1.0 **GENERAL**

1.1 Related UBC Guidelines

.1 Section 07 00 10 Building Envelope – General Requirements
.2 Section 08 00 10 Openings – General Requirements
.3 [UBC Bird Friendly Design Guidelines](#)

1.2 Co-ordination Requirements

.1 Coordinate design with Building Envelope Consultant.

1.3 Description

.1 Glass and Glazing.

1.4 Performance Standards

.1 MNECB Model National Energy Code for Buildings, typically using values for "Natural Gas".
.2 ANSI/ASHRAE 90.1.
.3 CAN/CGSB-12 Series Standards: glass types; performance.
.4 CAN/CGSB-12.20: Structural Design for Buildings.
.5 IGMAC Insulating Glass Manufacturers of Canada guidelines.
.8 British Columbia Energy Efficiency Act.

1.5 Quality Control and Assurance

.1 Submittals

.1 Shop drawings sealed and signed by a Professional Structural Engineer see 1.5.3.3.
.2 Samples if other than clear glass.
.3 Performance data.
.4 Maintenance and cleaning procedures.

.2 Quality Assurance

.1 Work shall be performed by a qualified glazing contractor with minimum five (5) years experience, with adequate facilities and skilled personnel suitable for this work.

.3 Quality Control

.1 Drawings indicate minimum thicknesses and requirements.

.2 Final thickness, safety glazing, heat strengthening, and other performance requirements to meet Code and Standards, Project Criteria, and required structural performance are the responsibility of the Contractor based on location and intended use.

.3 Structural performance requirements of exterior glazing, as well as that for exterior and interior Structural Glazing including anchorage and fasteners, to be designed and certified by a Professional Structural Engineer registered in the Province of British Columbia, who is to also carry out periodic site reviews during construction and at

.4 Provide guard redundancy when designing full height glazing.

.5 Costs to be included in the contract price.

.4 Warranties
   .1 10-Year for sealed units.

2.0 MATERIALS

2.1 Materials
   .1 Locally produced materials should be used whenever possible.
   .2 Manufacturer of IGU, must be IGMA certified.
   .3 Glass spacer type: thermally improved as required to meet specified energy performance requirements. Non-thermally broken aluminum spacers shall not be used.
   .4 Installation of glazing to conform with IGMA TM-3000-90, TB-3001 and TM-1300
   .5 List allowable glass types with applications (no tempered glass on buildings except where required to be safety glass in doors and sidelights):
      .1 Exterior glazing, simple building form and small units – Annealed or Heat Strengthened Glass.
      .2 Exterior glazing, complex building or solar shades or reflective glass or large units - Heat Strengthened Glass to reduce risk of breakage due to thermal stress.
      .3 Exterior glazing, all buildings- low-E coating on #2 surface of the insulated glazing unit (IGU).
      .4 Exterior glazing- appropriate bird friendly design including glass fritting, etching or film application.
      .5 Spandrel glass - Heat Strengthened Glass.
      .6 Handrail, skylight, canopy and overhead glass – fully tempered, laminated (minimum PVB interlayer 1.5mm).
      .7 Safety glass in doors and sidelights: fully tempered.
      .8 Safety glass in fire rated doors and sidelights and in all applications subject to human impact: non-wired fire-rated tempered glass or intumescent glass. Fire-rated glass installations to be certified and permanently labelled by the manufacturer.
      .9 Clearstory and atrium vertical glazing over occupied space: heat strengthened laminated glass with a minimum 1.5 mm PVB interlayer.
      .10 Heat soak testing required to reduce nickel sulphide impurities.
      .11 Provide metal trim at the exposed glass side edge of tempered, laminated glazing in guardrails where it is determined there is a high risk of impact damage.

2.2 Components
   .1 Exterior glazing at a minimum shall be insulated sealed double-glazed units. Component design to maximize energy performance as established by the Project Criteria, including orientation and expected functional use of space where installed.
2.3 Finishes
   .1 Any staining of glass or other surfaces by alkaline materials is cause for rejection.

2.4 Replacement Glass
   .1 Consideration to be given to the local availability of replacement glass when specifying glazing.

2.5 Glass Cleaning Access
   .1 Consideration to be given to access for glass cleaning including the structural capacity of floors to support appropriate man-lifts and/or the use of monorail systems.

***END OF SECTION***