

Fire-Resistance Rated Assemblies - Canada

Why is a fire-resistance rating important?

Many people live in multi-family homes where individual living spaces are accessed via common corridors, stairways and entry/exit doors. Individual suites in these buildings are required by code to be fire separated from each other. These common entry/exit passageways, stairways and suites are constructed to provide approved levels of fire protection that enable occupants to safely exit a building in the case of an emergency.

DMF Lighting provides luminaires, such as the M Series with OneFrame™ technology, which is code compliant for use in floor- and roof-ceiling assemblies requiring a fire-resistance rating when installed in an appropriate type of fire-resistance rated assembly¹. These are suitable for use in common entry/exit passageway and suite separations applications where a fire-resistance rating is required².

What is the NBC?

The National Building Code of Canada (NBC), developed by the Canadian Commission on Building and Fire Codes and published by the National Research Council of Canada, is a model building code that has been adopted and is used as a base code standard throughout all of Canada. The NBC is in use and has been adopted in all provinces and territories. Most provinces and territories adopt the NBC in its entirety for regulating the design and construction of new houses and buildings, however, some provinces like Ontario, Quebec, Alberta and British Columbia publish their own building codes based on the model NBC with local variations.

At the time of publication of this Technical Bulletin, the 2015 NBC has been adopted, without change, in Nova Scotia, Saskatchewan, British Columbia, Nunavik, Northwest Territories and the Yukon Territories. The other provinces' building codes are based on the 2010 edition of the NBC.

¹ Appropriate fire-resistance rated assemblies include those with gypsum wallboard or suspended acoustical tile membranes as the protection material for the floor or roof construction.

² Other fire-resistant barriers or methods of protection maybe utilized, such as a concrete structure, spray-applied fire-resistive material or automatic sprinkler protection.

What does the NBC say about fire-resistance ratings of outlet boxes/luminaires?

The NBC is a complex and lengthy document with comprehensive requirements. Sentence 3.1.9.4.(2), Division B on Penetration by Outlet Boxes is key and reads as follows³:

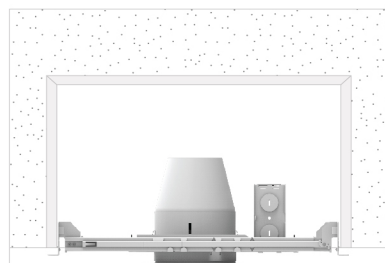
Except as provided in Sentences 3.1.9.1.(2) and (3), noncombustible outlet boxes that penetrate a vertical fire separation or a membrane forming part of an assembly required to have a fire-resistance rating are permitted to be waived⁴, provided

- a) They do not exceed
 - i) 0.016 m² in area, and
 - ii) An aggregate area of 0.065 m² in any 9.3 m² of surface area, and
- b) The annular space between the membrane and the noncombustible electrical outlet boxes does not exceed 3 mm.

The waiver in Sentence 3.1.9.4.(2) of the 2015 NBC appears in Sentence 3.1.9.3.(6) of the 2012 Ontario Building Code (OBC). This waiver appears in all of the current editions of the provincial building codes in Canada.

How can a recessed fixture be installed in a floor/ceiling assembly required to provide a fire-resistance rating? The traditional approach is shown in the diagram below:

TRADITIONAL FIRE RATED BOXING



Total Cost: \$\$\$\$

Although this is an effective method, it requires the ceiling space to have boxed-out cavities, using the same fire-resistance rated membrane material, to mount the recessed fixtures in. This approach adds significant costs and requires extra space above the ceiling plane that may not always be available.

³ Quote from 2015 NBC.

⁴ The waiver refers to Sentence 3.1.9.4.(1) which requires outlet boxes to be sealed at the penetration in the membrane using a fire stop tested to CAN/ULC-S115 "Fire Tests of Firestop Systems" which has an FT rating not less than the fire-resistance rating of the fire separation.

Technical Bulletin



M Series with OneFrame™ technology provides a new method of achieving the same result and is shown in the diagram below:

ONEFRAME TECHNOLOGY



The Fire Rated M Series junction box reduces installation costs significantly because it eliminates the requirement to create boxed-out cavities at the time of construction by utilizing the exception provided by Sentence 3.1.9.4.(2).

Note the requirement for the contractor to create a tight, not to exceed 3mm cut-out in the gypsum wallboard to ensure the integrity of the fire rated membrane.

The M Series has also been granted an unparalleled combination of other safety certifications, including Sound, Air-Tight, Concrete-Tight, IC, and Wet Location ratings. You can be confident that M Series is compliant in a wide range of installations.

