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**Partie 1      General**

**1.1      RELATED REQUIREMENTS**

- .1      The list of Work in this division is indicative but non-limiting. It does not exclude Work described in other specification divisions shown on the drawings or required for full execution of the Work as intended on the drawings.
- .2      Section 03 30 00      Cast-in-place Concrete.
- .3      Section 04 22 00      Concrete Unit Masonry.
- .4      Section 06 10 00      Rough Carpentry.
- .5      Section 07 26 00      Vapour Retarders.
- .6      Section 07 62 00      Sheet Metal Flashing and Trim.
- .7      Section 07 92 00      Joint Sealants.
- .8      Section 08 11 00      Metal Doors and Frames.
- .9      Section 08 11 16      Aluminum Doors and Frames.
- .10      Section 08 44 13      Glazed Aluminum Curtain Walls.
- .11      Section 08 50 00      Windows.
- .12      Section 08 90 00      Louvres and Vents.
- .13      Section 09 21 16      Gypsum Board Assemblies.

**1.2      REFERENCES**

- .1      American Society for Testing and Materials International (ASTM)
  - .1      ASTM C208-95(2001), Specification for Cellulosic Fiber Insulating Board.
  - .2      ASTM C591-01, Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation.
  - .3      ASTM C612-04, Standard Specification for Mineral Fibre Block and Board Thermal Insulation.
  - .4      ASTM C726-05, Standard Specification for Mineral Fiber Roof Insulation Board.
  - .5      ASTM C728-05, Standard Specification for Perlite Thermal Insulation Board.
  - .6      ASTM C1126-04, Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation.
  - .7      ASTM C1289-05a, Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
  - .8      ASTM E96/E96M-05, Standard Test Methods for Water Vapour Transmission of Materials.

- .2 Canadian Gas Association (CGA)
  - .1 CAN/CGA-B149.1-F05, Natural Gas and Propane Installation Code Handbook.
  - .2 CAN/CGA-B149.2-F05, Propane Storage and Handling Code.
- .3 Underwriters Laboratories of Canada (ULC)
  - .1 CAN/ULC-S604-M91, Standard for Type A Chimneys.
  - .2 CAN/ULC-S701-05, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Coverings.
  - .3 CAN/ULC-S702-97, Standard for Thermal Insulation, Mineral Fibre, for Buildings.
  - .4 CAN/ULC-S704-03, Standard for Thermal Insulation Polyurethane and Polyisocyanurate, Boards, Faced.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

### **1.3 ACTION AND INFORMATIONAL 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 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's insulation products and adhesives.
- .2 Manufacturer's Instructions:
  - .1 Submit manufacturer's installation instructions.

### **1.4 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 Convene pre-installation meeting one week prior to beginning work of this Section on-site installations in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart:
  - .1 Verify project requirements.
  - .2 Review installation and substrate conditions.
  - .3 Co-ordinate with other building subtrades.
  - .4 Review manufacturer's installation instructions and warranty requirements.
- .4 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

## **1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for packaging material in appropriate on-site containers for recycling in accordance with Waste Management Plan.

## **1.6 ACCEPTABLE PRODUCTS AND MATERIALS**

- .1 Where a particular brand name is stipulated, see Instructions to Bidders for procedure for requesting approval of substitute materials and products

## **Partie 2 Products**

### **2.1 INSULATION**

- .1 Extruded polystyrene (XPS): to CAN/ULC-S701.
  - .1 Type: 4.
  - .2 Compressive strength: 207 kpa.
  - .3 Thickness: As indicated.
  - .4 Dimensions: 600mm X 2400 mm.
  - .5 Edges: Shiplapped.
- .2 Mineral fibre board: to CAN/ULC-S702 ASTM C612.
  - .1 Type: 1.
  - .2 Density: 100 kg/m<sup>3</sup> for roofs and 65 kg/m<sup>3</sup> walls.
  - .3 Facing: unfaced.
  - .4 Thickness: as indicated.
  - .5 Dimensions: 610 mm X 1220 mm.
- .3 Rigid acoustic mineral fibre board to ASTM C1071 et CGSB 51.11-92.
  - .1 Type: 2.
  - .2 Facing: black.
  - .3 Thickness: as indicated.
  - .4 Dimensions: 610 mm X 1220 mm.
  - .5 Surface burning characteristics to CAN/ULC-S102-M, UL 723 and ASTM E84: flame spread under 25 and smoke developed under 50.

### **2.2 ACCESSORIES**

- .1 Insulation clips: impale type, perforated 50 x 50 mm cold rolled carbon steel 0.8 mm thick, adhesive back, spindle of 2.5 mm diameter annealed steel, length to suit insulation, 25 mm diameter washers of self-locking type.

- .2 Fasteners for EPS insulation board: Tringle en "T", galvanized hot-dipped, 50 mm wide x 13 mm deep, 16 gauge (1.6mm), with pre-drilled holes at 150 mm on centre.
- .3 T type mechanical fasteners: "Tapcon" screws, galvanized steel, length to penetrate 35 mm in concrete.
- .4 Self-adhering tape to ensure vapour barrier continuity at penetrations and openings in air barrier surface: bi-directional polypropylene tape with red self-adhesive acrylic carrier.
- .5 Dimensions: 60 mm wide, 0.084 mm thick.  
Tear resistance: 6.65 KN/m.
- .6 Concrete screws appropriate length, treated for corrosion.
- .7 Flexible polystyrene adhesive for insulation.
- .8 Adhesive tape for acoustic insulation:
  - .1 Width: 60 mm
  - .2 Composition: Plastifier and solvent free acrylic glue, polyester / acrylic backing with peelable film.
  - .3 Peel resistant: Fmax approx. 7 N/10mm.
  - .4 Colour: black.

### **Partie 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 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from [sidewalls of CAN4-S604 type A chimneys to CAN/CGA-B149.1 and CAN/CGA-B149.2 and type B and L vents.
- .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.
- .7 IMPORTANT: Do not enclose insulation until it has been inspected and approved by Departmental Representative.

### **3.3 EXAMINATION**

- .1 Examine substrates and immediately inform Departmental Representative.
- .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 RIGID INSULATION INSTALLATION**

- .1 Install mineral fibre insulation boards with insulation clips and disk, two (2) per 610 x 1220 mm board minimum, fit boards tight, cut off fastener spindle 3 mm beyond disk.
- .2 Leave insulation board joints unbonded over line of expansion and control joints. Bond a continuous 150 mm wide 0.15 mm modified bituminous membrane over expansion and control joints using compatible adhesive and primer before application of insulation.

### **3.5 PERIMETER FOUNDATION INSULATION**

- .1 Interior application: extend boards vertically below bottom of finish floor slab, installed on inside face of perimeter foundation walls.
- .2 Exterior application: Install on exterior face of perimeter foundation wall, to indicated level.
  - .1 Install fasteners to all shiplapped joints. Cut vertical slit in centre of each panel to install fasteners 305 mm on centre.
  - .2 Do not glue insulation board over expansion joints. Prior to installing insulation, seal joints with continuous 150 mm wide x 0.15 thick modified bitumen membrane with adhesive and compatible primer.
- .3 Under slab application: extend boards as indicated from perimeter foundation wall. Lay boards on level compacted fill.
- .4 Perimeter heating duct application: compact walls of heating duct trench to form solid backing. Attach insulation boards to perimeter foundation wall extending from underside of finish floor to 100 mm below bottom of heating duct. Lay insulation boards in bottom of heating duct trench, extend to 150 mm beyond heating duct 600 mm minimum from inside face of perimeter foundation wall. Secure insulation in place to prevent displacement.

### **3.6 CAVITY WALL INSTALLATION**

- .1 Install mineral fibre insulation boards on outer surface of inner wythe of wall cavity over impaling clips.

### **3.7 ROOF INSTALLATION**

- .1 Refer to Section 07 52 00 - Modified Bituminous Membrane Roofing and Section 07 61 00 – Sheet Metal Roofing for description.

### **3.8 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 Waste Management: separate waste materials for reuse / recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- .4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**