1.0 GENERAL

1.1 General Note

.1 Input from Building Envelope Professional required at early stage in design development.
.2 Production of a competent air barrier requires integration of the line of air tightness into early design decisions.

1.2 Performance Standards

.1 CAN/CSA-A440.2-09/A440.3-09 - Fenestration energy performance/User guide to CSA A440.2-09, Fenestration energy performance.
.2 NFRC 100 - 2010, Procedure for Determining Fenestration Product U-factors.
.4 CAN/CSA-A440.4 "Window and Door Installation".

1.3 Windows – General

This Section applies to all Glass and Glazing included in Sections: 08 41 13 Aluminum-Framed Entrances and Storefronts, 08 50 00 Windows, 08 80 00 Glazing, and 08 44 13 Glazed Aluminum Curtain Walls.

.1 Systems to utilize exterior rain screen deterrents, interior air seal barriers, and cavities pressure equalized to the exterior to minimize water infiltration into the internal areas of the system, assembled and installed to provide control and drainage to the exterior of any water which enters the pressure equalized cavities.

.2 All seals between frame and glazing to be made with compressed gaskets.

.3 Frames to be glazed with internal removable stops or using tamper proof fasteners where security is required.

.4 Window installations need to accommodate building movements including inter-storey drift during seismic loading.

.5 Air infiltration/exfiltration level:

.1 A3 level for operable products (0.5 l/sm2) and Fixed level for non-operable products (0.2 l/sm2) all measured at 75Pa.

.6 Water tightness rating for windows to be selected based upon exposure to elements related to location on the façade and site conditions.

.7 Sound attenuation ratings for windows to be selected based upon interior requirements.

.8 Thermal transmission and shading coefficient for windows and doors to be selected in coordination with mechanical consultant.

.1 Buildings designed to ASHRAE 90.1-2010: Provide overall U-values and SHGC that are lower than prescriptive values for Zone 4 buildings.

.1 Non-metal framing $U_s \leq 2.3 \text{ W/m}^2\cdot\text{K}.$
.2 Metal curtainwall / window wall $U_s \leq 2.8.$
.3 Metal windows, operable for fixed, and non-entrance doors: $U_s \leq 3.1.$
.4 Overall SHGC $\leq 0.40.$
.2 Buildings designed to 2011 NECB: provide overall U-values that are lower than prescriptive values for Zone 4: $U_{SI} \leq 2.4 \text{ W/m}^2\cdot\text{K}$.

.9 Operable windows to be included for ventilation and occupant comfort where noise and mechanical ventilation concerns do not preclude this.

.10 Operable windows are not to be installed in laboratories or spaces where pressure differentials need to be maintained in order to allow negative pressures to be maintained relative to adjacent spaces and to prevent draft conditions.

.11 Make provision for window washing and other maintenance access to both sides of glazing units, including in atrium spaces. Access by man lift is preferred.

.12 Hardware and seals of operable units should be designed so that hardware can be adjusted and seals maintained or replaced over the life of the window to maintain air and weather tightness.

.13 Frames need to be supplied with receiving surfaces for sealing to air and vapour barrier materials, insulation, and cladding in the wall assembly.

.14 Exterior sills and flashings to be installed with a definite outward slope (15° degrees or more). 90 degree angle spots where birds can land shall be avoided by using ledge exclusion options (bird slides) to minimize this angle and help prevent birds from perching in these areas.

.15 Other additional design considerations as appropriate with regard to window and screen installations to help deter pest entry.

.16 Designers should consider UBC’s [Bird Friendly Design Guidelines for Buildings](#) early in project design.

.17 If designing full height glazing, provide guard redundancy.

### 1.4 Windows - Materials

This Section applies to all Glass and glazing included in Sections: 08 41 13 Aluminum-Framed Entrances and Storefronts, 08 50 00 Windows, 08 80 00 Glazing, and 08 44 13 Glazed Aluminum Curtain Walls.

.1 Glazing units to have a 10-Year warranty.

.2 Frame materials to be selected for a minimum 30-Year service life.

.3 Suitable frame materials include thermally broken aluminum.

.4 Where permitted by code fiberglass windows may be specified provided they meet a minimum performance class and grade of CW 45 in accordance with NAFS.

.5 In a non-academic building of less than 3 stories in height, and where permitted by building code, AAMA 303 certified PVC compounds windows may be considered provided they meet a minimum performance class and grade of CW 45 in accordance with NAFS. PVC windows to be white or light colours only.
Frame coating: Aluminum AAMA 2603 for interior coatings, AAMA 2604 for exterior coatings in high traffic areas (entrances) for greater abrasion resistance, AAMA 2605 for exterior exposed coated surfaces. Anodized finishes to conform to AAMA 611 or AAMA 612 (clear coated anodized finish).

All materials should be shop fabricated and finished with no field cutting of materials allowed.

Non-metal and non-wood windows to meet a minimum performance class of NAFS CW class.

Sill accessories and flashing material shall be connected with waterproof joints or shall be underlain with continuous secondary waterproofing. Joints shall remain waterproof while accommodating thermal movement for the life of the installation.

All windows to be installed over a waterproofed sub sill pan that covers the entire underside of the window up to the air seal line.

1.5 Doors – General

This Section applies to all Doors included in Sections: 08 11 00 Metal Doors and Frames, 08 41 13 Aluminum-Framed Entrances and Storefronts, 08 50 00 Windows, 08 80 00 Glazing, and 08 44 13 Glazed Aluminum Curtain Walls.

Doors not designed to be weathertight should be protected from inclement weather by canopies or by other means.

Water tightness rating for exposed doors to be selected based upon exposure to elements related to location on the façade and site conditions.

Exposed doors and frames:

1. Install all doors under the cover of an overhang with an overhang ratio (horizontal projection of overhang to overhang to height above door sill) appropriate for the door type. All measurements are taken from the exterior edge of the door threshold.

2. Overhang projection outward from plane of door:

1. Out-swing door: 1:4 min
2. Sliding door: 1:4 min
3. In-swing: 1:2 min
4. Double swing: 1:2 min
5. Double slider: 1:2 min
6. Wood door: 1:2 min
7. Outswing Press steel door: 1:2 min

3. Overhang projection to jamb in plane of door 1:4 minimum.

4. Any door with less than a 1:2 overhang ratio (Out-swing door and sliding doors in table above) must also meet the minimum water penetration test resistance requirements for windows located in the wall at that location, and be verified through field testing.
.5 Exceptions to the above rules may also be made for outward opening or sliding doors that can resist water penetration in the lab and in the field at pressures in excess of 500 Pa with multi point locking system.

.4 Frames to be glazed with internal removable stops or using tamper proof fasteners where security is required.

.5 Door sub sill pans need to be integrated with terminations of roofing membranes.

.6 Check scuppers for height relative to door sills.

.7 Frames need to be sealed to air and vapour barrier materials, insulation, and cladding in the wall assembly.

.8 Wherever required for fire rating, use hollow metal thermally broken doors. At all other locations use thermally broken aluminum door or fiberglass.

.9 Wide stile glazed thermally broken aluminum doors in aluminum frames or fiberglass doors in pressed metal frames are preferable.

.10 Wood doors with a mineral core are acceptable under some circumstances but not recommended for maintenance.

.11 For security purposes doors should be single. All exterior exit doors (with panic hardware or "pass out" locksets) must be singles within their own frames. Where wider openings are required for movement of equipment, supplies, etc., provide removable center mullions.

.12 The University requires that all doors with glazed assemblies (floor to door height, or ceiling) be tempered glass.

.13 Where vision glass is located in a required fire separation use Firelite and not wired glass.

.14 Use of floor checks, pivots, concealed closers and/or concealed panic devices is not permitted.

.15 Door stiles of glazed doors must be 127 mm (5") x 45 mm (1 3/4") minimum in order to accept surface mounted panic hardware and mortise locksets. Glass doors are not recommended.

.16 Doors to swing out for all Service Rooms and provide an acoustic seal.

.17 Any exterior or vestibule doors that swing over walk off mats must have sufficient clearance underneath to accommodate the mats without having to make special provisions in the mats such as cutaways.

1.6 Doors - Materials

This Section applies to all Doors included in Sections: 08 11 00 Metal Doors and Frames, 08 41 13 Aluminum-Framed Entrances and Storefronts, 08 50 00 Windows, 08 80 00 Glazing, and 08 44 13 Glazed Aluminum Curtain Walls.

.1 Materials to be selected for a 30-Year service life.
.2 Corrosion protection considered suitable for steel materials consists of Z275 galvanizing and painting.

.3 Aluminum frame coating: AAMA 2604 for exterior coatings in high traffic areas (entrances) for greater abrasion resistance, AAMA 2605 for exterior exposed coated surfaces. Anodized finishes to conform to AAMA 611 or AAMA 612 (clear coated anodized finish).

.4 All materials should be shop fabricated and finished, with no field cutting of materials allowed.

.5 PVC doors to have a minimum exterior wall thickness of 2 mm, and to have internal steel reinforcing in every member.

.6 Sill accessories and flashing material shall be connected with waterproof joints or shall be underlaid with continuous secondary waterproofing. Joints shall remain waterproof while accommodating thermal movement for the life of the installation.

***END OF SECTION***