

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Materials and installation for modified bituminous roofing.

**1.2 REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM).
  - .1 ASTM D41-[94(2002)e1], Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
  - .2 ASTM D312-[00], Asphalt Used in Roofing.
  - .3 ASTM D6164-[00], Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
- .2 Canadian General Standards Board (CGSB).
  - .1 CAN/CGSB-37.5-[M89], Cutback Asphalt Plastic Cement.
  - .2 CGSB 37-GP-9Ma-[83], Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing.
  - .3 CGSB 37-GP-15M-[84], Application of Asphalt Primer for Asphalt Roofing, Dampproofing and Waterproofing.
  - .4 CGSB 37-GP-19M-[85], Cement, Plastic, Cutback Tar.
  - .5 CAN/CGSB-37.29-[M89], Rubber-Asphalt Sealing Compound.
  - .6 CGSB 37-GP-56M-[80b(A1985)], Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.
  - .7 CAN/CGSB-51.33-[M89], Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building Construction.
- .3 Canadian Roofing Contractors Association (CRCA).
  - .1 CRCA Roofing Specifications Manual-[1997].
- .4 Canadian Standards Association (CSA International).
  - .1 CAN/CSA-A123.3-[98], Asphalt Saturated Organic Roofing Felt.
  - .2 CAN/CSA-A123.4-[98], Asphalt for Use in Construction of Built-Up Roof Coverings and Waterproofing Systems.
  - .3 CSA O121-[M1978(R1998)], Douglas Fir Plywood.
  - .4 CSA O151-[M1978(R1998)], Canadian Softwood Plywood.
- .5 Underwriters Laboratories' of Canada (ULC).
  - .1 CAN/ULC-S701-[01], Thermal Insulation, Polystyrene, Boards and Pipe Covering.
  - .2 CAN/ULC-S704-[2001], Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

**1.3 STORAGE AND HANDLING**

- .1 Provide and maintain dry, off-ground weatherproof storage.

- .2 Store rolls of felt and membrane in upright position. Store membrane rolls with selvage edge up.
- .3 Remove only in quantities required for same day use.
- .4 Place plywood runways over completed Work to enable movement of material and other traffic.
- .5 Store sealants at +5 degrees C minimum.
- .6 Store insulation protected from daylight and weather and deleterious materials.
- .7 Handle roofing materials in accordance with manufacturer's written directives, to prevent damage or loss of performance.

#### **1.4 PROTECTION**

- .1 Fire Extinguishers: maintain one cartridge operated type or stored pressure rechargeable type with hose and shut-off nozzle, ULC labeled for A, B and C class protection. Size 4.5 on roof per torch applicator, within 10 m of torch applicator.
- .2 Maintain fire watch for 1 hour after each day's roofing operations cease.

#### **1.5 ENVIRONMENTAL REQUIREMENTS**

- .1 Do not install roofing when temperature remains below -18 degrees C for torch application, or -5 degrees C for mop application.
- .2 Minimum temperature for solvent-based adhesive is -5 degrees C.
- .3 Install roofing on dry deck, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system.

### **Part 2 Products**

#### **2.1 DECK PRIMER**

- .1 Asphalt primer: to CGSB 37-GP-9Ma.
  - .1 Acceptable product: Elastocol 500.

#### **2.2 VAPOUR RETARDER**

- .1 Two-ply asphalt laminated membrane to CAN/CGSB-51.33 , Type 2, and fire retardant adhesive.
  - .1 Acceptable product: Duraperm.

#### **2.3 MEMBRANE**

- .1 Base sheet and base sheet flashing: to CGSB 37-GP-56M polyester fibres to ASTM D6164

- .1 Styrene-Butadiene-Styrene (SBS) elastomeric polymer prefabricated sheet, polyester reinforcement, having nominal weight of 180 g/m<sup>2</sup>.
- .2 Type 1, fully adhered.
- .3 Class C - plain surfaced.
- .4 Grade 1 - standard service.
- .5 Top and bottom surfaces:
  - .1 polyethylene/sanded.
- .6 Acceptable product: Elastophene 180 PS or Modiflex MP-180-FS-Base
- .2 Cap sheet membrane: to CGSB 37-GP-56M polyester fibres to ASTM D6164
  - .1 Styrene-Butadiene-Styrene(SBS) elastomeric polymer, prefabricated sheet, polyester reinforcement, having nominal weight of 250 g/m<sup>2</sup>.
  - .2 Type 1, fully adhered.
  - .3 Class A-granule surfaced.
    - .1 Colour for granular surface: gray or brown.
  - .4 Grade 1-standard service.
  - .5 Bottom surface polyethylene.
  - .6 Acceptable product: Sopralene 250 GR or Torchflex TP-250-CAP

#### **2.4 ADHESIVE**

- .1 Adhesive for securing overlay board and insulation: asphalt extended vulcanized adhesive, two component unit, consisting of two liquids mixed on site to produce pourable adhesive.

#### **2.5 BITUMEN**

- .1 Asphalt: to CAN/CSA A123.4, ASTM D312, Type 2.

#### **2.6 ISOCYANURATE (URETHANE) INSULATION**

- .1 To CAN/ULC-S704, Type 2, thickness 75 mm.

#### **2.7 INSULATING FIBREBOARD**

- .1 To CAN/ULC-S706, Type 1-roof board, surface coated, 12.7mm thick.

#### **2.8 SEALERS**

- .1 Plastic cement: asphalt, to CAN/CGSB-37.5 coal tar, to CGSB 37-GP-19M.
- .2 Sealing compound: to CAN/CGSB-37.29, rubber asphalt type.

#### **2.9 METAL FLASHING**

- .1 Metal Flashing to be 24 gauge galvanized steel, profile as existing.
- .2 Color: Dark Brown

**2.10 DRAINS**

- .1 Acceptable product: Aluminum Hercules Retrodrain.

**2.11 ANCHORS**

- .1 Anchors to be Stainless Steel Hilti HSL heavy duty anchor.

**Part 3 Execution**

**3.1 WORKMANSHIP**

- .1 Do examination, preparation and roofing Work in accordance with Roofing Manufacturer's Specification Manual and CRCA Roofing Specification Manual.
- .2 Do priming for asphalt roofing in accordance with CGSB 37-GP-15M.

**3.2 EXAMINATION OF ROOF DECKS**

- .1 Inspect with Contract Administrator deck conditions including parapets, construction joints, roof drains, plumbing vents and ventilation outlets to determine readiness to proceed.
- .2 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 have been built.
  - .3 Roof drains have been installed at proper elevations relative to finished roof surface.
  - .4 Plywood and lumber nailer plates have been installed to deck, walls and parapets as indicated.
- .3 Do not install roofing materials during rain or snowfall.

**3.3 PROTECTION**

- .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.
- .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.

### **3.4 VAPOUR RETARDER**

- .1 Adhere vapour retarder using solvent based adhesive as per manufacturer's instructions.

### **3.5 EXPOSED MEMBRANE ROOFING APPLICATION**

- .1 Insulation: fully adhered, bitumen application:
  - .1 Embed insulation in 1 to 1.5 kg/m<sup>2</sup> mopping of bitumen.
  - .2 Place boards in parallel rows with ends staggered, and in firm contact with one another.
  - .3 Cut end pieces to suit.
  - .4 Install one layer of 75mm polyisocyanurate insulation over roof deck.
- .2 Overlay FibreBoard application:
  - .1 Adhere 2 layers of fibreboard to insulation with full coat of hot asphalt back mopped to surface of fibreboard. The second layer bonded to first layer with full coat of hot asphalt mopped to surface of fibreboard.
  - .2 Place boards in parallel rows with end joints staggered.
- .3 Base sheet application:
  - .1 Starting at low point of roof, perpendicular to slope, unroll base sheet, align and reroll from both ends.
  - .2 Unroll and embed base sheet in uniform coating of asphalt applied at rate of 1.2 kg/m<sup>2</sup>, at 230 degrees C.
  - .3 Lap sheets 75 mm minimum for side and 150 mm minimum for end laps.
  - .4 Application to be free of blisters, wrinkles and fishmouths.
- .4 Cap sheet application:
  - .1 Starting at low point on roof, perpendicular to slope, unroll cap sheet, align and reroll from both ends.
  - .2 Unroll and torch cap sheet onto base sheet taking care not to burn membrane or its reinforcement.
  - .3 Lap sheets 75 mm minimum for side laps and 150 mm minimum for end laps. Offset joints in cap sheet 300 mm minimum from those in base sheet.
  - .4 Application to be free of blisters, fishmouths and wrinkles.
  - .5 Do membrane application in accordance with manufacturer's recommendations.
- .5 Flashings:
  - .1 Complete installation of flashing base sheet stripping prior to installing membrane cap sheet.
  - .2 Mop base sheet onto substrate in 1 metre wide strips.
  - .3 Torch cap sheet to base sheet.
  - .4 Lap flashing base sheet to membrane base sheet minimum 150 mm and seal by mopping or torch welding.
  - .5 Lap flashing cap sheet to membrane cap sheet 250 mm minimum and torch weld.
  - .6 Provide 75 mm minimum side lap and seal.

- .7 Properly secure flashings to their support, without sags, blisters, fishmouths or wrinkles.
- .8 Do work in accordance with manufacturer's recommendations.
- .6 Roof penetrations:
  - .1 Install roof drain pans, vent stack covers and other roof penetration flashings and seal to membrane in accordance with manufacturer's recommendations.

### **3.6 WOOD FRAMING**

- .1 Replace all wood framing around perimeter of roof.
- .2 Cut existing anchors and install new anchors 600mm o/c.
- .3 Minimum anchor embedment 100mm into concrete roof deck.
- .4 Head of anchor to be flush with wood framing
- .5 Construct parapet around perimeter of roof with 38mm x 89mm blocking and fir plywood flush with top of fibreboard.

### **3.7 METAL FLASHING**

- .1 Install new metal flashing and caulk joints.
- .2 Flashing to be the same profile as existing.
- .3 Hem exposed edge on underside 12mm.

### **3.8 SOFFITS**

- .1 Install existing soffit screens same location as existing.

### **3.9 ROOF DRAINS**

- .1 Retrofit existing roof drain.

### **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.

**END OF SECTION**