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 Identify air / vapour / moisture barrier systems location and all materials on drawings.

.3 Provide details showing the continuity of the air / vapour / moisture barrier systems at all joints and junctions between enclosure assemblies (windows, doors, walls, roofs, penetrations, foundations, etc.) in the building.

.4 Coordinate details of drainage, venting, insulation, and cladding of enclosure assemblies.

1.3 **Performance Standards**

.1 All heated occupied buildings on campus to have an air barrier system.

.2 The air barrier must be located at a thermally protected location in the assembly and must be continuous across all parts of the building above grade.

.3 Penetrations by structural elements, electrical, mechanical services through the building enclosure, and interfaces at windows and doors are the most common sources of service life and performance related problems with air, vapour and moisture barrier systems.

.4 Production of a durable air barrier requires selection of durable materials and location of the air barrier within the building enclosure where it will not be rapidly deteriorated by the elements.

.5 The air barrier is to be integrated with all components of the building enclosure such as walls, windows and door frames, roof, foundation, and service penetrations.

.6 The air barrier shall have a service life equal to cladding or be maintainable from inside the building. UBC will not accept air barrier assemblies that are not visible and require maintenance in the expected service period.

.7 Air and moisture barrier must be the same material and have the following properties:

.1 Material air tightness: 0.02 l/s.m² @75pa

.2 System air tightness: 0.2 l/s.m² @75pa

.3 Building air tightness: 2.0 l/s.m² @75pa

.8 The air barrier system is to have a comprehensive air tightness of 0.2 l/s.m² unless otherwise specified below or unless mechanical system specifications override this requirement.

.1 Air tightness for other specific assemblies:

.1 Walls behind masonry cladding 0.3 l/s.m².

.2 Walls enclosing heated spaces with sustained high air borne moisture loads:

Air tightness to be increased as required to protect the wall assemblies.

.9 The air and vapour barriers are to be located close together in the assembly, or be of one material if possible. Any materials located between separate air and vapour barriers must be immune to moisture damage (100% inorganic).
.10 The air barrier is to be structurally supported to resist maximum wind loads, 30 year return. This is particularly important at movement joints where fatigue caused by excessive movement cycles of an unsupported membrane may fail the seal.

.11 The air barrier shall resist cyclic deformations caused by structural or other movement at all joints.

.12 Air barrier system shall be tested and rated in advance of construction and/or by testing in the field during construction and commissioning to check compliance with air tightness requirements.

.13 The vapour barrier is to be located on the warm side of insulation.

.14 The moisture barrier must be continuous and flashed to the exterior to prevent entry of water.

1.4 Quality Control and Assurance

.1 Submittals
   .1 Certification for Air barrier assembly (CCMC or equivalent).

.2 Quality Assurance
   .1 Construct mock-up of assemblies to check contractor’s procedures.
   .2 Test mock-ups to verify air tightness and resistance to structural loading.

.3 Quality Control
   .1 Test random portions of the assembly to verify air tightness.

.4 Commissioning
   .1 Carry out fan depressurization test with smoke to verify air tightness of completed building. Air tightness testing to also include positive and negative thermographic scans of building.
   .2 Air barrier components or assemblies that are not visible or accessible and require maintenance in the expected service period of the exterior wall are not acceptable.
   .3 Tier 1, 2 and 3A projects should conduct whole building airtightness testing meeting ASTM E799 or USACE Version 3 standard in accordance with BCBC Energy Step Code.

2.0 MATERIALS

2.1 Prescriptive Requirements

.1 Identify all air seal materials that form the air barrier assembly.

.2 Show location and continuity of all critical barriers on detail drawings and sections.

.3 Air barrier materials vulnerable to moisture damage, or heat and UV aging, must be located in the assembly so as to be protected from damaging levels of wetting and radiation over the service life.

.4 Organic materials lose strength and ductility as they age. Use 25% to 50% of the manufacturer’s published data values in design to account for decline in tensile strength, adhesion and ductility of these materials over the service life.
.5 Air and Vapour barriers:

.1 Exterior insulated rainscreen walls: self-adhesive SBS modified asphalt sheet acting as both air and vapour barriers.

.2 Interior insulated rainscreen walls: smart vapor retarder such as Membrane by CertainTeed.

.3 Hybrid insulated (insulation inside and outside of stud wall) rainscreen walls: Self-adhesive waterproof membrane which are vapour permeable.

.4 All other walls: properties and location of the vapour barrier in the assembly must comply with: ASHRAE 160 provide model results showing where the dew point will be located.

***END OF SECTION***