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Manufactured Windows, Doors and Skylights:

Clarification of the Requirements of the 2012 BCBC

For buildings constructed under Part 9 of the 2012 BC Building Code, any window, door and skylight installed on or after December 20, 2013 must conform to NAFS (North American Fenestration Standard) as well as *A440S1-09 Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, NAFS – North American Fenestration Standard/Specification for Windows, Doors, and Skylights*. Industry has requested some clarification to aid in the application of these new requirements.

What are “main entrance doors”?

The term “main entrance doors” is used three times in section 9.7 of the BC Building Code.

9.7.1.1. Application

- 1) This Section applies to
 - a) windows, doors and skylights separating *conditioned space* from unconditioned space or the exterior, and
 - b) main entrance doors.

In this first instance, the term “main entrance doors” effectively means “main entrance doors not referenced in clause (a)”. The “main entrance doors” referred to in Clause (b) do not separate conditioned from unconditioned space and therefore include interior doors such as the door from a corridor to a suite in an apartment or condominium building. Clause (b) would not include other interior doors that do not serve as a main entrance, such as a door to a bedroom.

9.7.2.1. Entrance Doors

- 1) A door shall be provided at each entrance to a *dwelling unit*.
- 2) Main entrance doors to *dwelling units* shall be provided with
 - a) a door viewer or transparent glazing in the door, or
 - b) a sidelight.

“Main entrance doors referred to in Sentence 9.7.2.1.(2) are specifically those main entrance doors that lead to a dwelling unit. This would exclude other main entrance doors, such as those to a suite of other than residential occupancy.

9.7.3. Performance of Windows, Doors and Skylights

9.7.3.1. General Performance Expectations

- 3)** Main entrance doors and their components shall be designed, constructed and installed so that, when in the closed position, they
- a) control air leakage,
 - b) resist the ingress of insects and vermin,
 - c) resist forced entry, and
 - d) are easily operable.

“Main entrance doors” in Sentence 9.7.3.1.(3) are the same as those referred to above in Clause 9.7.1.1.(1)(b), effectively meaning “interior main entrance doors”.

What are Site-built Windows, Doors and Skylights?

9.7.5. Site-built Windows, Doors and Skylights

9.7.5.1. Application and Compliance

- 1)** Materials, design, construction and installation of windows, doors and skylights that separate *conditioned space* from unconditioned space or the exterior but that are not covered in the scope of AAMA/WDMA/CSA 101/I.S.2/A440, “NAFS – North American Fenestration Standard/Specification for Windows, Doors, and Skylights,” shall conform
- a) to
 - i) the remainder of this Subsection or Subsection 9.7.4., and
 - ii) the applicable requirements in Subsection 9.7.6., or
 - b) to Part 5.

Though Subsection 9.7.5. is titled “Site-built Windows, Doors and Skylights”, its application is broader. As described in Sentence 9.7.5.1.(1), this Subsection applies to those windows, doors and skylights within the scope of the BC Building Code [see Sentence 9.7.1.1.(1)] that are not within the scope of NAFS. Examples include storm windows and doors and site-built systems.

The BC Building Code does not define the term “site-built”, however NAFS defines a site-built system in the following manner:

Site-built system — a fenestration assembly supplied in an unassembled or partially assembled state consisting of more than one supplier’s fabricated parts, components, locking/latching hardware, and/or accessories for final assembly at the project site. Excluded from this definition are door systems that are shipped from a distinct manufacturer without locking/latching hardware.

Note: *Because individual manufacturers do not incur the sole responsibility for the design, composition, and performance of site-built fenestration assemblies, such assemblies are not addressed by this Standard/Specification.*

The intended application of Subsection 9.7.5. is to custom fenestration products (windows, doors and skylights) that are not factory made or assembled. It is often impractical to pretest these products because they are custom-made for a specific building and are often use non-standard materials and components or are of non-standard sizes or geometric shapes that cannot be factory built. The Code recognizes that it is not practical to pre-test such site-built products to a standard created for factory-built products, and offers an alternate compliance path under Subsection 9.7.5. The performance expectations of Subsection 9.7.3. apply equally to these products as they do to NAFS products.

The exemption of site-built doors from compliance with NAFS under the BC Building Code is not intended to apply to conventional pre-hung exterior doors assembled from components available to the door industry. Those doors are within the scope of NAFS and must comply with the standard.

NAFS permits "weather protected" doors to have an LW (Limited Water) water penetration resistance rating. What does "protected" mean?

The introduction to NAFS contains the following statement:

0.2.4 Side-hinged door systems

Side-hinged door systems have requirements that are quite different from window, sliding door, and unit side-hinged skylight products, both in design and application. As the primary means of entry to a building, exterior side-hinged doors are required to not only protect against the elements noted above but are also required to allow for ease of access and emergency escape and rescue. Issues concerning accessibility by the disabled need to be addressed in product design. Additional consideration is given to escape during emergencies such as a fire and, in some cases, the side-hinged door system is required to act as a barrier to fire. A side-hinged door system can be expected to be operated a significantly greater number of times and to a greater severity during its design life than a typical window, sliding door, or unit skylight assembly. For this reason, cycling performance is evaluated. Lastly, it is not always feasible or necessary for side-hinged door systems to meet the substantial water penetration resistance requirements of other fenestration products in cases such as, but not limited to, accessibility requirements and/or the application of products in weather-protected areas.

This excerpt from NAFS is not part of the standard, and is thus not part of the legal requirements, but does provide some guidance on the intended application of doors designated as LW (Limited Water) under NAFS. Two examples are provided in NAFS of suitable locations for LW doors: an accessible entrance and a door protected by a carport. As the BC Building Code is silent on the application of LW doors, further guidance is needed:

- The exposure nomograph in Annex A of CSA A440.4-09 provides an acceptable method to determine whether a door is protected. A door deemed to have a Low exposure at the sill using the CSA nomograph method above may use a door with a Limited Water rating.
- Where the BC Building Code requires entrance doors to be accessible, such doors may have a Limited Water rating.
- Exterior doors located in a carport or in a garage (leading from the garage or carport into a dwelling unit or suite) may have a Limited Water rating.
- Exterior doors leading from an unconditioned (i.e. unheated) garage to the outside are not regulated by the BC Building Code and therefore need not comply with NAFS. It follows that a door with a Limited Water rating may be used in this application.