
CLEARING THE AIR

Residential Ventilation Issues by Dara Bowser & Bob Allison

Ventilation for Cottages, Bunkhouses, Live/work Units, Dormitories & Monster Houses,

or,

When is Part 6 Ventilation Design Required for Dwelling Units?

For those who apply Section 9.32 of the OBC on an ongoing basis, there are a series of exemptions and some mandatory conditions where 9.32 is required, or not permitted to be used.

Qualified Designer

A qualified designer is always permitted to "opt out" of section 9.32 even if the situation is one which would normally fall within the scope of 9.32. This is permitted by sentence 9.32.3.2.(1) which permits the designer to use "Part 6". Relevant sentences in Part 6 are 6.2.1.1. which requires "good engineering practice appropriate to the circumstance" as described in a list of reference documents, for example, the ASHRAE Handbooks and CAN/CSA F326). Sentence 6.2.2.1.(2) requires that all rooms and spaces be supplied with outdoor air at rates not less than those specified in ASHRAE 62 (a commercial ventilation standard) and 6.2.2.1.(3) which requires that self-contained mechanical ventilation systems serving only one *dwelling unit* conform to 9.32.3 in order to satisfy the requirements of Part 6. This forms a circular loop but the appendix text for 6.2.2.1.(3) clarifies the intent, that is; for *dwelling units*, Part 6 design is acceptable so long as the result meets the intent of section 9.32. When CSA F326 (HRAI Digest) is used for the ventilation design, the result is usually very similar to a 9.32 design.

Duct Design Only

Sentences 9.32.3.4.(9), 9.32.3.5.(4), 9.32.3.7.(5) and 9.32.3.7.(7) allow for duct design according to Part 6 or the use of the tables shown in section 9.32. If the duct, fan or situation does not meet the limitations of these sentences then the duct design must be according to Part 6. This applies only to the duct under consideration and the balance of the design can remain in section 9.32.

Natural Draft Non-Solid Fuel Combustion Equipment

Article 9.32.3.1. defines a house with this type of equipment as Type III and allows ONLY Part 6 ventilation system design. CSA F326 has provisions for calculation and testing of negative pressure in the home in order to avoid the life-safety hazard that can occur when this type of combustion appliances are present.

Homes with More than 4 Bedrooms

Sentence 9.32.3.4.(1) gives Principal Ventilation Capacities for homes up to only 4 bedrooms, calling for Part 6 design for homes with 5 or more bedrooms. This sometimes leads to situations where obvious fifth and sixth bedrooms are called "Den" and "Home Office" just to avoid the perceived nuisance of Part 6 design. When the system design is according to CSA F326 for these homes, the result is very similar to a 9.32 design, except that the system is larger. In reality, the figure of 4 bedrooms is an arbitrary one, but exists in order to give the building official some discretion in determining when a home might be beyond a single family residence from the ventilation point of view.

Cottages

9.36.2.1.(3) permits seasonal, recreational buildings of residential occupancy to be built without ventilation systems. A key word here is recreational as there are several seasonal building types (e.g. farm worker's bunkhouses) which are seasonal, but not recreational. Bunkhouses are *dwelling units* according to the 1.1.3.2. definition.

Live/Work Unit

Although the definition of a live/work unit includes a *dwelling unit*, the ventilation requirements of the combination occupancy will also have to be considered, all of which requires a Part 6 design because it is beyond the scope of Section 9.32.

Dormitories or Other Unusual Situations

Occasionally, a situation occurs where the building appears to meet the requirements of a dwelling unit within the scope of 9.32, but in reality the building is a dormitory or is otherwise intended for more than the typical residential occupancy load. This is often the case for worker housing where a large sleeping room is provided together with a living room, kitchen and sanitary facilities. Although this fits under the definition of *dwelling unit* as set out in 1.1.3.2 and it could easily be mistaken for a one bedroom dwelling under 9.32, the reality is that it will provide accommodation for many more than one would expect to be sleeping in a one bedroom dwelling. The key sentence here is 9.9.1.3.(1)(a) or 3.1.16.1. which limits normal occupant loading to 2 persons per sleeping room or sleeping area. Therefore a dormitory or bunkhouse which accommodates twelve persons in one sleeping room is equivalent to a six bedroom dwelling, requiring a Part 6 design.

Conclusion

In addition to the obvious and written-in situations where Part 6 is used for ventilation rather than Part 6, there are other situations which are not so obvious that we should be aware of. These include seasonal, dormitory, live/work and multi-family uses.

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