

PART 1 GENERAL

1.1 References

- .1 Canadian General Standards Board (CGSB)
 - .1 CGSB 71-GP-24M, Adhesive, Flexible, for Bonding Cellular polystyrene Insulation.
- .2 Underwriters Laboratories of Canada (ULC)
 - .1 CAN/ULC-S701, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Coverings.
 - .2 CAN/ULC-S702, Standard for Thermal Insulation, Mineral Fibre, for Buildings.
 - .3 CAN/ULC-S704, Standard for Thermal Insulation Polyurethane and Polyisocyanurate, Boards, Faced.

1.2 Waste Management and Disposal

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

PART 2 PRODUCTS

2.1 Insulation

- .1 PINK extruded polystyrene scored rigid board insulation to CAN/ULC-S701, Type 3:
 - .1 RSI 0.87 / 25 mm, 140 kPa compressive strength (20 psi)
 - .2 Water vapour permeance (max.): 45 ng / Pa.s.m²
 - .3 Dimensions: 610 mm x 2438 mm x thickness as indicated, ship lapped edges
 - .4 0.46 mm (28 Gauge) metal furring channels: 9.5 mm x 38 mm x 2413 mm;
 - .5 Approved product: Celfort 200/*CEL-LOK* System manufactured by Owens Corning Canada

2.2 Fasteners

- .1 *CEL-LOK* fastening system; metal furring, 0.46 mm thick (28 Gauge) x 38 mm (1.5 in.) wide x 9.5 mm, deep (3/8 in.) x 2413 mm long (95 in.) with a minimum of four self-tapping screws per length of channel; self-tapping screws of sufficient length to penetrate substrate minimum 25 mm. [1 in.]. Metal furrings spaced a maximum of 600 mm. [24 in.] o.c.

PART 3 EXECUTION

2.1 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.

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

- .5 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.
- .6 Offset both vertical and horizontal joints in multiple layer applications.

2.3 Examination

- .1 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.

2.4 Cleaning

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

PART 4 - MEASUREMENT AND PAYMENT

4.1 Method of Measurement and Payment

- .1 Board Insulation
 - .1 The supply and installation of Board Insulation will be measured and paid for at the Contract Lump Sum Price for "Electrical Building", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

END OF SECTION

PART 1 GENERAL

1.1 Section Includes

- .1 Performance criteria to achieve a continuous building enclosure air/vapour barrier.

1.2 Related Sections

- .1 Section 07 21 13 - Board Insulation.
- .2 Section 07 92 10 - Joint Sealing.

1.3 References

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM E 783, Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.
 - .2 ASTM E 330, Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static air Pressure Difference.
 - .3 ASTM E 1186, Standard Practices for Air Leakage Site Detection in Building Envelope and Air Retarder Systems.

1.4 Performance Requirements

- .1 Select and install wall and roof components and assemblies to resist air leakage caused by static air pressure across exterior wall and roof assemblies, including windows, doors, roof hatches and other interruptions to integrity of wall and roof systems.
- .2 Provide continuity of air/vapour barrier materials and assemblies in conjunction with materials described in Section 07 21 13 - Board Insulation, 07 92 10 - Joint Sealing.

1.5 Delivery, Storage and Handling

- .1 Deliver, store and handle materials in accordance with manufacturer=s written instructions.
- .2 Clean spills and leave area as it was prior to spill.

1.6 Waste Management and Disposal

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

1.7 Sequencing

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

1.8 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 Materials

- .1 Materials: As required to achieve specified performance criteria; functionally compatible with adjacent materials and components.

PART 3 EXECUTION

3.1 Preparation

- .1 Prepare substrate surfaces in accordance with air/vapour barrier material manufacturer's instructions.

3.2 Installation

- .1 Install air/vapour barrier materials in accordance with manufacturer's instructions.
- .2 Install sealant materials in accordance with manufacturer's instructions.
- .3 Apply sealants within recommended application temperature ranges.

3.3 Protection of Finished Work

- .1 Do not permit adjacent work to damage work of this section.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Method of Measurement and Payment

- .1 Air Barriers - Performance
 - .1 The supply and installation of Air Barriers – Performance will be measured and paid for at the Contract Lump Sum Price for “Electrical Building”, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

END OF SECTION

PART 1 GENERAL

1.1 References

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM A 653/A 653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .2 ASTM A 792/A 792M, Standard Specification for Steel Sheet, 55% Aluminum- Zinc Alloy-Coated by the Hot-Dip Process.
 - .3 ASTM C 1177, Specification for Glass Mat Gypsum Substrate Used as Sheathing.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.32, Sheathing, Membrane, Breather Type.
- .3 Underwriters Laboratory Canada (ULC).
 - .1 CAN/ULC-S701, Thermal Insulation, Polystyrene, Boards and Pipe Coverings.
- .4 National Building Code (NBC)

1.2 Design Criteria

- .1 Design metal panel roof and wall systems to provide for thermal movement of component materials caused by ambient temperature range of -35°C to 75°C without causing buckling, failure of joint seals, undue stress on fasteners or other detrimental effects.
- .2 Include expansion joints to accommodate movement in panel systems and between panel systems and building structure, caused by structural movements, without permanent distortion, damage to infills, racking of joints, breakage of seals, or water penetration.
- .3 Design members to withstand dead load, snow loads and build-up, wind loads including uplift, calculated in accordance with NBC and applicable local regulations, to maximum allowable deflection of 1/180th of span.
- .4 Provide for positive drainage of condensation occurring behind panels and water entering at joints, to exterior face of panels.

1.3 Shop Drawings

- .1 Submit shop drawings to Contract Administrator.
- .2 Indicate sizes and dimensions of components, panel types, materials and finish, subframing components, anchor details, compliance with design criteria and requirements of related work. Indicate details and flashings at wall and roof openings.

1.4 Samples

- .1 Submit colour samples of prefinished steel sheet on actual base metal in specified finishes and colours to Contract Administrator.

PART 2 - PRODUCTS

2.1 Materials

- .1 Z275 galvanized sheet steel conforming to ASTM A653 m Grade 230.
- .2 Sheathing paper: to CAN/CGSB-51.32, spunbound olefin type. Tyvek Commercial Wrap.
- .3 Fasteners:
 - .1 Deck covering to steel deck: No. 10 flat head, self tapping, Type A or AB, zinc plated screws to CSA B35.3. Drywall screws not acceptable.
 - .2 Sub-girts to steel deck, sub-girt to sub-girt, and roof clips to roof deck: type, size and spacing as recommended by roof system manufacturer, self-drilling, corrosion-resistant fasteners.
 - .3 Roof system components: stainless steel exposed fasteners, designed to accommodate full thermal expansion and contraction of materials, and as recommended by panel system manufacturer, complete with neoprene washer under head of fastener. Head colour to match materials being fastened.
- .4 Sealants: as specified in Section 07900 – Joint Sealants.
- .5 Closures and gaskets: closed cell polyurethane foam, adhesive on two sides, release paper protected.
- .6 Touch-up paint: as recommended by panel manufacturer.
- .7 Isolation coating: alkali resistant, bituminous paint or epoxy resin solution.

2.2 Components

- .1 Roof Panels:
 - .1 Factory preformed of galvanized sheet steel.
 - .2 Base metal thickness: 0.79 mm (22 gauge).
 - .3 Finish: prefinished.
 - .4 Acceptable material: Vicwest Marquis 450 (QC 260 Slate Blue) with interlocking batten ribs.
- .2 Exposed joint (perpendicular to profile): ends of siding sheet shop cut clean and square, backed with tight fitting filler lapping back of joint, exposed components colour matched to siding.
- .3 Cap flashings, drip flashings, internal corner flashings, copings and closures for head, jamb, sill and corners, of same material, base metal thickness and finish as adjacent panels, brake formed to shape.
- .4 Sub-girts and alignment bars: galvanized steel sheet to ASTM A 653/A 653M with Z275 zinc coating, profile to accept preformed panels with structural attachment to building frame. Base metal thickness as recommended by manufacturer to meet design requirements.

PART 3 - EXECUTION

3.1 Installation

- .1 Protect metal surfaces in contact with concrete, masonry mortar, plaster or other cementitious surface with isolation coating.
- .2 Mechanically fasten deck covering to deck with screws spaced 400 mm on centre each way. Place with long axis of each sheet transverse to steel deck ribs, with end joints staggered and fully supported on ribs.
- .3 Install sheathing paper between roof deck and roof panels. Overlap sheets to shed water. Overlap ends.
- .4 Install roof and wall panel support systems and components using fasteners of type and size recommended by manufacturer to resist uplift forces and thermal expansion and contraction. Exposed fasteners head colour to match panels.
- .5 Install components true to line and plane, free of dents.
- .6 Provide alignment bars, brackets, clips, inserts, shims as required to securely and permanently fasten wall and roof systems to building structure.
- .7 Install head, jamb and sill flashings, closures, and trims pieces as required for complete installation.
- .8 Install wall panels over sill flashings, install cap flashings and ensure completed installation is continuously sealed at perimeter.
- .9 Provide formed top closures, and flashing sealed against weather penetration, at ridges, changes in pitch, and vertical walls.
- .10 Flash roof penetrations with material matching roof panels, and make watertight.
- .11 Form seams in direction of water-flow and make watertight.
- .12 Clean exposed exterior surfaces using solution of mild domestic detergent in warm water, applied with soft clean wiping cloths.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Method of Measurement and Payment

- .1 Metal Roof
 - .1 The supply and installation of Metal Roofing will be measured and paid for at the Contract Lump Sum Price for "Electrical Building", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

END OF SECTION

PART 1 GENERAL

1.1 References

- .1 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.

1.2 Submittals

- .1 Submit product data.
- .2 Manufacturer's product to describe.
 - .1 Caulking compound.
 - .2 Primers.
 - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.

1.3 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.

1.4 Waste Management and Disposal

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

1.5 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.

1.6 Environmental Requirements

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Labour Canada.
- .2 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 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, One Part, Self-Leveling.
 - .1 To CAN/CGSB-19.13, Type 1.
 - .2 Acceptable material: Sikaflex 1cSL, Bostik Chem-Calk 950.
- .2 Urethanes, One Part, Non-Sag.
 - .1 To CAN/CGSB-19.13, Type 2.
 - .2 Acceptable products: Sikaflex 1a, Tremco DyMonic, Bostik Chem-Calk 900.
- .3 Sealant colours: selected by Contact Administrator from manufacturer's standard colour selection.
- .4 Foam backer rods: extruded polyethylene foam, compressible, oversized 30 to 50%.
 - .1 Acceptable material: Tremco Tundra Foam.
- .5 Bond breaker tape: polyethylene bond breaker tape that will not bond to sealants.
- .6 Expanding foam sealant: high-density open cell polyurethane foam, pre-compressed, impregnated with water-based, stabilized acrylic, self-adhesive. Secondary seal requiring primary seal of wet sealant.
 - .1 Acceptable material: Emseal Greyflex.
- .7 Adhesives: type recommended by expanding foam sealant manufacturer.
- .8 Primers: type recommended by sealant manufacturer, for appropriate sealant and corresponding substrate.
- .9 Joint cleaner: non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

2.3 Sealant Selections

- .1 Perimeters of exterior openings where frames meet exterior facade of building: Urethanes One Part, Non-Sag.
- .2 Expansion and control joints in exterior surfaces of precast, architectural wall panels: Urethanes One Part, Non-Sag.
- .3 Expansion and control joints in exterior surfaces of unit masonry walls: Urethanes One Part, Non-Sag.

- .4 Coping joints and coping-to-facade joints: Sealant type: Urethanes One Part, Non-Sag.
- .5 Cornice and wash (or horizontal surface joints): Sealant type: Urethanes One Part, Selfleveling.
- .6 Exterior joints in horizontal wearing surfaces (as itemized): Sealant type: Urethanes One Part, Self-leveling.
- .7 Perimeters of interior frames where frames meet interior finishes: Urethanes One Part, Non-Sag.
- .8 Interior masonry vertical control joints (block-to-block, block-to-concrete, and intersecting masonry walls): Sealant type: Urethanes One Part, Non-Sag.
- .9 Under thresholds at exterior doors. Sealant type: Urethanes, One Part, Non-Sag.
- .10 As itemized in other sections.

2.3 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.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Method of Measurement and Payment

- .1 Joint Sealing
 - .1 The supply and installation of Joint Sealing will be measured and paid for at the Contract Lump Sum Price for "Electrical Building", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

END OF SECTION