1.0 GENERAL

1.1 Related Work and UBC Guidelines

.1 Section 07 00 10 Building Envelope – General Requirements
.2 Section 07 40 00 Cladding
.3 Section 07 21 00 Thermal Insulation
.4 UBC Energy Modelling Guidelines
.5 Owner's Project Requirements

1.2 Related External Documents

.1 Latest edition of the British Columbia Building Code (BCBC).

1.3 Description

1. Weather-resistive barriers that are a part of exterior wall systems to protect building materials from exterior water penetration.

1.4 Coordination

1. The Guidelines apply to all work completed within buildings on both UBC Vancouver and UBC Okanagan campuses unless stated otherwise.
2. In instances where conflicts are found between the UBC Technical Guidelines and provincial regulations or codes, please notify the UBCV Technical Review Team Architect or UBCO Facilities Management.
3. These guidelines are intended to be read by design consultants and their content integrated into construction drawings and specifications. Construction documents are not to reference the technical guidelines directly.
4. The Coordinating Registered Professional is required to coordinate these requirements with other disciplines.

1.5 Submittals

1. Submit required documents to consultants in accordance with Section 013300 Submittal Procedures
2. O&M Submittals
   .1 Product data sheets.
   .2 Environmental Product Declaration (EPD).
   .3 Certification for air barrier assembly (CCMC or equivalent).
3. Product data sheets.
4. Manufacturer performance test data to confirm performance criteria.

1.6 Quality Control and Assurance

.1 Quality Assurance
   .1 Construct mock-up of assemblies to check contractor's procedures.
   .2 Test mock-ups at strategic locations for water and air tightness.
.2 Quality Control
   .1 Test strategic areas of the assembly early in the construction to evaluate performance and improve overall airtightness.
.3 Commissioning
   .1 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 Buildings that comply with BCBC 10.2.2.1 using ANSI/ASHRAE 90.1 or NECB are required to comply to 1.5.3.1(buildings that do not comply using step code).

2.0 DESIGN AND PERFORMANCE REQUIREMENTS

2.1 Design Requirements

.1 All heated and occupied buildings on campus must have an air barrier. Any materials located between separate air and vapour barriers must be immune to moisture damage (100% inorganic).

.2 The air and vapour barriers are to be located close together in the assembly, or be of one material if possible.

.3 The moisture barrier should be continuously adhered to the substrate and flashed/drained to the exterior at every two floors maximum.

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

.5 The vapour barrier is to be located on the warm side of insulation. For split wall assembiles, incorporating the air and vapour barriers together is preferred.

.6 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.

.7 Architect to provide details showing the location and 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.

.8 Architect to coordinate all wall and roof penetration details with structural, mechanical and electrical disciplines. All such details are to be provided in the architectural drawing set. Penetrations through the building envelope, 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.

.9 Architect to ensure all details have been reviewed by a Building Envelope Consultant.

2.2 Performance Requirements

.1 Air barrier materials must be located at a thermally protected location in the assembly and must be continuous across all parts of the building above grade.

.2 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.

.3 The air barrier shall have a service life equal to cladding or be maintainable from inside the building.

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

- .1 Material air tightness: 0.02 l/sm2 @75pa – ASTM 2178
- .2 System air tightness: 0.2 l/sm2 @75pa – ASTM E2357
- .3 Building air tightness: 2.0 l/sm2 @75pa – ASTM E779

.5 The air barrier system shall be continuous and provide a comprehensive Whole Building Air Tightness (WBAT) of minimum 1.27 l/s.m^2 at 75Pa unless otherwise specified below or unless Energy Performance Requirement or mechanical system specifications override this requirement.

- .1 Air tightness for other specific assemblies:
  - .1 Walls behind masonry cladding 0.3 l/sm^2.
  - .2 Walls enclosing heated spaces with sustained high air borne moisture loads: Air tightness to be increased as required to protect the wall assemblies.

.6 The air barrier shall be structurally supported and resist cyclic deformations caused by structural or other movement at all joints.

.7 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.

3.0 MATERIALS

3.1 Product Selection

.1 Air and Vapour barriers:

- .1 Exterior insulated rainscreen walls: self-adhesive non-permeable membrane 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.

3.2 Acceptable Products

.1 Exterior Air & Vapour Barriers (Preferred):

- .1 SBS Modified Asphalt Sheet, fully adhered, 40 mils minimum, conforming to ASTM 2178, less than 1 perm vapour permeance per ASTM E 96/E 96M.
- .2 Butyl based adhesive with cross laminated facer, 20 mils minimum, conforming to ASTM 2178, less than 1 perm vapour permeance per ASTM E 96/E 96M.

.2 Exterior Air Barriers (Vapour Permeable):

- .1 Fully adhered, 20 mils minimum, conforming to ASTM E 2178, more than 10 perms vapour permeance per ASTM E96/E 96M.

.3 Interior Air & Vapour Barriers:

- .1 Polyethylene sheet, 3 mils minimum, conforming to ASTM 2178, less than 1 perm vapour permeance per ASTM E96/E 96M.
- .2 Smart vapour retarder, 1 perm maximum under dry cup conditions (ASTM E96) and 10 perms minimum under wet cup conditions.

.4 Alternative Systems:

- .1 Spray polyurethane insulation (sprayfoam) will be considered on a project specific basis due to it's very high global warming potential. Consult with the Green Building Manager, Sustainability Department if considering use.

*****END OF SECTION*****