## Partie 1 General

### 1.1 RELATED REQUIREMENTS

.1 The list of Work in this division is indicative but non-limiting. It does not exclude Work described in other specification divisions shown on the drawings or required for full execution of the Work as intended on the drawings.

.2 Section 05 12 23 Structural Steel for Buildings.

.3 Section 06 10 00 Rough Carpentry.

.4 Section 06 10 01 Structural Carpentry.

.5 Section 07 21 13 Board Insulation.

.6 Section 07 62 00 Sheet Metal Flashing and Trim.

.7 Section 07 92 00 Joint Sealants.

.8 Section 07 95 23 Prefabricated Roof Expansion Joints.

.9 Section 07 72 33 Roof Hatches.

.10 Section 07 61 00 Sheet Metal Roofing.

.11 Section 09 21 16 Gypsum Board Assemblies.

.12 Section 09 22 16 Non-Structural Metal Framing.

### 1.2 REFERENCES

.1 ASTM International Inc.

.1 ASTM C728-05], Standard Specification for Perlite Thermal Insulation Board.

.2 ASTM C1177/C1177M-06, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

.3 ASTM C1396/C1396M-06a, Standard Specification for Gypsum Board.

.4 ASTM D41-05, Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.

.5 ASTM D312-00(2006), Standard Specification for Asphalt Used in Roofing.

.6 ASTM D6162-00a, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fibre Reinforcements.

.7 ASTM D6163-00e1, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fibre Reinforcements.

.8 ASTM D6164-05, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.

.2 Canadian General Standards Board (CGSB)

.1 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 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 CSA A123.21-F04, Standard Test Method for the Dynamic Wind Uplift Resistance of Mechanically Attached Membrane-Roofing Systems.

.2 CSA-A123.3-F05, Asphalt Saturated Organic Roofing Felt.

.3 CSA-A123.4-F04, Asphalt for Constructing Built-Up Roof Coverings and Waterproofing Systems.

.4 CSA A231.1-06, Precast Concrete Paving Slabs.

.5 CSA O121-F08, Douglas Fir Plywood.

.6 CSA O151-F04, Canadian Softwood Plywood.

.5 Factory Mutual (FM Global)

.1 FM Approvals - Roofing Products.

.6 Health Canada / Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.7 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 waterproofing Work, 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 copies of most recent technical roofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Provide two 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.

.3 Provide shop drawings:

.1 Indicate flashing, control joints, and tapered insulation details.

.2 Provide layout for tapered insulation.

.4 Samples: submit two (2) sample 304.8 mm (12") long pieces of insulation.

.5 Manufacturer's Certificate: certify that products meet or exceed specified requirements.

.6 Test and Evaluation Reports: submit laboratory test reports certifying compliance of bitumens, roofing felts and membrane with specification requirements.

.7 Manufacturer's Installation Instructions: indicate special precautions required for seaming the membrane.

.8 Manufacturer's field report: in accordance with Section 01 45 00 - Quality Control.

.9 Reports: indicate procedures followed, ambient temperatures and wind velocity during application.

## 1.5 QUALITY ASSURANCE

.1 Installer qualifications: company or person specializing in application of modified bituminous roofing systems approved by manufacturer.

## 1.6 FIRE PROTECTION (see section 01 35 29.06)

.1 Fire Extinguishers

.1 Maintain one cartridge operated type with hose and shut-off nozzle as indicated in Section 01 35 29.06 Health and Safety.

.2 ULC labelled for A, B and C class protection.

.3 Size 14 kg or as indicated on roof per torch applicator, within 6 m of torch applicator.

.2 Maintain fire watch for 1 hour after each day's roofing operations cease.

## 1.7 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions Section 01 61 00 - Common Product Requirements.

.2 Storage and Handling Requirements

.1 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of asphalt, sealing compounds, primers and caulking materials.

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

.3 Store rolls of felt and membrane in upright position. Store membrane rolls with salvage edge up.

.4 Remove only in quantities required for same day use.

.5 Place plywood runways over completed Work to enable movement of material and other traffic.

.6 Store sealants at +5 degrees C minimum.

.7 Store insulation protected from daylight and weather and deleterious materials.

.3 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.

## 1.8 SITE CONDITIONS

.1 Ambient Conditions:

.1 Do not install waterproofing 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.

.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.

## 1.9 WARRANTY

.1 For Work of this Section 07 52 00 – Modified Bituminous Membrane Roofing, the 12-month warranty period is extended to 120 months.

.2 All Work under this Section is covered by a 10-year warranty provided by the General Contractor and the manufacturer of the materials. The warranty includes installation of the Work by the General Contractor, the roofing contractor and the manufacturer. The warranty covers without being limited to all components penetrating the roofs (drains, vents and facilities for the installation of electrical and mechanical equipment, etc.) as well as penetrations without boxes.

## 1.10 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 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 Roofing System: to CSA A123.21 for wind uplift resistance.

**2.2 SUBSTRATE SHEATHING**

.1 Glass mat gypsum substrate: to ASTM C1177, Type X, fire-resistant, 12.7 mm thick and waterproof (for all building sectors unless otherwise indicated).

.1 Surface: Fibreglas mat
.2 Flute spanability: 127 mm
.3 Permeance: 35 perms
.4 Water absorption : 5% max.: 10.0
.5 Compression: 500-900 (psi)
.6 Surface burning characteristics: Flame spread: 0; Smoke developed: 0. To ASTM E-84).

.2 Plywood (various curbs and framing)

.1 Untreated, as specified in Section 06 10 00 Rough Carpentry.

**2.3 DECK PRIMER**

.1 Asphalt primer (base coat): to CGSB 37-GP-9Ma.

**VAPOUR RETARDER**

.2 Air/vapour barrier, SBS modified bitumen and polyethylene woven composite, self-adhered.

.1 Thickness: 0.8 mm
.2 Minimum application temperature: -10
.3 Facer: Tri-Laminate woven polyethelyne
.4 Underside: Silicon film

**2.4 MEMBRANE**

.1 Base sheet and reinforcing membrane: to CGSB 37-GP-56M, Styrene-Butadiene-Styrene (SBS) elastomeric polymer reinforcement, prefabricated sheet, minimum 2.2 mm thick, 180 g/m2, non-woven glass mat or polyester.

.1 Type 2, fully adhered.
.2 Class C – plain surfaced.
.3 Grade 1 – Standard service.
.4 Top and bottom surfaces: Sanded/polyethylene.
.5 Base sheet membrane properties: to CGSB 37-GP-56M.

.1 Strain energy (longitudinale/transversale): 9.0/7.0 kN/m.

.2 Breaking strength (longitudinal/transversal): 17.0/12.5 N/5 cm.

.3 Ultimate elongation (longitudinal/transversal): 60/65%.

.4 Tear resistance: 60 N.

.5 Cold bending at -30 degrees C : no cracking.

.6 Softening point: ≥ 105 degrees C.

.7 Static puncture resistance: 400.

.8 Dimensional Stability: -0.3 / 0.3%.

**Add. No 5 .2 Base Sheet Membrane for Flashings and Parapets**

**.1 Description:**

**Membrane composed of SBS modified bitumen and glass mat reinforcement. The surface is covered with a thermofusible plastic film covered with a release protection 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:** | **MD** | **XD** |
|---|---|---|
| **.1 Strain energy (kN/m)** | **8,4** | **8,3** |
| **.2 Breaking strength (kN/m)** | **18** | **16** |
| **.3 Ultimate elongation (%)** | **55** | **56** |
| **.4 Tear resistance (N)** | **120** | |
| **.5 Static puncture resistance (N)** | **380** | |
| **.6 Dimensional stability (%)** | **0,1** | **0,4** |
| **.7 Cold bending at -30 °C cracking.** | | **No** |

**Add. No 5 .3 Primer for self-adhesive membrane**

**.1 Description:**
**Primer compound(made up) of synthetic rubbers SBS, resins recognized for their power of adhesion and of volatile solvents. Used as primer to improve the adhesion of the self-adhesive membranes of waterproofness.**

.4 Cap sheet membrane: to CGSB 37-GP-56M, non-woven polyester reinforcement, white granules.

.1 Type: 1, fully adhered.

.2 Class: A – granule-surfaced.

.1 Colour for granular surface: White.

.3 Grade: 2 heavy duty service.

.4 Bottom surface: polyethylene.

.5 Cap sheet membrane properties: to CGSB 37-GP-56M.

.1 Strain energy (longitudinal/transversal): 10/10 kN/m.

.2 Breaking strength (longitudinal/transversal):17.0/16.0 kN/m.

.3 Ultimate elongation (longitudinal/transversal): 60/65%.

.4 Tear resistance: 75 N.

.5 Cold bending at -30 degrees C: No cracking.

.6 Softening point: ≥ 110 degrees C.

.7 Static puncture resistance: 420N.

.8 Dimensional Stability: -0.8 / 0.2%.

Add. No 5 **2.5 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.~~

**.1 Adhesive for sticking of the sublayer on panel of dubbing**

**.1 Description: asphalt modified with SEBS used as asphalt of sticking.**

**2.6 OVERLAY BOARD**

.1 Overlay Board: 25 mm perlite board to ASTM C 728.

.1 Install over insulation to provide torch safe surface.

.2 Recycled content: 30%

.3 Water adsorption: 1.5 (ASTM C 209)

.4 Compressive strength: 276 KPA (ASTM C 209)

.5 Weight: 144 kg/$m^3$ (ASTM C 209).

.2 Overlay board adjusted to drain height: 13 m x 1.2 m perlite panels to ASTM C728 and description in Point 1 above.

Add. No 5 ~~**2.7 BITUMEN**~~

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

**2.8 POLYISOCYANURATE INSULATION**

.1 To CAN/ULC-S704, Type 2, Class 2; universal fibreglass reinforced facers.

.2 Dimensions: 1220 mm X 1220 mm.

.3 Dimensional stability (ASTM D 2126): <2%.

.4 Water vapour permeance: <57.5 ng/Pa•s•m2 . . ASTM E 96 (< 1 perm).

.5 Temperature range: -73°C to 93°C (-100°F to 200°F).

.6 Tensile strength: 35 kPa (730 lb/po2) ASTM D 1623.

.7 Thickness: As indicated.

.8 RSI: 1/25.4 mm.

**2.9 SLOPE INSULATION**

.1 Polyisocyanurate to CAN/ULC-S704, Type 2, Class 2; universal fibreglass reinforced facers, utilise pour pentes régulières et façonnage des dosserets et criquets.

.2 Dimensions: 1220 mm X 1220 mm.

.3 Dimensional stability (ASTM D 2126): <2%.

.4 Water vapour permeance: <57.5 ng/Pa•s•m2 . ASTM E 96 (< 1 perm).

.5 Temperature range: -73°C to 93°C (-100°F to 200°F).

.6 Tensile strength: 35 kPa (730 lb/po2) ASTM D 1623.

.7 Thickness: As indicated.

.8 Minimum slope: 2%.

**Add. No 5** **2.10 MEMBRANE CUTTING – FLAME**

**.1 Description: membrane compound of an armature in glass sail coated with oxidized asphalt. Both faces are sanded.**

**2.11 SEALERS**

.1 Plastic cement: asphalt.

.2 Sealing compound: asphalt- rubber sealer.

.3 Sealants. Refer to 07 92 00 – Joint Sealants.

**2.12 WALKWAYS**

.1 Walkways to consist of one additional ply of cap sheet membrane. Colour to be different from field membrane as selected by Departmental Representative.

**2.13 ROUGH CARPENTRY**

.1 Refer to Section 06 10 00. – Rough Carpentry.

**2.14 CANT STRIPS**

.1 Cut from 38 mm thick rigid mineral wool fibre, to measure 140 mm on slope.

**2.15 FASTENERS**

**Add. No 5** **.1** Binding of the cover blanket in a steel support, in plywood or in CLT (lamellé wooden decking 3 crossings): sets boring screws with flat head, cadmiées, **number 14, by type A or appropriate AB of length, and galvanized plates 50 mm in diameter, approved by the FM 4470 of Factory Mutual.**

**Add. No 5** **.2 Binding of the insulating material in the support: sets boring screws with flat head, cadmiées, number 14, by type A or appropriate AB of length, and galvanized plates 50 mm in diameter, approved by the FM 4470 of Factory Mutual, as for the corrosion resistance and in the uprising by the wind, according to the recommendations of the manufacturer of the insulating material.**

.3 Continuous metal strips at roof junctures and parapet tops.

**Add. No 2** **2.16 ROOF DRAINS**

**.1 Roof Drain consists of a copper plate -shaped base and a solid copper sleeve , seamless and without vertical welding. Bend the copper plate to the inside of the sleeve with the aid of a punch . Assemble the two copper coins with "weld MIG ", which protects the weld when modified bitumen membrane application.**

**.1 Copper plate, 32 ounce, thickness: 1.066 mm by 400 mm in diameter.**

**.2 Drain sleeve made of solid pipe of 2,29 mm by 450 mm in length for 117 mm downspouts, either 127 mm, or 143 mm, or 152.4 mm of internal diameter.**

**.3 Category: commercial, HP C 12200.**

**.4 Certified stiff pipe in compliance with the standard ASTM B75.**

**.5 Weld: " MIG " metal-inerte-gaz.**

**.6 Strainer Antivandal type, cast aluminium with removable cover for cleaning.**

**.7 Stainless steel support flange and mechanical fixation.**

**.2 Acceptable products:**

**.1 Flash-tite distributed by LEXCOR**

**.2 Replacement product approved by addendum in accordance with Instructions to Bidders.**

## Partie 3 Execution

### 3.1 QUALITY OF WORK

.1 Do examination, preparation and roofing Work in accordance with Roofing Manufacturer's Specification Manual, CRCA Roofing Specification Manual, particularly for fire safety precautions, and to FM and ULC specifications.

.2 Do priming in accordance with manufacturers written recommendations and to CGSB 37-GP-15M.

.3 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.

.4 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 conditions of all deck types including parapets, construction joints, roof drains, plumbing vents and ventilation outlets to determine readiness to proceed.

.2 Evaluation

.1 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.

.4 Do not install roofing materials when temperature is below -20°C with strong winds.

**3.3 PROTECTION OF IN-PLACE CONDITIONS**

.1 Cover walls, walks, slopped roofs 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.

**Add. No 5**

**3.4 DECK SHEATHING**

**.1 These panels will be screwed in the tops of the grooves of the metallic deck at the rate of 4 mechanical bindings by panel and according to the requirements of Factory Mutual, in particular the PLPDS I-29 in what concerned the binding of panels in the perimeters and in the corners of roofs.**

**.2 Cut panels so that every bank if supports on the center of the superior groove. Make rectilinear cuttings with an adequate tool.**

**.3 In the changes of slope, panels will be cut (and not broken) to take the shape of the platelage of steel. Panels will be perpendicularly put in the grooves of the platelage so as to allow a continuous support for the extremities of panels.**

**.4 The joints of panels will be in staggered rows, in half-panel and perfectly joined. These joints, in both directions, will be closed by means of a heatproof ribbon to warn any flowof asphalt inside finished places.**

**3.5 PRIMING DECK**

.1 Apply deck primer to gypsum board roofing substrate at the rate recommended by manufacturer.

**3.6 VAPOUR RETARDER APPLICATION (OVER GYPSUM BOARD SUPPORT PANELS)**

.1 Prime gypsum board surfaces in quantities recommended by manufacturer (no primer required on prepainted metal). All surfaces must be free of rust, dust or any residue that may interfere with adherence. Cover primed surfaces as soon as possible the same day.

.2 Starting at low point of roof, unroll sheet and align before adhering. Do not remove detachable silicon film immediately.

.3 Align roll parallel to steel deck profiles. Position overlaps over profiles.

.4 Remove one end of the silicone release film and adhere this part of the membrane to the substrate. Remove the remaining release film at a 45º angle to avoid wrinkles in the membrane.

.5 If roll is incorrectly aligned, do not move from side to side. Instead, cut the roll and re-align correctly with 150 mm end.

.6 Overlap adjacent rolls of 75 mm. End laps must be 150 mm. Space end laps by at least 300 mm.

**3.7 (EXPOSED) CONVENTIONAL MEMBRANE ROOFING (CMR) APPLICATION**

.1 Insulation: mechanically fastened application

.1 Mechanically fasten insulation using screws and pressure distribution plates. Fasten insulation as per manufacturer's written recommendations.

.2 Number and pattern of screws per board to meet Factory Mutual requirements.

.3 Place boards in parallel rows with ends staggered, and in firm contact with one another.

.4 Cut end boards to suit.

**Add. No 5 .2 Installation of the insulating material of shape disentangled by mechanical fixation**

**.1 To fix the insulating material by means of screw and of plates of distribution of pressure, to fix the insulating material according to the recommendations of the manufacturer.**

**.2 Cut end boards to suit. Meet the requirements of Factory Mutual as for the arrangement of screws and their number by panel.**

.3 Install tapered insulation as first insulation layer, in accordance with shop drawings. Stagger joints between layers 150 mm minimum.

**Add. No 5 .3 Overlay board by mechanical fixation**

**.1 Fix the insulating material by means of screw and of plates of distribution of pressure, fix the insulating material according to the recommendations of the manufacturer.**

.2 Place boards in parallel rows with end joints staggered. Cap joints approximately 25 mm.

.3 Cut ends to suit and apply adhesive in continuous ribbons at 300 mm on centre.

**Add. No 5 .4 Installation of the basic coat by means of asphalt modified with SEBS**

.1 Starting at low point of roof, perpendicular to slope, unroll base sheet, align and reroll from both ends.

**Add. No 5 .2 Unroll the membrane for basic and stick it by means of asphalt on the support of blanket, by avoiding burning the membrane, its armature or the support. (Quantity L / m2), according to the recommendations of the manufacturer.**

.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.

**Add. No 5 .5 Use the roller maroufleur to allow a full adhesion of the membrane to the panel of dubbing, run first time in the longitudinal direction and second time in the transverse direction.**

**Add. No 5 .5 Rails: rest of the self-adhesive sublayer on the statements and the rails**

**.1 The coat of primer will have to be dry at the time of the application of the sublayer.**

**.2 In the case of a self-adhesive sublayer, apply of the primer for self-adhesive membrane to the zone to be covered at the foot of rails.**

**.3 For the installation of the sublayer on the common surface apply the asphalt SBS in the proportions of the adhesive must be applied by means of an indented raclette of 5 mm (3/16 po) néoprène. The implementation is made on a dry, clean and healthy support.**

**.4 Coat the surface of adhesive at the rate of 0,6 to 0,8 L/m 2 (1,50 - 2,00 gal US / 100 pi2).**

**.5 Limitations must not be used in temperatures lower than 5 °C (41 °F). Must not be used on surfaces having a slope** 3 % (3/8 po au pi).

**.6 In the transverse coverings, get away from angle the corner of the zone which will be covered by the roller of following membrane.**

**.7 Every border will be astride the previous one laterally by following the chalk-lining planned for that purpose, and by 150 mm (6 po) in butts.**

**.8 Position the membrane beforehand cut. Remove 150 mm (6 po) from some siliconé paper going on the top of the rail to maintain the membrane read in position.**

**.9 Remove gradually the rest of the paper silicone while pressing on the membrane with an aluminum applicator to favor the adhesion. Use the same applicator to obtain a transition completed between the statement and the common surface. Spend a roller to be stuck on the whole membrane to**

**obtain a total adhesion.**

**.10 To install a fob of reinforcement on all the internal and outer angles.**

**.11 Always to seal overlappings before the end of the working day.**

**.12 To Avoid the formation of folds, inflations or mouths of fish.**

**.13 For the rails of more than 300 mm in height to add fixations mechanically by means of the metallic strips to the horizontal.**

**Add. No 5 .6 Installation of the coat of finish thermosoudable on the common part**

**.1 To Begin in the low point, by evolving perpendicularly in the axis of the slope; unwind the membrane for coat of finish, align it, then roll up him from its two extremities.**

**.2 Unwind the membrane for coat of finish and weld it in the blowtorch on the basic coat; avoid burning the membrane or its armature.**

**.3 Make be astride the sheets of membrane of at least 75 mm and 150 mm, on sides and extremities respectively. Joints in the coat of finish must be moved by at least 300 mm compared with those of the basic coat.**

**.4 The coat of finish has to present neither puffiness, nor wrinkling, nor yawn.**

.5 **Realize the membrane according to the recommendations of the manufacturer.**

.7 Flashings

.1 Complete installation of flashing base sheet stripping prior to installing membrane cap sheet.

.2 Mop sheet onto substrate in 1 metre wide strips.

.3 Lap flashing base sheet to membrane base sheet minimum 150 mm and seal by mopping or torch welding.

.4 Lap flashing cap sheet to membrane cap sheet 250 mm minimum and torch weld.

.5 Provide 75 mm minimum side lap and seal.

.6 Properly secure flashings to their support, without sags, blisters, fishmouths or wrinkles.

.7 Do work in accordance with Section 07 62 00 - Sheet Metal Flashing and Trim.

.8 Install reinforcing membrane over edge flashing.

.8 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 and details.

.2 Unroll and torch base sheet onto substrate taking care not to burn membrane or its reinforcement or substrate.

.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.

**Add. No 5** ~~**.9 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 embed cap sheet in uniform coating of asphalt applied at rate of 1.2 kg/m$^2$, EVT at point of contact.**~~

**Add. No 5 .9 Installation of the coat of finish thermosoudable on the statements and the rails**

**.1 This coat of finish will be had by elements of 1 m (3,25 pi) width.**

**.2 Every border will be astride the previous one laterally by following the chalk-lining planned for that purpose, and will be astride of 150 mm (6 po) the common surface. The membranes of finish of statement must be moved by at least 100 mm (4 po) compared with those of the coat of finish of the common(current) surface to avoid any surépaisseur.**

**.3 In the transverse coverings, get away from angle the corner of the zone which will be covered by the roller of following membrane.**

**.4 With a line, pull a straight line at the common surface, in 150 mm (6 po) statements and rails.**

**.5 With a blowtorch and a trowel with round end, to push the granules of surface in the coat of hot asphalt from the very precise line on the common surface and up to the edge of the statement or the rail, as well as on the vertical parts granulated to be astride.**

**.6 This coat of finish will be welded in the blowtorch directly on the sublayer by proceeding in the bottom upward.**

**.7 Avoid the formation of folds, inflations or mouths of fish.**

**Make sure to proceed without overheating membranes and their armatures.**

## 3.8 CANTS

.1 Install mineral wool fibre over rigid insulation.

.2 Apply hot bitumen to receiving surface and embed cant firmly by hand.

.1 Fasten wood cants to wood insulation stops.

.3 Angle cut cants to fit tightly on back and bottom where roof to wall angle varies from 90 degrees.

## 3.9 WALKWAYS

.1 Install walkway membrane in accordance with manufacturer’s instructions as indicated.

.1 Apply primer to cap sheet membrane and torch apply, ensuring selvage edge is removed.

## 3.10 FIELD QUALITY CONTROL

.1 Inspections

.1 Inspection and testing of roofing application will be carried out by testing laboratory designated by Departmental Representative.

.2 Departmental Representative will pay for tests as specified in Section 01 45 00 - Quality Control.

.3 Inspection and testing of roofing application designated by Departmental Representative.

## 3.11 CLEANING – SECTION 01 74 11

.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 documented instructions.

.3 Repair or replace defaced or disfigured finishes caused by work of this section.

.4 Waste Management: separate waste materials for reuse/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 Unused paint and coatings must be of at official hazardous materials collections site as reviewed by Departmental Representative.

.5 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.

.6 Dispose of unused adhesive material at official hazardous material collections site approved by Departmental Representative.

.7 Dispose of unused sealant material at official hazardous material collections site approved by Departmental Representative.

.8 Dispose of unused asphalt material at official hazardous material collections site approved by Departmental Representative.

.9 Divert unused gypsum materials from landfill to recycling facility as reviewed by Departmental Representative.

**Add. No 2**

## 3.12 ROOF DRAIN INSTALLATION

**.1 At the level of the membrane:**

**This type of drain is typically used on flat roofs covered by a modified bituminous waterproof membrane. Apply a reinforcement strip and extend continuously the finishing membrane, following manufacturer’s recommendations.**

**.2 For connecting the drain sleeve to the storm stack, cut the sleeve of appropriate length so it can be install with a clamping ring with the 117 mm drains, or 127 mm, or 143 mm, or 152.4 mm.**

**END OF SECTION**