

1 General

1.1 **SECTION INCLUDES**

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

1.2 **REFERENCES**

- .1 ASTM A653/A653M, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealed) by the Hot-Dip Process.
- .2 CAN/ULC S705.1, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification.
- .3 CAN/ULC S705.2, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Application.

1.3 **SUBMITTALS**

- .1 Product data:
 - .1 Submit duplicate copies of manufacturer's Product data in accordance with Section 01 33 00 indicating:
 - .1 Performance criteria, characteristics, and limitations.
 - .2 Product transportation, storage, handling and installation requirements.
- .2 Shop drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00 indicating:
 - .1 Elevations, sections, materials, details of joint conditions, including door, window, entrance framing, flashings, and roof parapet connection.
- .3 Samples: Submit following samples in accordance with Section 01 33 00:
 - .1 Two 150 x 150 x 75 mm thick samples of sprayed insulation
 - .2 Two 300 x 300 mm samples of transition strips.
- .4 Certificates: Submit the following certificates in accordance with Section 01 33 00:
 - .1 Applicator's current certificate of approval by CUFCA/NECA or BASF Canada's training program.
 - .2 Applicator's current certificate of approval from material manufacturer.

1.4 **QUALITY ASSURANCE**

- .1 Perform work of this Section by a company that has a minimum of five years proven experience in installations of similar size and nature.

- .2 Contractor to be a certified member of the Canadian Urethane Foam Contractors Association/ National Energy Conservation Association (CUFCA/NECA) or be licensed under the BASF Canada Quality and Training Program "Raising Performance to New Heights" and in accordance with CAN/ULC S705.2 installation standard.
- .3 Provide quality assurance testing in accordance with CAN/ULC S705.2. Record daily results in a log book for Consultant's review.
- .4 Provide adhesion tests on transition membranes, in accordance with manufacturer's written instructions, at the perimeters of all openings. If the project comprises more than 10 openings, adhesion tests should be conducted on 15% of them. For jobs comprising 10 or fewer openings, 30% of these should undergo adhesion tests. Adhesion tests should be performed on the transition membranes at every tenth column or beam.
- .5 Mock-up:
 - .1 Construct mock-up of 3 m² minimum, of spray-in-place foam insulation to thickness as indicated on drawings, including one inside corner and one outside corner.
 - .2 Arrange for Consultant's review and acceptance, allow 24 hours before proceeding with work.
 - .3 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of Work if accepted by Consultant. Remove and dispose of mock-ups which do not form part of Work.

1.5 **SITE CONDITIONS**

- .1 Do not install work of this Section outside of following environmental ranges without Consultant's and Product manufacturer's written acceptance:
 - .1 Ambient air and surface temperature: 5°C to 40°C.
 - .2 Relative Humidity: Above 85%.
- .2 Supply and install temporary protection and facilities to maintain Product manufacturer's, and above specified environmental requirements for 48 hours before, during, and 48 hours after installation.

2 **Products**

2.1 **MATERIALS**

- .1 All materials under work of this Section, including but not limited to, primers and sealants are to have low VOC content limits.
- .2 Sprayed foam insulation: CAN/ULC S705.1, closed cell, medium density, polyurethane based, and utilizing an HFO blowing agent; 'Walltite CM01' by BASF, 'Sealtite One' by Carlisle, or 'Heatlok Soya HFO' by Huntsman Building Solutions.

- .3 Primers: As recommended by sprayed foam insulation manufacturer.
- .4 Transition strip membrane:
 - .1 Membrane: 1.0 mm thick, single-ply, self adhering, self sealing, rubberised asphalt, bonded to a cross-laminated high density polyethylene film. 'Blueskin SA' by Henry Company Canada, 'Soprasedal Stick 1100' by Soprema, 'Exo-Air 110' by Tremco, or 'Air-Shield' by W. R. Meadows.
 - .2 Primer: 'Aquatac' by Henry Company Canada Inc., 'Elastocol Stick H20' by Soprema, 'ExoAir WB Primer' by Tremco, or 'Mel-Prime Water Base' by W.R. Meadows.
 - .3 Mastic: 'Polybitume 570-05' by Henry Company Canada Inc., 'Sopramastic' by Soprema, 'Acoustical Sealant' by Tremco, or 'Sealtight Pointing Mastic' by W.R. Meadows.
 - .4 Fastening bar: Continuous 25 mm wide x 3 mm thick aluminum bar, predrilled for mechanical attachment.
 - .5 Fasteners: As specified herein or manufacturer's recommended fastener for attaching to Substrate.
- .5 Sheet metal closures:
 - .1 Sheet metal: 0.711 mm thick, ASTM A653/A653M Grade A, Z275 Commercial Quality zinc coating.
 - .2 Joint sealing tape: 100% solid, cross linked butyl, preformed sealant tape; 'Tremco 440 Tape' by Tremco Ltd. or approved alternative.
 - .3 Sealant: 'One-part, non-sag; 'TRS 600' by Tremco Ltd., 'NovaLink' by ChemLink, or approved alternative.
- .6 ***Thermal barrier system: in accordance with Section 07 81 00.***

3 Execution

3.1 EXAMINATION

- .1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

3.2 PREPARATION

- .1 Verify substrate surfaces are solid, free from surface water, frozen matter, dust, oil, grease, scaling or laitance, projections and any other foreign matter detrimental to performance. Obtain manufacturer's approval of substrate in writing, submit copy to Consultant.
- .2 Provide ventilation in area to receive sprayed foam insulation, introducing and exhausting fresh air continuously during and for 24 hours after application.
- .3 Provide temporary enclosures to prevent spray from contaminating air beyond application area, and damage from overspray and dusting on adjacent surfaces.

- .4 Supply and install temporary protection to adjacent surfaces to prevent damage resulting from work of this Section.
- .5 If required, apply primer to substrate surfaces in accordance with manufacturer's written instructions.

3.3 **TRANSITION STRIPS**

- .1 Install transition strips at all openings, penetrations, joints, cracks, dissimilar materials, and other locations of movement to ensure continuity of air/vapour retarder.
- .2 Mastic and Primer:
 - .1 Fill substrate voids, gaps, depressions, cracks, and joints with mastic until continuous, smooth, substrate for transition strip membrane is achieved.
 - .2 Prime substrate surfaces to receive membrane in accordance with manufacturer's instructions, at recommended application rate, allow to dry. Vary coverage to suit surface porosity.
 - .3 Prime surfaces. Re-prime surfaces if not covered with transition strip membrane within 4 hours.
- .3 Transition strip membrane installation:
 - .1 Install mastic where required to ensure integrity of transition strip membrane installation at protrusions and other complex details.
 - .2 Install transition strip membrane in accordance with manufacturer's instructions in locations indicated.
 - .3 Lap membrane ends and edges 50 mm minimum. Roll membrane and laps for continuous adhesion over entire substrate area; use manufacturer's recommended roller.
 - .4 Extend transition strip membrane as required to connect to other components of work comprising transition strip system.
 - .5 Cut and fit membrane as required for passage of protrusions, ensuring continuous adherence to substrate.
 - .6 At end of days' work, trowel mastic water cut-off along uppermost edge of incomplete membrane assembly, to prevent loss of adhesion and damage to transition membrane.
- .4 Fastening bars: Supply and install continuous mechanical fastening bar to clamp transition strip membrane both sides of unfilled gaps, cracks, and joints.

3.4 **SHEET METAL CLOSURES**

- .1 Provide sheet metal closures at all joints over 25 mm. Ensure surfaces receiving sealant or tape are dry, firm, straight, and free of loose material, projections, ice, frost, grease or oil, or other detrimental material.
- .2 Secure sheet metal closures with self-tapping screws at 150 mm oc along edges of panels and 450 mm oc at intermediate fixings.

- .3 At overlapping sheet metal edges, apply a continuous strip of tape; also gun-apply a continuous 6 mm bead of sealant along sheet metal edges. Liberally butter all screw fastenings penetrating the metal sheet closures or use self-sealing (EPDM) washers at each screw fastener.

3.5 **SPRAY INSULATION**

- .1 Install insulation in accordance with manufacturer's written instructions and conforming to CAN/ULC S705.2.
- .2 Apply sprayed foam insulation to thickness indicated on drawings and to provide continuous air retarder in locations indicated on the Drawings. Apply insulation to within 3 mm of thickness indicated on drawings. Provide one measuring pin for every 50 m².
- .3 Apply insulation in maximum 50 mm pass thickness, with a minimum wait time between passes as recommended by manufacturer.
- .4 Insulation to be continuous, level, plumb and uniform thickness throughout. Insulation shall be free of voids and imbedded foreign materials.

3.6 **INSPECTION AND TESTING**

- .1 Arrange for third party site-inspection by approved company. Cost of inspections shall be included in bid price.
- .2 Site inspection shall be carried out at 5%, 50% and 95% completion to verify conformance with CAN/ULC S705.2, manufacturers written instructions and this Section.
- .3 Written inspection reports shall be forwarded to Consultant within three (3) working days of test being performed.

END OF SECTION