

FIRE DEPARTMENT RESPONSE TIME

DISCUSSION

The amendments to the Alberta Building Code 2006 addressing high-intensity residential fires include changes to the wording in Sentences 3.2.3.1.(8), 9.10.14.3.(1) and 9.10.15.3.(1) to provide greater clarity regarding the method of calculating fire department response time to a building as it relates to the level of fire protection that is required on exterior walls and the distances required between adjacent structures. Additionally, these changes highlight that the purpose of these code items is to recognize that, where a fire department is unable to respond to a fire within 10 minutes more than 90% of the time, buildings should be provided with greater protection from exposure fires and not necessarily require increasing the physical distance of structures from each other and/or the property line.

Since the introduction of Code requirements related to fire department response time in 1981, there has been a recognition in the Alberta Building Code that significant risk is created to adjacent, finished structures and property when fire suppression forces are unable to arrive on scene within a 10 minute timeframe. These requirements were not intended to deal with any additional restrictions or limitations for buildings during construction. Those items are currently dealt with under Section 5.6. of Division B of the Alberta Fire Code 2006.

In the late 1970s and early 1980s, there was less density in terms of both commercial and residential developments, in part due to requirements in provincial legislation and municipal land-use bylaws which encouraged larger lot sizes and maximum percentages of the lot to be covered by buildings, particularly in residential areas. This potential risk has been increased over time as the density of development has increased. In addition, the combustibility of modern structures and cladding as well as the fire loads within the structures has generally increased since the introduction of this requirement through the use of lighter weight construction materials and petroleum-based goods within the buildings.

It is noted in A-3.2.3.1. that the concept of limiting distance is used within the Alberta Building Code to provide a point from which each structure will be set back for exposure purposes but not have a specific design impact upon the structures constructed on adjacent property. Clause (b) of each of the above Sentences indicates the ability to provide the appropriate fire sprinkler system and thus remove the restriction of having to

Unless stated otherwise, all Code references in this STANDATA are to Division B of the Alberta Building Code 2006.

assume a greater limiting distance than what is actually present in areas that are outside of a fire department's 10-minute response area.

This STANDATA was developed in conjunction with input from the Fire Technical Council and the Chief Fire Administrator to provide guidance and clarity to planning, design and inspection officials in complying with the requirements of the Alberta Building Code 2006 regarding the actual start and end point of the noted 10-minute response time, based upon the varying call taking, dispatching, communication and response models utilised by Alberta's fire departments.

This measurement of fire department response time is solely for the purpose of applying the appropriate development and building design criteria to comply with the Alberta Building Code 2006. Other measures, outside the regulatory framework of the *Safety Codes Act* and within the policy authority of municipal councils, must be used to address issues of fire department performance measures. This includes the use of standards provided by the National Fire Protection Association and other such standards development organizations or advisory bodies.

CODE REFERENCES

1. Sentence 3.2.3.1.(8) states:

3.2.3.1. Limiting Distance and Area of Unprotected Openings

...

8) A *limiting distance* equal to half the actual *limiting distance* shall be used as input to the requirements of this Subsection, where

- a) the time from receipt of notification of a fire by the fire department until the first fire department vehicle capable of beginning suppression activities arrives at the *building* is greater than 10 minutes in not less than 10% of all calls to the *building*, and
- b) any *storey* in the *building* is not *sprinklered*.

(See Appendix A and A-3.2.3.1. in Appendix A)

...

2. Article 9.10.14.3. states:

9.10.14.3. Limiting Distance where Firefighting Facilities are Inadequate

1) Except for the purposes of applying Sentences 9.10.14.4.(2), (8) and (9), and Sentence 9.10.14.5.(8), a *limiting distance* equal to half the actual *limiting distance* shall be used as input to the requirements of this Subsection, where

- a) the time from receipt of notification of a fire by the fire department until the first fire department vehicle capable of beginning suppression activities arrives at the *building* is greater than 10 minutes in not less than 10% of all calls to the *building*, and
- b) any *storey* in the *building* is not *sprinklered*.

(See A-3.2.3.1. and A-3.2.3.1.(8) in Appendix A)

3. Article 9.10.15.3. states:

9.10.15.3. Limiting Distance where Firefighting Facilities are Inadequate

1) Except for the purposes of applying Sentences 9.10.15.5.(11), a *limiting distance* equal to half the actual *limiting distance* shall be used as input to the requirements of this Subsection, where

- a) the time from receipt of notification of a fire by the fire department until the first fire department vehicle capable of beginning suppression activities arrives at the *building* is greater than 10 minutes in not less than 10% of all calls to the *building*, and
- b) any *storey* in the *building* is not *sprinklered*.

(See A-3.2.3.1. and A-3.2.3.1.(8) in Appendix A)

INTERPRETATION

The terminology as noted in Sentences 3.2.3.1.(8), 9.10.14.3.(1) and 9.10.15.3.(1) is interpreted to have the following meanings:

"receipt of notification of a fire" - means the point in time that the fire dispatcher (who may or may not also be the 911 call taker) first receives the request for fire suppression assistance. The fire dispatcher is the person who directly notifies fire crews of the need to respond and whose actions are within the control of the fire department through direct employment, a shared services agreement or contract.

Note: this timeframe does not include any call handling or call transfer time by 911 operators or alarm monitoring company personnel.

"arrives at the building" – means the point in time that a rated fire department engine (i.e. pumper) capable of beginning exterior exposure protection and suppression activities arrives at the scene of the fire staffed with a crew of firefighters in accordance with local municipal policy.

In situations where the time from the point of fire department notification to the point of fire department arrival at the structure will be greater than 10 minutes more than 10% of the time, the Code stipulates that either additional protection (i.e. fire resistance or suppression) or additional spatial separation must be provided. The timeframe may be calculated and mapped by the fire department using a combination of response data, timed trials and/or traffic modeling. These calculations must be based on the existing firefighting facilities and resources of the municipality, not upon future plans.

It is therefore necessary for the building safety codes officers within the municipality to work with the fire suppression and development authorities of the municipality to delineate the 10 minute response area(s). Such mapping will need to be updated as changes in infrastructure and fire suppression capacity occur.

This INTERPRETATION is applicable throughout the province of Alberta.