

1 General

1.1 **SECTION INCLUDES**

- .1 Labour, Products, equipment and services necessary for the thermal insulation work in accordance with the Contract Documents.

1.2 **REFERENCES**

- .1 ASTM C612, Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
- .2 ASTM C665, Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- .3 CAN/ULC-S701, Thermal Insulation, Polystyrene, Boards and Pipe Covering.
- .4 CAN/ULC-S702, Mineral Fibre Thermal Insulation for Buildings.
- .5 CAN/ULC-S710.1, Standard for Thermal Insulation – Bead-Applied One Component Polyurethane Air Sealant Foam, Part 1: Material Specification.
- .6 CAN/ULC-S710.2, Standard for Thermal Insulation – Bead-Applied One Component Polyurethane Air Sealant Foam, Part 2: Installation.

1.3 **SUBMITTALS**

- .1 Product data: Submit manufacturer's Product data in accordance with Section 01 10 10 indicating characteristics, performance criteria, and limitations. Indicate installation requirements and techniques, storage, and handling criteria and installation procedure acceptable to manufacturer.
- .2 Certification: Submit installer's certification verifying compliance with specification requirements.

1.4 **QUALITY ASSURANCE**

- .1 Qualifications: Execute work of this Section by company specializing in thermal insulation work with minimum of three years, recent, documented experience, on work of comparable complexity and scope.

2 Products

2.1 MATERIALS

- .1 All materials under work of this Section, including but not limited to, adhesives are to have low VOC content limits.
2. Batt insulation:
 - .1 Batt insulation (non-rated): CAN/ULC-S702, Type 1, friction fit; 'Unfaced Thermal and Sound Control Batts' by Johns Manville, 'Pink Next Gen Fiberglas Insulation' by Owens Corning Canada or 'ComfortBatt' by Rockwool.
 - .2 Batt insulation (fire-rated/acoustic): ASTM C665, Paperless, semi-rigid, spun stone wool fibre mats, of thickness as indicated on Contract Drawings, 'MinWool SAFB' by Johns Manville, 'SAFB Thermafiber' by Owens Corning Inc. or 'Rockwool AFB' by Rockwool.
- .3 Rigid insulation: CAN/ULC-S701, Type 4; Minimum RSI of 0.87, Extruded polystyrene, ship-lapped edges. Thickness: As indicated on Drawings.
 - .1 Styrofoam SM by Dupont de Nemours Inc.
 - .2 Foamular C-300 by Owens Corning Canada Inc.
- .4 Semi-rigid insulation:
 - .1 Semi-rigid stone wool conforming to ASTM C612, minimum density 70 kg/m³, thickness as indicated, minimum RSI of 0.74 per 25 mm. 'CladStone 45' by Johns Manville, 'Thermafiber Rainbarrier 45' by Owens Corning, and 'CavityRock' by Rockwool.
 - .2 Insulation fasteners (adhesive clip method):
 - .1 Insulation clips: Galvanized steel clips with self locking type washers; 'Insul-Anchors' by Continental Studwelding Ltd., 'Insulation Hanger Studs' by McMaster-Carr, or 'Stud Welders' by Midwest Fasteners Inc.
 - .2 Clip adhesive: High strength adhesive having a bonding time of 0 to 30 minutes (rapid initial set) and 48 hours final set, non-corrosive to galvanized steel, compatible and suitable for use in application.
 - .3 Provide galvanized or stainless steel mechanical insulation fasteners as recommended by insulation manufacturer for installation on horizontal surfaces.
5. Polystyrene Board Insulation (cement faced): CAN/ULC S701, Type 4; Extruded, closed-cell, cellular, foamed polystyrene with ship-lapped edges. Provide 8 mm thick latex modified concrete face; 'WallGuard' by T Clear Corporation, 'Concrete Faced Insulated (CFI) Wall Panels' by Tech-Crete or approved alternative.

- .6 Vinyl faced insulation:
 - .1 Stone wool: ASTM C612, Type IVA; Semi-rigid stone wool board, density 56 kg/m³ (3.5 pcf). Thickness: As indicated on Drawings. 'Fabrock LT' by Rockwool or approved alternative.
 - .2 Facing: 'WMP-10' by Lamtec Corporation or approved alternative.
 - .3 Pressure sensitive tape: Pressure sensitive tape having adhesive compatible with facing surface and fabricated from a material that matches the performance criteria and surface of the facing material. Type as recommended by facing manufacturer.
 - .4 Insulation fasteners (gas actuated): Zinc-plated steel pins in length to suit insulation thickness, with 60 mm diameter HDPE washers and integrated cap to form thermal barrier, installed with manufacturer's recommended gas-actuated tool; 'T3 InsulFast System' by Ramset or approved alternative. Fastener cap in colour to be selected by Consultant.
- .7 Foam insulation (kit): CAN/ULC-S710.1, closed cell, polyurethane foam-in-place moisture cured sealant insulation, CFC free, 16 kg per m³ to 32 kg per m³ density; injected from prepackaged pressurized containers.
- 8. Protection Board: MB Protection Board by Baker or Sealtight Vibraflex Waterproofing Protection Board by W.R. Meadows of Canada Ltd., 3 mm thick.
- 9. Drainage board: In accordance with Section 07 13 00.
- .10 Foundation insulation fastening system: Provide purpose made galvanized steel clips and continuous galvanized steel flashing as recommended by insulation manufacturer.
- .11 Adhesive: Type as recommended by insulation manufacturer.

3 Execution

3.1 **EXAMINATION**

- .1 Verify condition of previously installed work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.
- .2 Ensure substrate surfaces are dry, clean, suitable to receive adhesive and free from other deleterious substances.

3.2 INSTALLATION

- .1 Install thermal insulation in longest panel sizes possible in accordance with manufacturer's instructions.
- .2 Butt insulation with moderate contact and, cut and fit them tightly around other construction elements. Offset single layer vertical joints and both vertical and horizontal joints in multiple layer applications.
- .3 Make thermal insulation continuous, maintain thermal protection continuity and secure to prevent displacement. Ensure that insulation is tight to substrate without air gaps.
- .4 Cut and fit thermal insulation tightly around electrical boxes, plumbing and heating pipes and ducts, exterior doors and windows, and other protrusions.
- .5 Leave 75 mm separation between thermal insulation and heat emitting devices such as recessed light fixtures.
- .6 Cut and trim thermal insulation neatly to fit spaces; do not compress insulation to fit. Install only thermal insulation boards which are free from chipped or broken edges.
- .7 Fill miscellaneous cavities with insulation to maintain continuity of thermal barrier. Do not compress insulation to fit.
- .8 Arrange for Consultant to review thermal insulation before it is enclosed.

3.3 SECUREMENT

- .1 Batt insulation (non-rated, fire-rated/acoustic):
 - .1 Install batt insulation in partitions, between studs, and as indicated on Contract Drawings and in accordance with the manufacturer's instructions.
 - .2 Fill stud cavities to full height of partitions and carefully cut and fit required batt insulation type around services and protrusions.
- .2 Semi-rigid insulation:
 - .1 Provide insulation tight to the starting at the base of the wall in parallel courses with tight butt joints. Stagger end joints in adjacent course.
 - .2 Provide finish work level, plumb and true.
 - .3 Provide securement for cavity wall insulation with stick-clips and fasteners in accordance with manufacturer's written instructions.

- .3 Semi-rigid insulation (soffits - mechanical fastening):
 - .1 Adhesive clip method:
 - .1 Install insulation by adhesive clip method in accordance with manufacturer's specifications, complete with manufacturer recommended installation fasteners.
 - .2 Locate clips 100 mm from edges of panels where they abut other materials and at joints between panels otherwise, spaced throughout at 300 mm to 450 mm centres each way.
 - .3 At clip locations clean supporting surfaces and apply 50 mm square film of adhesive; coat clips with adhesive and press firmly to intended substrate, holding in place until adhesive exudes through clip base perforations; remove excess adhesive to permit curing; impale insulation panels on clips and secure.
- .4 Foil faced insulation (mechanical fastening, gas-actuated):
 - .1 Install insulation fasteners with gas-powered applicator in accordance with manufacturer's written instructions.
 - .2 Locate pins 75 mm from edges of panels where they abut other materials and at joints between panels otherwise, spaced in accordance with manufacturer's written instructions.
 - .3 Place a minimum of 5 equally-spaced insulation fasteners per 610 x 1220 mm insulation board area.
 - .4 Apply compatible pressure sensitive tape over butt joints of insulation.
- .5 Foamed-in-place (kit): Except where otherwise specified in other Sections, install foamed-in-place insulation fully in crevices and frame voids between exterior walls and door frames, and about lintels, around louvers and around other items built into exterior walls to prevent air infiltration. Install in accordance with CAN/ULC-S710.2.
- .6 Rigid insulation (adhesive attachment):
 - .1 Apply adhesive to thermal insulation foam boards in accordance with manufacturer's recommendations.
 - .2 Omit adhesive bonding of foam board insulation over expansion and control joints.
- .7 Perimeter foundation insulation (standard and cement faced insulation):
 - .1 Exterior application: unless otherwise indicated, extend boards from top of foundation wall down to top of footing. Install on exterior face of perimeter foundation wall with clips and adhesive.
 - .2 Provide rigid insulation below grade and cement faced insulation with caulked joints extending down minimum 600 mm below finished grade. Caulking of cement faced insulation to be grey to match concrete face colour.
 - .3 Protect entire face of insulation exposed to backfill (below grade) with drainage/protection board in accordance with Section 07 13 00.

- .8 Under slab insulation: Install insulation boards to size and locations as shown on Contract Drawings and in accordance with manufacturer's instructions, with joints butted tight.

END OF SECTION