



***SAFETY CODES COUNCIL***

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**COUNCIL ORDER No. 0015442**

**BEFORE THE BUILDING TECHNICAL COUNCIL  
On October 24, 2014**

**IN THE MATTER OF** the Safety Codes Act, Revised Statutes of Alberta 2000, Chapter S-1.

**AND IN THE MATTER OF** the Order dated August 21, 2014 issued by an Accredited Municipality (the Respondent) against a Development Company (the Appellant).

**UPON REVIEWING** the Order **AND UPON HEARING** the Appellant and the Respondent; **THIS COUNCIL ORDERS THAT** the Order is **VARIED**.

**FROM:**

THEREFORE pursuant to Section 49 of the *SAFETY CODES ACT*, the SAFETY CODES OFFICER DOES HEREBY ORDER YOU TO:

Item 1

FORTHWITH STOP WORK on the installation of the exit stairwell doors and take action to ensure that no person or property is exposed to undue risk because of the aforesaid construction pursuant to Sentence 8.1.2.2.(1) of Division B, Part 3 of the Alberta Building Code 2006, AND

Item 2

Provide full scale test results acceptable to the Authority Having Jurisdiction to show the exit door and frame assemblies have been tested and meet the requirements of CAN4-S104-M, "Fire Test of Door Assemblies" pursuant to Sentence 3.1.8.4.(1) for the fire protection rating required OR

Item 3

Provide a published listing from an organization accredited by the Standards Council of Canada which show the exit door frame assemblies, as they have been installed, have been tested to the requirements of CAN4-S104-M, "Fire Test of Door Assemblies" pursuant to Sentence 3.1.8.4.(1) for the fire protection rating required by **1600 hours on the 29<sup>th</sup> day of September 2014**. AND

Item 4

Provide full scale test results acceptable to the Authority Having Jurisdiction to show that the exit door/frame assemblies as installed have been tested to the requirements of ULC CAN4-S104-M80, "Fire Tests of Door Assemblies" pursuant to Article 3.1.8.15. for the temperature rise limit for doors required: OR

Item 5

Provide a published listing from an organization accredited by the Standards Council of Canada to do so, to show that the exit door/frame assemblies, as installed, have been tested to the requirements of ULC CAN4-S104-M80, "Fire Tests of Door Assemblies" pursuant to article 3.1.8.15. for the temperature rise limit for the doors required; by **1600 hours on the 29<sup>th</sup> day of September 2014**. AND

Item 6

All exit stairwell door/frame assemblies for the building at the aforementioned address are to be installed to meet the requirements of NFPA 80 "Fire Doors and Fire Windows: pursuant to sentence 3.1.8.5.(2).

Item 7

Remove the stairwell door/frame assemblies currently installed that do not comply with item 2 through 6 above and re-install the door/frame assemblies to comply with the requirements of NFPA 80 "Fire Doors and Fire Windows" pursuant to sentence 3.1.8.5.(2) as well as meet references and standards indicated in items 2 and 4 listed above by **1600 hours on the 29<sup>th</sup> day of September 2014**

**TO:**

You are hereby ordered to:

Item 1

**FORTHWITH STOP WORK** on the installation of the exit stairwell doors and take action to ensure that no person or property is exposed to undue risk because of the aforesaid construction pursuant to Sentence 8.1.2.2.(1) of Division B, Part 3 of the Alberta Building Code 2006, AND

Item 2

Provide full scale test results acceptable to the Authority Having Jurisdiction to show the exit door and frame assemblies have been tested and meet the requirements of CAN4-S104-M, "Fire Test of Door Assemblies" pursuant to Sentence 3.1.8.4.(1) for the fire protection rating required OR

Item 3

Provide a published listing from an organization accredited by the Standards Council of Canada which show the exit door frame assemblies, as they have been installed, have been tested to the requirements of CAN4-S104-M, "Fire Test of Door Assemblies" pursuant to Sentence 3.1.8.4.(1) for the fire protection rating required by January 23, 2015 or a later date acceptable to the Authority Having Jurisdiction AND

**Item 4**

Provide full scale test results in compliance with the parameters as defined by the Authority Having Jurisdiction to show that the exit door/frame assemblies as installed have been tested to the requirements of ULC CAN4-S104-M80, "Fire Tests of Door Assemblies" pursuant to Article 3.1.8.15. for the temperature rise limit for doors required: OR

**Item 5**

Remove the stairwell door/frame assemblies currently installed that do not comply with item 2 through 4 above and re-install the door/frame assemblies to comply with the requirements of articles 3.1.8.4. and 3.1.8.5. of Division B of the Alberta Building Code 2006 required by January 23, 2015 or a later date acceptable to the Authority Having Jurisdiction. OR

**Item 6**

Obtain a letter from the same testing agency that completed the small scale test, confirming that the small-scale test that was already undertaken is representative of the on-site as-built conditions required by January 23, 2015 or a later date acceptable to the Authority Having Jurisdiction.

**Issue:**

1. The Appeal concerns a ten storey building incorporating seven levels of underground parking garage.
2. The issues on appeal are:
  - a) Whether the exit stairwell door and frame assemblies show compliance with the test standards for the door and frame assembly as required by Clause 3.1.8.4. (1)(a) of Division B, Part 3 of the Alberta Building Code 2006 (ABC 2006).
  - b) Whether the assembly tested is representative of the assemblies installed in the building under appeal.
  - c) Whether the exit stairwell door and frame assemblies are installed in compliance with Sentence 3.1.8.5.(2) of Division B, Part 3 of the ABC 2006 and the listed standard NFPA 80 Standard for Fire Doors and Fire Windows.
  - d) Whether the exit stairwell door and frame assemblies provide a closure in a fire separation as required by Sentence 3.1.8.1.(1), and are compliant with NFPA 80 Standards for Fire Doors and Fire Windows.

**Appearances and Preliminary, Evidentiary or Procedural Matters:**

3. Appearing for the Appellants, the Appeal Panel heard from a representative of the architect company, a professional engineer for the Appellant, and representatives from the sealant company.

4. Appearing for the Respondent, the Appeal Panel heard from Safety Codes Officers for the Respondent, and from Legal Counsel.
5. The Respondent's legal counsel raised two preliminary issues prior to the Appeal Hearing. (The Record, item M, pages 241 & 242).
6. On the preliminary issue regarding the representative of the architect company's participation in the hearing as a presenter for the Appellant, the Appeal Panel confirmed, through the Chair of the Appeal Panel, that the Appeal Panel members did not have any previous discussions on the appeal subject matter with the representative, the Chair of the Building Technical Council, and that the Chair of the Appeal Panel would allow the representative to present for the Appellants.
7. On the preliminary issue regarding the Appellants' appeal submissions pertaining to six other buildings that are not the subject of this appeal hearing, the Appeal Panel considered the Respondent's objection and indicated, through the Chair of the Appeal Panel, that the documents known as pages 7 through 12 of the Record, Item B, and duplicated in pages 45 through 50 of the Record, Item L, would remain in the record as part of the Appellants' submissions and that the Appeal Panel would determine what weight, if any, to give to the documents.
8. At the commencement of the hearing, the Appellants and Respondent confirmed that there were no objections to any members of the hearing panel, and that the Safety Codes Council (Council) in general and the Appeal Panel in particular had jurisdiction to hear and decide the appeal.
9. The Chair then explained the process to be followed in hearing this appeal, and read out a list of the written material before the panel, consisting of the documents listed below in The Record, as items A through N. The Appellants and Respondent confirmed that there were no objections to any of the written material submitted to the Appeal Panel prior to the hearing.
10. At the beginning of the Appellants' presentation, the Appellants' presented a package of seven pages for consideration by the Appeal Panel. The seven pages are: product information sheet for Flexible Firestop Sealant CP606, Certificate of Compliance for CP606, Material Safety Data Sheet for CP 606 (two pages), a colour photo of a UL label on a door, TechNotes for Grouting Hollow Metal Frames, and one page from Appendix A of Division B of the Alberta Building Code 2006. After reviewing the submission the Respondent indicated that there was no objection to providing the documents to the Appeal Panel. The Appeal Panel Chair accepted into the Record the submission marked as Hearing Exhibit 1 – Appellant, pages 320-326.
11. At the beginning of the Respondent's presentation, the Respondent presented a new document for consideration by the Appeal Panel. The document is a nine-page report issued from Respondents database providing a chronological report of Safety Codes Officer notes regarding the building at issue. The document was shown to the Appellant. After reviewing the submission the Appellant indicated that there was no objection to providing the

document to the Appeal Panel. The Appeal Panel Chair accepted into the Record the submission marked as Hearing Exhibit 1 – Respondent, page 327-335. Later in the hearing, during questions and testimony, it was identified that some of the notes on the report were incomplete due to a printing error from the software and where notes were missing in Exhibit 1, reference could be made to the pages behind Tab 9 of the Respondent’s Appeal Hearing Brief. (The Record, Item N)

**The Record:**

12. The Appeal Panel considered, or had available for reference, the following documentation:
  - a) Copy of Order dated August 21, 2014 (pages 1 to 3)
  - b) Notice of Appeal dated September 2, 2014 (pages 4 to 16)
  - c) Request for Stay of Order dated September 2, 2014 (page 17)
  - d) Acknowledgement Letter dated September 9, 2014 (page 18)
  - e) Stay Letter dated September 11, 2014 (page 19)
  - f) Written Notification of Appeal Hearing dated September 25, 2014 (pages 20 & 21)
  - g) Appeal Hearing Brief Preparation Guide (page 22)
  - h) Letter of Respondents’ attendance dated October 2, 2014 (pages 23 & 24)
  - i) Letter of Appellants’ attendance dated October 8, 2014 (page 25)
  - j) Letter of Response to parties dated October 8, 2014 (pages 26 to 32)
  - k) Document Submission Letter from Appellant dated October 8, 2014 (page 33)
  - l) Appeal Hearing Brief from the Appellant consisting of a binder containing 15 tabs (pages 34 to 240)
  - m) Document Submission Letter from Respondent dated October 8, 2014 (pages 241 & 242)
  - n) Appeal Hearing Brief from the Respondent consisting of a report folder containing 11 tabs (pages 243 to 319)
  - o) Exhibit 1 Appellant (pages 320-326)
  - p) Exhibit 1 Respondent (pages 327-335)

**Provisions of the Safety Codes Act:**

13. The *Safety Codes Act* (S-1, RSA 2000), as amended, provides, *inter alia*:

Part 1 Responsibilities

Owners, care and control

5 The owner of any thing, process or activity to which this Act applies shall ensure that it meets the requirements of this Act, that the thing is maintained as required by the regulations and that when the process or activity is undertaken it is done in a safe manner.

Part 5 Orders, Appeals

Council considers appeal

52(2) The Council may by order

- (a) Confirm, revoke or vary an order, suspension or cancellation appealed to it and as a term of its order may issue a written variance with respect to any thing, process or activity related to the subject-matter of the order if in its opinion the variance provides approximately equivalent or greater safety performance with respect to persons and property as that provided for by this Act.

**Provisions of the Safety Codes Act Building Code Regulation 177/2007, as amended**

- 14. Code in Force
  - 1. The *Alberta Building Code 2006*, as established by the Safety Codes Council and published by the National Research Council of Canada, is declared in force with respect to buildings, with the variations set out in the Schedule.

**Provisions of the Alberta Building Code 2006 (ABC 2006):**

- 15. The Alberta Building Code 2006 provides, *inter alia*:

**Division B**

**Part 3 Fire Protection, Occupant Safety and Accessibility**

**3.1.8. Fire Separations and Closures**

**3.1.8.1 General Requirements**

- 1) Any wall, *partition* or floor assembly required to be a *fire separation* shall
  - a) except as permitted by Sentence (2), be constructed as a continuous element, and
  - b) as required in the Part, have a *fire-resistance rating* as specified (see Appendix A.).
- 2) Openings in a fire separation shall be protected with closures, shafts or other means in conformance with Articles 3.1.8.4. to 3.1.8.17. and Subsections 3.1.9. and 3.2.8. (See Appendix A.)

**3.1.8.4. Determination of Ratings**

- 1) Except as permitted by Sentences (2) and 3.1.8.14.(1), the *fire-protection rating of a closure* shall be determined based on the results of tests conducted in conformance with the appropriate provisions in
  - a) CAN4-S104-M, “Fire Tests of Door Assemblies,”
  - b) CAN4-S106-M, “Fire Tests of Window and Glass Block Assemblies,” or
  - c) CAN/ULC-S112-M, “Fire Test of Fire-Damper Assemblies.”(See Articles 3.1.8.15. to 3.1.8.17. for additional requirements for *closures*.)

**3.1.8.5. Installation of Closures**

- 1) Except where *fire dampers*, window assemblies and glass block are used as *closures*, *closures* of the same *fire-protection rating* installed on opposite sides of the same opening are deemed to have a *fire-protection rating* equal to the sum of the *fire-*

protection ratings of the closures. (See A-3.1.8.1(2) in Appendix A.)

- 2) Except as otherwise specified in this Part, every door, window assembly or glass block used as a *closure* in a required *fire separation* shall be installed in conformance with NFPA 80, “Fire Doors and Fire Windows.” (See A-3.1.8.1.(2) in Appendix A.)
- 3) If a door is installed such that it could damage the integrity of a *fire separation* if its swing is unrestricted, door stops shall be installed to prevent the damage.

**3.1.8.15. Temperature Rise Limit for Doors**

- 1) Except as permitted by Article 3.1.8.17., the maximum temperature rise on the opaque portion of the unexposed side of a door used as a *closure* in a *fire separation* in a location shown in Table 3.1.8.15., shall conform to the table when tested in conformance with Sentence 3.1.8.4.(1).

**Table 3.1.8.15.**  
**Restrictions on Temperature Rise and Glazing for Closures**  
 Forming Part of Articles 3.1.8.15. and 3.1.8.16.

Location	Minimum Required Fire-Protection Rating of Door	Maximum Temperature Rise on Opaque Portion of Unexposed Side of Door, °C	Maximum Area of Wired Glass in Door, m <sup>2</sup>	Maximum Aggregate Area of Glass Block and Wired Glass Panels not in a Door, m <sup>2</sup>
Between a dead-end corridor and an adjacent <i>occupancy</i> where the corridor provides the only access to <i>exit</i> and is required to have a <i>fire-resistance rating</i>	Less than 45 min	No limit	No limit	No limit
	45 min	250 after 30 min	0.0645	0.0645
Between an <i>exit</i> enclosure and the adjacent <i>floor</i> area in a building not more than 3 storeys in <i>building height</i>	All ratings	No limit	0.8	0.8
Between an <i>exit</i> enclosure and the adjacent <i>floor</i> area (except as permitted above)	45 min	250 after 30 min	0.0645	0.0645
	1.5 h	250 after 1 h	0.0645	0.0645
	2 h	250 after 1 h	0.0645	0.0645
In a <i>firewall</i>	1.5 h	250 after 30 min	0.0645	0
	3 h	250 after 1 h	0	0

## **Part 8 Safety Measures at Construction and Demolition Sites**

### **8.1.2. Application**

#### **8.1.2.2. Protection from Risk**

- 1) Precautions shall be taken to ensure that no person is exposed to undue risk.

#### **Provisions of the NFPA 80 Standard for Fire Doors and Fire Windows 1999 edition:**

16. The NFPA 80 provides, *inter alia*:
  - 1-1.1 This standard regulates the installation and maintenance of assemblies and devices used to protect openings in walls, floors, and ceilings against the spread of fire and smoke within, into, or out of buildings. The fire performance valuation of these assemblies is tested in accordance with NFPA 251, *Standard Methods of Test of Fire endurance of Building Construction and Materials*, for horizontal access doors; NFPA 252, *Standard Methods of Fire Tests of Door Assemblies*, for fire doors and shutters; and NFPA 257, *Standard on Fire Test for Window and Glass Block Assemblies*, for fire windows and glass block. It is not the intent of this standard to establish the degree of protection require or to constitute the approval of any product. These are determined by the authority having jurisdiction.

This standard is based on product engineering practices recognized as acceptable at the date of issue. Therefore, the provisions of this standard are not intended to be applied retroactively to installations that were in compliance at the time of installation.

#### **Provisions of the NFPA 252 Standard Methods of Fire Tests of Door Assemblies:**

17. The NFPA 252 provides, *inter alia*:
  - 1-2.3 It is intended that tests made in conformity with these test methods will develop data that enable regulatory bodies to determine the suitability of door assemblies for use in locations where fire resistance of a specified duration is required.

#### **Position of the Parties**

##### *Appellants*

*From the Appellants' submissions and testimony the Appellants' position may be summarized as follows:*

18. The Appellants' arranged for a test with ULC through the door manufacturer.
19. The certified testing agency was aware of the specifications and the agency determined the methodology for the test.
20. ULC undertook a Small Scale Fire Test of Foam Filled Butted Frame Installation. They performed the test of the foam product using requirements from the UL Standard for "Fire



Tests of Door Assemblies,” ANSI/UL 10B, 10<sup>th</sup> edition and “Standard Method for Fire Tests of Door Assemblies,” CAN/ULC-S104-10 3<sup>rd</sup> edition. (The Record, Item L, page 66)

21. The results show that the door frames comply with the test standards. The conditions of the test are dictated by the testing authority, UL.
22. The test samples consisted of a doorframe, fire door and hardware installed into the small scale test frame. The assembly was installed into a nominal 8 in. (203 mm) solid block concrete masonry wall unit using expansion type anchors. A nominal 1 in. (25 mm) annular space was incorporated along the hinge, strike, and head jamb. The throat of the frame and annular space was filled with Hilti CF-812 foam. Excess foam was removed to accommodate for a nominal 7/16 in. (11.1 mm) deep fill of CP 606 sealant. (The Record Item L, pages 66-81).
23. The test report indicates compliance. The testing authority reported that the fire endurance test and the hose stream test were deemed representative of CAN/ULC-S104-10. (The Record, Item L, pages 68 and 70)
24. The assembly is composed of tested and listed items in compliance with NFP 80. The door frame and assembly is compliant. NFPA 80 2013 Edition 4.2.5.2. provides, “Except where restricted by individual published listings, a fire door assembly shall be permitted to consist of the labeled, listed, or classified components of different organizations that are acceptable to the AHJ.” The labelled door and frame components are compliant.

*Respondent*

*From Respondent’s submissions and testimony, the Respondent’s position may be summarized as follows:*

25. While inspecting the building during construction, the Safety Codes Officer noticed that the exit stairwell door and frame assemblies as installed did not comply with provisions of the Alberta Building Code (ABC) 2006 and that the construction deviated from the plans approved by the Respondent through the building permit plans examination.
26. The installation does not comply for two reasons:
  - a) There is a large gap between the door frames and the surrounding concrete wall opening and a large gap is not permitted by the installation standard for doors in a fire separation.
  - b) The gap is filled with filler foam and sealed with firestop sealant and the door and frame assemblies installed have not been tested with the foam and sealant. There are concerns that the door and frame assembly will not perform properly in a fire situation, and will allow smoke and heat to enter the exit stairwells and impede the operation of the exit door.
27. The Appellants undertook small scale testing of door and frame assembly and it isn’t clear if the testing was conducted with the filler foam. No acceptable testing has been carried out to

show that the door and frame assembly will perform adequately when the filler foam is installed inside and surrounding the frame. There is concern that the filler foam and firestop sealant will break down or disintegrate under fire conditions and could allow smoke and heat to enter the exit stair, making it unusable or hazardous to occupants or emergency responders.

28. The small-scale test was conducted without a glazing panel and the sample was tested swinging into the furnace. CAN4-S104 3.1.1. requires the tested sample to be representative of the dimensions and materials of the door and frame, therefore a test of a small scale version of the door and frame with no glazing panel is not acceptable. Also, the test was conducted with the door swinging into the furnace, which does not simulate the likely location of a fire next to an exit stair. Exit doors always swing into the exit stair, and since a fire is not likely to originate inside an exit stair, a test showing the performance of the door swinging towards the furnace is not representative of the actual situation at hand.
29. The small-scale test does not resemble the onsite conditions and the response from the testing agency, UL, (Record Item L, Page 206) does not confirm that the small scale test is representative of a full scale test.
30. The exit door frame assemblies as installed at the building are not published on a list from an organization accredited by the Standards Council of Canada which would show the assemblies meet the requirements of CAN4-S104-M as required by 3.1.8.4. (1) of ABC 2006. The assembly is not a common assembly.
31. To ensure that exit stairwell door assemblies will meet performance requirements, the code requires standard testing, and labelling by the testing agency to identify that they comply with the standard, to limit the probability that incorrect installation of the doors will compromise the level of safety in the exit stairwell.
32. Safety Codes Officers inspecting the building throughout the construction phase worked with the owner, contractor, and designer to review various proposals for compliance. Compliance has not been achieved and as a result the Order was issued.
33. The Order must be upheld so that important corrective action can be taken.

**Reasons for Decision (Findings of Fact and Law):**

The Appeal Panel makes the following findings:

34. The Appeal Panel has varied the order, essentially providing three choices to the Appellants': provide a letter from the same testing agency that confirms the small scale testing undertaken is representative of the assemblies on site and complies with full-scale testing requirements; undertake a full scale test as required for compliance; or remove and reinstall the assemblies in compliance with the ABC 2006.

35. There is a lack of clarity in the evidence whether the testing agency is of the opinion that the small scale test demonstrates the assembly is compliant. Therefore, the Appeal Panel is not prepared to find that the testing demonstrates compliance in all respects or that the assembly complies in all respects with the codes or that the assembly was installed in all respects in compliance with the codes. The Appellants and Respondent were of different views on the testing and the Appeal Panel finds that the wording provided from the testing authority is ambiguous.
36. The Appeal Panel finds that to ensure that the assembly is compliant and that the testing is representative of onsite assemblies and conditions, the Appellants' must do one of the following: 1) provide a letter from the testing agency that clearly indicates compliance, or 2) remove the assemblies and reinstall in compliance with ABC 2006, or 3) undertake full-scale testing prescribed by the Authority Having Jurisdiction with results that would indicate compliance.
37. In regards to the Appeal Panel's Order, item number one, the Respondent is of the opinion that the small scale testing did not test the door and frame using foam. The Appeal Panel finds that the reporting provided by the testing authority clearly indicates that the testing did include the foam as is indicated in The Record, Item M, on page 68 of the record. Paragraph one states that the "throat of the frame and annular space was filled with CF-812 foam."
38. In varying the order, the Appeal Panel removed item number five of the original order as it appeared to be a duplicate of item number three. Both items speak to the requirement of a published listing showing exit door frame assemblies as installed have been tested to the requirements.
39. In varying the order, the Appeal Panel removed item number six of the original order as it seemed unnecessary. All options must comply with NFPA.
40. The Appeal Panel considers that the concern expressed by the Respondent regarding the glazing is unrelated to the issue at appeal as the test was not intended to test the glazing and there is no indication that the glazing is faulty.
41. The Appeal Panel considers that the concern expressed by the Respondent regarding the direction of the door swing is valid given that the small scale test included a door swinging in to the fire test furnace and not away from the fire test as it would in the actual installation within the stair wells. The letter of verification from the testing agency, noted in Paragraph 36, must confirm compliance without any further testing required to satisfy acceptable as-built construction representation. (The Record, Page 2 of Appendix A of the test report).

42. On the Respondent's preliminary issue regarding the Appellants' appeal submissions pertaining to six other buildings that are not the subject of this appeal hearing, the Appeal Panel notes that during testimony there was only a cursory reference by the Appellants' to the six pages identified. The Appeal Panel did not find this evidence of assistance in their deliberations and thus afforded it very little, if any, weight.

Dated at Edmonton, Alberta this 11th day of December 2014

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Chair, Building Technical Council Appeal Panel