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Proposed Change 1684

Code Reference(s):	NBC25 Div.B 3.2.3.7.(3) (first printing) NBC25 Div.B 3.2.3.7.(4) (first printing)
Subject:	Other — Fire Protection
Title:	Revision of Intent Statements and Attributions for NBC Sentences 3.2.3.7.(3) and (4)
Description:	This proposed change deletes the attributions and revises the intent statements for Sentences 3.2.3.7.(3) and (4) of Division B of the NBC.

This change could potentially affect the following topic areas:

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| <input type="checkbox"/> Division A | <input type="checkbox"/> Division B |
| <input type="checkbox"/> Division C | <input type="checkbox"/> Design and Construction |
| <input type="checkbox"/> Building operations | <input type="checkbox"/> Housing |
| <input type="checkbox"/> Small Buildings | <input type="checkbox"/> Large Buildings |
| <input type="checkbox"/> Fire Protection | <input type="checkbox"/> Occupant safety in use |
| <input type="checkbox"/> Accessibility | <input type="checkbox"/> Structural Requirements |
| <input type="checkbox"/> Building Envelope | <input type="checkbox"/> Energy Efficiency |
| <input type="checkbox"/> Heating, Ventilating and Air Conditioning | <input type="checkbox"/> Plumbing |
| | <input type="checkbox"/> Construction and Demolition Sites |

Problem

Sentences 3.2.3.7.(1) and (2) of Division B of the National Building Code of Canada (NBC) both stipulate the use of noncombustible cladding for exposing building faces of buildings where the maximum permitted area of unprotected openings is not more than 50% of the exposing building face.

Sentences 3.2.3.7.(3) and (4) both waive the requirement for noncombustible cladding if certain conditions are met.

- Sentence (3) – the requirement for noncombustible cladding is waived where the maximum permitted area of unprotected openings is more than 10% of the exposing building face and the exterior wall assembly complies with Article 3.1.5.5. or 3.1.5.6.
- Sentence (4) – the requirement for noncombustible cladding is waived where maximum permitted area of unprotected openings is between 25% and 50% of the exposing building face and the building meets one of the five conditions in Clauses (a) to (e), relating to limiting distance, sprinklering, cladding materials

and their installation, and compliance of the exterior wall assembly with Article 3.1.5.5. or 3.1.5.6.

The objective-based analysis of Sentences 3.2.3.7.(3) and (4) indicates that it is not strictly accurate to assign attributions to these exemption provisions, since the exemption does not itself impose requirements on design or construction. Rather, the exemption in Sentences (3) and (4) is meant to acknowledge that if certain conditions are met, the risk of fire spread is acceptably low.

In addition, the intent statements for Sentences 3.2.3.7.(3) and (4) both refer to a limitation on the probability of ignition. It has been suggested that the reference to a reduced probability of ignition should be deleted, since the purpose of both Sentences is to allow for combustible cladding, which is more likely to contribute to the spread of fire than to limit it, as compared to noncombustible cladding. Therefore, the intent statements for Sentences (3) and (4) need to be revised.

Justification

Objective-based analysis of Sentence 3.2.3.7.(3)

In the case of Sentence 3.2.3.7.(3), all three bullets of the current intent statement are associated with the condition that must be met for the exemption to apply (i.e., the exterior wall assembly must comply with Article 3.1.5.5. or 3.1.5.6.).¹ The third bullet, in particular, refers to the limited probability that the cladding will be ignited, while the first and second bullets refer to the limited risk of fire spread from the subject building to an adjacent building. With respect to the third bullet, since combustible cladding can be ignited, the premise that the condition set out in Sentence 3.2.3.7.(3) will limit the probability that the cladding will be ignited is not necessarily valid.

The guidelines for writing intent statements, which are laid out in the document “General Rules for the Development of Bottom-Up Analysis of National Codes,” state that the intent statements for exception provisions must explain the nature of and the reason for the exception. It also notes that attributions are not linked to exceptions.

The relevant intent statement for Sentence 3.2.3.7.(1), associated with limiting the probability of ignition of the exposing building face, is as follows:

3.2.3.7.(1) Intent 2: “To limit the probability that an exposing building face will be ignited and contribute to a fire, which could lead to the spread of fire from the building to an adjacent building during the time required for emergency responders to perform their duties, which could lead to damage to adjacent buildings.”

However, Sentence 3.2.3.7.(1) specifically permits combustible cladding under some circumstances, and combustible cladding can be ignited and contribute to a fire, which could damage an adjacent building.

The intent statements for Sentences 3.2.3.7.(1) and (2) can be compared to those for Sentence 3.1.5.5.(2), which invokes the requirements of Table 3.2.3.7. for limiting distances permitting unprotected openings of not more than 10% of the exposing building face. Intent 2 for Sentence 3.1.5.5.(2) uses the same wording as the intent statements for Sentences 3.2.3.7.(1) and (2):

3.1.5.5. Intent 2: "To limit the probability that an exposing building face will be ignited and contribute to a fire, which could lead to the spread of fire from the building to an adjacent building during the time required for emergency responders to perform their duties, which could lead to damage to adjacent buildings."

However, unlike Sentences 3.2.3.7.(1) and (2), which permit combustible cladding in some cases, Sentence 3.1.5.5.(2) specifically precludes combustible cladding and requires noncombustible cladding where the permitted area of unprotected openings is not more than 10% of the exposing building face.

The intent statements for Sentences 3.2.3.7.(1) and (2) and Sentence 3.1.5.5.(2) include reference to "the time required for emergency responders to perform their duties." It is appropriate to include this phrase in the intent statement for Sentence 3.2.3.7.(3) as well, in order to capture that the limitation on the probability of ignition is only during the period before firefighters arrive on scene and are actively fighting the fire.

Intent statements for exception provisions in the NBC are not written in a consistent manner but most commonly take the following form: "To exempt [specific element] from the requirements of [Code reference], if certain conditions are met, on the basis that [reason]."

With respect to this exception provision, it is noted that functional statements and objectives are not attributed to exception provisions.

Therefore, the intent statement and attributions for Sentence 3.2.3.7.(3) should be revised to (a) clarify that the Sentence is intended for limiting fire spread to an adjacent building, (b) incorporate the reference to emergency response time found in the intents for the related Sentences, and (c) remove the attributions (F02, F03-OP3.1) for this exception provision.

Objective-based analysis of Sentence 3.2.3.7.(4)

Since Sentence 3.2.3.7.(4) specifies multiple application conditions that would permit the noncombustible cladding requirement in Sentence 3.2.3.7.(1) to be waived, its intent statement or statements should reflect all these compliance options or be specific as to which options apply to each bullet. Some of the options (e.g., the limiting distance requirement in Clause (a)) do not reduce the risk of a fire being ignited. In this case, then, the premise of the third bullet is not valid.

The third bullet is relevant to Clause (b), which requires the provision of sprinklers in the building to reduce the risk of flash-over conditions, which reduces the risk of fire spread through window openings and thereby reduces the risk that the exterior wall will be ignited.

Clauses (c) and (d) provide requirements that the combustible cladding and its installation must meet, which do not preclude the cladding from being ignited.

Clause (e) specifies the same application condition as that for the exemption in Sentence 3.2.3.7.(3). See the above discussion of the intent statement for Sentence 3.2.3.7.(3).

It is appropriate to incorporate the reference to emergency responders from the intent statements for Sentences 3.2.3.7.(1) and (2) into the intent statement for Sentence 3.2.3.7.(4) in order to capture that the limitation on probability of ignition is only during the time before firefighters arrive on scene and are actively fighting the fire.

Therefore, the intent statement for Sentence 3.2.3.7.(4) should be revised to (a) clarify that it is intended for limiting fire spread to an adjacent building, (b) incorporate the wording of emergency responders found in the intents for the related Sentences, (c) list the conditions on which cladding requirements in Sentences (1) and (2) are exempted, and (d) remove the attributions (F02, F03-OP3.1) for this exception provision.

Summary

The recommended modifications to the intent statements for Sentences 3.2.3.7.(3) and (4) reflect the fact that combustible cladding, which is permitted by these provisions, may result in ignition and that the intent of the provisions is more accurately linked to the reduced probability of fire spread from one building to another than it is the probability of ignition.

The revised intent statement for Sentence 3.2.3.7.(3) is as follows:

Intent 1: To exempt cladding from the requirements of Sentences 3.2.3.7.(1) and 3.2.3.7.(2) [specifically "Type of Cladding Required" in Table 3.2.3.7.], if certain conditions are met, on the basis that conformance with Article 3.1.5.5. or 3.1.5.6. will limit the probability of the spread of fire from the subject building to an adjacent building during the time required for emergency responders to perform their duties, which could lead to damage to adjacent buildings.

The revised intent statement for Sentence 3.2.3.7.(4) is as follows:

Intent 1: To exempt cladding from the requirements of Sentences 3.2.3.7.(1) and 3.2.3.7.(2) [specifically "Type of Cladding Required" in Table 3.2.3.7.], if certain conditions are met, on the basis that limiting distance, sprinklers, cladding materials and their installation, or conformance with Article 3.1.5.5. or 3.1.5.6. will limit the probability of spread of fire from the subject building to an adjacent building during the time required for emergency responders to perform their duties, which could lead to damage to adjacent buildings.

The recommendation to remove the attributions to these exception provisions is based on the application of the attributions from the root requirements (i.e., Sentences 3.2.3.7.(1) and (2)), i.e., exception provisions do not have their own functional statement and objective pairs attributed to them.

1. For the current intent statements for Sentences 3.2.3.7.(3) and (4), see the [Supplement to the NBC 2020: Intent Statements](#).

PROPOSED CHANGE

[3.2.3.7.] 3.2.3.7. Construction of Exposing Building Face

- [1] 3)** Except as provided in Articles 3.1.4.8. and 3.1.6.9., the requirement in Table 3.2.3.7. for *noncombustible* cladding for *buildings* or *fire compartments* where the maximum permitted area of *unprotected openings* is more than 10% of the *exposing building face* is permitted to be waived for exterior wall assemblies that comply with Article 3.1.5.5. or 3.1.5.6.

[3.2.3.7.] 3.2.3.7. Construction of Exposing Building Face

- [1] 4)** Except as provided in Articles 3.1.4.8. and 3.1.6.9., the requirement in Table 3.2.3.7. for *noncombustible* cladding for *buildings* or *fire compartments* where the maximum permitted area of *unprotected openings* is more than 25% but not more than 50% of the *exposing building face* is permitted to be waived where
- [a] a) the *limiting distance* is greater than 5 m,
 - [b] b) the *building* or *fire compartment* and all *combustible* attic and roof spaces are *sprinklered* (see Sentence 3.2.5.12.(8)),
 - [c] c) the cladding
 - [i] i) conforms to Subsections 9.27.6., 9.27.7., 9.27.8., 9.27.9. or 9.27.10.,
 - [ii] ii) is installed without furring members, or on furring not more than 25 mm thick, over gypsum sheathing at least 12.7 mm thick or over masonry, and
 - [iii] iii) after conditioning in conformance with ASTM D2898, "Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing", has a *flame-spread rating* not greater than 25 on the exterior face when tested in accordance with Sentence 3.1.12.1.(1),
 - [d] d) the cladding
 - [i] i) conforms to Subsection 9.27.12.,
 - [ii] ii) is installed with or without furring members over gypsum sheathing at least 12.7 mm thick or over masonry,
 - [iii] iii) has a *flame-spread rating* not greater than 25 when tested in accordance with Sentence 3.1.12.1.(2), and
 - [iv] iv) does not exceed 2 mm in thickness, exclusive of fasteners, joints and local reinforcements (see Note A-3.2.3.7.(4)(d)(iv)), or
 - [e] e) the exterior wall assembly complies with Article 3.1.5.5. or 3.1.5.6.

Impact analysis

The deletion of the attributions and revision of the intent statements for Sentences 3.2.3.7.(3) and (4) clarifies the intent of these two Sentences and improves the clarity of the provisions. The more accurate intent statements will help Code users correctly interpret the Code provisions and provide the appropriate level of protection for buildings. No negative impact or additional cost is anticipated.

Enforcement implications

It is expected that the revision will facilitate the correct interpretation and enforcement of the Code requirements. No enforcement implication is anticipated.

Who is affected

Regulators, consultants, building owners, contractors, testing and certification organizations, and manufacturers.

OBJECTIVE-BASED ANALYSIS OF NEW OR CHANGED PROVISIONS

[3.2.3.7.] 3.2.3.7. ([1] 3) [~~F02,F03-OP3.1~~]

[3.2.3.7.] 3.2.3.7. ([1] 4) [~~F03,F02-OP3.1~~]