


BC BUILDING CODE INTERPRETATION COMMITTEE

A joint committee with members representing
AIBC, EGBC, BOABC

File No: 12-0101

INTERPRETATION

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Interpretation Date:	March 20, 2018
Building Code Edition:	BC Building Code 2012
Subject:	Electrical Outlet Boxes in Fire Separations
Keywords:	Fire Separation, Penetrations, Outlet Boxes
Building Code Reference(s):	3.1.9.1.(1), 3.1.9.2.(1), 3.1.9.3., 3.1.9.3.(6)
Questions:	
Where electrical outlet boxes are located in a fire separation that is required to have a fire-resistance rating:	
<ol style="list-style-type: none">1. Is firestopping required for noncombustible electrical outlet boxes of any size, where the boxes are tightly fitted?2. Is firestopping required for combustibles electrical outlet boxes that comply with the size restrictions of Sentence 3.1.9.3.(5), where the boxes are tightly fitted?3. If firestopping is provided for electrical outlet boxes, is it still necessary to offset electrical boxes that penetrate opposite sides of the wall assembly?	
Interpretation:	
<ol style="list-style-type: none">1. No, but other measures may be necessary for large outlet boxes. <p>Sentence 3.1.9.1.(1) requires that penetrations of fire-rated fire separations be (a) sealed by an acceptable fire stop, or (b) cast in place, or (c) tightly fitted. The allowance for tightly fitted penetrations is a unique-to-BC provision that is not part of the National Building Code. There is no definition of "tightly fitted". The reference to Clause 3.1.9.1.(1)(c) in Division B – Part 3 Appendix A (April 2013 revision) states that there are to be no substantial gaps between the building service or penetrating item and the membrane or assembly it penetrates.</p> <p> R. J. Light, Committee Chair</p>	
<p>The views expressed are the consensus of the joint committee with members representing AIBC, EGBC and BOABC, which form the BC Building Code Interpretation Committee. The Building and Safety Standards Branch, Province of BC and the City of Vancouver participate in the committee's proceedings with respect to interpretations of the BC Building Code. 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.</p>	
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The National Building Code 2015 contains a new Article 3.1.9.4 “Penetrations by Outlet Boxes”, which is expected to be adopted as part of the BC Building Code 2018. This new Article states that the maximum allowable annular space between the membrane and a noncombustible outlet box is 3 mm. This requirement is not part of the BC Building Code 2012, but it may be referenced for guidance for the installation of noncombustible outlet boxes, subject to agreement by the authority having jurisdiction.

The requirements are not intended to allow large boxes of any size to penetrate fire separations. Sentence 3.1.9.2.(1) requires that services, including electrical outlet boxes, that penetrate an assembly required to have fire-resistance rating must be noncombustible unless the assembly is tested incorporating the services, except as permitted by Articles 3.1.9.3 and 3.1.9.4. Further explanation in Division B – Part 3 Appendix A states that “the provisions dealing with outlet boxes assume size, quantities and concentrations of partial depth penetrations that would not significantly affect the fire resistance of the assembly”. This Appendix note further states that Sentence 3.1.9.2.(1) is not intended to allow large electrical distribution and control boxes to be recessed into an assembly that requires a fire-resistance rating unless the boxes were incorporated into the assembly when it was fire-tested.

Article 3.1.9.3 allows penetration of fire separations by wires, cables and outlet boxes, subject to the criteria noted in that Article. It is important to note that these penetrations must comply with the firestopping requirements of Article 3.1.9.1.

2. No.

Combustible outlet boxes are subject to the same “tightly fitted” requirements as noncombustible boxes, as described in item 1 above. If the opening in the membrane is larger than 0.016 m² (24.8 sq.in.) as stated in Sentence 3.1.9.3.(5), a combustible outlet box is not permitted unless it was incorporated into the fire-rated assembly at the time of fire testing. Note that this area limit refers to the opening in the membrane at the box, not to the box size, and the membrane opening is typically larger than the box.



R. J. Light, Committee Chair

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3. Yes, unless other compensating measures are taken.

Putty pads listed by a recognized testing agency, which are produced by one of several different firestopping manufacturers, can be molded around the electrical outlet box. Sentence 3.1.9.3.(6) requires outlet boxes that penetrate opposite sides of a wall assembly to be offset where necessary to maintain the integrity of the fire separation. Where putty pads that are listed for the purpose of covering the outlet box are installed in accordance with the listing requirements, they are considered to maintain the integrity of the fire separation without any offset.

Other compensating measures may be acceptable subject to agreement by the authority having jurisdiction.

The BC Building Code 2012 does not provide any criteria for the required offset distance. The National Building Code 2015, which will form the basis for the BC Building Code 2018, requires that outlet boxes on opposite sides of a vertical fire separation shall be separated by a horizontal distance of at least 600 mm, or that a fire block conforming to Article 3.1.11.7 (of the NBC 2015) be provided. These requirements can be used as a guideline until the BC Building Code 2018 is adopted.

Sentence 3.1.9.3.(6) deals only with the integrity of the fire separation. The proximity of outlet boxes on opposite sides of a fire separation may also affect the required STC rating between a dwelling unit and the remainder of the building. The National Research Council publication "Best Practice Guide on Fire Stops and Fire Blocks and Their Impact on Sound Transmission" recommends that outlet boxes on opposite sides of a vertical fire separation be offset horizontally by at least one full stud space.



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