









PART 1 - GENERAL

1.1 SECTION CONTENTS

- .1 This section of the specifications governs the supply of all the materials, labour, supervision, tools, equipment, and all of the services required for the performance of all of the work described in these specifications and/or indicated on the plans, and specifically includes:
 - .1 The inspection of the preparatory work done by others.
 - .2 Execution of the new membrane including gypsum board, vapour, barrier, insulation, membrane, support panel, flashing, parapets and upstands.
 - .3 Base sheet membrane for flashings.
 - .4 Flashing around conducts.
 - .5 Flashing of curbs.
 - .6 Walkways.
 - .7 Sealing work.
 - .8 Polyvinyl flashing.
 - .9 Membrane contraction joint.
 - .10 Self-adhesive membrane.
 - .11 Roof drain.
 - .12 Metal flashing.
 - .13 Fire retardant support panel.
 - .14 Materials and accessories required for completion of the work specified in this section.
 - .15 The reinstallation of the existing equipments and accessories previously removed.
 - .16 The roof hatch.
 - .17 The pennants for the roof drain.
 - .18 Tapered insulation.
 - .19 Adhesive.
 - .20 Vent pipe.
 - .21 Lap band over support panel joints.

1.2 RELATED SECTIONS

- .1 The demolition work section 02060
- .2 Parapet section 06100

1.3 **CONTRACTOR QUALIFICATIONS**

- .1 Roofing contractors and sub-contractors must, when tendering and during works, possess a roofing contractor operating license, must also be registered with the Q.R.M.A. and the C.R.C.A. and meet all the requirements of R.S.Q., chapter Q-1, act respecting building contractors vocational qualifications.

1.4 **REFERENCE STANDARDS**

- .1 Membrane must meet or exceed requirements specified in the roofing specifications manuals of the C.R.C.A and the Q.R.M.A.

1.5 **SITE EXAMINATION**

- .1 The roof contractor shall hire a roofing consultant chosen by the CSC Representative for the inspection and the site examination for the complete work of the replacement of the membrane including the deck, the vapour barrier, the membrane including the deck, the vapour barrier, the membrane and all the flashings.
- .2 The site examination fees are at the owner's expense.

1.6 **PRECONDITION**

- .1 The assembly of the roofing membrane shall be performed during dry weather with a temperature higher than 4° (40° F) using only new dry and perfect materials.
- .2 If the temperature is colder than the minimum asked, the contractor shall notify the inspector of his ways of installing the membrane. The inspector could ask for additional measures other accepted ways of installing the membrane because of cold weather shall be the replacement of the adhesive by asphalt and/or by mechanical fasterrings.
- .3 At all time, materials will be adequately protected and stored in a dry and property ventilated area, away from any wilding flame or spark, and sheltered from the elements and any harmful substances.
- .4 Improper materials will be marked by the inspector and take away form the site.

1.7 PROTECTION

- .1 During the work, the roofing contractor shall adequately protect the materials, his work and the building from bad weather.

1.8 MATERIALS STORAGE AND DELIVERY

- .1 All materials will be delivered and stored in their original packaging, in conformance with the requirements described in the manufacture's technical documentation.

1.9 WARRANTIES

- .1 The contractor will provide a written and signed document to the owner's name certifying that the work executed will remain in place and free of waterproofing defect for a 10 year period from the date of acceptance.
- .2 Execution of the roofing membrane will be executed in strict compliance with the requirements of the Q.R.M.A.

1.10 COOPERATION

- .1 The contractor shall provide to the sub-contractor any material necessary to the work and shall notify the workers of any preparatory work required to fix adequately the material of the roofing membrane.

PART 2 - PRODUCTS

2.1 PRIMER

- .1 Elastocol 500 or Roofcraft from IKO
 - .1 Description: Primer installed on parapets and curbs.
 - .2 Property: Black liquid made from bitumen fast-evaporating solvents and adhesive enhancing additives.

2.2 **ADHESIVE**

- .1 Adhesive for insulation and support panel made of two component, quick setting, low expansion foam urethane adhesive. Specified product: DUOTACK by SOPREMA or ADPHALT by FRANSYL.

2.3 **VAPOUR BARRIER**

- .1 Self-adhesive membrane composed of SBS modified bitumen, with a surface screen made of high-density polyethylene laminated between two layers of polyethylene films. The width of the membrane is 1.14 m (45 in) to allow the membrane to fit on the top of most structural deck profiles. The self-adhesive underface is protected with a silicone plastic release film. SOPRAVAP'R by SOPREMA or PERMATE-STICK by FRANSYL. Used with elastocol 500 or Multigrip.

2.4 **ASPHALT FELT**

- .1 #15 Asphalt felt in accordance with CSA A123.3.

2.5 **INSULATION**

- .1 Expanded polystyrene insulation board according to standard ULC, CAN/ULC-S701 and ASTM C1338 evaluation report R04-690 mold resistance, width x length 914 mm x 2438 mm with shi lap edge. Total thickness 108 mm factory laminated composite panel (12,7 mm) on both faces of a fireproof fiberglass sheet, double-sided 3" self-adhesive overlapping strip laminated with a 180 gr membrane of 2,2 mm thick, consisting of a polyester reinforcement with a thermo fusible under face and surface POLYBASE-R+ 180THR by FRANSYL.
- .2 Accepted equivalence
 - .1 High performance support panel composed of SBS modified bitumen membrane with a non-woven polyester reinforcement, factory-laminated on a HD polyisocyanurate insulation board. The surface is covered with a thermo fusible film SOPRASMART ISO HD 180 by SOPREMA,
 - .2 Closed-cell polyisocyanurate foam insulation board laminated on both sides with a fiberglass yarn-reinforced organic paper SOPRA-ISO by SOPREMA.

2.5 **INSULATION (continued)**

.3 **Tapered insulation**

Expanded polystyrene insulation sloped board according to standard ULC, CAN/ULC-S701 and ASTM C1338, evaluation report R04-690, width x length 1220 mm x 1220 mm mold resistance CCMC #13027-L. Thermal transmission R4 (RSI-0.7) for one inch (25 mm) thickness B120LON THR by FRANSYL.

2.6 **BASE SHEET MEMBRANE FOR FLASHING AND PARAPETS**

.1 Membrane composed of SBS modified bitumen and non-woven polyester reinforcement. Both sides are covered with a thermofusible plastic film. The surface shall be marked with three (3) chalk lines to ensure proper roll alignment.

.2 In conformance with: CGSB 37.56-M (9th Draft).

.3 Properties:

- .1 Strain energy (550N " 5 cm).
- .2 Breaking strength $\geq 8\%$.
- .3 Ultimate elongation (%): 30%.
- .4 Static puncture resistance (n): ≥ 300 N
- .5 Cold bending at -30 °C, no cracking.

.4 Specified product: SOPRALENE FLAM 180 to SOPREMA or TORCHFLEX TP-180- FF-BASE by IKO.

2.7 **ROOFING CAP SHEET MEMBRANE**

.1 Description: Roofing membrane composed of SBS modified bitumen with a non-woven polyester reinforcement and elastomeric bitumen. The surface is protected by white coloured granules. The underface is covered with a thermofusible plastic film.

In conformance with: CGSB 37.56-M (9th Draft).

Properties:

Strain energy (kN/m)	11,9
Breaking strength (kN/m)	19,5
Ultimate elongation (%)	61
Tear resistance (N)	70
Static puncture resistance (N)	470
Dimensional stability (%)	-0.2

2.7 **ROOFING CAP SHEET MEMBRANE (continued)**

Plastic flow (°C)	≥ 105
Cold bending at -30 °C	No cracking
Lap joint strength (kN/m)	Pass > 4 kN/m
Specified Product: SOPRASTAR FLAM HD GR by SOPREMA or ARMORCOOL white granules by IKO.	

2.8 **METAL FLASHING**

- .1 Prepainted galvanized steel sheet .50 (26 gage) baked enamel finish, Vicwest colour VW-6071 Stone Grey.

2.9 **URETHANE SEALANTS**

- .1 Dymeric 240 FC by TREMCO, ASTM C920, type M two component urethane, chemical curing as specified on drawings. Use with joint backing made of round foam rod compatible with the sealant oversized 30%.

2.10 **NAILS AND FASTENERS**

- .1 Spiral nails and steel washers, 1' or 1 ½" length in conformance with ACNOR B111-1974, spreadsheet 12, galvanized steel.
Fasteners "Glasfast" in conformance with ONGC 37-GP-5M.

2.11 **SELF ADHESIVE MEMBRANE**

- .1 Self-adhesive membrane composed of SBS modified bitumen and non-woven polyester reinforcement such as SOPRALEM FLAM STICK with primer ELASTOCOL 500 by SOPREMA or ARMOUREBOND FLASK by IKO Industries Ltd.

2.12 **BUTYL RUBBER FLASHING**

- .1 Minimum 1,2 mm reinforced tape with butyl adhesive compound, traction resistance 8,3 Kpm, elongation 50%, colour black.

2.13 **GYPSUM-FIBER ROOFBOARD**

- .1 No-combustible glass fibre-covered roof board, 12,7 mm thickness. In conformance with ASTM E84 and ASTM C1177 and UL790.
- .2 Specified products: Greenglass Prime by FRANSYL or DENSDECK Prime by GPG.

2.14 **ADHESIVE FOR GYPSUM ROOF BOARD**

- .1 Two-component urethane base adhesive. Lexcan Insultac II with primer MULTIGRIP by FRANSYL.

2.15 **BITUMINOUS BOARD**

- .1 Semi-rigid roofing support panel.
- .2 Two asphalt-saturated fiberglass liners.
- .3 Mineral-reinforced asphaltic core.
- .4 Thickness: 6,4 mm.
- .5 Dimensions: 1220 mm x 2440 mm.
- .6 Specified products: SOPRABOARD by SOPREMA or Protecto Board by IKO.

2.16 **ROOF DRAIN**

- .1 Roof drain with complete anti-vandalism system, permanent dome strainer with opening lid, rigid copper drain sleeve, without joint, clip and vertical solder; 32 oz copper flange folded down in the sleeve; compatible with U-Flow Seal; dome strainer 260 mm diameter with evenly distributed orifices.
- .2 Specified Products: MURPHCO Ultra-Dome or Flip-Top by Lexcor.
- .3 Match the copper sleeve with the existing rainwater leader.
- .4 Retrofit roof drain seal such as MAXXFLO LEXCOR by FRANSYL.

2.17 **VENT STACK FLASHING**

- .1 Insulated Stack-Jack Flashing finish 1100-0T alloy aluminium pre-molded urethane insulation liner with vandal proof vent stack cap in aluminium. Specified Products SJ-26 and SJ-33 by Thaler or approved equivalent.

2.18 **TERMINATION BAS**

- .1 Made from specially extruded aluminium without sharp edges, flat with no ledges with slotted holes 8" on center, thickness 0,090".
- .2 Specified products: TB-90-8 by TRUFAST.

2.19 **THERMOFUSIBLE TAPE**

- .1 Thermofusible tape constructed using a reinforcing mat of durable no-woven reinforced polyester, which is coated and impregnated with SBS modified bitumen. Top and bottom faces in thin poly-film; thickness 3 mm; width x length: 247,6 mm x 330 mm.
Installation method: heat welding.
Specified products: POLYTAPE 180 by FRANSYL or POLYBASE TAPE by SOPREMA.

2.20 **FLAG POLE FOR ROOF DRAIN**

- .1 Flag pole 12 mm diameter solid fiberglass rod material of high strength thermal set resin and approximately 55% continuous fiber reinforcement; heavy duty 10 oz typical, visibility blaze orange fluorescent material. Hex base in zinc chromate plated with hex head bolt in stainless steel.
- .2 Specified products: WMA 120BKS Mount Plate.

2.21 **MEMBRANE WALKWAYS**

- .1 Additional layer of membrane (roofing cap sheet membrane) where shown on roof plan. Colour white.

2.22 **ROOF HATCH**

- .1 Metal roof hatch type L, size width 762 mm x length 2438 mm; the roof hatch shall be insulated, single leaf and pre-assembled from the manufacturer BILCO or JOURNAULT-JOUPLEX.
 - .1 Cover shall be 14 gauge paint bond G-90 galvanized steel.
 - .2 Cover insulation shall be fiberglass 25,4 mm thickness and protected by a metal liner 22 gauge paint bond G-90.
 - .3 Factory finish shall be alkyd based red oxide primed steel.

PART 3 – EXECUTION OF THE WORK

3.1 **SURFACE EXAMINATION AND PREPARATION**

- .1 Surface examination and preparation must be completed in conformance with instructions in the membrane manufacturer's technical documentation.
- .2 Before roofing work begins, the owner's representative and roofing foreman will inspect and approve deck conditions (including slopes and wood grounds) as well as flashings at parapets, roof drains, plumbing vents, ventilation outlets and other construction joints. If necessary, a non-conformity notice will be issued to the contractor so that required corrections can be carried out. The start of roofing work will be considered as acceptance of conditions for work completion.
- .3 Do not begin any portion of work before surfaces are clean, smooth, dry, and free of ice and debris. Use of calcium or salt is forbidden for ice or snow removal.
- .4 Be sure plumbing, carpentry and all other works have been duly completed.
- .5 No materials will be installed during rain or snowfall.

3.2 **GENERAL REQUIREMENTS**

- .1 Install plywood where equipment such as pump or winch will be installed for lifting material to protect the building exterior wall.
- .2 This instruction is complementary to those listed in the specifications for all the protection needed on the existing surfaces and for the work done by other sub-contractor.

3.3 **EXECUTION**

- .1 Install the roofing material on dry and clean surfaces in conformance with instructions in the membrane manufacturer's technical documentation.
- .2 Roofing work must be completed in a continuous fashion as surfaces are readied and as weather conditions allows it.
- .3 Protect the exposed surfaces of finished work to avoid damage during roof installation and material transportation.
- .4 Ensure waterproofing of roofs at all times including protection during installation work by other trades and protection as work is completed (vents, drains, etc.) and seal all joints that are not covered by a cap sheet membrane the same day. A second cap sheet cannot be installed if any moisture is present in joints.

3.4 **EQUIPMENT FOR EXECUTION OF WORK**

- .1 Keep the equipment and the tools to be used for the execution of the roofing in a good condition.
- .2 Use only the propane torch recommended by the manufacturer's membrane.

3.5 **NAILING**

- .1 Nails for the flashing are specified further in metal flashing.
- .2 If rails are necessary for the installation of a bitumen felt or other materials, look for the instructions of the manufacturer.
- .3 Not used nails and other debris on the roof have to be removed rapidly.

3.6 **BITUMEN SEALANT**

- .1 Sealant work and sealant material must be in conformance with the specifications described in this section and with the drawings.
- .2 The sealant for the flashing shall be DYMERIC 240.
- .3 Horizontal joints between the flashing the roofing membrane and the metal flashing shall be sealed.

3.7 **GYP SUM BOARD**

- .1 The gypsum board shall be fixed mechanically to the existing wood deck in conformance with Factory Mutual requirements including the PLPRS1-29.
- .2 The fastener and all the anchors pieces for the wood shall penetrate at least 20 mm in the wood.

3.8 **VAPOUR BARRIER**

- .1 Material and installation
Furnish and install the vapour –barrier membrane with the proper primer in accordance with the indications of the manufacturers.
- .2 Before beginning the job, the contractor shall verify all the surfaces to receive the vapour barrier and make sure that all surfaces are rigid, without gap, smooth, dry, clean and damage free.

3.9 **INSULATION (PANELS WITH FACTORY, LAMINATED MEMBRANE POLYBASE R+180-THR**

- .1 Install the proper amount of installation panels per day that could be recovered. At each end of the day or when the weather is bad, seal the insulation pane border. Take away the seal the next day before continuing the job.
- .2 Examine and repair the vapour barrier during execution of the work.
- .3 Panels shall be installed in parallel rows with the border recovered by the support panels.
- .4 Cut end boards to suit. Fit boards tight together.
- .5 Apply beads of roofing adhesive in accordance with manufacturer's written instructions. Insulation panels shall be pressed to insure maximum contact with adhesive.
- .6 Heat-weld the overlaps. Install the tape on each joint.

3.10 **SUPPORT PANEL (SOPRASMART, SOPRA-ISO)**

- .1 Cover Polyiso insulation with one layer of support panel 13 mm thickness. Apply beads of roofing adhesive to insulation on accordance with manufacturer's written instructions.
- .2 Adhere the support panel in adhesive to insure maximum contact with adhesive.
- .3 During execution, the support panels shall be protected against bad weather.
- .4 All boards must be in perfect connection, without any significant variances in level and must be completely adhered to the surface, before installing the cap membrane.
- .5 Seal end laps by welding a 250 mm wide protection strip centered on the joint where the overlap is missing.

3.11 **BASE SHEET FLASHING INSTALLATION**

- .1 Apply base sheet flashing only after primer coat is dry.
- .2 Cut off corners at end laps to be recovered by the next roll. Installed the membrane in one-meter-wide strip. Overlap side lap by along lines provided for the purpose, and overlap end laps by 100 mm. Stagger end joints by 100 mm.
- .3 This base sheet membrane must be welded directly to the prepared surface, proceeding from top to bottom, using a propane torch.
Rail the membrane every 300 mm c/c on top at 25 mm from border.
- .4 Overlap the membrane on top of the membrane installed on the support panels.

3.12 **ROOFING CAP SHEET INSTALLATIONS**

- .1 Make sure the support panel with the laminated membrane is free of wrinkles, swellings or fish mouths.
- .2 Starting at drain. Unroll the cap sheet membrane on the base sheet without adhering, taking care to align the first strip parallel to the edge of the roof.
- .3 Heat-weld according to the following instructions of membrane manufacturer.

3.12 **ROOFING CAP SHEET INSTALLATIONS (continued)**

- .4 The heat-welding shall melt both surfaces (base sheet and cap sheet), while unrolling the cap sheet the installer shall fix the cap membrane in the bitumen bead.
- .5 During installation be careful not to overheat the membrane.
- .6 Cut off corners at end laps to be covered by the next roll.
- .7 Overlap side laps by a long lines provided for this purpose (75 mm) and overlap end laps by 150 mm.
- .8 Heat-weld between 2 layers and avoid the formation of wrinkles, voids of fishmouths.
- .9 At the end of the work, verify all the joints and the overlap.
- .10 Make sur not to over-weld at overlap. Bitumen shall not be seen in smudge.
- .11 Lay an additional layer of membrane for the walk-way.

3.13 **INSTALLATION OF HEAT-WELDED CAP SHEETS ON UPSTANDS AND PARAPETS**

- .1 This cap sheet must be installed in one-meter-wide strip. Overlap side laps by a long lines provided for this purpose and overlap end laps by 150 mm. The side joints must overlap and must be staggered by at least 100 mm with respect to the joints of the cap sheet on the field surfaces, to avoid areas of excessive membrane thickness.
- .2 Use a propane torch and round-nose trowel to embed the surface granules in the layer of hot bitumen starting from the chalk line on the field surface to the bottom edge of the upstands or parapet as will as on the granulated vertical surfaces that are to be overlapped.

3.14 **METAL FLASHINGS**

- .1 Material
 - .1 Galvanized steel, 0,50 mm thickness, enamel baked finish, stone grey colour installed by the slater.

3.14 **METAL FLASHINGS (continued)**

- .2 Welding
 - .1 Stripper and welding shall be approved for the conditions of the roofing.

- .3 Fasteners
 - .1 Nails, screws, washers and other fasteners shall be made of anti-rust material and be compatible with the surfaces in contact. Fasteners shall be approved.
 - .2 Apply an etchant on all metallic surfaces which may receive bitumen. Those surfaces shall receive at least two layers of hot bitumen and vents or pipe shall be pressed in bitumen sealant.
 - .3 The roofing contractor shall install the metallic flashing in accordance with the best modern practices and allowing the metal to contract and expand. All vertical joints shall be sliding and filled with a polysulfide compound such as Thiostastic. Joints shall be folded 12 mm and the joints on corner shall be nailed to the parapet behind the drip every 600 mm c/c.
 - .4 The roofing contractor shall indicate in shop drawings all the flashing and the control joints for verification.

3.15 **SELF-ADHERED BASE SHEET**

- .1 Install a self-adhered membrane where specified by the Architect and if the conditions on site require such an installation. Apply the base sheet only after primer coat is dry. Install the self-adhered membrane in accordance with the manufacturer's recommendations.

3.16 **FIRE RETARDANT SUPPORT PANEL ON PARAPET AND UPSTANDS**

- .1 Install the fire retardant support panels on parapets and upstands according to the drawings. Those panels will be fixed on a bitumen felt mechanically fixed to the structure.

3.17 **ROOF DRAIN**

- .1 Install the roof drains according to the drawings.
- .2 Seal the roof drains with the existing rainwater leaders.

3.17 **ROOF DRAIN (continued)**

- .3 The roofing contractor shall supply and install the new drains with the dome strainers.
- .4 The roofing contractor shall take responsibility of the seals between the drains and the rainwater leader.
- .5 The roofing contractor shall provide shop drawings for verification before installation.
Installation:
 - .1 Install an elastomeric sealant. Between each layer of membrane.
 - .2 The roof drain shall lay in elastomeric sealant with a copper flange.
 - .3 The roofing contractor shall respect all the specifications of the manufacturer and make sure that the drain is installed at the bottom of a depression.
 - .4 The plumbing installation should be made in conformity with the appropriate provincial rules and with the recommendation of the Q.R.M.A.

3.18 **WARRANTY INSPECTION**

- .1 The roofing contractor shall execute every 5 years an inspection in company of a CSC Representative and produce a report at the beginning of each 5 years period.
- .2 Defects and leaking covered by the warranty of the roofing contractor shall be repaired by the contractor to restore the roofing system at no extra cost.

3.19 **WATER TESTING**

- .1 The roofing contractor shall execute a water test at the end of the work to verify the drainage and the sealing of the roofing system.
- .2 The test shall be performed with a water hose. No puddle shall remained on the membrane.

3.20 **FLASHING OF THE MECHANICAL CURBS**

- .1 Install metallic flashing under the mechanical curbs. Those curbs shall be in accordance with the specifications of the Q.R.M.A. see section 06100.

3.21 **FLASHING AROUND PIPE**

- .1 Execute bitumen flashing with metallic cover around mechanical pipe and conduct which pass through the roof.

3.22 **THE PENNANTS (FLAG POLE) FOR THE ROOF DRAIN**

- .1 Install on top of each roof drain a pennant showing the position of the drain. Install the pennants in accordance with the recommendations of the manufacturer. Fix the pennants with anti-rust fasteners.

3.23 **ROOF HATCH**

- .1 Supply and install where shown on drawings. The roof hatch 762 mm x 2440 mm in galvanized steel on insulated parapets which shall be 100 mm higher than the perimetric parapets.
- .2 The roof hatch shall have heavy pintle hinges and resist wind loads when open. The roof hatch shall be locked inside with a padlock furnish by the owner. Exterior shall be galvanized steel gage 14 with curb installation. Painting shall be executed by section 06100.
- .3 Furnish and install a folding hand rail 38 mm \varnothing as shown in drawing. Painting shall be executed by section 06100.

- END -