

BC BUILDING CODE INTERPRETATION COMMITTEE

A joint committee with members representing
AIBC, EGBC, BOABC

File No: 18-0291

INTERPRETATION

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Interpretation Date:	November 21, 2023
Building Code Edition:	BC Building Code 2018
Subject:	Door Frame Installation to Wall, for Doors in Fire Separations
Keywords:	Door, Frame, Fire Separation
Building Code Reference(s):	3.1.8.5.(2), 3.1.8.1.(1), 3.1.9.1.(1)

Question:

Where a door is installed in a wall that is a fire separation having a fire-resistance rating, is firestopping or other treatment required for the joint between the door frame and the adjacent wall, if the door frame is:

1. Steel?
2. Wood?

Interpretation:

1. No, in most cases, if the frame is installed in accordance with its listing requirements and the manufacturer's instructions.

Sentence 3.1.8.5.(2) requires doors serving as closures in fire separations to be installed in accordance with NFPA 80 "Fire Doors and Other Opening Protectives". However, NFPA 80 does not address the joint between a door frame and the adjacent wall assembly. NFPA 80 requires that frames must be anchored as stated in the manufacturer's listing, and door frames intended for drywall installation must be of the flush butt-mounted type or wrap-around type. Steel door frames are typically the wrap-around type as shown in the example profile below, where the gypsum wallboard extends into the frame.



Patrick Shek, P.Eng., CP, FEC, Committee Chair

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 *Authority Having Jurisdiction*. The views of the joint committee should not be construed as legal advice.

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This type of fire-rated steel frame is expandable, so its width can be adjusted for different wall thicknesses. For this type of frame, there is no gap or open joint between the frame and the wall.

Steel frames are also installed in cast concrete walls and masonry walls. Where the frame is cast in place, there is no gap between the door frame and the wall. Where the door frame is installed after the wall is poured, or is installed in an opening in a masonry wall, the frame will be flush-mounted in the opening. The frame may be filled with grout or other cementitious products or remain hollow, depending on the manufacturer's requirements. Where the frame is filled in this manner, there should be no gap between the frame and the wall. If the frame remains hollow, there is a possibility of small gaps if the wall opening where the frame is seated does not have consistent square surfaces. In that case, these small gaps could be sealed with the same material used for joints in the wall, such as mortar.

2. Possibly, depending on the installation.

Wood door frames in fire-rated walls are typically used with doors having 20-minute fire protection ratings, which are usually installed as entry doors to residential suites that are accessed from public corridors. The wood door frames are normally installed flush against the wall framing but there may be gaps to allow the frame to be square and of the required width and height for the door.

Sentence 3.1.8.1.(1) requires fire separations to be continuous elements except where they are interrupted by closures. The joint between a gypsum wallboard membrane and a door frame is not part of the closure, so it needs to be part of the continuous fire separation.

Clause 3.1.9.1.(1)(c) allows (as one option) penetrations through a fire separation to be tightly fitted. If the door frame is tightly fitted to the membrane of the wall, no additional treatment of the joint should be necessary. Note that this provision to allow tightly fitted penetrations is unique to the BCBC and is not part of the National Building Code, and it may or may not be included in future BCBC editions.



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Where the door frame is not tightly fitted to the membrane, the BCBC does not provide any guidance on how to seal gaps between the door frame and the wall membrane, and at this time there do not appear to be any listed firestop systems for this type of joint. For this condition, to maintain the continuity of the fire separation it is recommended to seal the gap with a firestopping product that is listed for similar sized spaces and for bonding with wood and gypsum wallboard. The firestopping should not be intumescent type because it could affect the ability to open the door under fire conditions.

This approach should be reviewed with the local authority.



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