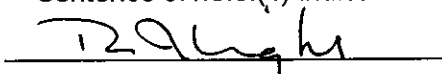


**BC BUILDING CODE INTERPRETATION COMMITTEE**  
**AIBC, APEGBC, BOABC, POABC**

<b>File No: 06-0014A</b>	<b>INTERPRETATION</b>	<b>Page 1 of 3</b>
<b>Interpretation Date:</b>	June 17, 2008	
<b>Building Code Edition:</b>	BC Building Code 2006	
<b>Subject:</b>	Continuity of equivalent vertical fire separation through attic concealed space	
<b>Keywords:</b>	Attic, horizontal service / concealed space, equivalent fire separation continuity, concealed space fire block, combustible construction	
<b>Building Code Reference(s):</b>	3.1.8.3, 3.1.11.5, 3.1.11.7	
<b>Questions:</b>		
<p>Given for example, a multi-storey wood framed building (Part 3) with multiple residential suites served by a public corridor and with an unsprinklered attic space; horizontal concealed spaces (containing building services) are formed within the attic spaces above the building.</p> <p>For a 4 storey condition where the suite to suite fire separations are required to be 1h rated;</p>		
<ol style="list-style-type: none"> <li>1. Must the floor area vertical fire separations, extend through the attic concealed spaces continuously upward to the underside of the roof sheathing, to create a smoke tight joint, for each of the following cases:             <ol style="list-style-type: none"> <li>a) where the uppermost ceiling / roof assembly has no fire-resistance rating at all.</li> <li>b) where the uppermost ceiling / roof assembly has for example a 1h fire-resistance rating based on listed cUL Design No. P522.</li> <li>c) where the uppermost ceiling / roof assembly has a fire separation with a 1h fire-resistance rating derived from Appendix D Table D-2.3.12 (membrane only basis).</li> </ol> </li> <li>2. What would the answers to the above questions be for a 3 storey building where the vertical fire separations are only required to be 3/4h fire rating?</li> <li>3. Would the previous answers to question 1. be the same if the attic spaces are fully sprinklered?</li> <li>4. If concealed space fire blocking in conformance with Articles 3.1.11.5 and 3.1.11.7 is provided in the unsprinklered attic horizontal concealed space, is it still necessary to maintain the vertical fire separation continuity upward in the attic for all of the floor area vertical fire separations below, such as those between separate suites and between suites and the public corridor?</li> </ol>		
<b>Interpretation:</b>		
<ol style="list-style-type: none"> <li>1. a) Yes.              Sentence 3.1.8.3.(1) indicates that if a <i>horizontal service space</i> or other concealed space spans             <div style="text-align: center;">   <hr style="width: 200px; margin: 0 auto;"/> </div>             R. J. Light, Committee Chair           </li> </ol>		
<p><small>The views expressed are the consensus of the joint committee of AIBC, APEGBC, BOABC, and POABC, which form the BC Building Code Interpretation Committee. The purpose of the committee is to encourage uniform province wide interpretation of the BC Building Code. These views should not be considered as the official interpretation of legislated requirements based on the BC Building Code, as final responsibility for an interpretation rests with the local <i>Authority Having Jurisdiction</i>. The views of the joint committee should not be construed as legal advice.</small></p>		

**BC BUILDING CODE INTERPRETATION COMMITTEE**  
**AIBC, APEGBC, BOABC, POABC**

**File No: 06-0014A**

**INTERPRETATION**

**Page 2 of 3**

over a vertical fire separation, an 'equivalent' vertical fire separation must be provided within such a concealed space to divide the attic space, along the line of the fire separation. The Building Code defines *horizontal service space* as "a space such as an attic, duct, ceiling, roof or crawl space oriented essentially in a horizontal plane, concealed and generally inaccessible, through which *building* service facilities such as pipes, ducts and wiring may pass."

Clause 3.1.8.3.(2)(c) further indicates that this 'equivalent' fire separation within the concealed space must terminate at smoke tight joints where it abuts the roof deck. The respective intent statements are "To limit the probability that fire will spread from one fire compartment to another fire compartment through concealed spaces located above a vertical fire separation, which could lead to harm to persons" and "To limit the probability that smoke will spread from one fire compartment to another fire compartment through gaps where the fire separation abuts other assemblies, which could lead to harm to persons".

b) Yes.

Based on Sentence 3.6.4.2.(2) and its related Appendix note, the requirement for the equivalent vertical fire separation within the horizontal service space is only waived for an assembly having a ceiling membrane with a 1h finish rating independent of the entire rated assembly, is used such as based on Appendix D Table D-2.3.12. However many ULC listed assemblies typically used cannot provide the required 1h fire resistance rating for the ceiling membrane independently. In the case of this project, using listed roof / ceiling Design No. cUL P522, the ceiling finish rating is only 25 minutes, which is insufficient to apply this waiver.

c) No.

The requirement for the equivalent vertical fire separation within the horizontal service space is waived by Sentence 3.6.4.2.(2) and its related Appendix A note. If a 1h membrane derived rating is used for the ceiling under the attic, such as based on Appendix D Table D-2.3.12., the waiver could then be used. However it should be noted that in using this method, Appendix D D-2.3.12 prohibits 'openings' in the ceiling membrane.

2. a) Yes.

b) Yes.

Based on Sentence 3.6.4.2.(2), where 3/4h vertical fire separations are required, the requirement for the equivalent vertical fire separation within the horizontal service space is waived if the finish rating of the ceiling membrane itself can provide a 30 minute fire resistance rating. In the case of this project, using listed roof / ceiling Design No. cUL P522, the ceiling finish rating is only 25 minutes, which is insufficient to apply this waiver.

c) No.

The requirement for the equivalent vertical fire separation within the horizontal service space is waived by Sentence 3.6.4.2.(2) and its related Appendix A note. If an assembly having a ceiling

  
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**BC BUILDING CODE INTERPRETATION COMMITTEE**  
**AIBC, APEGBC, BOABC, POABC**

**File No: 06-0014A**

**INTERPRETATION**

**Page 3 of 3**

membrane with finish rating for the ceiling only of 30 minutes, is used such as based on Appendix D Table D-2.3.12, the waiver could then be used. However it should be noted that in using this method, Appendix D D-2.3.12 prohibits 'openings' in the ceiling membrane. Also acceptable is any ULC, cUL or ITS/WH listing where the ceiling membrane by itself has a finish rating of 30 minutes based on fire tests. Note that Table D-2.3.4.A cannot be used (see D-2.3.3.(2) and D-2.3.4.(2)).

3. Yes.

Providing sprinklers in the attic space has no influence on the requirements of Article 3.1.8.3. However providing such a fire protection feature could be considered as part of an alternative solution.

4. Yes.

Notwithstanding compartment fire blocking in conformance with Articles 3.1.11.5 and 3.1.11.7 is provided in the unsprinklered attic horizontal concealed space, it may still be necessary to maintain the vertical fire separation continuity upward in the attic for all of the floor area vertical fire separations below, such as those between separate suites and between suites and the public corridor. Some of the assemblies, combinations of assemblies or thicknesses of assemblies designed to satisfy Articles 3.1.11.5 and 3.1.11.7 may not necessarily be sufficient to satisfy the fire resistance and / or fire separation integrity required under Subsection 3.1.8. In contrast, fire separations meeting Subsection 3.1.8 typically meet the requirements for the construction of concealed space fireblocking under Articles 3.1.11.5 and 3.1.11.7.

Note that this interpretation addresses only fire resistance and fire separation issues. There are also other issues such as relating to durability / maintenance, security, continuity of acoustic barrier and environmental separation that have to be considered in addressing the continuity of the vertical demising barrier within an attic concealed space. Interpretation 06-0020 further addresses prohibited penetrations of the attic vertical fire separations by wood truss members.

  
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