# BC BUILDING CODE INTERPRETATION COMMITTEE

A joint committee with members representing

**AIBC, APEGBC, BOABC, POABC**

**File No: 06-0090** **INTERPRETATION** 

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| Interpretation Date: | April 17, 2012 |
| Building Code Edition: | BC Building Code 2006 |
| Subject: | *Combustible* components in exterior walls in noncombustible buildings |
| Keywords: | *Combustible* components, *noncombustible* buildings, exterior walls, exterior cladding |
| Building Code Reference(s): | 3.1.4.2., 3.1.5.1.(1), 3.1.5.5., A-3.1.5.5., 3.1.5.12., 3.2.3.8. |

**Question:**

For Part 3 buildings that are required to be *noncombustible* construction:

1. Does Article 3.1.5.5. apply when an exterior non-*loadbearing* wall assembly does not contain *combustible* cladding?
2. Does Article 3.1.5.5. apply when an exterior *loadbearing* wall assembly does not contain *combustible* cladding?
3. If an exterior non-*loadbearing* wall assembly contains combustible cladding, does Article 3.1.5.5. apply to the entire exterior wall assembly?
4. Can minor combustible components be installed in an exterior non-*loadbearing* wall that contains *combustible* cladding even though such components were not included in the CAN/ULC-S134 test assembly?
5. Are factory-assembled exterior wall panels that contain foamed plastic insulation as described in Sentences 3.1.5.12.(6) & (7) also subject to the requirements of Article 3.1.5.5.?
6. Is combustible cladding permitted on a *loadbearing* wall assembly?
7. For the purposes of Article 3.1.5.5., how is the term "cladding" defined?
8. Does Article 3.2.3.8. apply to an exposing building face that is permitted to have 100% unprotected openings?

**Interpretation:**

1. No

   Article 3.1.5.5. was originally introduced in the 1990 National Building Code of Canada (NBCC) and was entitled "*Combustible* Cladding". The title of Article 3.1.5.5. was amended in the 1995 NBCC to read "*Combustible* Components for Exterior Walls", although the Appendix note A-3.1.5.5. retained the original title "*Combustible* Cladding".

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The purpose of this change was to expand the use of *combustible* materials in an exterior non-*loadbearing* wall to include not only *combustible* cladding but also other *combustible* framing members within the entire wall assembly (e.g. wood studs). If an exterior non-*loadbearing* wall assembly passes the CAN/ULC-S134 test, then it can contain any *combustible* components anywhere within the wall assembly provided they were included in the test assembly.

The original intent of Article 3.1.5.5. was to address non-*loadbearing* exterior walls with *combustible* cladding in buildings that are required to be *noncombustible* construction. Although the current wording of Article 3.1.5.5. is not abundantly clear, this Article is still intended to apply only to exterior non-*loadbearing* walls that contain *combustible* cladding. It is expected that the wording of Article 3.1.5.5. in the 2012 BCBC will be amended to clarify this intent.

2. No

Article 3.1.5.5. only applies to non-*loadbearing* exterior wall assemblies.

3. Yes

Appendix A-3.1.5.5. clarifies that the required test, CAN/ULC-S134, "Standard Method of Test of Exterior Wall Assemblies" is to be conducted on the entire exterior wall assembly in order to assess the performance of the entire assembly. That is, the performance of some exterior cladding systems may depend on the wall assembly to which they are attached.

4. Yes, with conditions

Combustible components that would have a negligible impact on the results of the CAN/ULC-S134 test can be installed in an exterior wall with combustible cladding, even though such components were not included in the test assembly. Refer to BC Building Code Appeal Board decision #1682.

Combustible components that are described in Sentence 3.1.5.1.(2), Articles 3.1.5.2., 3.1.5.3., 3.1.5.6., 3.1.5.10., 3.1.5.11., 3.1.5.18., 3.1.5.19. and 3.1.5.20. are considered to have a negligible impact on the results of the CAN/ULC-S134 test.

5. No

Factory assembled exterior wall panels that meet the requirements of either Sentence 3.1.5.12.(6) or (7) do not have to be tested to CAN/ULC-S134.

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6. No, with the exception of gypsum board as permitted by Article 3.1.5.11.

   Sentence 3.1.5.1.(1) prohibits the use of *combustible* components in buildings that are required to be *noncombustible* construction, except as permitted by Sentences 3.1.5.1.(2) to (4) and Articles 3.1.5.2. to 3.1.5.21., 3.1.13.4. and 3.2.2.6.

   Article 3.1.5.5. permits the use of combustible cladding on non-*loadbearing* exterior wall assemblies, but none of the other exceptions to Sentence 3.1.5.1.(1) address the use of combustible cladding on *loadbearing* exterior walls. It is possible that the wording of Article 3.1.5.5. in the 2012 BCBC will be amended to address the use of *combustible* cladding on *loadbearing* walls.

7. Since there are innumerable types of exterior wall assemblies it is difficult to clearly define for all wall types which portion of an exterior wall assembly constitutes the "cladding" component. In principle, combustible components, particularly foamed plastic insulation, that are located near the exterior surface of a wall assembly could represent a fire hazard for fire spread up the exterior face of the building. If there is no thermal barrier between foamed plastic insulation and the exterior surface of the wall assembly, there is a potential for fire spread up the face of the building.

   Some examples of combustible cladding would include EIFS, metal or glazing spandrel panels with sprayed foamed plastic insulation immediately adjacent to the metal or glazing.

8. No

   Sentence 3.2.3.8.(1) only applies when an exposing building face is permitted less than 100% unprotected openings. This Sentence applies to *combustible* buildings, *noncombustible* buildings, *loadbearing* walls and non-*loadbearing* walls when the building height exceeds 3 storeys.

   Sentence 3.2.3.8.(1) prohibits the use of foamed plastic insulation in an exposing building face in a *building* that is more than 3 storeys in building height, unless the foamed plastic is protected on the outside face with not less than 25 mm thick concrete or masonry, or a *noncombustible* material that meets the test requirements of CAN/ULC-S101, including the additional requirements of Sentence 3.2.3.8.(2).

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Sentence 3.2.3.8.(3) waives the requirements of Sentence 3.2.3.8.(1) if the exterior wall assembly meets the requirements of Article 3.1.5.5. (i.e. it has undergone a full scale furnace test in accordance with CAN/ULC-S134).

It should also be noted that Article 3.1.4.2. (for *combustible buildings*) and Article 3.1.5.12. (for *noncombustible buildings*) require a thermal barrier to protect the interior face of wall and ceiling assemblies that contain foamed plastic insulation.

Note: This Interpretation supersedes Interpretation 98-0012 which was based on the 1998 BC Building Code.

Refer to the attached drawings for examples of acceptable use of *combustible* components in exterior walls in a *building* that is required to be *noncombustible* construction.

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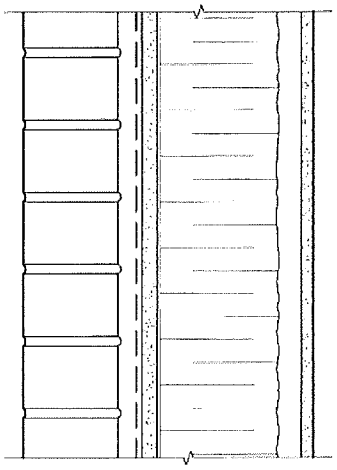
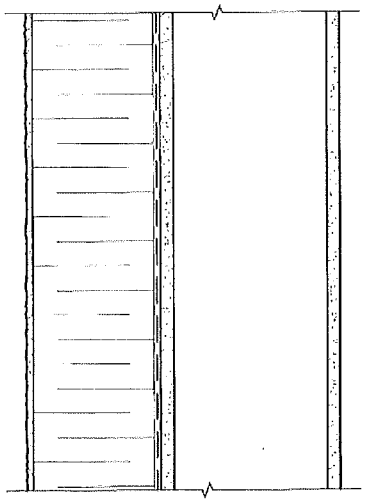
## BRICK VENEER RAINSCREEN WALL ASSEMBLY



EXTERIOR
- Brick veneer
- 25 mm air space
- Self-adhesive membrane
- 15.9 mm gypsum sheathing
- 150 mm steel studs, with foamed plastic insulation
- 12.7 mm gypsum wall board
- Interior finish

INTERIOR

## EXTERIOR INSULATION AND FINISH SYSTEM (EIFS) TESTED TO CAN/ULC-S134



EXTERIOR
- 3 mm cementitious coating
- 125 mm (max) foamed plastic insulation
- 25 mm of 2 layers of cementitious coating, with integral reinforcing mesh
- 12.7 mm gypsum sheathing
- 150 mm steel studs
- 12.7 mm gypsum wall board
- Interior finish

INTERIOR

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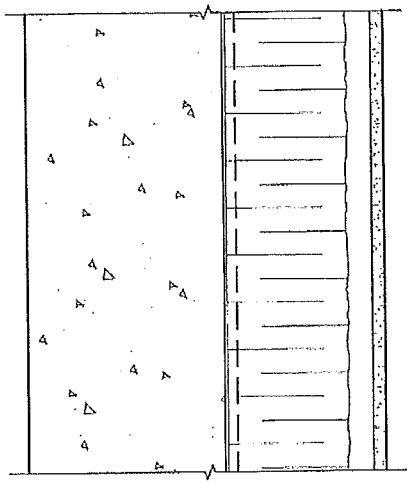
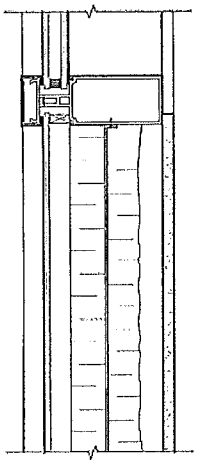
## POURED-IN-PLACE CONCRETE WALL



EXTERIOR
- Poured-in-place concrete
- 12.5 mm space between inner face of concrete and steel studs
- 150 mm steel studs
- Foamed plastic insulation
- 12.7 mm gypsum wall board
- Interior finish

INTERIOR

## GLAZED SPANDREL PANEL



EXTERIOR
- Spandrel glazing
- Mineral fibre insulation (noncomb)
- Back pan sheet metal
- Foamed plastic insulation
- 12.7 mm gypsum wall board
- Interior finish

INTERIOR

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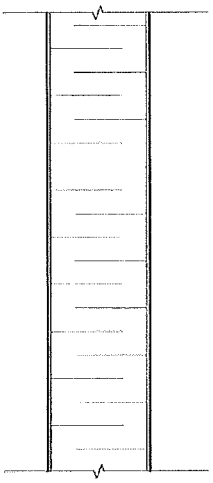
**FACTORY-ASSEMBLED EXTERIOR WALL PANEL**
**PER SENTENCE 3.1.5.12.(6)**



EXTERIOR
- Sheet steel > 0.38 mm thick which remains in place for 10 minutes when tested to CAN/ULC-S101
- Thermosetting foamed plastic insulation with FSR < 500
- No air space
- Sheet steel > 0.38 mm thick

INTERIOR

Building does not contain Group B or C major occupancy
Building height < 18m from grade to floor level of top storey

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