PART I GENERAL

1.1 SECTION INCLUDES

.1 Board insulation at underside of existing concrete floor slab.

.2 Batt insulation.

.3 Vapour barrier.

.4 Air barrier.

1.2 RELATED SECTIONS

.1 Section 06114 - Rough Carpentry.

.2 Section 07552 - Modified bitumen Roofing: rigid insulation at roof system.

.3 Section 07480 - Firestopping.

.4 Section 07900 – Joint Sealers

.5 Section 09226 - Portland Cement/Acrylic Stucco

1.3 REFERENCES

.1 ASTM C578 - Preformed, Cellular Polystyrene Thermal Insulation.

.2 ASTM D 1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics.

.3 ASTM E96 - Test Methods for Water Vapour Transmission of Materials.

.4 ASTM D2842 - Water Absorption of Rigid Cellular Plastics.

.5 ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.

.6 ASTM E96 - Test Methods for Water Vapour Transmission of Materials.

1.4 INSPECTION TESTING

.1 Coordinate inspection of vapour barrier elements prior to vapour barrier system being covered up by other trades.

PART 2 PRODUCTS

2.1 INSULATION MATERIALS

.1 Rigid Insulation (u/s of Concrete Floor): 2" Type 4 extruded cellular polystyrene – shiplap edge.

.1 Acceptable Manufacturers: Dow Corning Styrofoam or approved equal in accordance with B6.

.2 Expanded Polystyrene Insulation (exterior wall surfaces)

.1 Acceptable Manufacturers: Dryvit Systems Canada or approved equal in accordance with B6.

.3 Batt Insulation: ASTM C665; preformed glass fiber batt, friction fit.

.1 Acceptable manufacturers: Johns Manville Formaldehyde-free batt insulation or approved equal in accordance with B6.

2.2 VAPOUR BARRIER

.1 Polyethylene film: to CAN/CGSB-51.34, 0.15 mm thick.

2.3 AIR BARRIER

.1 Air Barrier: Spun bonded polyolefin

.1 Acceptable materials: Tyvek Building Wrap manufactured by Dupont Canada or approved equal in accordance with B6.

2.4 MOISTURE BARRIER

.1 Moisture Barrier: Trowel on Moisture Barrier

.1 Acceptable materials: Backstop MP manufactured by Dryvit Systems Canada or approved equal in accordance with B6.

2.4 ACCESSORIES

.1 Joint Sealing Tape: air resistant pressure sensitive adhesive tape recommended by manufacturer.

.2 Non-skinning, non-drying compound: Tremco Acoustical Sealant or approved equal in accordance with B6.

.3 Staples and nails: galvanized steel staples minimum ½" long to CSA B111.

.4 Moulded box vapour barrier: factory-moulded polyethylene box for use with recessed switch and outlet device boxes.

.5 Extruded Polystyrene Insulation adhesive: Primus by Dryvit Systems Canada or approved equal in accordance with B6.

PART 3 EXECUTION

3.1 RIGID INSULATION - UNDERSIDE OF FLOOR SLAB

.1 Install insulation after building substrate materials are dry.

.2 Install insulation to maintain continuity of thermal protection to building elements.

.3 Fit insulation tight around electrical boxes, plumbing, heating pipes, and ducts, around exterior doors and windows and other protrusions.

.4 Keep insulation minimum 3" from heat emitting devices such as recessed light fixtures, and minimum 2" from sidewalls of CAN4-S604 type A chimneys and CAN/CGA-Bi49.1 and CAN/CGA-B149.2 type B and L vents.

.5 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.

.6 Offset both vertical and horizontal joints in multiple layer applications.

.7 Do not enclose insulation until it has been inspected and approved by Contract Administrator.

.8 Secure 3/8" MDF, ptd black, over rigid insulation as indicated in drawings. MDF to be fastened with Masonry screws every 24" oc.

3.2 EXPANDED POLYSTYRENE INSULATION – EXTERIOR WALL SURFACES

.1 Install insulation after building substrate materials are dry.

.2 Provide Moisture Barrier beneath insulation as specified and according to manufacturer's instructions.

.3 Provide insulation adhesive according to manufacturer's instructions.

.4 Install insulation to maintain continuity of thermal protection to building elements.

.5 Fit insulation tight around electrical boxes, plumbing, heating pipes, and ducts, around exterior doors and windows and other protrusions.

.6 Keep insulation minimum 3" from heat emitting devices such as recessed light fixtures, and minimum 2" from sidewalls of CAN4-S604 type A chimneys and CAN/CGA-Bi49.1 and CAN/CGA-B149.2 type B and L vents.

.7 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.

.8 Offset both vertical and horizontal joints in multiple layer applications.

.9 Do not enclose insulation until it has been inspected and approved by Contract Administrator.

3.3 BATT INSULATION – EXTERIOR WALLS

.1 Install insulation to maintain continuity of thermal protection to building elements and spaces.

.2 Install insulation with factory applied vapour barrier facing warm side of building spaces.

.3 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

.4 Do not compress insulation to fit into spaces.

.5 Keep insulation minimum 3" from heat emitting devices such as recessed light fixtures, and minimum 2" from sidewalls of CAN/ULC-S604 Type A chimneys and CAN/CGA-B149.1 and CAN/CGA-B149.2 Type B and L vents.

.6 Do not enclose insulation until it has been inspected and approved by Contract Administrator.

3.3 VAPOUR BARRIER

.1 Ensure services are installed and inspected prior to installation of vapour barrier.

.2 Use sheets of largest practical size to minimize joints.

.3 Install continuous vapour barrier at inside face of exterior insulated wood framed building elements unless otherwise indicated.

.4 Installed vapour barrier to form a complete and continuous envelope, properly sealed at all joints, fastenings and penetrations to resist moisture migration.

.5 All penetrations through vapour barrier, unless clearly detailed on drawings, must be approved by Contract Administrator.

.6 To ensure continuity of vapour barrier at all locations, install strips of sufficient width at intersecting walls, on top of walls at joist bearings, and at other locations where subsequent work would prevent installation of continuous vapour barrier.

.7 Place vapour barrier joints over solid backing, lapped one full stud or joist space and sealed with sealant between sheets. Where vapour barrier is applied to top of roof deck or floor sheathing, lap joints a minimum of 6", and seal with sealant between sheets.

.8 At door and window openings cut 'X', carry material onto sill, head and jamb framing members, staple in place and seal framing.

.9 At electrical outlets and boxes located in exterior building elements, provide preformed polyethelene box. Seal vapour barrier to box and seal between electrical wires and boxes with sealant to maintain continuity of barrier.

.10 Inspect for continuity. Repair punctures and tears with sealing tape before work is concealed.

.11 Do not cover up any area until Contract Administrator has inspected and accepted installation of vapour barrier.

3.4 AIR BARRIER

.1 Apply air barrier over exterior surfaces of walls as indicated.

.2 Lap minimum of 8" and seal with tape.

.3 Fasten to framing or strapping at 24" on centre.

.4 Cut 'X' at window and door openings and fasten material to sill, head, jambs and seal.

3.5 MOISTURE BARRIER

.1 Apply trowel on moisture barrier over exterior surfaces of walls as indicated. Ensure sheathing materials are dry before commencing work.

.2 Install according to manufacturer instructions.

3.5 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 RELATED WORK

.1 Fire stopping and smoke seals within mechanical assemblies and electrical assemblies are specified in Division 15.

1.2 REFERENCES

.1 Underwriter's Laboratories of Canada (ULC)

.1 ULC-S115-1995, Fire Tests of Firestop Systems.

1.3 SAMPLES

.1 Submit samples in accordance with Section 01330: Submittal Procedures.

.2 Submit duplicate 300 x 300 mm samples showing actual firestop material proposed for project.

1.4 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01330: Submittal Procedures.

.2 Submit shop drawings to show proposed material, reinforcement, anchorage, fastenings and method of installation. Construction details should accurately reflect actual job conditions.

.3 Shop drawings to indicate locations where firestopping is used, required fire resistance rating, the material to be used and the tested design system (ULC or WH).

1.5 PRODUCT DATA

.1 Submit product data in accordance with Section 01330: Submittal Procedures.

.2 Submit manufacturer's product data for materials and prefabricated devices, providing descriptions are sufficient for identification at job site. Include manufacturer's printed instructions for installation.

Part 2 Products

2.1 MATERIALS

.1 Fire stopping and smoke seal systems: in accordance with ULC-S115.

.1 Asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of ULC-S115 and not to exceed opening sizes for which they are intended and conforming to special requirements specified in 3.5.

.2 Firestop system rating: as indicated.

.2 Service penetration assemblies: certified by ULC in accordance with ULC-S115 and listed in ULC Guide No.40 U19.

.3 Service penetration firestop components: certified by ULC in accordance with ULC-S115 and listed in ULC Guide No.40 U19.13 and ULC Guide No.40 U19.15 under the Label Service of ULC.

.4 Fire-resistance rating of installed fire stopping assembly in accordance with NBC.

.5 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.

.6 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.

.7 Primers: to manufacturer's recommendation for specific material, substrate, and end use.

.8 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.

.9 Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.

.10 Sealants for vertical joints: non-sagging.

Part 3 Execution

3.1 PREPARATION

.1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials. Ensure that substrates and surfaces are clean, dry and frost free.

.2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.

.3 Maintain insulation around pipes and ducts penetrating fire separation without interruption to vapour barrier.

.4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.2 INSTALLATION

.1 Install fire stopping and smoke seal material and components in accordance with ULC certification and manufacturer's instructions.

.2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.

.3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.

.4 Tool or trowel exposed surfaces to a neat finish.

.5 Remove excess compound promptly as work progresses and upon completion.

3.3 INSPECTION

.1 Notify Contract administrator when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.

3.4 SCHEDULE

.1 Firestop and smoke seal at:

.1 Penetrations through fire-resistance rated gypsum board partitions and walls.
.2 Top of fire-resistance rated gypsum board partitions.
.3 Intersection of fire-resistance rated gypsum board partitions.
.4 Control and sway joints in fire-resistance gypsum board partitions and walls.
.5 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
.6 Openings and sleeves installed for future use through fire separations.
.7 Around mechanical and electrical assemblies penetrating fire separations.
.8 Rigid ducts: greater than 20 sq inches: fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

3.5 CLEAN UP

.1 Remove excess materials and debris and clean adjacent surfaces immediately after application.

.2 Remove temporary dams after initial set of fire stopping and smoke seal materials.

END OF SECTION

PART I GENERAL

1.1 SECTION INCLUDES

.1 Modified bitumen membrane roofing with protective covering, vapour barrier, insulation and base flashings.

1.2 RELATED SECTIONS

.1 Section 06114 - Rough Carpentry.

.2 Section 07212 – Insulation, Air and Vapour Barriers.

.3 Section 07620 – Sheet Metal Flashing And Trim

.4 Section 07900 – Joint Sealer

.5 Section 09250 - Gypsum Board.

.6 Division 15 - Mechanical roof openings.

.7 Division 16 - Openings in roof system for electrical equipment.

1.3 REFERENCES

.1 CSA A 247-M - Fibreboard.

.2 CANICGSB-5 1.26-M86 - Urethane and Isocyanurate Boards, faced.

.3 ASTM C 79-94 - Specification for Gypsum Sheathing Board.

.4 ASTM C1002 - Steel Drill Screws for the Application of Gypsum Board.

.5 ASTM C 10 13 - Membrane Faced Rigid Cellular Polyurethane Roof Insulation.

.6 CRCA (Canadian Roofing Contractors Association) "Roofing Specification"

1.4 SYSTEM DESCRIPTION

.1 Low Roof on New Pavilion. Modified Bitumen Roofing System: Two ply membrane system with vapour barrier, covered by prefinished standing seam metal roof panels.

.2 Built up Roof on Existing Building. Modified Bitumen Roofing System: Self-Adhering Ice and Water guard membrane with vapour barrier and insulation, covered by prefinished standing seam metal roof panels.

1.5 QUALITY ASSURANCE

.1 Perform Work in accordance with CRCA manufacturer's instructions.

1.6 QUALIFICATIONS

.1 Applicator: Company specializing in performing the work of this section with three years documented experience and approved by system manufacturer.

1.7 MANUFACTURER'S REPRESENTATIVE

.1 The roofing material manufacturer shall delegate a representative to visit the work site at commencement of work and periodically during work in progress.

.2 At all times the contractor shall permit and facilitate access to the work site and roofs to manufacturer's representative.

1.8 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store, protect, and handle products to site.

.2 Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.

.3 Store products in weather protected environment, clear of earth and moisture.

.4 Stand roll materials on end.

1.9 ENVIRONMENTAL REQUIREMENTS

.1 Do not apply roofing membrane to damp or frozen deck surface.

.2 Do not apply roofing membrane during inclement weather.

.3 Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

.4 Coordinate demolition with new roof membrane installation to ensure all areas are completely waterproof at the end of each day.

1.10 COORDINATION

.1 Coordinate the work with installing associated metal flashings and standing seam metal roof panels as the work of this section proceeds.

1.11 WARRANTY

.1 Provide a 10 year manufacturer's warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS - MEMBRANE MATERIALS

.1 Soprema Waterproofing Inc. or approved equal in accordance with B6.

2.2 MEMBRANE SYSTEMS

.1 Low Roof: COLVENT system (semi-independent self-adhesive base sheet)

.1 Description: Reinforced elastomeric bitumen waterproofing system with a semi-independent, self-adhesive base sheet and a heat-welded cap sheet. The top surface of the base sheet is covered with a thermo-fusible plastic film and must have three distinctive blue lines to facilitate roll alignment. The bottom surface of the cap sheet is covered with a thermo-fusible plastic film and the top surface protected by coloured granules. Completed Roof system to be clad with prefinished standing seam metal roof panels.

.2 Components

.1 Reinforcement: combination of glass and polyester

.2 Elastomeric bitumen: blend of selected bitumen and SBS polymer

.3 System properties: [Traffic only]	MD	XD
.1 Strain energy (kN/m)	9.4	9.2
.2 Breaking strength (N/5 cm)	19.2	16.3
.3 Ultimate elongation (%)	54	62
.4 Cold bending at –30°C	No cracking	
.5 Softening point	≥ 110°C	
.6 Static puncture (N)	380	

.4 Prefabricated membrane, complies with CAN/CGSB 37-GP-56M (9th draft)

.5 Specified products

.1 Base sheet membrane: COLVENT BASE 810 by SOPREMA

.2 Cap sheet: COLVENT TRAFFIC CAP-860 by SOPREMA

.2 Upstand System: self-adhesive base sheet

.1 Description: Membrane flashing shall be two plies of reinforced modified bitumen membrane and the base sheet shall be self-adhesive. The top surface of the base sheet is covered with a thermofusible plastic film and the bottom surface is protected by silicone release paper. Cap sheet top surface is protected with coloured granules and the bottom surface is covered with a thermofusible plastic film. Cap sheet membrane is applied by heat-welding.

.2 Components

.1 Reinforcement: combination of glass and polyester

.2 Elastomeric bitumen: blend of selected bitumen and SBS polymer

.3 System properties:		MD	XD
.1	Strain energy (kN/m)	8.4	8.3
.2	Breaking strength (N/5 cm)	18	16
.3	Ultimate elongation (%)	55	56
.4	Tear resistance (N)	120	
.5	Static puncture (N)	380	
.6	Dimensional stability (%)	0.1 0.4	
.7	Plastic flow (°C)	105	
.8	Cold bending (at -30°C)	-initial No cracking -90 days at 70°C No cracking	

.4 Prefabricated membrane, complies with CAN/CGSB 37-GP-56M, 9th draft

.5 Specified products

.1 Base sheet flashing membrane SOPRAFLASH FLAM STICK from SOPREMA

.2 Cap sheet flashing membrane SOPRAFIX TRAFFIC CAP 660 by SOPREMA

.3 Built-Up Existing Roof: self-adhering Ice and Water Guard Membrane

.1 Description: Roof system to be built-up over existing stepped roof structure. Provide vapour barrier, insulation and self-adhering membrane as indicated. Provide wood strapping as indicated to receive prefinished standing seam metal roof panels.

.2 Specified products

.1 Modified Bitumen Self-Adhering Membrane LASTOBOND SHIELD from SOPREMA or approved equal in accordance with B6.

.2 Primer as recommended by Manufacturer.

2.3 ACCESSORIES MEMBRANES

.1 Roofing membrane reinforcement:

.1 Description: Roofing membrane with [composite heavy duty] [non-woven polyester] [and glass mat] reinforcement and SBS modified bitumen. [Both sides are] [The top face is] [covered with a thermofusible plastic film], [sanded] [the under side is self-adhesive]. The top face must be marked with three (3) distinctive blue chalk lines to ensure proper roll alignment.

.2 Components:

.1 Reinforcement: composite heavy duty non-woven polyester and glass mat.

.2 Elastomeric bitumen: Mix of selected bitumen and SBS polymer.

.3 Properties:

.1 Strain energy (kN/m) : longitudinal (MD)= [8,0] , transversal (XD) = 7,0

.2 Breaking strength (N/5 cm): longitudinal (MD) = [15], transversal (XD) = 13.5.

.3 Ultimate elongation (%): longitudinal (MD) = [60], transversal (XD) = 65.

.4 Cold bending at -300C: No cracking.

.5 Softening point: $\geq$ 1100C.

.6 Static puncture resistance (N): $\geq$ 560.

.4 Prefabricated membrane, complies with CAN/CGSB 37-GP-56M (9th draft)

.5 Specified product(s): SOPRAFLASH FLAM STICK by SOPREMA.

2.4 PRIMER

.1 Primer for self-adhesive membranes

.2 [Description: ELASTOCOL STICK: A blend of elastomeric bitumen, volatile solvents, adhesive enhancing resins used to prime porous substrates and non-porous substrates such as wood, concrete or metal to enhance the adhesion of self-adhesive membranes at temperatures above - 10°C.

.3 Specified product: ELASTOCOL STICK by SOPREMA.]

2.5 FLAME-STOP MEMBRANE

.1 Description: Self-adhesive membrane composed of a glass mat reinforcement and SBS modified bitumen designed to prevent flames from penetrating into empty spaces and openings while installing heat-welded membranes.

.2 Specified products: SOPRAGUARD tape by SOPREMA
Description: Membrane composed of a glass fleece reinforcement coated with oxidized bitumen. Both sides are sanded.

.3 Specified products: SOPRAGLASS [40] [100] by SOPREMA

2.6 INSULATION

.1 Polyisocyanurate insulation:

.1 Description : closed-cell polyisocyanurate foam core integrally laminated to heavy non-asphaltic fiber-reinforced grey felt facers.

.2 Specified product: COLGRIP B by SOPREMA

2.7 FLASHINGS

.1 Flexible Flashings: manufacturer's standard compatible with roof and wall vapour barrier.

2.8 ACCESSORIES

.1 Sealants: As recommended by membrane manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

.1 Surface examination and preparation must be completed in conformance with recommendations in the SOPREMA Specifications Manual, particularly for fire safety precautions.

.2 Before roofing work begins, Contract Administrator and roofing foreman will inspect and approve deck conditions (including slopes and wood blocking) as well as upstands and parapets, construction joints, roof drains, plumbing vents,

ventilation outlets and others. If necessary, a non-conformity notice will be issued to the contractor so that required corrections can be made. The start of roofing work will mean roofing conditions are acceptable for work completion.

.3 Do not begin any work before surfaces are smooth, dry, exempt of ice and debris. Use of calcium or salt is forbidden for ice or snow removal.

.4 Be sure plumbing, carpentry and all other work have been duly completed.

.5 No materials will be installed during rain or snowfall.

3.2 METHOD OF INSTALLATION

.1 Prepare surfaces and complete waterproofing work in conformance with SOPREMA'S requirements, and the "Roofers' Guide"

.2 Install roofing elements on clean and dry surfaces, in conformance with manufacturer's instructions and recommendations.

.3 Roofing work must be completed in a continuous fashion as surfaces are readied and weather conditions permit.

.4 Preferably seal all seams that are not covered by a cap sheet membrane in the same day. The cap sheet cannot be installed if any moisture is present at/in the base sheet seams.

.5 Whenever membranes are torch applied, a continuous and even bead of molten bitumen must be visible as the membrane is unrolled and torched.

.6 Ensure waterproofing conditions for roofs at all times, including protection during installation work by other trades and progressive protection as work is completed (e.g. vents, drains, etc.).

.7 Complete all work (temporary supports for equipment and bases, disconnection and connection of equipment as needed, moving and lifting of bases, etc.) required for waterproofing beneath equipment and bases [as shown on drawings]; use qualified trade persons as required. Temporary supports for waterproofing beneath air-conditioning units must be designed to hold supported loads and distribute these loads to avoid structural damage.

3.3 EQUIPMENT FOR WORK EXECUTION

.1 Maintain all roofing equipment and tools in good working order.

.2 Use torches recommended by SOPREMA

3.4 APPLICATION PRIMER

.1 Roofing substrates of wood, metal, concrete, masonry or gypsum board surfaces will receive a coat of asphalt primer at a rate of [.3 to .5 /sq m. (none required for factory-painted metals). All surfaces to be primed must be free of rust, dust or

any residue that may hinder adherence. Cover primed surfaces with roofing membrane as soon as possible (same day coverage for self-adhesive membranes).

3.5 INSULATION INSTALLATION

.1 Attach insulation mechanically in conformance with manufacturer's recommendations, and Factory Mutual standards [1-90] pertaining to number and placement of fasteners, namely Bulletin 1-28 for fastening to roof perimeters and corners.

.2 All vertical joints between two rows of insulation board will be staggered.

.3 Install only as much insulation as can be covered in the same day.

3.6 INSTALLATION OF FLAME-STOP MEMBRANES

.1 Adhere the membrane directly onto an approved substrate, tack the silicone release film. SOPRAGUARD TAPE is designed to prevent flames from penetrating into empty spaces and openings while installing heat-welded membranes.

3.7 INSTALLATION OF SELF-ADHESIVE SEMI-ADHERED BASE SHEET (COLVENT SYSTEM)

.1 Beginning at the drains and perpendicular to the slope, install the base sheet membrane without adhering in parallel strips.

.2 Each strip should overlap the preceding strip by 75 mm along the side joint (use the blue line to facilitate alignment) and by 25 mm at the ends. Because of the nature of this system, base sheet membrane joints can be aligned (no staggering) to facilitate the installation of the reinforcing band.

.3 Let the membrane relax at least 15 minutes before installing it, or burn the plastic film in a zigzag fashion using a propane torch to relax it. In cold weather, use the second method.

.4 Peel back the silicone release paper to adhere the membrane to the substrate. Use a broom or brush to apply even pressure and ensure good adherence.

.5 Remove the paper protecting the selvedge [then heat the side joints. Seal the joints using a trowel. A bead of molten bitumen should appear along the joint to ensure a perfect seal].

.6 Seal the end joints by welding a 300-mm-wide protection band centred on the joint.

.7 Avoid creating wrinkles, blisters, and fishmouths.

.8 The base sheet membrane should end over the cant strip or at the edge of the substrate.

.9 Install screws and washers every 300 mm c/c along the edge of the substrate.

3.9 INSTALLLATION OF PERIMETER BASE SHEETS WITH MECHANICAL FASTENERS.

.1 Unroll a strip of membrane without adhering at the base of the parapets and upstands.

.2 This base sheet membrane will be mechanically fastened using the anchoring patterns approved by Factory Mutual for the SOPRAFIX 1-90 system.

.3 Fasten the base sheet membrane at one end, pull firmly on the membrane to stretch it flat, then install the appropriate anchors, proceeding toward the free end.

.4 Just before installing the base sheet membrane on the field surface or on the upstands, remove the protection strip from each edge of the membrane to adhere the base sheet membrane to the perimeter membrane.

.5 Heat-weld the overlaps using a lap torch to prevent infiltrations.

.6 Avoid creating wrinkles, blisters, and fishmouths.

.7 The base sheet membrane should end over the cant strip or at the edge of the substrate.

3.10 INSTALLATION OF REINFORCEMENT GUSSETS

.1 Install gussets at every angle, on inside and outside corners.

.2 Heat weld the gussets in place after installing the thermofusible base sheet membrane.

.3 Install the thermofusible gussets after installing the self-adhesive base sheet membrane.

.4 Install the self-adhesive gussets before installing the self-adhesive base sheet membrane.

3.11 BASE-SHEET FLASHING INSTALLATION (SELF ADHERED)

.1 Apply base sheet flashing only once primer coat is dry.

.2 Before applying membranes, always remove the plastic film on the section to be covered if there is an overlap (inside and outside corners and field surface). For sanded base sheet membranes, apply ELASTOCOL STICK to the area to be covered at the foot of the parapets.

.3 Position the pre-cut membrane piece. Peel back 4 to 6 inches (100 to 150 mm) of the silicone release paper to hold the membrane in place at the top of the parapet.

.4 Then, gradually peel back the remaining silicone release paper, pressing down on the membrane with an aluminum applicator to ensure good adhesion. Use the aluminum applicator to ensure a perfect transition between the upstand and the field surface. Smooth the entire membrane surface with a roller for full adhesion.

.5 Cut off corners at end laps to be covered by the next roll.

.6 Install a reinforcing gusset in all inside and outside corners.

.7 Always seal overlaps at the end of the workday.

3.12 ROOFING CAP SHEET INSTALLATION (TORCH APPLIED MEMBRANE)

.1 Once base sheet is applied and no defects are apparent, proceed with cap sheet installation.

.2 Begin with double-selvage starter roll. If starter roll is not used, side laps covered in granules must be degranulated by embedding side laps in torch-heated bitumen over a 100 mm width.

.3 Unroll cap sheet at drain. Carefully align first side lap (parallel to roof edge).

.4 Weld cap sheet onto base sheet with torch recommended by membrane manufacturer. During application, simultaneously melt both designated contact surfaces so a bead of bitumen is apparent as cap sheet unrolls.

.5 Avoid overheating.

.6 Make sure joints between the two layers are staggered by at least 300 mm.

.7 Overlap cap sheet side laps by 100 mm and end laps by 150 mm. Cut off corners at end laps to be covered by next roll. All overlap surfaces must be degranulated.

.8 Complete perfect welds between two membranes. Leave no zone unwelded. In cold weather, adjust welding time to obtain homogenous seam (it may be necessary to slow down in certain cases.)

.9 Once cap sheet is installed, carefully check all overlapped joints.

.10 During installation, take care to avoid excessive bitumen bleed-out at joints.

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

.1 This cap sheet must be installed in one-metre-wide strips. The side joints must overlap by 100 mm and must be staggered by at least 100 mm with respect to the joints of the cap sheet on the field surface to avoid areas of excessive membrane thickness. The overlaps on the field surface must be 50 mm wider than those of the base sheet membrane on the upstands and parapets. At end laps, angle-cut the corners that will be covered by the following roll.

.2 Use a chalk line to draw a straight line on the field surface 150 mm from the upstands and parapets.

.3 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 upstand or parapet as well as] on the granulated vertical surfaces that are to be overlapped.

.4 This cap sheet will be heat-welded directly to the base sheet membrane, proceeding from bottom to top. This technique softens both membranes in order to obtain even, continuous weld.

.5 [During installation, be careful not to overheat the membrane or to create [excessive] [bitumen] bleeding at the joints.]

3.14 WATERPROOFING FOR VARIOUS DETAILS

.1 Install waterproofing membranes in conformance with various roofing details illustrated in the SOPREMA Manual.

3.15 CLEANING

.1 In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.

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

3.16 PROTECTION

.1 Protect building surfaces against damage from roofing work.

.2 Where traffic must continue over finished roof membrane, protect surfaces.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Aluminum Association (AA):

.1 DAF-45, Designation System for Aluminum Finishes

.2 American Society for Testing and Materials (ASTM International)

.1 ASTM A792/A792M-02, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

.2 ASTM A653M, Standard Specification for Sheet Steel, Zinc Coated (galvanized by the Hot Dip Process).

.3 ASTM B209, Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate

.3 Canadian Roofing Contractors Association (CRCA)

.1 Roofing Specifications Manual 1997.

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic Cement.

.2 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.

.5 Canadian Standards Association (CSA International)

.1 CSA B111-1974(R1998), Wire Nails, Spikes and Staples.

.2 CSA W59, Welded Steel Construction (Metal Arc Welding)

.5 Refer to specification section 09900 for Prefinished Metal Colours

1.2 SAMPLES

.1 Submit shop drawings in accordance with Section 01330 - Submittal Procedures.

.2 Submit duplicate 2”x 2” samples of each type of sheet metal material, colour and finish.

Part 2 Products

2.1 SHEET METAL MATERIALS

.1 Aluminum-zinc alloy coated steel sheet: to ASTM A792/A792M-02 commercial quality, grade 37 with AZ180 coating, regular spangle surface, chemically treated for unpainted finish and not chemically treated for paint finish, 0.45 mm base metal thickness.

.2 Clear Annodized Aluminum Trim Panels, 0.125" Thick.

2.2 STANDING SEAM METAL ROOF PANELS

.1 Standing seam metal roof panels: roll formed to CSA W59, panels to be 16" wide with 1 ½" profile, made of structural grade steel galvanized to ASTM A653M. Finish to colour specified in section 09900.

.2 Approved products: Flynn MRTL Architectural Metal Roof, contact (204) 786-6951, or approved equal in accordance with B6.

2.3 ACCESSORIES

.1 Isolation coating: alkali resistant bituminous paint.

.2 Plastic cement: to CAN/CGSB 37.5.

.3 Underlay for metal flashing:
- .1 dry sheathing to CAN/CGSB-51.32.
- .2 asphalt laminated 3.6 to 4.5 kg kraft paper.
- .3 No. 15 perforated asphalt felt to CSA A123.3.

.4 Sealants: in accordance with Section 07900.

.5 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness 0.45 mm same as sheet metal being secured.

.6 Fasteners: of same material as sheet metal, to CSA B111, ring thread flat head roofing nails of length and thickness suitable for metal flashing application.

.7 Washers: of same material as sheet metal, 1 mm thick with rubber packings.

.8 Construction adhesive: LePage PL 200 or approved equal in accordance with B6.

2.4 FABRICATION

.1 Fabricate metal flashings and other sheet metal work in accordance with applicable CRCA 'FL' series details and as indicated.

.2 Fabricate aluminum flashings and other sheet aluminum work in accordance with AA-Aluminum Sheet Metal Work in Building Construction.

.3 Form pieces in 2400 mm maximum lengths. Make allowance for expansion at joints.

.4 Hem exposed edges on underside 12 mm. Mitre and seal corners with sealant.

.5 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.6 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

2.5 METAL FLASHINGS

.1 Form flashings, copings and fascias to profiles indicated of 0.45 mm thick Aluminum-zinc alloy coated steel sheet as indicated.

2.6 CAP FLASHINGS

.1 Form for base flashings as detailed and in accordance with CRCA FL series details.

2.7 EAVES TROUGHS AND DOWNPIPES

.1 Form eaves troughs and downpipes from 0.45 mm thick Aluminum-zinc alloy coated steel sheet.

.2 Eaves Troughs to be 4” wide, Downpipes to be 4” x 4” closed profile, submit samples in accordance with Section 01330 – Submittal Procedures.

.3 Provide goosenecks, outlets, strainer baskets and necessary fastenings.

.4 Notch and form metal to building radius. All notches to be soldered. Ensure finished product forms a smooth curve, not a segmented face.

2.8 ALUMINUM TRIM PANELS

.1 Trim panels are not to be prefabricated. Panels are to be formed on site to ensure acceptable fit.

Part 3 Execution

3.1 INSTALLATION

.1 Flashing and Trim

.1 Install sheet metal work in accordance with CRCA FL series details, and as detailed.

.2 Use concealed fastenings except where approved before installation.

.3 Provide underlay under sheet metal. Secure in place and lap joints 4”.

.4 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs. Flash joints using S-lock, standing seams, forming tight fit over hook strips, as detailed.

.5 Lock end joints and caulk with sealant.

.6 Caulk flashing at cap flashing with sealant.

.2 Standing Seam Metal Roof Panels

.1 Coordinate Installation with application of specified roofing membranes, insulation, and strapping systems.

.2 Obtain Contract Administrator approval of roofing membranes, insulation, and strapping systems before proceeding with work.

.3 Install according to manufacturer's guidelines.

.4 Use concealed fastenings except where approved before installation.

3.2 EAVES TROUGHS AND DOWN PIPES

.1 Install eaves troughs and secure to building at 2'-6" on centre with eaves trough spikes through spacer ferrules. Slope eaves troughs to down pipes. Seal joints watertight.

.2 Install downpipes and provide goosenecks back to wall. Secure down pipes to wall with straps at 6' on centre; minimum two straps per down pipe.

3.3 ALUMINUM TRIM PANELS

.1 Supply 0.125" Clear Annodized Aluminum Trim pieces in complete flat lengths as indicated.

.2 Form Trim panels as indicated on site to ensure acceptable fit. Ensure trim panels are free of burrs and sharp edges and anodized finish remains consistent.

.3 Install Trim panels with LePage PL 200 construction adhesive or approved equal in accordance with B6. Ensure only a thin layer of adhesive is used to prevent deformation of trim panel.

END OF SECTION

PART I GENERAL

1.1 SECTION INCLUDES

.1 Preparing substrate surfaces.

.2 Sealant and joint backing.

1.2 RELATED SECTIONS

.1 Section 07212 - Insulation, Air and Vapour Barriers: Sealants required in conjunction with air and vapour barriers.

.2 Section 07552 - Modified Bitumen Roofing: Sealants required in conjunction with roofing.

.3 Section 08500 - Fibreglass Windows: Sealants required in conjunction with fiberglass windows.

.4 Section 08800 - Glazing: Sealants required in conjunction with glazing methods.

1.3 REFERENCES

.1 ASTM C790 - Use of Latex Sealing Compounds.

.2 ASTM C804 - Use of Solvent-Release Type Sealants.

.3 ASTM C834 - Latex Sealing Compounds.

.4 ASTM C919 - Use of Sealants in Acoustical Applications.

.5 ASTM C920 - Elastomeric Joint Sealants.

.6 ASTM DI056 - Flexible Cellular Materials - Sponge or Expanded Rubber.

1.4 SUBMITTALS

.1 Include the following paragraph for submission of physical samples for selection of finish, colour, texture, etc.

.2 Samples: Submit two samples, 114x6 inch in size illustrating sealant colours for selection.

1.5 QUALITY ASSURANCE

.1 Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

.2 Perform acoustical sealant application work in accordance with ASTM C919.

1.6 ENVIRONMENTAL REQUIREMENTS

.1 Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.7 WARRANTY

.1 Provide five year warranty.

.2 Warranty: Include coverage for installed sealants and accessories which fail to achieve air tight seal, water tight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.1 SEALANTS

.1 Acrylic Sealant (Type A): ASTM C920, Tremco latex 100; paintable; single component, solvent curing, non-staining, non-bleeding, non-sagging; Tremco latex 100. Colour to be selected by Contract Administrator.

.2 Acoustic Sealant (Type B): ASTM C920, Acoustic grade, single component, solvent release, non-skinning, non-sagging, synthetic rubber, Tremco Acoustic Sealant Grey colour.

.3 Polyurethane Sealant (Type C): ASTM C920, single component, chemical curing, non-staining, non-bleeding, Elongation Capability 25 percent, non-sagging ; Tremco Dymonic; PRC RC- 1 ; Sonneborn NP-1; Vulkem 931. Colour to be selected by Contract Administrator.

.4 Silicone Sealant (Type D): ASTM C920, Grade single component, fungus resistant, acidic curing, non-sagging, non-staining, non-bleeding; General Electric 'Sanitary 1700; Dow Coming 786. Colours to be selected by Contract Administrator.

2.2 ACCESSORIES

.1 Primer: Non-staining type, recommended by sealant manufacturer to suit application.

.2 Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

.3 Joint Backing: ASTM D1056; round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width.

.4 Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.1 EXAMINATION

.1 Verify that substrate surfaces and joint openings are ready to receive work.

.2 Verify that joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

.1 Remove loose materials and foreign matter which might impair adhesion of sealant.

.2 Clean and prime joints in accordance with manufacturer's instructions.

.3 Protect elements surrounding the work of this section from damage or disfiguration.

3.3 INSTALLATION

.1 Install sealant in accordance with manufacturer's instructions.

.2 Measure joint dimensions and size materials to achieve required 2: 1 width/depth ratios.

.3 Install bond breaker where joint backing is not used.

.4 Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

.5 Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

.6 Tool joints concave.

3.4 CLEANING

.1 Clean adjacent soiled surfaces.

3.5 PROTECTION OF FINISHED WORK

.1 Protect finished installation.

.2 Protect sealants until cured.

3.6 SCHEDULE

.1 Apply sealant type 'A' to junctures of millwork items and adjacent building components and perimeter of door frames as directed by Contract Administrator.

.2 Apply sealant type 'B' in two continuous beads around perimeter of plates, at top, bottom and sides of all partitions.

.3 Apply double bead sealant type 'B' around designated fire separations i.e. before setting top and bottom plates, where studs set around other materials, etc

.4 Apply sealant Type ‘C’ to exterior condition joints between door frames, aluminum window frames, siding components, etc. and where indicated on drawings.

.5 Apply sealant Type ‘D’ to perimeter joints of all sanitary components, vanities, counters, sinks, water closets, shower heads, etc. unless noted otherwise on drawings.

END OF SECTION