



**Part 1            General**

**1.1                SECTION INCLUDES**

- .1      Substrate preparation
- .2      Sheathing over deck surface.
- .3      Vapour retarder.
- .4      Insulation.
- .5      Membrane roofing.
- .6      Membrane Accessories
- .7      Membrane Flashings
- .8      Roofing Accessories.

**1.2                RELATED SECTIONS**

- .1      Section [05 31 23 - Steel Roof Decking]: Roof deck substrate.
- .2      Section 06 10 13 - Wood Blocking and Curbing: [Wood nailers] [cant strips].
- .3      Section 07 26 00 - Vapour Retarders.
- .4      Section 07 27 00 - Air Barriers.
- .5      Section 07 50 05 - Preparation For Re-roofing.
- .6      Section 07 62 00 - Sheet Metal Flashing and Trim: Counter flashing and [\_\_\_\_\_].
- .7      Section 07 63 00 - Sheet Metal Roof Specialties: Counter flashing and [\_\_\_\_\_].
- .8      Section 07 72 33 - Roof Hatches: Counter flashing and [\_\_\_\_\_].
- .9      Section 08 62 00 - Unit Skylights: Skylight frame [and integral curb]: Counter flashing and [\_\_\_\_\_].
- .10     Section 08 45 23 - Translucent Panel Wall and Roof Assemblies: Counter flashing and [\_\_\_\_\_].
- .11     [Division 22 – Plumbing] [Section 22 42 01 - Plumbing Specialties]: Roof [hoppers] [sumps] [drains].
- .12     [Division 23 – Heating, Ventilating, and Air-Conditioning (HVAC)] [Section [\_\_\_\_\_]]: Prefabricated curb for mechanical equipment.
- .13     [Division 26 – Electrical] [Section [\_\_\_\_\_]]: Lightning protection

**1.3                REFERENCES**

- .1      [ASTM C578-13 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.]
- .2      [ASTM C612-10 - Standard Specification for Mineral Fiber Block and Board Insulation.]

- .3 [ASTM C726-12 - Standard Specification for Mineral Fiber Roof Insulation Board.]
- .4 [ASTM C1002-07(2013) - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.]
- .5 [ASTM C1177/C1177M-13 - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.]
- .6 [ASTM C1396/C1396M-13 - Standard Specification for Gypsum Board.]
- .7 [ASTM D4434/D4434 M-15 - Standard Specification for Poly(Vinyl Chloride) Sheet Roofing.]
- .8 [CSA-A231.1-06/A231.2-06 (R2010) - Precast Concrete Paving Slabs/Precast Concrete Pavers.]
- .9 [CAN/ULC-S107-10 - Methods of Fire Tests of Roof Coverings.]
- .10 [CAN/ULC-S701-11 - Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.]
- .11 [CAN/ULC-S702-09 - Standard for Mineral Fibre Thermal Insulation for Buildings (Includes Amendment 1, 2012).]
- .12 [CAN/ULC-S704-11 - Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.]
- .13 [CRCA (Canadian Roofing Contractors' Association) - CRCA Roofing Specifications Manual.]
- .14 [FM (Factory Mutual) - Roof Assembly Classifications.]
- .15 Province of [ ] Roofing Contractors Association - Roofing Specifications Manual.
- .16 [ULC-BM-14 - Building Materials Directory (2014 Edition).]

#### **1.4 SYSTEM DESCRIPTION**

- .1 Assembly of components include Hi-Pro PVC Adhesive Adhered Roofing System with [vapour barrier][vapour retarder], [fully adhered][mechanically attached] insulation, and adhesive applied membrane, as well as all related roofing accessories in strict accordance with specifications and details approved by the roof system manufacturer.

#### **1.5 ADMINISTRATIVE REQUIREMENTS**

- .1 Section [ ]: Project management and coordination procedures.
- .2 Coordination:
  - .1 Coordinate with other work having a direct bearing on work of this section.
  - .2 Coordinate the work with the installation of associated metal flashings, as the work of this section proceeds.
- .3 Pre-installation Meetings:

- .1 Convene [one (1) week] [[\_\_\_\_\_] weeks] before starting work of this section.
- .2 Review preparation and installation procedures and coordinating and scheduling required with related work.

## 1.6 SUBMITTALS

- .1 Section [ ]: Submission procedure
- .2 Product Data: Provide characteristics on membrane materials, flashing materials, insulation, vapour retarders, [protective coating].
- .3 Samples: Submit [two (2)], [<[\_\_\_\_\_] mm><[\_\_\_\_\_] inch>] in size illustrating [insulation] [coloured coating].
- .4 Shop Drawings:
  - .1 Tapered insulation, roof cricket infill, setting plan layout, and details.
  - .2 Membrane layout on detailed roof plan, complete with full assembly section, vertical parapet details, joint or termination detail conditions, and conditions of interface with other materials.
- .5 Manufactures field reports: Indicate procedures followed; ambient temperatures, humidity, wind velocity during application, [\_\_\_\_\_] .
- .6 Sustainable Design:
  - .1 Section[ ]: LEED documentation procedures.
  - .2 Provide required LEED documentation for Product [recycled content] [regional materials] [low-emitting materials].
  - .3 Manufacturer's Certificate: Certify that Products meet or exceed [specified requirements].

## 1.7 QUALITY ASSURANCE

- .1 Roofing Contractor shall be an approved applicator of the roofing system supplier. The Prequalified contractors are: [\_\_\_\_\_] .
- .2 Workmen shall be trained and experienced in the installation of this type of roofing system and shall be under full time competent supervision.
- .3 Comply with all industry recommended safety practices during construction.
- .4 Perform Work to [CRCA Roofing Specifications Manual] [manufacturer's written instructions] [[\_\_\_\_\_] Manual]. Maintain [one (1) copy] [[\_\_\_\_\_] copies] of document on site.

## 1.8 DESIGN [REGULATORY] REQUIREMENTS

- .1 Conform to applicable code for roof assembly fire hazard requirements.
- .1 [CAN/ULC-S107]: Class [A] Fire Hazard Classification.
- .2 The specified roofing assembly must have been successfully tested by a qualified testing agency to resist the design uplift pressures calculated according to

- .1 *ANSI/SPRI WD-1 "Wind Design Standard Practice for Roofing Assemblies" American Society of Civil Engineers (ASCE 7) International Building Code (IBC). Or*
- .2 *[FM]: Roof Assembly Classification, Class [1] Construction, wind uplift requirement of [1-60] [1-90], in accordance with FM 1-28 "Design Wind Loads" and complies with FMG Property Loss Prevention Data Sheet 1-29 for enhancements at the perimeter and corners.*
- .3 *CSA A123.21 and Provincial Building Code wind uplift requirements; obtain applicable wind isotachs and Building Code hourly wind velocity pressure for 1 in 50 year return value, necessary for the selection of the proper roof system design specific to this project.*

## **1.9 DELIVERY, STORAGE, AND PROTECTION**

- .1 Deliver all roofing materials in original, unopened containers, complete with labels indicating brand name, contents, usage instructions and safety precautions. Membrane rolls are to be left in their unopened packaging until prior to install.
- .2 Protect membranes from cuts, abrasion or other abuse that might adversely affect performance in service.
- .3 Adhesives, sealants and flashing accessories are to be stored in a clean, dry area at a temperature between 5°C and 27°C. When the temperature is expected to fall below 5°C, outside heated storage boxes should be provided on the roof for temporary storage of adhesives and sealants.
- .4 Protect insulation, vapour retarder and other materials subject to water damage while stored on the job-site by covering them with a weatherproof tarpaulin and keeping them a minimum 15 cm (6") off of the deck or ground.

## **1.10 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 Do not apply roofing membrane during inclement weather or when ambient temperature falls below **-5** degrees C or above **30** degrees C.
  - .2 Install each roof layer on a dry substrate, free of snow and ice. Use only dry materials and apply only during weather that will not introduce moisture into the system.
  - .3 Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.
- .2 Schedule and execute work to prevent leaks and excessive traffic on completed roof sections. Care should be exercised to provide protection for the interior of the building and to ensure water does not flow beneath any completed section of the membrane system.

## **1.11 WARRANTY**

- .1 Contractor's Warranty: Provide two (2) year warranty on roofing, dated from time of Substantial Performance. The contractor will repair, at their expense, any leaks in the roofing membrane and membrane flashing including any related Sheetmetal work.

- .2 Manufacturer's Warranty: Roof System Manufacturer shall provide a written [Lexguard Classic, Essential, and Ultimate] warranty on supplier's standard form for a period of [5, 10, 20, 25, 30] years from the date of roofing system completion.
- .3 Projects with extended wind speed warranty coverage greater than 90 km/h and projects requiring a 20 year or greater Lexguard Ultimate warranty will require a design review by Lexcan's design department.
- .4 All membrane and accessory components must be Lexsuco Corporation products or approved equal.

## Part 2 Products

### 2.1 VAPOUR RETARDER SUPPORT PANELS

- .1 GLASS FACED GYPSUM BOARD: Panels composed of gypsum core, reinforced, faced with glass mat conforming to ASTM C1177, Standard Specification for Glass Mat (*Gypsum Substrate for Use as Sheathing.*)
  - .1 Thickness: [6.4 mm (¼ in)], [12.7 mm (½ in)], [15.9 mm (⅝ in)]
  - .2 Specified product: [coated], [non-coated] Georgia-Pacific Gypsum LLC; DensDeck or comparable product as supplied by Lexsuco Corporation.
- .2 LIGHTWEIGHT CEMENTITIOUS PANELS: Low density, fibre reinforced, water resistant cement support panels.
  - .1 Thickness: 11.1 mm (7/16 in)
  - .2 Specified product: Dexcel Cement Roof Board or comparable product as supplied by Lexsuco Corporation.

### 2.2 VAPOUR RETARDER

- .1 PRIMER ADHESIVE: Synthetic elastomeric based liquid adhesive used to bond self-adhesive membrane to [steel, concrete, wood] wood deck.
  - .1 Specified product: Lexcor Multigrip Fire Retardant Primer by Lexsuco Corporation.
- .2 POLYETHYLENE SHEET VAPOUR RETARDER: to CAN/CGSB -51.34-M86, sheet with moisture vapour transmission rate less than 2.4 ng/Pa•s• m<sup>2</sup> (0.04 perms) when tested in accordance with ASTM E-96, procedure B Construction.
  - .1 Thickness: [0.15 mm (6 mil)], [0.25 mm (10 mil)]
  - .2 Specified product: Lexcor PE-[6,10] Vapour Retarder sealed with Lexcor Lexshield Tape by Lexsuco Corporation. Use Lexshield peel & stick Air and Vapour Barrier Membrane for protrusions and openings to secure vapour barrier continuity.
- .3 POLYETHYLENE SELF ADHERED AIR/VAPOUR RETARDER: shall be a 'peel and stick' membrane consisting of cross laminated, high density polyethylene film laminated to a high tack, all temperature adhesive, backed with a [silicone

release liner], [plastic release liner]. Vapour Barrier shall demonstrate a typical moisture vapour transmission rate of  $[11.5 \text{ ng/Pa}\cdot\text{s}\cdot\text{m}^2 \text{ (0.2 perms)}]$  when tested in accordance with ASTM E-96, procedure A, a typical tensile strength in excess of 48 kPa in accordance with ASTM D-882 and a minimum 180° peel strength of 400 g/cm after 6 weeks adhered to stainless steel at 22°C.

- .1 Thickness: 0.2 mm (8 mil)
  - .2 Specified product: Lexcor LexShield™ Air/Vapour Barrier Membrane by Lexsuco Corporation.
- .4 TEXTURED POLYETHYLENE SELF ADHERED VAPOUR RETARDER:  
Reinforced membrane with weaved polypropylene laminated to a non-weaved polyester top layer: moisture vapour transmission rate less than  $2.4 \text{ ng/Pa}\cdot\text{s}\cdot\text{m}^2$  (0.04 perms) when tested in accordance with ASTM E-96, procedure B Construction.
- .1 Thickness: 0.15 mm (6 mil)
  - .2 Specified product: Lexcor Permaste Stick Peel n' Stick Type 1 Vapour Barrier by Lexsuco Corporation.
- .5 ASPHALT LAMINATED REINFORCED KRAFT PAPER VAPOUR RETARDER:  
Fibreglass edge reinforced kraft Fibreglass edge reinforced Kraft vapour retarder conforming CAN/CGSB-51.33M89, Type II, *Vapour Barrier Sheet Excluding Polyethylene* to for Use in Building Construction.
- .1 Specified product: Lexcor Permaste Vapour Barrier by Lexsuco Corporation.
- .6 TWO PLIES OF NO. 15 ASPHALT PERFORATED FELT: Two plies of asphalt saturated organic roofing felt, perforated, conforming to CSA123.3-05, Type I, Asphalt Saturated Organic Roofing Felt, laminated and adhered to the substrate with hot asphalt.
- .1 Specified product: Lexcor No. 15 Perforated Roofing Felt by Lexsuco Corporation.
- .7 MODIFIED BITUMEN MEMBRANE BASE SHEET: SBS roofing membrane, mopping grade, with [composite heavy-duty] [non-woven polyester reinforcement] [and glass mat], conforming to CGSB 37-GP-56M, *Membrane, Modified, Bituminous, Prefabricated and Reinforced for Roofing*.
- .1 Thickness: [2 mm (80-mil)] minimum
  - .2 Specified product: [ ]

## 2.3 INSULATION

- .1 EXPANDED POLYSTYRENE INSULATION (EPS): An unfaced styrene polymer material produced by a mold/expansion process that results in coarse closed cells containing air. Insulation shall conform to CAN/ULC-S701, Type [1,2,3].
- .1 Thickness: [Base Layer size], [Top Layer size] [ ] (*can be specified as thick as 24", typical sheet size is 48"x48" or 48"x96". Shiplap can be added 1/2" or 5/8".*) [mechanically attached, (4,6,8,10,12,16,20 fasteners/board)], [fully adhered]

- .2 Specified product: Izolon expanded polystyrene insulation board by Fransyl Ltd.
- .2 **EXPANDED POLYSTYRENE PREFABRICATED INSULATION BOARD:** High density panels composed of high-density closed-cell polyisocyanurate foam core with coated fibreglass facers. Panels shall conform to CAN/ULC S-704, factory laminated to an unfaced styrene polymer material produced by a mold/expansion process that results in coarse closed cells containing air. Insulation shall conform to CAN/ULC-S701, Type [1,2,3].
  - .1 Thickness: [Base Layer Board Size]: 1220mm x 2440mm (4'- 0" x 8'- 0") [mechanically attached, (4,6,8,10,12,16,20 fasteners/ board), [fully adhered]. Thickness, [50mm - 610mm] [2" – 24"] inches, [shiplapped edges all 4 sides]
  - .2 Specified product: Izolon R+ (2 in 1) prefabricated insulation panel by Fransyl Ltd.
- .3 **POLYISOCYANURATE INSULATION:** A rigid foam insulation produced from a chemical reaction between polyol and polymeric isocyanate that results in closed cells containing captive blowing agents. The foam core is integrally laminated to [organic felt paper, or inorganic fibreglass-reinforced facers]. Insulation shall conform to CAN/ULC S-704, *Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced*.
  - .1 Thickness: [Base Layer Board Size]: [(1220mm x 2440mm), (1220mm x 1220mm) (4'- 0" x 8'- 0"), (4'- 0" x 4'- 0") [mechanically attached, (4,6,8,10,12,16,20 fasteners/ board), [fully adhered]. Thickness, [25mm - 115mm] [1" – 4 1/2"] inches.
  - .2 Specified product: [Lexcor Isolex™, Lexcor Isolex™ II] manufactured by Lexsuco Corporation.
- .4 **TAPERED [CRICKET] INSULATION:** Insulation panels are to measure 1220 mm (4') square and are to slope at the rate of 2%, with a minimum thickness of [50mm, 101.6 mm (4",2") inches at the drains. Shiplapped edge 2"x 2", panels are to be positioned and installed in accordance with the shop drawings.
  - .1 Specified product: [Bizolon R+ (2 in 1) prefabricated insulation panel by Fransyl Ltd.], [Lexcor Isolex™, Lexcor Isolex™ II] manufactured by Lexsuco Corporation.

## 2.4 COVERBOARDS

- .1 **HIGH DENSITY POLYISOCYANURATE PANEL:** High density panels composed of high density closed cell polyisocyanurate foam core with coated fibreglass facers. Panel shall be compliant with ASTM C 1289, Type II, Class 4, Grade 1, 2 and 3. Panels shall conform to CAN/ULC S-704, *Standard for Thermal Insulation, Polyurethane, and Polyisocyanurate Boards, Faced*.
- .2 Thickness: 6.4 mm (1/4 in)
- .3 Specified product: Lexcor Lexboard by Lexsuco Corporation.

## 2.5 MEMBRANE MATERIALS

- .1 Membrane: Polyvinyl Chloride (PVC) Membrane

- .1 Description: (White, Grey) Reinforced PVC roofing membrane. Formulated for long-term, direct exposure to the elements. Prefabricated membrane, conforming to ASTM D-4434, *Standard Specification for Polyvinyl Chloride Sheet Roofing*.
- .2 Thickness: [1.3 mm (50 mil)], [1.5 mm (60 mil)], [2.0 mm (80 mil)], [add 75-mil for fleece-backed products]
- .3 Specified product: Lexcan Hi-Pro PVC Reinforced Membrane by Lexsuco Corporation.

## 2.6 ADHESIVE MATERIALS

- .1 SOLVENT-BASED BONDING ADHESIVE: Solvent-based bonding adhesive specially formulated using a blend of VOC-exempt and non-exempt solvents, that allows bonding of PVC and KEE membranes to various porous and non-porous substrates.
  - .1 Specified Product: Lexcan Hi-Pro PVC Low VOC Bonding Adhesive by Lexsuco Corporation.
- .2 POLYURETHANE FOAMABLE ADHESIVE: Two part, urethane based, low rise foaming adhesive [bead applied][spray applied] used for bonding fleeceback membrane to various surfaces. Insultac Adhesive can also be used as an insulation adhesive over compatible substrates. To attach insulation boards and Membrane Adhesive to manufacturers approved substrates.
  - .1 Specified Product: Lexcor InsulTac II Insulation Adhesive.
- .3 LOW-RISE POLYURETHANE FOAM: A low rise polyurethane foam used to attach insulation to manufacturers approved substrates. Consult membrane manufacturer for application rates.
  - .1 Specified Product: Lexcor Lexphalt Foamed Polyurethane Adhesive by Lexsuco Corporation.

## 2.7 INSULATION FASTENERS

- .1 Description: Insulation securement screws are to be Factory Mutual listed and approved #12 diameter with round or flat head, corrosion treated to withstand 30 cycles of the Kesternich test with only a minimum amount of red rust showing. Fasteners must penetrate a minimum 19 mm (3/4") into steel decks or 25 mm (1") into wood decks. Holes for concrete anchors must be pre-drilled not less than 21 mm (1/2") deeper than the penetration depth of the fastener, with a drill bit recommended by the fastener manufacturer. Stress plates are to be 76 mm (3") diameter galvalume metal to fit screw.
- .2 Specified Product: Lexcor Lexgrip™ Insulation Fasteners or [Lexcor Lexgrip™ Pre-Assembled Insulation Fasteners] treated with Cx-5 coating, complete with metal stress plate.

## 2.8 WOOD NAILERS

- .1 Description: Blocking and rough framing. No.1 Spruce conforming to National Grades Authority, Standard Grading Rules for Canadian Wood to CSA 0141-05. Wood for roofing to be pressure treated to CSA 080-97, Series (R2002).



Plywood Sheathing to be exterior grade conforming to CSA 0121-M1978 or CSA 0151-M1978, select grade, good one side, thickness as indicated.

## **2.9 ACCESSORIES**

- .1 PARAPET/WALL FLASHING: PVC membrane as described in 2.5 cut to appropriate widths and lengths.
- .2 FLASHINGS: Lexcan Hi-Pro PVC Un-reinforced Membrane by Lexsuco Corporation.
- .3 OVERLAY STRIP: Lexcan Hi-Pro PVC Overlay Strip by Lexsuco Corporation.
- .4 MEMBRANE CLEANER: Lexcan Weathered Membrane Cleaner by Lexsuco Corporation.
- .5 CUT EDGE SEALANT: Lexcan Hi-Pro PVC Cut Edge Sealant by Lexsuco Corporation.
- .6 WATER CUT OFF MASTIC: Lexcan Universal Single Ply Sealant by Lexsuco Corporation.
- .7 POURABLE SEALER: Lexcan Thermoplastic Pourable Sealer by Lexsuco Corporation.
- .8 TERMINATION SEALER TAPE: Lexcan Water Cut-Off Tape by Lexsuco Corporation.
- .9 TERMINATION BAR: Lexcan Termination Bar by Lexsuco Corporation.
- .10 PIPE FLASHINGS: Lexcan Hi-Pro PVC Pre-formed Pipe Boots or Split Pipe Boots by Lexsuco Corporation.
- .11 IRREGULAR ROOF PROTRUSIONS: Lexcan Hi-Pro PVC Molded Sealant Pockets and Lexcan Thermoplastic Pourable Sealer by Lexsuco Corporation.
- .12 TRAFFIC PADS: Lexcan Hi-Pro PVC Walkways by Lexsuco Corporation.
- .13 ROOF EDGE AND FLASHING METAL: Lexcan Hi-Pro PVC Metal, matching the colour of the membrane by Lexsuco Corporation.

## **2.10 ROOF SYSTEM FLASHING ACCESSORIES**

- .1 VENT STACK FLASHING: Vent caps shall be sealed to the pipe with Lexcor Flash-Tite™ Drain and Vent Seals. Vent pipes shall be flashed to the roof membrane with two part, telescoping vent stack covers featuring an 18" high base flange and a 127mm (5") Cap. Vent Stack flashing shall be fabricated from seamless spun aluminum. Caps and base flanges are to match the size of vent pipe. Install in strict accordance with manufacturer's directions and flash into the roof membrane in accordance with the roofing membrane manufacturer's directions and good roofing practice. Vent Stack Flashing as supplied by Lexsuco Corporation, Lexcor Flash-Tite™ Standard Vent Stack Covers (Seamless spun mill finish VB-418-Cap model SCA-4).
- .2 VENT STACK FLASHING (B VENT): B-Vent Flashings shall be fabricated from a single piece of spun aluminum metal this is free from joints. Flashing stack is to be fourteen inches (12,14,18") high complete with Rain Collar. Base flanges are to match the size of vent pipe. Install in strict accordance with manufacturer's directions and flash into the roof membrane in accordance with

the roofing membrane manufacturer's directions and good roofing practice. B-Vent Stack Flashing as supplied by Lexsuco Corporation, Lexcor Flash-Tite™ B-Vent Flashings.

- .3 ROOF DRAINS: New Construction drain hoppers shall be 2 mm thick seamless spun aluminum and feature a 430 mm (17") diameter flashing flange, 250 mm (10") downspout, membrane stop and clamping ring studs. [Drains shall also include an integral deck clamp assembly composed of a 65 mm thick cast aluminum hopper reinforcement ring welded to the hopper and adjustable aluminum deck clamp mounted on 4 stainless steel rods]. Drains shall come complete with separable cast aluminum membrane clamping ring, 178 mm (7") high cast aluminum strainer [and spun aluminum Flow Control Insert].
- .1 Specified Product: Lexcor Flash-Tite™ NC Aluminum Super Drains [with: Flash-Tite™ Integral Deck Clamp; Flash-Tite™ Flow Control Insert; Mechanical Joint Connector] by Lexsuco Corporation. Drain sizes to match drain pipe diameters.
- .4 ROOF DRAINS: Retrofit drain hoppers shall be 2 mm thick seamless spun aluminum and feature a 430 mm (17") diameter flashing flange, 305 mm (12") downspout, membrane stop and clamping ring studs. Drains shall come complete with separable cast aluminum membrane clamping ring, 178 mm (7") high cast aluminum strainer, stainless steel hardware [and spun aluminum Flow Control Insert].
- .1 Specified Product: Lexcor Flash-Tite™ RR Aluminum Super Drains [with: Flash-Tite™ Integral Deck Clamp; Flash-Tite™ Flow Control Insert; Flash-Tite™ Drain and Vent Seal; U-Flow Pipe Seal] by Lexsuco Corporation. Drain sizes to match drain pipe diameters.
- .5 SUPPORTS: for Gas pipes; Structural Support Base shall consist of a Pressure moulded using a one or two part mix, utilising milled, sieved and graded Styrene Butadiene Rubber (SBR-Recycled Rubber). Accessory must be complete with 40mm x 20mm Aluminium Channel supplied recessed and bonded into the top face of the foot and BBJ insulclamps to support piping. Specified Product: Fix-it Foot Low 250 (250mm x 130mm x 50mm) supplied by Lexsuco Corporation.
- .6 CONDUIT/PIPE SPLIT FLASHING: Two part stainless steel base and floating rain collar, complete with selvedge style seam, pre-applied seam sealant, stainless steel screws and nuts and EPDM rubber pipe seal strip. [Base flashing is to be insulated on the jobsite with moisture resistant rubber foam].
- .1 Specified Product: Lexcor Flash-Tite™ Conduit (Split) Flashing, model no. \_\_\_\_\_ by Lexsuco Corporation.
- .7 HVAC & ELECTRICAL FLASHINGS : To be fabricated from seamless spun aluminum, complete with primer coated flanges. Use appropriate flashing for each application.
- .1 Specified Products: Lexcor Flash-Tite™ Electrical Wire Outlet Post [ 30 cm; 46 cm] high base, complete with rigid PVC cap fitting. Model no. \_\_\_\_\_ by Lexsuco Corporation.
- .2 Specified Products: Lexcor Flash-Tite™ Electrical Wire Socket or Switch Posts [ 30 cm; 46 cm] high base, complete with rigid PVC cap fitting. Model no. \_\_\_\_\_ by Lexsuco Corporation.

- .3 Specified Products: Lexcor Flash-Tite™ B-Vent Flashing, diameter to match chimney diameter, complete with adjustable galvanized steel rain collar by Lexsuco Corporation.
- .4 Specified Products: Lexcor Flash-Tite™ pre-fabricated mastic sealer pockets ("pitch pockets"). [130 mm (5"); 230 mm (9")] high x appropriate diameter to exceed diameter or width of protrusion by 50 mm (2"). Pockets to be sealed with Lexcan Pourable Sealer, a two-part urethane, self-levelling sealant by Lexsuco Corporation.
- .8 ROOF HATCH UNIT[S]: Single leaf type, 762 mm x 914 mm [2'-6" x 3'-0"] inch size, listed by Lexcor: R-100 (Ladder Access) Roof Hatch.
  - .1 Specified Product: Lexcor R-100G/WGC/SB/R30 by Lexsuco Corporation.
  - .2 Steel Cover and Curb: 2.95 mm [11 gauge] thick primer coated galvanized steel and shall be neatly welded and ground at corners. Door shall have two layers of 66.1mm [2.6 inches] polyisocyanurate insulation; door liner shall be 18 gauge primer coated galvanized steel. Curb shall be [*<305mm; [12 inch]; 457mm [18 inch]; 610mm [24 inch] >>*] high with two layers of 66.1mm [2.6 inch] polyisocyanurate insulation secured to the curb exterior. Curb shall have 89 mm [3.5 inch, pre-punched flanges. Curb and cap assembly shall be complete with extended flanges ready to receive roof flashings.
  - .3 Roof Hatches Hardware:
    - .1 Wind Gust Control Unit: shall be mounted on the inside of the hatch opposite to the steel hold open arm. Piston forces shall pull the door closed; or [push door open.
    - .2 Roof hatch shall be completely assembled with heavy duty pintle, torsion bar operated doors, latching mechanism, *interior and/or [exterior]* padlock hasps and neoprene draft seal. Door shall be equipped with an steel hold open arm with foam rubber grip handle. All hardware shall be cadmium plated.
    - .3 Hatch shall be equipped with 35mm [1'-3/8"] diameter Safety Bar coated with mil PVC colour coated roof safety green. Safety Bar shall be mounted on the [*right; left*] corner of hatch curb with out impeding operation of the door.

## Part 3 Execution

### 3.1 EXAMINATION

- .1 Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions, which would be detrimental to installation.
- .2 Verify deck is clean and smooth, free of depressions, waves, or projections, properly sloped to drains.
- .3 Ensure mechanical and electrical systems have been co-ordinated and curbs have been constructed.

- .4 Examine substrate for compliance of conditions that affect installation and performance of the roof system.
- .5 Verify roof openings, curbs, pipes, conduit, sleeves, ducts, and vents through roof are solidly set, and wood nailing strips are in place.

### **3.2 PREPARATION - CONCRETE DECK**

- .1 Fill surface honeycomb and variations with latex filler.

### **3.3 VAPOUR RETARDER APPLICATION**

- .1 Application of Self Adhesive Vapour Retarder
  - .1 Where the vapour retarder is applied to a support panel, use only vapour retarder support panels approved by the membrane manufacturer.
  - .2 Where the self-adhesive vapour retarder is to be adhered to a cementitious panel, apply a light coat of primer as recommended by the membrane manufacturers.
  - .3 All surfaces to be primed must be free of dust, or any residue that may hinder adhesion of the vapour retarder. Cover primed surfaces with vapour retarder as soon as possible.
  - .4 When applied directly to steel deck align the roll parallel to the flutes of the deck. Ensure that the vapour retarder overlaps are positioned on the top ribs of the deck and supported along their entire length.
  - .5 Beginning at the bottom of the slope and without adhering the membrane, unroll onto the substrate for alignment. Do not immediately remove the release sheet.
  - .6 Overlap each preceding sheet by 75 mm (3 in) at the side laps and 150 mm (6 in) at end laps. Stagger end laps by a minimum of 300 mm (12 in).
  - .7 Once aligned peel back one end of the release sheet and adhere the exposed membrane to the substrate. Peel back the remaining release sheet at a 45° angle to avoid wrinkles in the membrane.
  - .8 If the membrane is not properly aligned, do not adjust it. Instead, cut the roll and start again, making sure that it is properly aligned and that it overlaps the end of the misaligned piece by 150 mm (6 in).
  - .9 Roll the self-adhesive vapour retarder onto the substrate with a 34 kg (75 lb) roller. Finish by aligning the edge of the roller with the lower end of the side laps and rolling up the membrane. Do not cut the membrane to remove air bubbles trapped under the laps. Squeeze out air bubbles by pushing the roller to the edge of the lap.
- .2 Application of Heat Welded Vapour Retarder
  - .1 Primed surfaces must be dry when the vapour retarder is installed.
  - .2 Heat weld the thermofusible vapour retarder onto the substrate in conformance with the manufacturer's written recommendations.
  - .3 Unroll vapour retarder membrane dry onto substrate and align.

- .4 Overlap side laps a minimum of 75 mm (3 in) and end laps 150 mm (6 in). End laps shall be staggered a minimum of 300 mm (12 in). Begin work at bottom of slopes.
  - .5 Torch membrane so a visible bead of bitumen appears as the membrane is unrolled, ensuring the vapour retarder's complete adherence.
  - .6 Seal vapour retarder membrane at all perimeters, transitions and around each penetration to ensure continuity.
- .3 Application of Polyethylene Vapour Retarder
- .1 Lay vapour retarder loose over support panel, or directly onto steel deck. Overlap all edges minimum of 100mm (4 in) and seal with butyl tape.
  - .2 Where the polyethylene vapour retarder is applied directly to steel deck, align the roll parallel to the flutes of the deck. Ensure that the membrane overlaps are positioned on the top ribs of the deck and supported along their entire length.
  - .3 Seal vapour retarder membrane at all perimeters, transitions and around each penetration to ensure continuity.
  - .4 Seal the vapour retarder to the vertical surfaces at all roof penetrations, curbs and parapets.
- .4 Installation of Fibreglass Reinforced Asphalt Coated Base Sheets
- .1 Starting at low point, and right angles to the slope, embed sheet in hot asphalt applied at a rate of 1 to 1.5 kg/m<sup>2</sup> (0.2 to 0.3 lb/ft<sup>2</sup>). Asphalt shall be Type [II] [III].
  - .2 Overlap side laps by a minimum 75 mm (3 in) and end laps by 150 mm (6 in). Laps shall be staggered a minimum of 300 mm (12 in).
  - .3 Coat the vapour barrier with hot asphalt applied at a rate of 1 to 1.5 kg/m<sup>2</sup> (0.2 to 0.3 lb/ft<sup>2</sup>). If asphalt is to be used to adhere the insulation, embed the specified insulation into the hot asphalt top coat.
  - .4 Seal vapour retarder membrane at all perimeter transitions, and around each penetration to ensure continuity.
- .5 Application of Kraft Laminated Vapour Retarder
- .1 Apply vapour retarder to substrate with specified adhesive in conformance with the manufacturer's recommendations.
  - .2 Overlap side laps a minimum of 100 mm (4 in) and end laps a minimum of 150 mm (6 in).
  - .3 Seal side laps and end laps with recommended adhesive in conformance with manufacturer's recommendations.
  - .4 Seal vapour retarder membrane at all perimeters, transitions and around each penetration to ensure continuity.
- .6 Application of Type IV or Type VI Glass Ply Sheet
- .1 Starting at low point, at right angles to the slope, embed type IV or VI glass ply sheets in hot asphalt.
  - .2 Asphalt shall be Type II, or III.
  - .3 Interply mopping shall be applied at a rate of 1 kg/m<sup>2</sup> (0.2 lb/ft<sup>2</sup>).

- .4 Coat the vapour retarder with hot asphalt applied at a rate of 1 to 1.5 kg/m<sup>2</sup> (0.2 to 0.3 lb/ft<sup>2</sup>).
- .5 If asphalt is to be used to adhere the insulation, embed the specified insulation into the hot asphalt top coat.
- .6 Seal vapour retarder membrane at all perimeters, transitions and around each penetration to ensure continuity.
- .7 Installation of No. 15 Mopped Vapour Retarder
  - .1 Starting at low point, at right angles to the slope, embed two plies of No. 15 perforated felt in hot asphalt. For 2-ply construction use side laps of ½ width of sheet plus 25 mm (1 in) and end laps of 150 mm (6 in).
  - .2 Asphalt shall be Type II, or III. Interply mopping shall be applied at a rate of 1 kg/m<sup>2</sup>.
  - .3 Coat the vapour barrier with hot asphalt applied at a rate of 1 to 1.5 kg/m<sup>2</sup> (0.2 to 0.3 lb/ft<sup>2</sup>). If asphalt is to be used to adhere the insulation, embed the specified insulation into the hot asphalt top coat.
  - .4 Seal vapour retarder membrane at all perimeters, transitions and around each penetration to ensure continuity.

### 3.4 INSULATION APPLICATION

- .1 *[Insulation shall be installed according to the insulation manufacturer instructions].*
- .2 Where there is no support panel, install insulation so that long dimensions of the board are parallel with the flutes of the steel deck and fully supported on the top rib.
- .3 Attach with low-rise (Lexcor InsulTac II) insulation adhesive. Apply directly to the substrate using a ribbon style pattern. Make sure that substrate is clean and dry. Space ½", [3/4", 1"] (13mm, 19mm,) diameter beads on [4", 6", 12"] (100mm, 150mm) centres to achieve proper coverage rates for insulation attachment. As adhesive is applied, immediately place the insulation board into wet adhesive. Do not allow the adhesive to skin over
- .4 Where more than one layer of insulation is used, stagger joints at least 300mm (12in) between layers.
- .5 Position Insulation Board in adhesive, ensuring panels are butt-edged together with a maximum separation of 2 mm. Walk the boards into the adhesive and roll using the 30" wide, 100 – 150 pound weighted steel roller to ensure full embedment. Optimal set up time should be approximately 5 to 10 minutes.
- .6 After the adhesive has dried, test each panel to ensure it is completely secured to the deck. If it is not 100% secure, the insulation panel must be removed and discarded. A new insulation panel must be adhered in its place. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL INSULATION PANELS ARE PROPERLY ADHERED TO THE SUBSTRATE.
- .7 Mechanically fasten composite layer of insulation through the vapour retarder and into the deck using fasteners and plates specified in 2.6. Mark out any conduit runs on the surface of insulation prior to fastening. Ensure that plates

have been sufficient clamping force so as not to compromise the vapour retarder. Do not overdrive the screws.

- .8 Butt-edges together with a maximum separation of 2mm.
- .9 Insulation shall be neatly cut to fit around penetrations and projections.
- .10 Install tapered insulation around drains creating a drain sump.
- .11 Insulation shall be neatly cut to fit around penetrations and projections.
- .12 Do not install more insulation boards than can be covered with membrane by the end of the day or the onset of inclement weather.
- .13 Do not drive fasteners into any utility lines such as electrical, conduit or gas pipes.
- .14 Minimum penetration to fasten into a metal deck is 19 mm (3/4 in.), or [Minimum penetration to fasten into a concrete deck is (1)" (25.4mm).]
- .15 Minimum number of fasteners required per 4'x8' sheet is [4,6,8,10,12,16,20] in the field.
- .16 Attach any 4'x 4' tapered insulation with low-rise (Lexcor InsulTac II) insulation adhesive. Apply directly to the substrate using a ribbon style pattern. Make sure that substrate is clean and dry.

### **3.5 COVER BOARD APPLICATION**

- .1 Attach with low-rise (Lexcor InsulTac II) insulation adhesive. Apply directly to the substrate using a ribbon style pattern. Make sure that substrate is clean and dry.
- .2 Stagger joints at least 300mm (12 in) between layers. All tapered insulation joints should be overlapped by the cover board.
- .3 Position Cover Board in adhesive, ensuring panels are butt-edged together with a maximum separation of 2 mm. Walk the boards into the adhesive and roll using the 30" wide, 100 – 150 pound weighted steel roller to ensure full embedment. Optimal set up time should be approximately 5 to 10 minutes.
- .4 After the adhesive has dried, test each panel to ensure it is completely secured to the deck. If it is not 100% secure, the insulation panel must be removed and discarded. A new insulation panel must be adhered in its place. Ensure all insulation panels are properly adhered to substrate

### **3.6 MEMBRANE APPLICATION**

- .1 The contractor shall be responsible for the suitability of the substrate surface to accept the membrane. Ensure cover board surface or substrate is clean, flat and free from dirt, debris or sharp objects that might be detrimental to the performance of the membrane.
- .2 The ambient temperature should be +5° C and rising when fully adhering the membrane.
- .3 Unroll membrane sheets and position according to the approved shop drawings. For roofs with edge drainage, start at the low edge with the first sheet and install adjacent sheets by overlapping the lower sheets. For roofs with interior drainage, start with the first sheet centred on the drain valley and install adjacent

sheets by overlapping the lower sheet. Outside perimeter sheets shall be brought to the base of the perimeter parapet or wall and turned up the wall (76.2mm) 3" and secured with a batten every 6" on center. Adjoining sheets are to overlap a minimum of 140 mm (5.5") on sides and wherever fasteners are included within the seam. End laps without fasteners are to be lapped a minimum of 140 cm (5.5").

- .4 Optionally, the membrane may be extended up and over a parapet wall or a roof edge, provided it is secured along the perimeter edge using the Lexcan PS Batten Bar method of perimeter securement. As shown in Lexcan detail H-E-018.
- .5 Fold the sheet in half lengthwise to expose one-half of the sheet underside.
- .6 Apply Hi-Pro PVC Low VOC Bonding Adhesive with a plastic core, medium nap roller to the underside of the roofing membrane and to the substrate at the combined net coverage rate of 5.7 m<sup>2</sup> (60 Sq.Ft.) / gallon. Do not apply the Bonding Adhesives to areas on the membrane that are to be heat welded. Apply both adhesives evenly, without globs or puddles. Allow both adhesives to flash-off until they are tacky but do not string when touched with a dry finger.
- .7 If the adhesive becomes contaminated by blowing dust, moisture, walking in it, etc. it should be allowed to completely dry (no longer tacky) and new adhesive applied to both surfaces.
- .8 When the adhesives have sufficiently dried, carefully unroll the glued portion of the membrane back over the glued substrate, avoiding wrinkles, voids or air pockets. Immediately, roll with weighted steel roller or brush the membrane heavily with a push broom to ensure 100% complete contact.
- .9 Fold back the other half of the sheet and repeat steps .3 through .7
- .10 Layout subsequent sheets by positioning them so they overlap the previously adhered sheet by a minimum of 50 mm (3"). Seam overlaps should be overlapped downward (shingle fashion) to avoid catching water. Heat weld the subsequent sheet to the first sheet as per section [3.7] below. Once the weld has cooled, completely fold the subsequent sheet back over the splice to expose the entire underside of the subsequent sheet. Apply Hi-Pro PVC Low VOC Bonding Adhesive as per section [.6] above

### **3.7 SPLICING MEMBRANE SHEETS**

- .1 Field's seams must be welded with an automatic hot air welder operated by an individual thoroughly trained and competent in the machine's operation. Small work and repairs can be done efficiently with a hand welder. However, hand-held welders are not an accepted means of field seaming.
- .2 Hot air weld all seams a minimum of 38 mm (1.5") wide.
- .3 Dirty, dusty or contaminated membrane or membrane exposed for more than seven days prior to welding must be cleaned with Lexcan Weathered Membrane Cleaner. With a clean scrub pad saturated with Cleaner, aggressively scrub the seam area of the roof membrane. Follow with a final one swipe pass, being careful not to re-deposit contaminants back onto the cleaned area. Ensure that the Seam Cleaner and adjacent Bonding Adhesive have completely flashed off



before welding. Follow standard welding procedures with a 20% reduction in speed.

- .4 All splices are to be probed along their entire length with a seam probing tool to verify that the welder is operating effectively. The membrane must be allowed to cool prior to testing. In addition, there should be a destructive peel strength test performed at the start of each day and each time the robot welder is reused after being allowed to cool. The destructive test sample should be 5 cm (2") wide and should show membrane delamination from the scrim prior to weld failure. Roofing contractor must date the test samples and submit them to the system manufacture.
- .5 Cut membrane edges shall be sealed by applying Hi-Pro PVC Cut Edge Sealant along the exposed edge.

### **3.8 PERIMETER FLASHING AND SECUREMENT**

- .1 Install the (roof edge system; gravel stop; drip edge) according to an approved Lexcan detail and in accordance with the manufacturer's directions. Nailers are required at all roof edges, gravel stops or drip edges.
- .2 DIRECT FASTENER PERIMETER SECUREMENT METHOD: Hi-Pro PVC membrane shall be brought to roof edges, parapets, walls, expansion joints, curbs and all other roof penetrations that exceed 60 cm (24") in any dimension and turned up the wall (76.2mm) 3" and secured with a batten every 6" centered at the vertical plan to the parapet (12") centres with Lexcor Lexgrip Membrane Fasteners and Plates.
- .3 Reinforced Hi-Pro PVC flashing membrane shall be extended up all parapet walls, curbs, roof edges, etc. If using the Direct Fastener Method of perimeter securement, the flashing membrane must extend a minimum of 140 mm (5-1/2") beyond the Perimeter edge out onto the flat area of the roof.
- .4 Hi-Pro PVC membrane shall be used for all vertical flashings and shall extend from a seam just beyond the perimeter fastener row, up to the curb or parapet. Apply with Hi-Pro PVC Low VOC Bonding Adhesive as per sections 3.5.6 to 3.5.7. Be careful not to wrinkle the membrane or bridge it at the vertical / horizontal juncture (crease the membrane first). Brush the membrane heavily with a push broom to ensure complete contact.
- .5 Unless approved detail shows otherwise, membrane must either terminate in a reglet, be fastened according to paragraph .6 below, or be carried over the top of wall or parapet and counter-flashed with sheet metal or a stone cap. All metal work must be installed to be wind resistant and sealed and waterproofed in an acceptable manner.
- .6 If terminating membrane part way up to a wall or parapet, apply Lexcan Water Cut-Off Tape to the backside of membrane edge. Press membrane against wall and roll with a steel hand roller. Fasten Lexcan Termination Bar along the upper edge of the membrane into the wall, using appropriate fasteners on 15 cm (6") centres. Apply Lexcan Universal Single Ply Sealant along the upper edge of the Termination Bar and over the top of all fastener heads.

**3.9 PROTRUSION AND CORNER FLASHINGS**

- .1 Install pre-formed metal flashings; drain hoppers, etc. according to the manufacturer's installation instructions.
- .2 Flash all corners, vent pipes, posts, curbs and pre-formed flashings in strict accordance with current Lexcan installation instructions and details. Use Hi-Pro PVC Low VOC Bonding Adhesive as per section 3.6, above. Do not apply the Bonding Adhesives to areas on the Flashing that are to be seamed. Seam as per section 3.7 above.
- .3 All flashing shall be mechanically fastened at the top, under or through appropriate counterflashing with approved fasteners and in accordance with Lexcan details.
- .4 Membrane connections to drains are to be sealed with All-Purpose Sealant or Lexcan Water Cut-Off Tape and clamped with a clamping ring to ensure a 100% continuous seal, as per Lexcan details. Field seams shall not run through drains.

**3.10 TRAFFIC WALKWAYS**

- .1 Ensure membrane to receive traffic pads is clean and dry. If the membrane is not clean and dry, follow the steps in section 3.6.3 before proceeding with the remainder of this section.
- .2 Position the walkway pad and cut to desired length. Wherever possible, walkway pad shall not cover seams. When installed adjacent to a seam, the pad should be kept a minimum 50 mm (2") from the edge of the seam on the bottom sheet and 15 cm (6") away from the edge of the seam on the top sheet.
- .3 When covering seams is unavoidable; the lap seam should be completed per section 3.6 above and thoroughly probed, with any deficiencies corrected prior to pad installation.
- .4 Where drainage around the pads is desired, cut pads to a uniform length and space the sections 50 mm (2") apart.
- .5 Weld the perimeter of the walkway pad to the membrane following standard welding procedures. Leave 25 mm to 50 mm (1" to 2") gaps in the weld on the low slope edge every 60 cm (2 ft.) to prevent the accumulation of water under the pad.

**3.11 METAL COUNTERFLASHING, CAP, SCUPPERS AND FASCIA FLASHINGS**

- .1 Allow warranty inspector to inspect all membrane flashings and roofing before installation of metal counterflashing and fascia.
- .2 Install all metal counter-flashing and fascia in strict accordance with CRCA 'FL' specifications and good roofing practice.
- .3 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance and performance. Mitre all corners. Irregular or badly fabricated work will not be accepted. Hem all edges 12 mm (1/2") and cut corners of straight edges on a 45° angle. Remove all burrs and metal scrap.
- .4 Use concealed fastening and clamping (termination) bars to secure fascia and counter-flashing.

- .5 Use standard 2.44 m (8') metal lengths. Space joints symmetrically and evenly in relation to the module, columns, pre-cast panels or other distinguishing features of the building. Use tight-fitting S-lock joints. Fabricate joints to permit free movement of metal without leaking.
- .6 Apply isolation membrane or coating to separate dissimilar metals or metal from concrete.

### **3.12 TEMPORARY NIGHT SEAL**

- .1 At the end of each day or at the threat or onset of inclement weather, the insulation shall be protected by extending the membrane beyond the insulation and sealing it to the deck with an approved temporary sealant. Ensure membrane edge is either mechanically fastened or sufficiently ballasted to protect against wind uplift.
- .2 When resuming works cut and dispose of the portion of membrane contaminated with the night sealant.

### **3.13 FIELD QUALITY CONTROL**

- .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and clearing of product.
- .2 The Manufacturer's representative will regularly review the fieldwork, to verify the satisfactory completion of the work in accordance with the Manufactures Membrane System Warranty.
- .3 Once the project is in progress work will be continuous, weather permitting, until completion.
- .4 Do not conceal or cover any phase of the work until after it has been inspected and approved by the Roof System Manufacture.
- .5 Roofing System Manufacturer (Lexcan) must be notified in writing that the project is ready for a Final Inspection within 120 days of substantial completion of the roofing system. All trades that have work to do on the roof must be completely finished. All PVC seams and details will be probed and voids will be clearly marked with a red crayon. If a Final Inspection indicates that deficiencies are still outstanding, then additional Final Inspections will be conducted until all work has been completed to the Manufactures satisfaction.

### **3.14 CLEANING**

- .1 In areas where finished surfaces are soiled by Work of this section, consult manufacturer of surfaces for cleaning advice and conform to their instructions.

### **3.15 PROTECTION OF FINISHED WORK**

- .1 Protect building surfaces against damage from roofing work.
- .2 Where traffic must continue over finished roof membrane, protect surfaces.

**END OF SECTION**