BCC Ruling No. 16-26-1454

Ontario

Ruling No.: 16-26-1454
Application No.: B 2016-15

BUILDING CODE COMMISSION

IN THE MATTER OF Subsection 24(1) of the *Building Code Act, S.O. 1992*, c. 23, as amended.

AND IN THE MATTER OF Article 9.8.8.5. of Division B of Regulation 332/12, as amended, (the "Building Code").

AND IN THE MATTER OF an application by Stephen Kirkpatrick, Vision Contracting, for a resolution of dispute with Neil Donald, Chief Building Official, Muskoka Lakes Township regarding whether the openings in the proposed guard, which serves a deck of a residential dwelling, provides sufficiency of compliance with Article 9.8.8.5. of Division B of the Building Code at, 1667-1 Acton Island Road, Muskoka, Ontario.

APPLICANT

Stephen Kirkpatrick
Vision Contracting
Bracebridge, Ontario

RESPONDENT

Neil Donald
Chief Building Official
Muskoka Lakes Township, Ontario

PANEL

Tony Chow, Chair
Alison Orr
Mina Tesseris

PLACE

City of Toronto, Ontario

DATE OF HEARING

September 8, 2016

DATE OF RULING

September 8, 2016

APPEARANCES

Stephen Kirkpatrick
Vision Contracting
Bracebridge, Ontario
Applicant

Jeremy Jordan
Fortress Railing Products
Garland, Texas
Agent for the Applicant

Curtis Livingstone
Senior Building Inspector
Muskoka Lakes Township, Ontario
Designate for the Respondent

RULING

1. Particulars of Dispute

The Applicant applied for a building permit under the *Building Code Act, 1992*, to construct a single residential dwelling at 1667-1 Acton Island Road, Muskoka, Ontario.

The subject building is a new one storey residential building having a building area of 210 m². The construction includes an exterior deck that is attached to the home. Due to the elevation of the deck, a guard is required.

The construction in dispute relates to the guard that has been installed on the deck. The guard is a pre-engineered guardrail system, which includes vertical cable balusters that are held in tension between a top and bottom rail.

The dispute specifically relates to whether the openings between the vertical cables of the guardrail system, will prevent the passage of a 100 mm spherical object as required by Article 9.8.8.5. of Division B of the Building Code.

2. Provisions of the Building Code in Dispute

9.8.8.5. Openings in Guards

1. **(1)** Except as provided in Sentence (2), openings through any *guard* that is required by Article 9.8.8.1 shall be of a size that will prevent the passage of a spherical object having a diameter of 100 mm unless it can be shown that the location and size of openings that exceed this limit do not represent a hazard. (See Appendix A.)

3. Applicant's Position

The Agent for the Applicant submitted that Sentence 9.8.8.5.(1) of Division B of the Building Code requires that openings through any guard must be of a size that will prevent the passage of a spherical object having a diameter of 100 mm, unless it can be shown that the location and size of openings that exceed this limit do not represent a hazard.

The Agent explained that the subject guardrail system has been installed on the exterior deck of the home, which serves the first storey. The Agent described the pre-engineered guard as a proprietary vertical cable railing system, consisting of a top and bottom rails with vertical cable balusters that are held in tension between the rails.

The Agent submitted that the railing system was tested by Intertek, which reported that when cables were tightened to 200 lbs tension, the railing prevented a 100 mm diameter sphere from passing through at a maximum lateral load of 5.1 lbs and when tightened to 300 lbs tension, the railing prevented a 100 mm diameter sphere from passing through at a maximum load of 14.8 lbs. The Agent advised that typically the vertical cables of the subject guard system are installed with a tension of 250 lbs. The Agent advised that the report provides a note, which reads 'the acceptable minimum loads to prevent a 100 mm diameter sphere to penetrate through the railings in-fill cables is subject to evaluation and approval by the Authority Having Jurisdiction'. In this case, he maintained, the Respondent's position is that the subject guard system does not comply with Sentence 9.8.8.5.(1). Although, the Agent argued, the report stipulates an amount of force applied to the vertical cables, the Building Code as it currently reads, does not have any language specifying the amount of force that can be applied to a guard.

The Agent advised that other commonly installed 'rigid' guard systems approved for use in residential applications in Ontario, are not being held to this same standard. Using a sample panel of the guard system in question, the Agent demonstrated using a 100 mm spherical object that with a certain amount of lateral force, the sphere could be pushed through the vertical cable railing system. Similarly, the Agent argued and demonstrated using a sample rigid guard system, that with a certain amount of lateral force applied, a spherical object of 100 mm could be pushed through a rigid guard system, where the balusters are spaced 19 mm on center.

The Agent asserted that if a child were to run into the vertical cable guard system, they would not fall through but would rather be bounced back. Further, he maintained if a child were to get their head stuck between the cables, the cable tensions could be loosened to remove the child safely. Whereas, the Agent argued, a similar impact against a rigid guard system with metal balusters, could result in the balusters breaking or bending and therefore, failing. The Agent concluded that the vertical cable guard system should not be considered any less safe than the typical rigid guard systems commonly installed in Ontario, and they may even be safer.

The Agent submitted that the installed vertical cable guard system meets all other loading criteria for a guard system based on the International Building Code and National Building Code. Therefore, the Agent concluded, as the Building Code does not specify the minimum loads required to prevent a 100 mm sphere from passing through the openings in a guard, the subject guard provides sufficiency of compliance with the Code.

4. Respondent's Position

The Designate submitted that the issue concerns compliance with Article 9.8.8.5. of the Building Code. The Designate explained that Sentence 9.8.8.5.(1) of Division B of the Building Code requires that openings through any guard must **be of a size that will prevent the passage of a spherical object**. (emphasis added) having a diameter of 100 mm, unless it can be shown that the location and size of openings that exceed this limit do not represent a hazard.

The Designate asserted that the Intertek testing report submitted in support of the subject vertical cable guard system indicates that when the cables are set at a 250 lbs tension, the guard will not be able to prevent a 100 mm diameter sphere from passing through when a force over 7 lbs is applied. Additionally, if the cables are set at a 300 lbs tension, the guard will not be able to prevent a 100 mm diameter sphere from passing through if a load over 14.8 lbs is applied. The Designate maintained that it was his opinion that these are relatively low loads.

The Designate submitted that Appendix note A-9.8.8.5. states, "The risk of falling through a guard is especially prevalent for children. Therefore, the requirements are stringent for guards in all buildings except industrial buildings, where children are unlikely to be present except under strict supervision". The Designate maintained that although the Appendix does not form part of the Building Code, it does provide explanatory notes. In this case, he argued the Appendix note for this Article 9.8.8.5. of the Code considers the risks of children getting their heads lodged between balusters.

The Designate advised that the Intertek testing report also noted 'the acceptable minimum loads to prevent a 100 mm diameter sphere to penetrate through the railings in-fill cables is subject to evaluation and approval by the Authority Having Jurisdiction'. The Designate concluded that the subject guard does not prevent the passage of a 100 mm sphere, and therefore, it does not comply with Article 9.8.8.5. of Division B of the Building Code.

5. Commission Ruling

It is the decision of the Building Code Commission that the openings in the proposed guards, which serve a deck of a residential dwelling, do not provide sufficiency of compliance with Article 9.8.8.5 of Division B of the Building Code at 1667-1 Acton Island Road, Muskoka, Ontario.

6. Reasons

i. Sentence 9.8.8.5.(1) of Division B states, "Except as provided in Sentence (2), openings through any *guard*...shall be of a size that will **prevent** the passage of a spherical object having a diameter of 100 mm unless it can be shown that the location and size of openings that exceed this limit do not represent a hazard" (emphasis added).

   Based on the Applicant's demonstration during the hearing, a spherical object, having a diameter of 100 mm, passed through the openings in the sample vertical cable railing system, which the Commission was advised was representative of the guard in dispute. It is the Commission's opinion that the subject guard will not prevent the passage of a spherical object having a diameter of 100 mm and therefore, does not provide sufficiency of compliance with Sentence 9.8.8.5.(1).

ii. The Commission heard that the test report submitted in support of the subject vertical cable railing system did not state that the 100 mm sphere was prevented from passing through the openings in the guard. Rather, it contained a note that indicated parameters at which the railing was tested and at which the sphere did not pass through. The parameters included tension limits for the cables and a limitation on the maximum load, applied perpendicular to the plane of the guard that could be placed on the sphere before it passed through the cable balusters.

   The Building Code does not specify deflection limits on guard components; it simply states "prevent the passage of a spherical object having a diameter of 100 mm".

iii. Appendix notes A- 9.8.8.5.(1) and (2) of Volume 2 of the Building Code states, "The risk of falling through a guard is especially prevalent for children. Therefore, the requirements are stringent for guards in all buildings except industrial buildings, where children are unlikely to be present except under strict supervision". In addition, Appendix note A-9.8.8.5.(3) of Volume 2 of the

Building Code notes the risks of children getting their heads lodged between balusters.

Although the Appendix to the Building Code does not strictly form part of the Code, it is the Commission's opinion that based on the information provided in the Appendix, it can be determined that Article 9.8.8.5. of Division B of the Building Code considers a child getting stuck or falling through a guard as potential risks.

Dated at the City of Toronto this **8th** day in the month of **September** in the year **2016** for application number **B 2016-15**.

Tony Chow, Chair

Alison Orr

Mina Tesseris