

Partie 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 03 30 00 Cast-in-place Concrete.
- .2 Section 06 10 00 Rough Carpentry.
- .3 Section 07 21 13 Board Insulation.
- .4 Section 07 21 29.03 Sprayed Insulation - Polyurethane.
- .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 ASTM International Inc.
 - .1 ASTM D449-03, Standard Specification for Asphalt Used in Dampproofing and Waterproofing.
 - .2 ASTM D6162-00a, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fibre Reinforcements.
 - .3 ASTM D6163-00e1, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fibre Reinforcements.
 - .4 ASTM D6164-05, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
 - .5 ASTM E283: Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors.
 - .6 ASTM E330: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 - .7 ASTM E2178: Standard Test Method for Air Permeance of Building Materials.
- .2 Canadian General Standards Board (CGSB)
 - .1 CGSB 37-GP-9Ma-83, CGSB 37-GP-9Ma-83, Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing.

- .2 CGSB 37-GP-56M-80b(A1985)], Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.
- .3 Underwriters Laboratories' of Canada (ULC)
 - .1 CAN/ULC-S701-05, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
 - .2 CAN/ULC-S702.2-03, Standard for Mineral Fibre Thermal Insulation for Buildings.
 - .3 CAN/ULC-S704-03, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
 - .4 CAN/ULC-S706-02, Standard for Wood Fibre Thermal Insulation for Buildings.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Convene pre-installation meeting one week prior to beginning Work under this Section with Departmental Representative in accordance with Section 01 14 23 – Work Sequence and Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building subtrades.
 - .4 Review manufacturer's installation instructions and warranty requirements.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide two (2) copies of most recent technical waterproofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Provide two (2) copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements, and indicate VOC content for:
 - .1 Primers.
 - .2 Asphalt.
 - .3 Sealers.
 - .4 Filter fabric.
 - .5 Elastomeric sheet membrane.
- .3 Provide shop drawings and indicate:
 - .1 Flashing, control joints and tapered insulation details, changes in direction, junctions with door frames, curtain walls and windows, tops and bottoms of walls.
- .4 Manufacturer's Certificate: certify that products meet or exceed specified requirements.

- .5 Test and Evaluation Reports: submit laboratory test reports certifying compliance of membrane with specification requirements.
- .6 Manufacturer's Installation Instructions: indicate special precautions required for seaming the membrane.
- .7 Manufacturer's field report: in accordance with Section 01 45 00 - Quality Control.
- .8 Reports: indicate procedures and ambient temperatures during application.

1.5 FIRE PROTECTION

- .1 Fire Extinguishers
 - .1 Maintain one stored pressure rechargeable type with hose and shut-off nozzle.
 - .2 ULC labelled for A, B and C class protection.
 - .3 One extinguisher on roof per torch applicator, within 6 m of torch applicator.
- .2 Maintain fire watch for 1 hour after each day's Work operations cease.

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Provide and maintain dry, off-ground weatherproof storage.
- .2 Store rolls of felt and membrane in upright position.
 - .1 Store membrane rolls with salvage edge up.
- .3 Remove only in quantities required for same day use.
- .4 Store sealants at +5 degrees C minimum.
- .5 Store insulation protected from weather and deleterious materials.
- .6 Handle waterproofing materials in accordance with manufacturer's written directives, to prevent damage or loss of performance.
- .7 Store and manage hazardous materials in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .8 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding and packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.
 - .2 Fold up metal banding, flatten and place in designated area for recycling.

1.7 SITE CONDITIONS

- .1 Ambient Conditions
 - .1 Do not install waterproofing when temperature remains below -12 degrees C for torch application, or -5 degrees C for mop application.
 - .2 Minimum temperature for solvent-based adhesive is -5 degrees C or above.
- .2 Install waterproofing on dry deck, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into waterproofing system.

1.8 WARRANTY

- .1 For Work of this Section 07 13 52 - Modified Bituminous Sheet Waterproofing, 12 month warranty period is extended to 60 months.

1.9 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 PERFORMANCE CRITERIA

- .1 Waterproofing System: capable of resisting moisture/water head, and preventing moisture migration to interior.
- .2 Compatibility between components of waterproofing system is essential. Provide written declaration to Departmental Representative stating that materials and components, as assembled in system, meet this requirement.

2.2 DECK PRIMER

- .1 Primer for self-adhered membranes applied at temperatures above -10°C, low-VOC, fast drying, rubber base, designed to improve adherence of self-adhered membranes.
 - .1 Weight: 0.9 kg/l.
 - .2 Solids by weight: 24%.
 - .3 Brookfield viscosity at 25°C: 200 cP.
 - .4 Drying time (start of set): 15 to 60 minutes.
- .2 Primer for heat-welded foundation membrane, blend of SBS modified bitumen, volatile solvents and adhesive enhancing additives, used to prime concrete or metal substrates to enhance the adhesion of torch-applied waterproofing membranes.
 - .1 Weight at 20°C: 0.91 kg/L.
 - .2 Colour: Black.
 - .3 Solids by weight: 35%.
 - .4 Brookfield viscosity at 25°C: 50 cP.
 - .5 Drying time: 1 to 12 hours.

2.3 MEMBRANE

- .1 Air/vapour self-adhered membrane for use on walls: modified bitumen waterproofing membrane strip, elastomeric and non-woven polyester reinforcement.
 - .1 Thickness: 1.0 mm (40 mil).
 - .2 Air leakage: <0.005 L/s.m² at 75 Pa to ASTM E283-91.
 - .3 Tested to ASTM E 2357 for air retarder.
 - .4 Water vapour permeance: 1.6 ng/Pa.m².s. (0.03 perms) to ASTM E96.

- .5 Cold bending: -35 °C to CGSB 37-GP-56M.
- .6 Ultimate elongation (%): Longitud. = 40.0 – Transv. = 25.0
- .7 Static puncture resistance (N): 400.
- .8 Ultimate elongation (%): Longitud. = 40.0 – Transv. = 25.0
- .2 Heat-welded foundation membrane:
 - .1 Polymer-elastomeric styrene-butadiene-styrene (SBS) type, polyester reinforced, nominal surface weight of 180 g/m², thermofusible plastic film on both sides.
 - .2 Class C – plain surface.
 - .3 Category –heavy duty service.
 - .4 Both faces:
 - .1 Polyethylene/polyethylene.
 - .5 Properties of foundation membrane:
 - .1 Thickness: 2.7 mm.
 - .2 Ultimate elongation (longitudinal/transversal): 60/65%.
 - .3 Tensile strength (kN/m): Longitud. = 25.0 – Transv. = 160.
 - .4 Cold bending: no cracking at -30 °C.
 - .5 Softening point: ≥ 110 °C.
 - .6 Static puncture resistance: 470 N.

2.4 Accessories:

- .1 Asphaltic support panel, mineral-fortified asphaltic core between two asphalt saturated glass reinforcement mats attached with mechanical fasteners.
 - .1 Thickness: 6.4 mm.
 - .2 Puncture resistance: ASTM E154.
 - .3 Water absorption: ASTM D994.
 - .4 Compressive strength: ASTM C472.
- .2 Drainage panel: three-dimensional heterogeneous drainage system, crush resistant core, non-woven, needle-punched geotextile.
- .3 Fasteners: concrete screws treated for corrosion, sufficient length to penetrate 35 mm of concrete and 25 mm diameter self-locking nuts.

Partie 3 Execution

3.1 QUALITY OF WORK

- .1 Do examination, preparation and waterproofing Work in accordance with Roofing Manufacturer's Specification Manual particularly for fire safety precautions, and to ULC design.
- .2 Do priming for asphalt waterproofing in accordance with manufacturer's written recommendations.

- .3 Concrete must be cured a minimum of fourteen (14) days and an adhesion test is recommended before membrane application.
- .4 Refer to manufacturer's recommendations for sealing and treating concrete surface cracks (all layers) before installing membrane.
- .5 The interface of the walls and roof assemblies will be fitted with durable rigid material, sheet metal, providing connection point for continuity of air barrier.
- .6 Assembly, component and material connections will be made in consideration of appropriate design loads, with reversible mechanical attachments.

3.2 EXAMINATION OF ROOF DECKS

- .1 Verification of Conditions:
 - .1 Inspect with Departmental Representative deck conditions including parapets, construction joints, roof drains, plumbing vents and ventilation outlets to determine readiness to proceed.
- .2 Evaluation and Assessment: prior to beginning of work ensure:
 - .1 Decks are firm, straight, smooth, dry, free of snow, ice or frost, and swept clean of dust and debris. Do not use calcium or salt for ice or snow removal.
 - .2 Curbs and frames have been built.
 - .3 Plywood and lumber nailer plates have been installed to deck, walls and parapets as indicated.
- .3 Do not install waterproofing materials during rain or snowfall.
- .4 Conduct 10-point hydrometric inspection of poured concrete surfaces and comply with membrane manufacturer's requirements for moisture levels of these surfaces prior to application.

3.3 PROTECTION OF IN-PLACE CONDITIONS

- .1 Cover walls, walks, and adjacent work where materials hoisted or used.
- .2 Use warning signs and barriers. Maintain in good order until completion of Work.
- .3 Clean off drips and smears of bituminous material immediately.
- .4 Dispose of rain water off roof and away from face of building until roof drains or hoppers installed and connected.
- .5 Protect roof from traffic and damage. Comply with precautions deemed necessary by Departmental Representative.
- .6 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed Work and materials out of storage.
- .7 Metal connectors and decking will be treated with rust proofing or galvanization.

3.4 PRIMING DECK

- .1 Apply deck primer to concrete and gypsum board deck at the rate recommended by the manufacturer.

3.5 SELF-ADHERED WATERPROOFING MEMBRANE APPLICATION

- .1 Primer
 - .1 Apply deck primer to concrete and gypsum deck at rate specified on label.
- .2 Membrane application
 - .1 Cover all inside and outside corners with self-adhering 150 mm (6 in) membrane strip centred on corner. Apply strip directly to primed substrate not leaving any void between support and membrane.
 - .2 Apply membrane strips by progressively peeling back silicon film, while pressing on membrane to promote adherence.
 - .3 All membrane overlaps must be at least 50 mm.
 - .4 Holes and tears in the membrane must be repaired with the appropriate membrane material. The repair must exceed the affected surface area by at least 100 mm.
 - .5 Use a rubber roller to apply pressure over the entire surface of the membrane to ensure uniform adhesion to substrate.
 - .6 Contractor shall inspect membrane installation meticulously at the end of each day of work and also before installation of insulation. The upper edge of the membrane must be sealed with mastic at the end of the day's work when precipitation is anticipated or when the work is expected to be delayed or interrupted by more than one day.
 - .7 All small protrusions (pipes, etc.) through the waterproofing membrane, should be pre-stripped with a membrane and sealed with mastic.
- .3 Through-wall flashing membrane installation
 - .1 Install through-wall flashing at wall bottoms, as indicated on drawings.
- .4 Membrane installation at openings (windows, doors, etc.)
 - .1 The membrane must be carefully installed around openings in the wall (windows, doors, etc.) in such a manner as to prevent any air leak at these areas (refer to drawings for details). The air/vapour barrier membrane must be installed to create a continuous seal at construction elements such as foundations, roofs and walls, and at junctures of different materials or construction types (curtain wall construction, etc.).
 - .2 Self-adhesive membranes applied to junctions, window frames, door frames, endings, and on the perimeter of the building, receiving a sprayed insulation, should be mechanically fastened to the substrate with a termination bar.

3.6 HEAT-WELDED FOUNDATION WATERPROOFING MEMBRANE

- .1 Use chalk line to align first membrane strip.
- .2 All inside corners should be covered with a 300 mm (12 in.) wide strip of membrane centered on the corner. This membrane must be installed in direct contact with the substrate not leaving any voids under the membrane.
- .3 Weld the membrane using a propane gas torch.

- .4 Proceed in the same way for following subsequent membranes, aligning with previous roll. Overlap each strip by 75 mm laterally and 100 mm transversally.
- .5 Holes and tears in the membrane must be repaired with the same membrane. The repair must exceed the affected surface area by at least 100 mm, welded in place using a propane gas torch.
- .6 Prior to backfilling, install a protection board sealed with specified mastic. Backfill immediately after installation of protection board.
- .7 Mechanical fasten uppermost edge of the membrane using termination bars exceeding top edge of membrane.
- .8 Apply specified mastic on uppermost edge to prevent infiltrations and water accumulation.
- .9 Protect exposed waterproofing membrane from UV and mechanical damage.

3.7 INSULATION BOARD APPLICATION

- .1 Melt plastic film over entire surface using torch.
- .2 Glue board directly to exposed asphalt surface, applying uniform pressure over entire surface or as indicated on drawings.
- .3 Backfill immediately after installation of board within 72 hours maximum.

3.8 PROTECTION, DRAINAGE BOARD APPLICATION

- .1 Fasten drainage and protection panels using screws and anchor washers in accordance with panel manufacturer's recommendations.
- .2 Cover mechanical fasteners and anchor washers with welded membrane strip.

3.9 FIELD QUALITY CONTROL

- .1 Inspection and testing will be carried out by a representative of the membrane manufacturer.

3.10 CLEANING

- .1 Remove bituminous markings from finished surfaces.
- .2 In areas where finished surfaces are soiled caused by work of this section, consult manufacturer of surfaces for cleaning advice and complying with their instructions.
- .3 Repair or replace defaced or disfigured finishes caused by work of this section.
- .4 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Place materials defined as hazardous or toxic in designated containers.
 - .2 Clearly label location of salvaged material's storage areas and provide barriers and security devices.
 - .3 Ensure emptied containers are sealed and stored safely.
 - .4 Divert unused aggregate materials from landfill to local facility for reuse as reviewed by Departmental Representative.

- .5 Unused paint and coating material must be disposed of at official hazardous material collections site as reviewed by Departmental Representative.
- .6 Unused adhesive, sealant and asphalt materials must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
- .7 Dispose of unused adhesive material at official hazardous material collections site approved by Departmental Representative.
- .8 Dispose of unused sealant material at official hazardous material collections site approved by Departmental Representative.
- .9 Dispose of unused asphalt material at official hazardous material collections site approved by Departmental Representative.

END OF SECTION