1.0 GENERAL

1.1 Related UBC Guidelines

.1 Section 07 00 10 Building Envelope – General Requirements

1.2 Coordination Requirements

.1 Coordinate design with Building Envelope Consultant.
.2 Coordinate design with Structural Engineer.
.3 Coordinate design with Mechanical Consultant.

1.3 Performance Requirements

.1 Membranes under landscaping require access for maintenance and replacement. Membranes are not to be buried under cast-in-place concrete except as absolutely necessary at sidewalks and driveways. Pavers or other material that can be removed and re-used for hard landscaping is preferable.

.2 For soft landscaping (plants etc.) over membranes use materials that can be removed with light excavation equipment and be disposed of. More valuable plants can be placed in movable planters.

.3 Membranes should be fully bonded to the surface of the concrete structure to help isolate leak locations.

.4 Concrete structures under the membrane should be sloped to drains at about 2%. Account for deflection or other subsidence of the structure when specifying and designing slopes.

.5 Apply hot rubberized asphalt membranes only after sustained intervals of dry weather. If construction schedule dictates application during poor weather season, select alternate waterproofing type.

.6 Membranes to terminate at least 100 mm higher than the finished grade surfaces of any landscaping. Use termination bars or reglets to finish the top edge of the membrane and install counter flashing to cover and protect membrane above grade.

.7 Sills at service doors to be raised 100 mm above finished grade surfaces and be provided by ramps to grade if required to be accessible.

.8 Sills at main public access doors and at exit doors must be located flush with exterior walkway pavers. Provide a 3/4" deep recessed pocket immediately beneath the door threshold. Extend the waterproofing membrane into the recessed pocket and upturn at the back and sides of the pocket. Threshold to be set on shims to provide a flush installation with interior finishes and to reduce the risk of any tripping hazard. Exterior pavers will be installed on pedestals to promote drainage and pavers are to be provided with adequate spacing or provide trench drains to prevent ponding nearby doorways. Floor finishes on the interior of these doors should not be moisture sensitive type products.

.9 Door sills to be integrated with terminations of roofing membranes using a liquid waterproofing flashing membrane (PMMA).

.10 Check scuppers for height relative to door sills.
.11 Subgrade membranes to be drained to perimeter drains via a permeable fill or geotextile system placed on top of the membrane.

.12 The installation is not to leak at terminations, drains, upturns, or splices.

.13 The installation is to be impermeable to chloride ions.

.14 The system must be able to withstand active cyclical crack movement to a maximum of 1.5 mm and remain waterproof.

.15 The membrane, primer, and or surface patching material shall fully adhere to the substrate concrete.

.16 Adhesion of all layers of the system is to exceed 1.0 MPa.

.17 Cold joints at below grade foundation concrete walls should be detailed with vertical reveals to control crack propagation. All below grade foundation walls to be designed with waterstopped crack control joints, located at a minimum of 15'-0" on centre. Spacing to be confirmed with project structural engineer.

1.4 Quality Control and Assurance

.1 Quality Assurance
.1 Testing of permeability, bond strength, material thickness, and flood testing will be carried out by the Owner at his expense.
.2 Applicator to provide material submittal and drawings showing any deviation from RCABC Waterproofing Standards.

.2 Quality Control
.1 Contractor to test moisture content of concrete substrate to verify that substrate moisture content does not exceed manufacturer’s specifications.
.2 Submit results to consultant prior to application of membrane.
.3 Flood testing and EFVM scans are to be performed prior to installation of overburden.

.3 Warranties
The following warranties and guarantees are required:
.1 First two years - Guarantee, secured by Performance Bond, commencing on the Final Holdback release due date.
.2 Third year to fifth year - Extended Guarantee, unsecured by Bond, commencing on the expiration of the Performance Bond. Joint and Sealant guarantee by Coating applicator and Manufacturer.
.3 Horizontal waterproofing: 5 year RCABC waterproofing warranty and detailing; 10 years Manufacturer material warranty. These warranties only apply to horizontal applications, RCABC does not cover vertical waterproofing of foundation walls. In the case that a 5 year RCABC waterproofing warranty is provided the Performance Bond (1.4.3.1) and Extended Guarantee (1.4.3.2) are not required.
.4 Submit the RCABC RoofStar “Roofing Assignment and Guarantee Request” sheet with all roof guarantee certificates.
.5 Submit signed certificates to Consultant.
.4 Commissioning
   .1 Contractor to repair any defects found in membrane as a result of flood testing or Electric Field Vector Mapping (EFVM) scan.

2.0 MATERIALS
   .1 UBC-required sub-grade waterproofing system for horizontal surfaces:
      .1 Waterproofing systems to consist of two ply thermo fusible membrane for flat applications (low slope) under landscaping.
      .2 Waterproofing systems to consist of three ply thermo fusible membrane under hard landscaped areas and roadways constructed of cast-in-place concrete topping.
      .3 All membranes to be covered with 3mm minimum protection board for horizontal application.
      .4 At landscaped areas, root barrier to be provided and consist of minimum 10 mils HPDE or 30 LPDE complete with taped seams or membrane manufacturers recommended product for use with specified vegetation (whichever is more stringent) – 80 mils welded HPDE for very invasive roots such as bamboo.
      .5 Curb on “starter-curb” details to be used for all curbs and planter walls.
      .6 All penetrations for irrigation, electrical or gas services to extend into a roofing jack that terminates into a drained, accessible garden box.
      .7 Pond liner: 80 mils fully welded HDPE.

   .2 UBC-required sub-grade waterproofing system for vertical surfaces:
      .1 Based on results of geotechnical report and occupancy the following membrane should be considered as a minimum:
         .1 Drained and cast in place wall: 1-ply Torch SBS
         .2 Drained and blind side formed wall: preprufe 200 or Bentonite/HPDE Composite
         .3 Drained and shotcrete wall: preprufe 160
         .4 Drained and high risk occupancy: 2-ply and/or double wall with drainage
         .5 Hydrostatic pressure and cast in place wall: 2-ply torch
         .6 Hydrostatic pressure blind side: preprufe 160
         .7 Hydrostatic pressure shotcrete: preprufe SCS
         .8 Hydrostatic occupied or high risk: not allowed

   .3 Other membrane systems possible:
      .1 Hot applied rubberized asphalt, 2 ply, fully reinforced; can be used where SBS is impractical. Minimum 215 mils thickness.
      .2 Hot rubber products to conform to CGSB-37.50, Standard for “Asphalt, Rubberized, Hot Applied, for Roofing and Waterproofing” (i.e. Hydro tech Membrane Corp. PQ, c/w protection and drainage course, 20-year manufacturer Water tightness Warranty).

   .4 Drain bodies to have clamping ring to receive membrane.

3.0 EXECUTION
   .1 All substrate cracks in concrete substrates to be pretreated by sawing out crack, installing bridging sealant, and reinforcing waterproofing system over the crack.
   .2 Concrete bonding surfaces to be cleaned and prepared by shot-blasting, sand blasting, or water blasting.

***END OF SECTION***