorGard cross members and VersaClips.

.2 Termination Bar: 34 mm wide roll formed, pre-punched aluminum, mill finish.

.1 Manufacturer’s Fasteners: Self-tapping high load screw or masonry nail-in anchor as required to suit substrate, complete with 50 mm diameter washer discs.

.3 Isolation coating: alkali resistant bituminous paint.

.4 Waterproofing and Underlay Membrane: Self-adhered bituminous underlayment, slip resistant surface, high-temperature application, minimum thickness 1.0 mm.

.5 Sealant: Asbestos-free sealant, compatible with systems materials, recommended by system manufacturer.

.6 Cleats: of same material, and temper as sheet metal: 50 mm minimum wide.

.1 Thickness same as sheet metal being secured.

.7 Fasteners: concealed.

.8 Washers: of same material as sheet metal, 1 mm thick with rubber packings.

.9 Touch-up paint: as recommended by sheet metal roofing manufacturer.

2.4 FABRICATION

.1 Form individual pieces in 2400 mm maximum lengths. Make allowances for expansion at joints.

.2 Fabricate sheet steel flashings and other sheet steel work in accordance with applicable CRCA details and as indicated.

.3 Hem exposed edges on underside 12 mm, mitre and seal.

.4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.5 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 prefinished steel sheet.

2.6 GUTTERS AND DOWNPIPES

.1 Form gutters and downpipes from prefinished galvanized steel.

.2 Sizes and profiles as indicated.

.3 Provide goosenecks, outlets, strainer baskets and necessary fastenings.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for sheet metal roofing installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Departmental Representative.

.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

.1 Use concealed fastenings except where approved in writing by Departmental Representative before installation.

.2 Include underlay membrane under sheet metal roofing.

.1 Secure in place and lap joints 100 mm minimum.

.3 Install sheet metal roof panels in accordance with manufacturer's written instructions.

.4 Stagger transverse seams in adjacent panels.

.5 Flash roof penetrations with material matching roof panels and make watertight.

.6 Form seams in direction of water-flow and make watertight.

.7 Form valleys of sheets not exceeding 3 m in length. Lap joints 150 mm in direction of flow.

.1 Extend valley sheet minimum 150 mm under roofing sheets.

.2 At valley line, double fold valley and roofing sheets and secure with cleats spaced 450 mm on centre.

3.3 GUTTERS

.1 Provide seamless steel gutter assembly to profiles indicated.

.1 Use 1000 mm long steel sheets if section profile of gutter exceeds 1000 mm. Use 2.4 m or 3 m long sheets if sectional profile is less than 1000 mm.

.2 Longitudinal joints not acceptable.

.2 At roof edges extend gutter lining under metal roofing 150 mm minimum and terminate in 20 mm folded edge secured by cleats. Hook lower end of roofing into lock strip to form 20 mm wide loose-lock seam.

.3 Provide downspouts as indicated.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.5 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by sheet metal roofing installation.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Coping, parapet, cap, sill, and other flashings.

.2 Brake-formed flashing at openings for windows, louvres and other openings.

1.2 RELATED SECTIONS

.1 Section 07 61 00 - Sheet Metal Roofing.

.2 Section 07 92 00 - Joint Sealants.

1.3 REFERENCES

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

.1 ASTM A653/A653M-2020, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM B209/B209M-2021a - Aluminum and Aluminum-Alloy Sheet and Plate.

1.4 SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

.3 Submit two samples 50 x 50 mm in size illustrating metal finish colour.

1.5 QUALIFICATIONS

.1 Fabricator and Installer: Company specializing in sheet metal flashing work with 5 years documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

.2 Prevent contact with materials which may cause discolouration or staining.

Part 2 Products

2.1 SHEET MATERIALS

.1 Prepainted Galvanized Steel Sheet: ASTM A653/A653M, 24 gauge zinc coated galvanized steel sheet.

.1 Finish: Polyvinylidene Fluoride (PVDF) finish comprised of 70% Kynar 500 or Hylar 5000 fluoropolymer resin systems.

.2 Colour: Multiple colours selected, including solids and metallic range, by Departmental Representative to match adjacent cladding material or window framing.

2.2 ACCESSORIES

.1 Fasteners: Finish exposed fasteners same as flashing metal. Permitted only on approval of Departmental Representative.

.2 Exposed Sealant: Silicone type, as specified in Section 07 92 00; colour to match sheet metal finish.

.3 Bedding Sealant: Butyl, as specified in Section 07 92 00.

.4 Protective Backing Paint: Bituminous.

2.3 FABRICATION

.1 Form sections true to shape, accurate in size, square, and free from distortion or defects.

.2 Fabricate cleats of same material as sheet, minimum 50 mm wide, interlockable with sheet.

.3 Form pieces in longest possible lengths.

.4 Hem exposed edges on underside 13 mm; mitre and seam corners.

.5 Form material with flat lock seams.

.6 Fabricate vertical faces with bottom edge formed outward 6 mm and hemmed to form drip.

.7 Fabricate flashing, copings, drips and sills to slope away from walls and other building elements.

.8 Fabricate flashings for curtain wall, windows, louvres and other openings to profiles indicated. Coordinate installation with work of other sections.

2.4 FINISH

.1 Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 0.4 mm.

Part 3 Execution

3.1 PREPARATION

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

3.2 INSTALLATION

.1 Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.

.2 Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

.3 Seal metal joints watertight.

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 26 00 - Vapour Barriers.

.2 Section 07 26 16 - Underslab Vapour Barrier.

.3 Section 07 62 00 - Sheet Metal Flashing and Trim.

.4 Section 08 11 13 - Standard Metal Doors and Frames.

.5 Section 08 51 13 - Aluminum Windows.

.6 Section 09 21 16 - Gypsum Board Assemblies.

1.3 REFERENCES

.1 ASTM C834-2017 - Standard Specification for Latex Sealants.

.2 ASTM C919-2022 - Standard Practice for Use of Sealants in Acoustical Applications.

.3 ASTM C920-2018 - Standard Specification for Elastomeric Joint Sealants.

.4 ASTM C1330-2018 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.

.5 ASTM D5893/D5893M-16(2021) - Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements.

1.4 SUBMITTALS FOR REVIEW

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

.2 Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and colour availability.

.3 Samples: Submit two sample ribbons of sealant, illustrating sealant colours for selection.

.4 Submit laboratory tests or data validating product compliance with performance criteria specified. Include SWRI validation certificate where required.

.5 Closeout Submittals: Sealant applicator to submit copies of the Manufacturer's Warranty.

1.5 SUBMITTALS FOR INFORMATION

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

.2 Manufacturer's Installation Instructions: Indicate special procedures, surface preparation, perimeter conditions requiring special attention, and field quality control testing.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

.2 Store products in a location protected from freezing, damage, construction activity, precipitation, and direct sunlight in strict accordance with manufacturer's recommendations.

.3 Condition products to approximately 16 to 21°C for use in accordance with manufacturer's recommendations.

1.7 ENVIRONMENTAL AND SAFETY REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

Part 2 Products

2.1 SEALANT MATERIALS

.1 Acoustical sealant: to ASTM C919, single component, non-hardening, non-skinning, synthetic rubber. Acceptable product: Pecora BA-98, Tremco Acoustical Sealant.

.2 Acrylic latex: to ASTM C 834, single component general purpose siliconized acrylic latex sealant. Acceptable product: BASF Sonnolastic Sonolac, GE L100, Pecora AC-20 + Silicone, Tremco Tremflex 834.

.3 Butyl Sealant: to ASTM C1311, single component, solvent release, non-skinning, non- sagging, black colour; Acceptable Products: Pecora BC-158, Tremco Butyl Sealant.

.4 Epoxy, flexible: Poured flexible 100% solids epoxy joint filler. Acceptable product: BASF Epolith-P, Sika Loadflex 2 or approved equal.

.5 Polyurethane, self-levelling: to ASTM C 920, Type S, Grade P, Class 25, single component self-levelling polyurethane sealant with plus or minus 25 percent movement capability for horizontal joints. Acceptable product: BASF Sonolastic SL1, Pecora Urexpan NR-201, Tremco Vulkem 45, Sika Sikaflex 1C SL or approved equal.

.6 Silicone, one part: to ASTM C 920, Type S, Grade NS, Class 25, single component neutral cure silicone sealant, plus minus 50% joint movement capability. Acceptable product: Dow Corning 795, Pecora 895NST, Tremco Spectrum 2, BASF Omniseal 50 or approved equal.

2.2 ACCESSORIES

.1 Primer: Type recommended by the sealant manufacturer and compatible with joint forming materials.

.2 Joint Cleaner: Non-corrosive and non-staining type recommended by sealant manufacturer and compatible with joint forming materials.

.3 Soft Backer Rod: to ASTM C1330, non-gassing, reticulated closed-cell polyethylene rod designed for use with cold-applied joint sealants. Size required for joint design.

.4 Closed-Cell Backer Rod: to ASTM C1330, closed-cell polyethylene rod designed for use with cold-applied joint sealants for on-grade or below-grade applications. Size required for joint design.

.5 Joint Filler: closed-cell polyethylene joint filler designed for use in cold joints, construction joints, or isolation joints wider than 6 mm. Size required for joint design.

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

2.3 COLOURS

.1 Unless indicated otherwise in respective technical specification sections, colour selection is at the option of the Departmental Representative.

2.4 SEALANT SCHEDULE

.1 Perimeters of exterior openings where frames meet exterior facade of building. All other exterior applications.

.1 Sealant type: Silicone, one part.

.2 Perimeters of interior door/window frames and surfaces, where required.

.1 Sealant type: Acrylic latex or Silicone, one part; refer to technical specification. section.

.3 Building envelope applications (vapour barrier/vapour barrier, vapour barrier/wall opening, etc.):

.1 Sealant type: Acoustical sealant.

.4 Interior concrete control joints and sawcuts.

.1 .Sealant type: Epoxy, flexible.

.5 Perimeter of interior concrete slab.

.1 Sealant type: Polyurethane, self-levelling.

.6 For locations not included in this schedule, consult with Departmental Representative for proper selection of sealants.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that substrate surfaces and joint openings are clean, dry, and free of frost and 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 sealant manufacturer's written instructions.

.3 Perform preparation in accordance with sealant manufacturer's written instructions.

.4 Protect elements surrounding the work of this section from damage or disfiguration.

3.3 INSTALLATION

.1 Install sealant in accordance with sealant manufacturer's written instructions.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Measure joint dimensions and size materials to achieve required 2:1 width/depth ratios.

.4 Install joint backing to achieve a neck dimension no greater than 1/3 of the joint width.

.5 Install bond breaker where joint backing is not used.

.6 Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

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

.8 Tool joints concave.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.2 Clean adjacent soiled surfaces.

3.5 PROTECTION OF FINISHED WORK

.1 Remove masking tape and excess sealant.

.2 Protect sealants until cured.

END OF SECTION