Part 1 General

1.1 Summary

.1 Unless otherwise indicated, follow the standards below when specifying new windows. These standards are not intended to restrict or replace professional judgment.

.2 The current section applies to the specification of windows separating environmentally dissimilar spaces, within vertical interior or interior/exterior wall assemblies.

1.2 Design Requirements

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.3 Windows and windows installation must comply with the requirements of Part 5 - Environmental Separation, of the Quebec Construction Code, Chapter I – Buildingq u215.1 (ngq(s)-8 (o)(

1.4 Window selection criteria

.1 Whenever possible, sliding windows shall not be specified.

.2 Thermoplastic products shall not be specified.

.3 The need for the following window selection criteria shall be confirmed with the Project Manager early in the Design stage:

.1 Operable windows are to be installed in buildings that do not have mechanical ventilation. Operable windows are not to be considered in air-conditioned buildings with mechanical ventilation systems, unless required for building occupant safety or security. In buildings with mechanical ventilation systems that do not included air-conditioning, operable windows are to be considered on a case-by-case basis;

.2 If a window is operable, determine the necessary size of operable sash and the type of operability. Type of operable window shall take the room layout into account so that the window can indeed be opened (e.g. a vertical sliding sash (hung window) might be difficult to open if located above a counter). Determine if barrier-free design is a consideration;

.3 For operable windows, validate types of hardware and necessity for stoppers, key-locks and other accessories. Determine the necessity of integrating insects' screens;

.4 Operation type and maintenance of windows - inclusive of window washing method - shall be coordinated with the Building Director, the Director of Building Operations and Director Buildings and grounds, through the Project Manager;

.5 Where large window ledges exist, the windows might be subjected to lateral loads from people seated on the ledge and leaning against the window, determine if additional safety features should be integrated in the window design or wall assemblies;

.6 For windows susceptible to impacts beyond Codes' design criteria, determine if additional features should be integrated in the window design or wall assemblies;

.7 Determine if excessive or disruptive sound attenuation is needed.

Driving Rain Wind Pressure (DRWP) one (1) or two (2) levels above the DRWP provided in the design data for the Montreal region (QCC'10 and CSA A440S1).

.3 For operable windows, specify products for which water penetration through the specified locking/latching mechanism has been tested.

.9 Acoustical Performance

.1 Specify and rate sound attenuation as Sound Transmission Class (STC) for interior windows, and as Outdoor-Indoor Transmission Class (OITC) for exterior sounds;

.2 The following Acoustical Performances are minima and shall be confirmed with the Project manager:

.1 STC-40 for interior windows;

.2 OITC-32 for exterior windows.

.3 STC and OITC to be validated in accordance with ASTM E90.

.10 Condensation Resistance

.1 Tests results of Condensation Resistance evaluation under the procedures of CAN/CSA-A440.2 Energy Performance of Windows and Other Fenestration Systems shall be requested for all windows.

.2 The CSA temperature index (I) shall be I = 60 or better.

.11 Thermal Performance

.1 Test results of Thermal Performance evaluation under the procedures of CAN/CSA-A440.2 Energy Performance of Windows and Other Fenestration Systems shall be requested for all windows;

.2 Specify thermally improved (thermal break) construction for all windows.

.12 Solar Heat Gain Coefficient (SHGC)

.1 Solar Heat Gain Coefficients (SHGC) shall be determined in accordance with climate zone 6 of ANSI/ ASHRAE Standard 90.1-2010 and its supplement (see also Section 01 83 16 – Exterior Enclosure Performance Requirements for additional criteria);

.2 SHGC shall be 0,40 or better. Refer to section 08 80 50 – Glazing for specific SHGC requirements.

.13 U-Value (Thermal transmittance W/M^2K)

.1 U-Value (Thermal transmittance) of assembly shall be determined in accordance with climate zone 6 of ANSI/ ASHRAE Standard 90.1-2010 and its supplement (see also Section 01 83 16 – Exterior Enclosure Performance Requirements for additional criteria).

.2 U-Value shall be 0,33 or better.

.14 Visible Light Transmission (VLT)

.1 VLT of building envelope glazing must be greater than 40%.

.15 Load deflection test

.1 Deflection limit for glass supporting members shall comply with Part 5 of QCC'10 and not exceed 1/175th of the span (max.3 mm).

.16 Operating Force

If allowed by pressure delta from either side of the window, the force required to open or close any latch for normal opening/closing shall be no more than 38N wherever an operable window is accessible to people with disabilities.

.17 Forced-Entry Resistance test

.1 Confirm with the Project Manager if Campus Public Safety, the Building Director, Building Operations or any other stakeholder requires a Forced-Entry Resistance level beyond the minimum requirements of NAFS. Any superior requirement shall be specified as per ASTM F588 (for fixed and operable windows);

.2 Determine with the Project Manager if the windows must be protected with additional means such as window films or integrated security grills. If this is the case, these additions must be confirmed with the manufacturer to assure complete warranty.

Part 2 Products

2.1 Preferred Products

.1 All products must adhere to the requirements listed in Division 01 – Product Requirements 01 60 00.

.2 Specify aluminum windows unless otherwise indicated by the Director of Design Services. Aluminum must adhere to the requirements listed in section 2.1 of Division 05 - Metals 05 00 00.

.3 Specify that any mandatory manufacturer's identification permanent marking, requested by NAFS or others, shall be installed in an inconspicuous location.

.4 Specify windows be supplied by the same (one) manufacturer.

.5 Specify factory applied finishes.

2.2 Additional requirements for a luminum windows

.1 Prefer 6063-T5 alloy anodized aluminum extrusions;

.2 Prefer a four (4) coats Duranar XL factory oven baked finish;

.3 Prefer windows with shop fitted installation flanges. Specify water-tightness attributes of connection to the wall assembly and detail field anchoring;

.4 To prevent corrosion, specify isolation of aluminium from dissimilar materials (metals, concrete, mortar, masonry, wood, etc.).

2.3 Wood windows

.1 Specify wood windows only if:

.1 It involves replacing a few already existing wood windows

.2 Project Manager specifically requests wood windows

.2 DMA Douglas Hall kiln dried 6-8% vs NAFS 12%

2.4 Glazing

.1 Sealed Unit comprising at least two (2) windowpanes shall always be specified for exterior windows; Specify that setting blocks for glazing shall not obstruct venting or draining of glazing cavity;

.2 Whenever possible, for windows part of Environmental Separations that are also Fire Separations assemblies, specify that glass assemblies comprising security or wired glazing shall provide the same airtightness and water tightness

.2 Friction hinges as limit devices for operable sashes shall not be specified;

.3 For location susceptible to abuse, but nevertheless requiring operable windows, consider continuous hinges (eg. if people could dangle themselves from an open sash);

.4 Specify locking/latching mechanisms that have been tested within the Water Penetration Resistance testing.

2.8 Sealant

.1 Refer to Section 07 92 10 – Joint Sealing;

.2 Sealant shall remain permanently elastic, non-shrinking, and non-migrating.

2.9 Insects Screen

.1 When insects' screens are required, specify windows for which insect screens are offered by the manufacturer of the window;

.2 Windows to be fitted with insect screens shall have been tested to NAFS and A440S1 both, with and without their insect screens;

.3 The insects' screens mesh shall be made of plastic-coated glass-fibre and have a mesh count of 18 x 16 per square inch. The thread shall be woven and fused to form a fabric mesh resistant to corrosion, shrinkage, stretch, impact damage, and weather deterioration, compliant with requirements of ASTM D 3656- Standard Specification for Insect Screening and Louver Cloth Woven from Vinyl-Coated Glass Yarns;

.4 If security insects' screens are required, they shall be made of stainless steel type 316 and resist to a minimum impact load of 1220J when tested according to ASTM F 2006 - Standard Safety Specification for Window Fall Prevention Devices for Non-Emergency Escape (Egress) and Rescue (Ingress) Windows.

2.10 Related Technical Sections

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