

PART 1 - GENERAL

1.1 NOTES TO DESIGN AUTHORITY

- .1 ALTERATIONS TO AN EXISTING LIGHT WEIGHT CONCRETE ROOFING SYSTEM AT A UNIVERSITY OF TORONTO BUILDING SHALL BE REVIEWED & APPROVED BY IRC SCIENCES GROUP INC. PRIOR TO ISSUANCE FOR TENDER TO MAINTAIN THE INTEGRITY AND WARRANTY OF THE EXISTING ROOF**

1.2 SECTION INCLUDES

1.3 RELATED SECTIONS

- .1 Section 01110 – Summary of Work
- .2 Section 07620 – Sheet Metal Flashing and Trim
- .3 Section 07900 – Sealants

1.4 REFERENCES

The latest edition of all listed references shall apply:

- .1 ASTM D41 – Asphalt Primer Used in Roofing, Damp-proofing, and Waterproofing.
- .2 ASTM D2822 – Asphalt Roof Cement.
- .3 ASTM D4601 – Standard Specification for Asphalt-Coated Glass Fibre Base Sheet Used in Roofing.
- .4 ASTM D6162 – Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fibre Reinforcements
- .5 ASTM D6163 – Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fibre Reinforcements
- .6 ASTM D6164 – Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements
- .7 CGSB 37-GP-9Ma – Primer, Asphalt, Unfilled, for Asphalt Roofing, Damp-proofing and Waterproofing.
- .8 FM (Factory Mutual) – Roof Assembly Classifications.
- .9 Ontario Roofing Contractors Association – Roofing Specifications Manual.
- .10 NRCA (National Roofing Contractors Association) – Roofing and Waterproofing Manual.
- .11 ULC (Underwriters Laboratories of Canada) – List of Equipment and Materials for Building Materials, Fire Resistance, and Fire-stop Systems and Components.
- .12 Conform to National Plumbing Codes and requirements of Provincial and Municipal Authorities. Most stringent requirements shall govern where in conflict.

1.5 SUBMITTALS

- .1 Provide initial schedule within five (5) working days after Contract award, showing anticipated progress stages and final completion of work. Work shall not commence before work schedule is provided.
- .2 Sample copy of Contractor's warranty.
- .3 Certifications by manufacturers of roofing and insulating materials that all materials supplied comply with all requirements of the identified ASTM and other industry standards or practices.
- .4 Certification from the Contractor that the system specified meets all identified code and insurance requirements as required by the Specification.

1.6 CONTRACTOR QUALIFICATION

- .1 Contractor and his staff must be certified by the membrane manufacturer and pre-approved by the Owner and Consultant prior to tender,
- .2 Contractor must be a member in good standing with the Ontario Roofing Contractors Association (OIRCA) and have a minimum ten (10) years relevant experience with similar roof materials.
- .3 Pre-approved Roofing Contractors with University of Toronto are:
 - Atlas-Apex Roofing – 416.421.6244
 - Bothwell-Accurate Roofing – 416.762.8243
 - Dean-Chandler Roofing – 416.751.7840
 - Semple Gooder Roofing – 416.743.5370
 - Schreiber Brothers Roofing – 905.561.7780
 - York Roofing – 416.661.1883

1.7 QUALITY ASSURANCE

- .1 Perform Work in accordance with manufacturer's written instructions.
- .2 There shall be no deviation made from the Project Specification or the approved shop drawings without prior written approval by the Owner, the Owner's Representative, and the manufacturer.

1.8 REGULATORY REQUIREMENTS

- .1 Conform to applicable local code for roof assembly fire hazard requirements.
- .2 UL: Class B Fire Hazard Classification.
- .3 FM: Roof Assembly Classification, of Class 1 Construction, wind uplift requirement of I-90, in accordance with FM Construction Bulletin 128.

1.9 SPECIAL SITE INSTRUCTIONS

- .1 Interior Protection for work to be provided by Contractor.
- .2 Minimize disruptions to regular building activities. Noisy Work to be performed outside of regular office/operating hours. Arrange special access and times to project site with Designee.
- .3 Staging area to be determined on site with Consultant and Building Owner.

- .4 All salvaged copper flashings, cleats, and hook strips from the designated roof replacement areas to be recycled and subsequent value credited to the Building Owner.
- .5 No asphalt kettles on site. Project to be free of mopping and torching applications. All roof elements to be mechanically fastened, adhered in bonding agent, or cold applied. All membranes to be self adhering or cold applied.

1.10 DELIVERY, STORAGE, AND HANDLING

- .1 All work to be conducted from the exterior using swing-stage, hoist, etc.
- .2 Site storage is limited. Location of storage to be coordinated with Owner.
- .3 All materials shall be delivered and stored in their original packaging bearing the manufacturers label, grade and product weight, including all other related standards, specifications, and the like.
- .4 All materials shall be adequately protected from inclement weather conditions and stored in a dry, well ventilated and weather protected location.
- .5 Only materials to be installed on the same day shall be removed from the protected location to the work site.
- .6 During extreme temperature, materials shall be stored in a heated location with a 40°F (4.4°C) minimum temperature and removed only as needed.
- .7 All materials in a rolled configuration shall be stored on end, elevated off the ground on a pallet or skid, to protect the bottom surface from foreign debris and moisture.
- .8 When possible, the Contractor should restrict stock piling of material in one location on the roof surface to prevent exceeding the specified deck live load capacity.
- .9 Handle and store products in a manner to prevent damage and deterioration.
- .10 Remove and replace damaged products at own expense and to the satisfaction of the Consultant.

1.11 ENVIRONMENTAL REQUIREMENTS

- .1 Do not apply roofing membrane to damp or frozen deck surface.
- .2 Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.
- .3 Only as much of the new roofing as can be made weather-tight each day, including all flashing and detail work, shall be installed. All seams shall be heat welded with hot air gun before leaving the job site that day.
- .4 All work shall be scheduled and executed without exposing the interior building areas to the effects of inclement weather. The existing building and its contents shall be protected against all risks.
- .5 All new and temporary construction, including equipment and accessories, shall be secured in such a manner as to preclude wind blow-off and subsequent roof or equipment damage.
- .6 Uninterrupted water-stops shall be installed at the end of each day's work and shall be completely removed before proceeding with the next day's work. Water-stops shall not emit dangerous or unsafe fumes and shall not remain in contact with the finished roof as the installation progresses. Contaminated membrane shall be replaced at no cost to the Owner.

- .7 Prior to and during application, all dirt, debris and dust shall be removed from surfaces by vacuuming, sweeping, blowing with compressed air, and/or similar methods.
- .8 The Contractor shall follow all safety regulations as required by OHSA (Occupational Health and Safety Act) and any other applicable authority having jurisdiction.
- .9 All roofing, insulation, flashings and metal work removed during construction shall be immediately taken off site to a legal dumping area authorized to receive such materials. Hazardous materials, such as materials containing asbestos, are to be removed and disposed of in strict accordance with applicable Municipal, Provincial, Federal, and University of Toronto requirements.
- .10 All new roofing waste material (i.e., scrap roof membrane, empty cans of adhesive) shall be immediately removed from the site by the Contractor and properly transported to a legal dumping area authorized to receive such material.
- .11 The Contractor shall take precautions that storage and/or application of materials and/or equipment does not overload the roof deck or building structure.
- .12 Flammable adhesives and deck primers shall not be stored and not be used in the vicinity of open flames, sparks and excessive heat.
- .13 All rooftop contamination that is anticipated or that is occurring shall be reported to the manufacturer to determine the corrective steps to be taken.
- .14 The Contractor shall verify that all roof drain lines are functioning correctly (not clogged or blocked) before starting work. Contractor shall report any such blockages in writing to the Owner's Representative for corrective action prior to the installation of the roof system.
- .15 The Contractor shall immediately stop work if any unusual or concealed condition is discovered and shall immediately notify Owner of such condition in writing for correction at the Owner's expense.
- .16 Site cleanup, including both interior and exterior building areas that have been affected by construction, shall be completed to the Owner's satisfaction.
- .17 All landscaped areas damaged by construction activities shall be repaired at no cost to the Owner.
- .18 Precautions shall be taken when using adhesives at or near rooftop vents or air intakes. Adhesive odours could enter the building. Coordinate the operation of vents and air intakes in such a manner as to avoid the intake of adhesive odour while ventilating the building. Keep lids on unused cans at all times.
- .19 Protective wear shall be worn when using solvents or adhesives or as required by job conditions.

1.12 EXAMINATION

- .1 Examine the Drawings and Specifications to determine the extent of the work involved, together with other necessary data affecting the work, as in no circumstances will any claims against the Owner be allowed resulting from failure to ascertain the extent of such work herein described or implied.

1.13 QUALITY OBSERVATION ASSURANCE

- .1 An Independent Quality Assurance Observation Consultant retained by the University's Project Manager will be appointed to observe the installation.

- .2 Arrange site meeting with the Observer no more than three weeks prior to commencement of work on site. Obtain the Observer's instructions with reference to procedures to be followed. Contractor to provide Observer with the following at this meeting:
 - .1 Notice of Project
 - .2 A sample copy of the Warranty
 - .3 A copy of the letter and completed project warranty form sent to the "Warranty Holder" advising them of the project starting
 - .4 Bonds and Insurance in the Owner's Name
 - .5 WSIB Clearance Certificate
 - .6 A Contact List complete with 24-hour emergency phone numbers
 - .7 A Work Schedule listing start date, number of working days and manpower for the project shop drawings for tapered insulation, if applicable
 - .8 A complete Material List
 - .9 MSDS information pertaining to ALL materials being used on site
 - .10 The appropriate securement patterns for mechanically fastening of the insulation, if applicable
 - .11 A list of the "Trained and Carded Membrane Approved Applicators" who will be working on site
- .3 Cooperate with the Observer and afford all facilities necessary to permit full QA observation of the work. Act immediately on instructions given by the Observer.
- .4 Make cut-outs when required and make good roofing without additional costs to the Owner.

1.14 SAFETY AND PROTECTION

- .1 The latest edition of all listed references shall apply:
 - .1 CAN/CSA S269.2M – Access Scaffolding for Construction Purposes.
 - .2 FCC No. 301 – Standard for Construction Operations.
- .2 Solvents, adhesives and membranes
 - .1 Store only enough solvents and adhesives on the roof for the same day's use, do not leave adhesives on roof overnight. Manufacturer supplied adhesives should be stored in their overnight containers. Minimum temperature for solvent based adhesive and primers is -5°C.

1.15 WARRANTY

- .1 Contractor shall supply the Owner with a one (1) year Contractor OIRCA Warranty for workmanship. In the event any work related to roofing, flashing, or metal is found to be within the Contractor warranty term, defective or otherwise not in accordance with the Contract Documents, the Contractor shall repair that defect at no cost to the Owner. The Applicator's warranty obligation shall run directly to the Owner.

- .2 Owner shall notify both the membrane manufacturer and the Contractor of any leak that occurs during the time period when both warranties are in effect.

PART 2 - PRODUCTS

2.1 GENERAL

- .1 Note all membrane materials are to be supplied by one manufacturer: Siplast or Soprema, meeting manufacturer's respective material compatibility requirements to achieve the required System Warranty.
- .2 Components to be used that are other than those supplied or manufactured by the membrane manufacturer may be submitted for review and acceptance by the membrane manufacturer.
- .3 The membrane manufacturer's acceptance of any other product is only for a determination of compatibility with the products and not for inclusion in the manufacturer's warranty.
- .4 The specifications, installation instructions, limitations, and/or restrictions of the respective manufacturers must be reviewed by the Owner's Representative for acceptability for the intended use with the membrane manufacturer's products.

2.2 N.V.S. REPAIR COMPOUND

- .1 N.V.S. Repair Compound: NVS Premix by Siplast

2.3 MEMBRANE & MEMBRANE FLASHING

- .1 Venting Base Sheet:
 - .1 Mechanically secured fibreglass, asphalt coated fibreglass base sheet meeting ASTM D4601, Type II; Parabase FS by Siplast or Sopraglass 100 by Soprema.
- .2 Base Sheet:
 - .1 Adhesive grade modified bitumen, minimum thickness 3.0mm, with minimum 180g/m², random fibre glass mat or non-woven polyester, impregnated and coated with SBS modified bitumen, and conforming to CGSB 37-GP-56M; Paradiene 20 HV by Siplast or Colply Base 410 by Soprema.
- .3 Base Sheet Flashing:
 - .1 Self-adhering grade modified bitumen, minimum 3.0mm thick, with random fibre glass mat impregnated and coated with SBS modified bitumen, and coated with self-adhesive bitumen layer and polyolefin release film on bottom surface, and conforming to CGSB 37-GP-56M; Paradiene 20 EG SA by Siplast or Sopralene Stick Adhesive by Soprema.

OR
 - .2 Adhesive grade modified bitumen, minimum thickness 3.0mm, with minimum 180g/m², random fibre glass mat or non-woven polyester, impregnated and coated with SBS modified bitumen, and conforming to CGSB 37-GP-56M; Paradiene 20 HV by Siplast or Sopralene Stick Adhesive by Soprema.
- .4 Cap Sheet:
 - .1 Adhesive grade modified bitumen, minimum thickness 3.6mm, with minimum 250g/m², fibreglass scrim/polyester composite impregnated and coated with SBS modified

bitumen, and conforming to CGSB 37-GP-56M; Paradiene 30 by Siplast or Colply Traffic Cap 460 by Soprema.

.5 Cap Sheet Flashing:

- .1 Adhesive grade modified bitumen, minimum thickness 3.6mm, with minimum 250g/m², fibreglass scrim/polyester composite impregnated and coated with SBS modified bitumen, and conforming to CGSB 37-GP-56M; Parafor 30 by Siplast or Colply Traffic Cap 460 by Soprema.

.6 Membrane Primer:

- .1 Solvent based primer to prepare surfaces before the installation of membranes, PA-1125 Primer by Siplast or Elastocol Stick by Soprema.

.7 Membrane Adhesive:

- .1 Solvent based adhesive; PA-311 adhesive by Siplast or Colply Adhesive Brush for horizontal surfaces and Colply Adhesive Trowel Grade for sloped surfaces by Soprema.

2.4 LIQUID APPLIED RESIN FLASHING MEMBRANE

- .1 Polymethylmethacrylate (PMMA) Primers: as recommended by the membrane manufacturer.

.2 PMMA Roofing Flashing (Soprema):

- .1 Resin for flashing applications: a one-component polyurethane/bitumen resin for use in combination with fleece fabric to form a monolithic, reinforced flashing membrane; Alsan Flashing from Soprema.
- .2 Fleece for flashing reinforcement: A woven, 100 g/m², polyester fabric reinforcement as supplied by the membrane system manufacturer; Flashing Reinforcement by Soprema.

.3 PMMA Roofing Flashing (Siplast):

- .1 Catalyst: Pro Catalyst by Siplast.
- .2 Resin for flashing applications: A flexible, polymethylmethacrylate (PMMA) based resin combined with a thixotropic agent for use in combination with fleece fabric to form a monolithic, reinforced flashing membrane; Parapro 123 Flashing Resin by Siplast.
- .3 Resin for field membrane: A flexible, polymethylmethacrylate (PMMA) based resin for use in combination with fleece fabric to form a monolithic, reinforced roofing membrane; Parapro Roof Resin by Siplast.
- .4 Fleece for membrane and flashing reinforcement: A non-woven, 110 g/m², needle-punched polyester fabric reinforcement as supplied by the membrane system manufacturer; Pro Fleece by Siplast.
- .5 Clear finish resin: A clear, flexible, polymethylmethacrylate (PMMA) based resin for use as a wearing coat over colored quartz; Pro Clear Finish by Siplast.
- .6 Thixotropic agent: A liquid additive used to increase the viscosity of the PMMA-based resin products, allowing the resins to be applied over vertical or sloped substrates; Pro Thixo by Siplast.

.4 Anti-Skid Surfacing:

- .1 Ceramic granules: No. 11 grade specification ceramic granules suitable for broadcast into the PMMA based wearing layer; No. 11 Granules by Siplast or approved equal from Soprema.
- .5 PMMA Accessories:
 - .1 Cleaning solution/solvent: A clear solvent used to clean and prepare transition areas of in-place catalyzed resin to receive subsequent coats of resin and to clean substrate materials to receive resin; Pro Prep by Siplast or approved equal from Soprema.
 - .2 Tape: A white, flexible, coated cotton cloth tape designed for treatment of insulation panel joints, deck/wall transitions and joints in flashing substrates; Pro Tape by Siplast or approved equal from Soprema.

2.5 ROOF ACCESSORIES

- .1 Concrete Pavers: MPA air entrained precast concrete with maximum absorption 5% with formed pedestals. 24" x 24" x 2" PEDSLABS by Brooklin Concrete.
- .2 Pourable Sealer: Elastomeric pourable sealer as supplied by Siplast or Soprema.
- .3 Sheet Metal Flashings and Trim: As per Section 07620.
- .4 Sealants: As per Section 07900.

2.6 FASTENERS AND PLATES

- .1 Insulation to steel and wood deck:
 - .1 Tru-Fast Ultra Solid Stainless Steel fastener to penetrate substrate by 3/4" (19mm). Plates to be 3" diameter. Tru-Fast Galvalume stress plate.
- .2 Wood to steel, wood to wood or steel to steel:
 - .1 Tru-Fast Ultra Solid Stainless Steel fastener to penetrate substrate by minimum 3/4" (19mm).
- .3 Wood/steel to concrete or concrete block:
 - .1 Perma-Grip Tap Grip H.D. Truss Head fastener with Perma-Coat Z3 corrosion protection to penetrate substrate by 1 1/4" (32mm).
 - .2 Tru-Fast Tap Grip H.D. Truss Head fastener with Perma-Coat Z3 corrosion protection to penetrate substrate by 1 1/4" (32mm).
- .4 Steel/aluminum to aluminum:
 - .1 Tru-Fast DP with Trucote PC-3 corrosion protection fastener c/w EPDM galvanized steel sealing washers to penetrate substrate by 3/4" (19mm).
- .5 Termination bar for membrane:
 - .1 Extruded aluminum, 0.060" thick x 1" wide x 10' long with 1/4" x 3/8" slotted holes on 8" (203mm) o/c. Acceptable material: TB-120 aluminum termination bar by Tru-Fast.
- .6 Termination bar fastener for wood, steel or aluminum:
 - .1 Tru-Fast Ultra Solid Stainless Steel fastener to penetrate substrate by 3/4" (19mm) c/w EPDM galvanized steel sealing washers or Construction Fasteners Inc. Woodgrip #14

- screw complete with Senti coating on threads, Chromagard colour match head and EPDM washer
- .7 Termination bar fastener for concrete or masonry:
- .1 Tru-Fast Tap Grip Truss Head fastener with Perma-Coat Z3 corrosion protection to penetrate substrate by 1 1/4" (32mm) c/w EPDM galvanized steel sealing washers.
- .8 Pre-painted metal flashing to steel or wood:
- .1 Construction Fasteners Inc. Woodgrip #14 screw complete with Senti coating on threads, Chromagard colour match head and EPDM washer or approved equal. Fastener to penetrate substrate by minimum 3/4".
- .9 Membrane to wood:
- Galvanized round top nails with minimum 1" diameter heads to penetrate the substrate a minimum 1 1/4" (32mm).
- .10 Venting Sheet Membrane to Lightweight Concrete:
- .1 NVS fasteners as manufactured by Siplast or Soprema. Specialty fasteners are as specified in the scope of work or as required in drawings.
- .11 All fasteners and plates to meet the requirements of Factory Mutual 4470 Standard for wind uplift and corrosion resistance.

PART 3 - EXECUTION

3.1 WORKMANSHIP

- .1 Execute roofing work which is not specifically covered by these Specifications in accordance with applicable standards in Canadian Roofing Contractors Association (CRCA) and the National Roofing Contractors Association Roofing Specification Manual, in accordance with the Canadian Modified Bitumen Manufacturer's Association's recommendations, in accordance with the manufacturer's preprinted and published specifications and to ULC Design No. S-107, to FM 1-28 and 1.49 criteria, compliance with local fire insurance requirements and/or local building codes, except where specified otherwise.
- .2 Do priming for asphalt roofing in accordance with CAN/CGSB 37-GP-15M and as recommended by membrane manufacturer.
- .3 Procedures for application of materials should be in accordance with manufacturer's recommendations; otherwise the Consultant should be notified if any conflict with this Specification arises.
- .4 All work shall be carried out in accordance with drawings, specifications and contract documents.
- .5 Adhesives or sealants and liquid primers will not be applied until surfaces are dry.
- .6 Inspect the underside of roof deck when installing fasteners, where possible, to avoid accidental damage.
- .7 While work is in progress, all steps must be taken to safeguard the building from damage due to the elements.
- .8 Consultant must be notified of adjustments to specified roofing procedures recommended by the Manufacturer or due to site conditions. Written approval from the independent Consultant is required to make any adjustments to the specified procedures.

3.2 EXAMINATION OF SITE CONDITIONS

- .1 Inspect existing conditions and substrates upon which work of this section is dependent. Report to the Consultant in writing any defects or discrepancies. Commencement of work implies acceptance of existing conditions and assuming full responsibility for the finished condition of the work.
- .2 Defective work resulting from application to unsatisfactory conditions will be considered the responsibility of those performing the work of this section.

3.3 PREPARATION

- .1 Examine all site conditions to ensure that they are in satisfactory condition for the commencement of the work of this section.
- .2 Examine work of other trades for defects and discrepancies and report them to the owner/consultant in writing. Do not proceed with work until surfaces are satisfactory.
- .3 Ensure roof drains have been installed at proper elevations relative to finished roof surface in order to allow for sufficient drainage of the roof surface.
- .4 Disconnect Electrical Services as required.
- .5 Disconnect Mechanical Equipment as required.
- .6 Ensure that projections and any equipment (electrical conduit, gas lines etc.) are correctly secured to the decking where applicable. If any inadequate securement is found, the Consultant is to be informed and work around that area is to be halted until the situation has been rectified.
- .7 Any rooftop equipment requiring disconnection shall be the responsibility of the Contractor in consultation with the owner unless otherwise specified in this document.
- .8 Inspect wood blocking, cants and the like. Do not install roofing unless such items are adequately installed to withstand stresses imposed by thermal movement of the roof components.
- .9 Apply each part of roofing system when surfaces are free of moisture for successful application. Consult with manufacture's printed instructions for successful application.
- .10 All details supplied with this scope of work package are acceptable installations. Any deviance from these details must first approved by the Consultant prior to installation.

3.4 PROTECTION

- .1 Cover walls and adjacent work where materials are hoisted and used.
- .2 Use warning signs and barriers. Maintain in good order until completion of work.
- .3 Protect roof from traffic and damage by placing suitable runways over all new membrane work. Comply with precautions deemed necessary by Consultant.
- .4 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.
- .5 Contractor is to take care as not to damage any previously performed work, any closely located buildings and all grounds in the vicinity during roofing operations. Contractor shall protect against dust infiltration and other such occurrences. Garbage chutes are to be located as to minimize their exposure to the building and its occupants. Protect walls by means of tarpaulins where garbage chutes and hoisting equipment is located. Cover dumpsters and bins so that debris does not blow away.

- .6 Only equipment that will not adversely affect the deck (damage or alter) is to be used.
- .7 Roof access is to be unobstructed. Doorways and fire routes are to be kept clear of any obstacles.
- .8 Examine and repair or replace damage caused by work of this contract with materials and finish to match original to Consultant's approval.
- .9 All non-used materials are to be removed and stored at a location that will prevent any damage (moisture, ultraviolet breakdown, etc.).
- .10 All materials for the project are to be delivered to the site. Materials are to arrive in undamaged condition with the original manufacturer's label intact and clearly visible for easy verification of materials to specified materials.
- .11 When temperatures fall below 40°F, any materials such as membrane, adhesives and sealants that are affected by cool temperatures are to be stored in heated storage areas.
- .12 Protect rolls from flattening by storing on ends on skids.
- .13 Moisture sensitive products and exposed building substrates are to be protected with all work being halted during inclement weather including but not limited to rain fall, snow, drizzle, fog and hail.
- .14 Protect all openings and safeguard all vents, stacks, and drains from weather and contamination from debris.
- .15 Defective work resulting from application of material on unsatisfactory surface will be considered the responsibility of the Contractor.

3.5 N.V.S. INSULATION SYSTEM REPAIRS

- .1 Areas with damaged concrete substrate must be repaired before any further work can take place on that particular roof section.
- .2 Dry out any areas of the existing lightweight concrete surfaces that are damp or wet. Repair any sections of the concrete substrates that are spalled or flaking with specified compound.
- .3 At the repair section, remove the existing lightweight concrete to a minimum depth of 1" (25mm) or to sound concrete, whichever is greater.
- .4 Prior to application of patching compound, remove debris from the repair area and remove deteriorated concrete material down to a sound substrate.
- .5 Moisten the surface of the repair area with water.
- .6 Following the manufacturer's instructions for mixing product preparation and application.
- .7 Finish the surface of the patch area to a smooth surface.
- .8 Trowel finish any edges to provide a smooth transition to the surface of the existing substrate.

3.6 MODIFIED BITUMEN MEMBRANE REPAIRS

- .1 Modified bitumen membrane repairs to be carried out with new materials using the same type of membrane and bitumen already installed in the existing membrane system. All supplied roof materials to be compatible with the existing roof system components.

- .2 Cut out damaged and deteriorated existing membrane sections in logical rectangular segments as required. Dispose of all debris and dirt to an appropriate site.
- .3 Use two (2) plies of new specified modified bitumen base sheet and cap sheet membrane with an attachment method appropriate for existing building and installation.
- .4 Cap sheet membrane to have granulated surface where left exposed. Colour to match existing as close as possible.
- .5 Install new modified bitumen base sheet across repair area and extend minimum 4" (102mm) past edge, on to existing modified bitumen membrane. Ensure a good bond to existing membrane. Self-adhering base sheet flashings to be installed with membrane primer as specified.
- .6 Carry new modified bitumen cap sheet over new base sheet and extend a minimum of 4" (102mm) past edge, on to existing modified bitumen membrane. Ensure a good bond to existing membrane.
- .7 ALL SIDE AND END LAPS OF THE BASE SHEET AND CAP SHEET SHALL BE HEAT WELDED WITH HOT AIR GUN TO THE SATISFACTION OF THE CONSULTANT.

3.7 MODIFIED BITUMEN FLASHING MEMBRANE REPAIRS

- .1 All modified bitumen membrane flashing repairs to be carried out with new modified bitumen flashings. All new roof materials to be compatible with the existing roof system components.
- .2 Modified bitumen membrane flashing repairs are to consist of two (2) plies of new specified modified bitumen membrane using attachment method appropriate for existing building and installation.
- .3 Extend new base sheet flashings a minimum 4" (102mm) past the existing repair area. Self-adhering base sheet flashings to be installed with membrane primer as specified.
- .4 Carry new cap sheet flashing a minimum of 4" (102mm) past the base sheet flashing. Ensure a good bond between the modified bitumen flashings.
- .5 ALL SIDE AND END LAPS OF THE BASE SHEET FLASHING AND CAP SHEET FLASHING SHALL BE HEAT WELDED WITH HOT AIR GUN TO THE SATISFACTION OF THE CONSULTANT.

3.8 ROOF PENETRATION REPAIRS

- .1 Install roof penetration flashings and seal with membrane in accordance with the manufacturer's recommendations and as indicated on detail drawings.
- .2 Prime all metal flanges and allow to solvents to flash off prior to installation.
- .3 Set metal flange in full layer of rubberized sealing compound ensuring a positive bond.
- .4 Install an additional ply of base sheet membrane over the flange as per the manufacturer's written instruction prior to installing the field cap sheet membrane. The additional ply of membrane to extend a minimum of 6" (152mm) past the edge of the flange.
- .5 Install cap ply to the base ply flashing ensuring a full bond to the base ply and apply bead of sealing compound at the termination point.

3.9 METAL FLASHINGS

- .1 After the installation of the roof membrane and membrane flashings, new perimeter metal and metal flashings shall be installed as detailed in Section 07620 and as indicated on detail drawings.

3.10 SEALANTS

- .1 As per Section 07900 – Sealants.

3.11 TEMPORARY WATER CUT-OFFS

- .1 Temporary waterproof seals will be placed on daily work. Only areas which can be made watertight in the same day will be removed to ensure protection of the interior. Temporary seals will be removed before proceeding with the remaining work.
- .2 All flashings shall be installed concurrently with the roof membrane in order to maintain a watertight condition as the work progresses.
- .3 All temporary water-stops shall be constructed to provide a 100% watertight seal. The stagger of the insulation joints shall be made even by installing partial panels of insulation.
- .4 The new membrane shall be carried into the water-stop. The water-stop shall be sealed to the deck and/or substrate so that water will not be allowed to travel under the new or existing roofing.
- .5 The edge of the membrane shall be sealed in a continuous heavy application of sealant.
- .6 When work resumes, the contaminated membrane shall be cut out. All sealant, contaminated membrane, insulation fillers, etc. shall be removed from the work area and properly disposed of offsite. None of these materials shall be used in the new work.
- .7 If inclement weather occurs while a temporary water-stop is in place, the Contractor shall provide the labour necessary to monitor the situation to maintain a watertight condition.
- .8 If any water is allowed to enter under the newly-completed roofing, the affected area shall be removed and replaced at the Contractor's expense.

3.12 CLEAN-UP

- .1 Clean up and remove from job site on a daily basis, all rubbish and surplus materials resulting from this work.

END OF SECTION – 07550

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