



## **COUNCIL ORDER No. 0015467**

**BEFORE THE BUILDING SUB-COUNCIL**

**On August 16, 2016**

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

**AND IN THE MATTER OF** the Refusal to Issue a Building Permit dated April 28, 2016 issued by the Accredited Municipality (Respondent) against the Architectural Firm (Appellant).

**UPON REVIEWING** the Building Permit Refusal **AND UPON HEARING** the Appellant and the Respondent; **THIS COUNCIL ORDERS THAT** the Building Permit Refusal is **CONFIRMED**.

**Issue:**

1. The Appeal concerns a building on the territory of the Accredited Municipality.
2. The issue on appeal is the use of an aluminum panel system utilizing polyamide inserts known as the Wall Cladding System.

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

3. Appearing for the Appellant, the Appeal Panel heard from a representative of the Building Envelope Trade Contractor. Also appearing for the Appellant, the Appeal Panel heard from a representative of the product manufacturer, the Wall Cladding System.
4. Appearing for the Respondent, the Appeal Panel heard from a Building Safety Codes Officer with the Accredited Municipality. Also appearing for the Respondent, the Appeal Panel heard from another Building Safety Codes Officer with the Accredited Municipality.
5. A Legal Counsel with the Accredited Municipality attended as an observer.
6. At the commencement of the hearing, the Appellant and Respondent confirmed there were no objections to any members of the Appeal Panel, and that the Safety Codes Council (Council) in general and the Appeal Panel in particular had jurisdiction to hear and decide the appeal.
7. During the hearing, a Safety Codes Officer advised all present that he was a member of the Building Sub-Council to ensure there were no objections to his participation in the proceeding. There were none.

8. The Appeal Panel Chair (the “Chair”) then explained the process to be followed in hearing this appeal, and read out a list of the written material before the Appeal Panel, consisting of the documents listed below in The Record, paragraph 9 as items a) to h). The Appellant and Respondent confirmed that there were no objections to any of the written material submitted to the Appeal Panel prior to the hearing.

**The Record:**

9. The Appeal Panel considered, or had available for reference, the following documentation:
  - a) Notice of Appeal (pages 1 to 4)
  - b) Letter of Representation (page 5)
  - c) Acknowledgement Letter dated May 30, 2016 (page 6)
  - d) Appeal Hearing Brief Preparation Guide (page 7)
  - e) Written Notice of Appeal (pages 8 to 9)
  - f) Brief of the Appellant (pages 10 to 74)
  - g) Supplemental to Appellant Brief - English translation of pages 53 to 63 in brief (pages 75 to 86)
  - h) Brief of the Respondent (pages 150 to 219)

**Provisions of the Safety Codes Act:**

10. 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 Alberta Building Code 2014 (ABC 2014):

11. The Alberta Building Code 2014 provides, *inter alia*:

### Division B

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

#### 3.1.5. Noncombustible Construction

##### 3.1.5.1. Noncombustible Materials

- 1) Except as permitted by Sentences (2) to (4) and Articles 3.1.5.2. to 3.1.5.21., 3.1.13.4. and 3.2.2.16., a *building* or part of a *building* required to be a *noncombustible construction* shall be constructed with *noncombustible* materials. (See also Subsection 3.1.13. for the requirements regarding the *flame-spread rating* of interior finishes.)
- 2) Notwithstanding the definition of *noncombustible* materials stated in Article 1.4.1.2. of Division A, a material is permitted to be used in *noncombustible construction* provided that, when tested in accordance with ULC-S135, “Test Method for the Determination of Combustibility Parameters of Building Materials Using an Oxygen Consumption Calorimeter (Cone Calorimeter),” at a heat flux of 50 kW/m<sup>2</sup>,
  - a) its average total heat release is not more than 3 MJ/m<sup>2</sup>,
  - b) its average total smoke extinction area is not more than 1.0 m<sup>2</sup>, and
  - c) the test duration is extended beyond the time stipulated in the referenced standard until it is clear that there is no further release of heat or smoke.

##### 3.1.5.2. Minor Combustible Components

- 1) The following minor combustible components are permitted in a *building* required to be of *noncombustible* construction:
  - a) paint (see also Sentence 3.1.5.10.(1)),
  - b) mastics and caulking materials, including *foamed plastic* air sealants, applied to provide a seal between the major components of exterior wall construction (see also Article 3.6.4.3. for limits on the use of *combustible* materials in *plenum* spaces),
  - c) *fire stops* and *fire blocks* conforming to Sentence 3.1.9.1.(1). and Article 3.1.11.7.,
  - d) tubing for pneumatic controls provided it has an outside diameter of not more than 10mm,
  - e) adhesives, *vapour barriers* and sheathing papers,
  - f) electrical outlet and junction boxes,
  - g) wood blocking within wall assemblies intended for the attachment of handrails, fixtures, and similar items mounted on the surface of the wall, and
  - h) similar minor components.

##### 3.1.5.5. Combustible Components for Exterior Walls

- 1) Except as required in Sentence (2), an exterior non-*loadbearing* wall assembly that includes *combustible* components is permitted to be used in a *building* required to be of *noncombustible construction* provided

- a) The *building* is
    - i.) not more than 3 *storeys* in *building height*, or
    - ii.) *sprinklered* throughout,
  - b) the interior surfaces of the wall assembly are protected by a *thermal barrier* conforming to Sentence 3.1.5.12.(3), and
  - c) the wall assembly satisfies the criteria of Sentences (3) and (4) when subjected to testing in conformance with CAN/ULC-S134, “Fire Test of Exterior Wall Assemblies.”
- (See Appendix A.)
- 2) Except as permitted by Articles 3.2.3.10. and 3.2.3.11., where the *limiting distance* in Tables 3.2.3.1.B. to 3.2.3.1.E. permits an area of *unprotected openings* of not more than 10% of the *exposing building face*, the construction requirements of Table 3.2.3.7. shall be met.
  - 3) Flaming on or in the wall assembly shall not spread more than 5m above the opening during or following the test procedure referenced in Sentence (1).  
(See Appendix A.)
  - 4) The heat flux during the flame exposure on a wall assembly shall be not more than 35kW/m<sup>2</sup> measured 3.5m above the opening during the test procedure referenced in Sentence (1). (See Appendix A.)
  - 5) A wall assembly permitted by Sentence (1) that includes *combustible* cladding of *fire-retardant-treated wood* shall be tested for fire exposure after the cladding has been subjected to an accelerated weathering test as specified in ASTM D 2898, “Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.”

## **Division B**

### **Part 4 Structural Design**

#### **4.1.1.3. Design Requirements**

- 1) *Buildings* and their structural members and connections, including formwork and falsework, shall be designed to have sufficient structural capacity and structural integrity to safely and effectively resist all loads, effects of loads and influences that may reasonably be expected, having regard to the expected service life of *buildings*, and shall in any case satisfy the requirements of this Section. (See Appendix A.)
- 2) *Buildings* and their structural members shall be designed for serviceability, in accordance with Articles 4.1.3.4., 4.1.3.5. and 4.1.3.6. (See Appendix A.)
- 3) All permanent and temporary structural members, including the formwork and falsework of a *building*, shall be protected against loads exceeding the special loads during the construction period except when, as verified by analysis or test, temporary overloading of a structural member would result in no impairment of that member or any other member.
- 4) Falsework, scaffolding, and formwork shall be designed in conformance with
  - 1) CSA S269.1, “Falsework for Construction Purposes,”
  - 2) CAN/CSA-S269.2-M, “Access Scaffolding for Construction Purposes,” or
  - 3) CAN/CSA-S269.3-M, “Concrete Formwork.”
- 5) Precautions shall be taken during all phases of construction to ensure that the *building* is not damaged or distorted due to loads applied during construction.

**Division A**  
**Part 1 Compliance**

**1.2.1.1. Compliance with this Code**

- 1) Compliance with this Code shall be achieved by
  - a) complying with the applicable acceptable solutions in Division B (see Appendix A), or
  - b) using alternative solutions that will achieve at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the applicable acceptable solutions (see Appendix A).

**Division C**  
**Part 2 Administrative Provisions**

**2.3.1. Documentation of Alternative Solutions**

**2.3.1.1. Documentation**

- 1) Documentation conforming to this Subsection shall be provided by the person requesting the use of an alternative solution to demonstrate that the proposed alternative solution complies with this Code.
- 2) The documentation referred to in Sentence (1) shall include
  - a) a Code analysis outlining the analytical methods and rationales used to determine that a proposed alternative solution will achieve at least the level of performance required by Clause 1.2.1.1.(1)(b) of Division A, and
  - b) information concerning any special maintenance or operational requirements, including any building component commissioning requirements, that are necessary for the alternative solution to achieve compliance with the Code after the *building* is constructed.
- 3) The Code analysis referred to in Clause (2)(a) shall identify the applicable objectives, functional statements and acceptable solutions, and any assumptions, limiting or restricting factors, testing procedures, engineering studies or *building* performance parameters that will support a Code compliance assessment.
- 4) The Code analysis referred to in Clause (2)(a) shall include information about the qualifications, experience and background of the persons taking responsibility for the design.
- 5) The information provided under Sentence (3) shall be in sufficient detail to convey the design intent and to support the validity, accuracy, relevance and precision of the Code analysis.
- 6) Where the design of a *building* includes proposed alternative solutions that involve more than one person taking responsibility for different aspects of the design, the applicant for the *permit* shall identify a single person to co-ordinate the preparation of the design, Code analysis and documentation referred to in this Subsection.
- 7) The *authority having jurisdiction* shall forward a copy of what was accepted as an alternative solution of the *Chief Building Administrator* to be registered as a variance.

**Division C**  
**Part 2 Administrative Provisions**

**2.2.10. Permits**

**2.2.10.1. General**

- 1) A *permit* is required for the construction, *alteration*, installation, repair, relocation, demolition, or change in *occupancy* of any *work* to which this Code applies in accordance with regulations made pursuant to the Safety Codes Act.
- 2) In addition to a *permit* that is required by Sentence (1), other *permits* may be required for the installation of related *building* services.
- 3) An *owner* shall ensure that all *permits* required in connection with proposed *work* are obtained before starting the *work* to which they relate.

**2.2.10.8. Refusal to Proceed**

- 1) The *authority having jurisdiction* may refuse to allow any *building, project, work* or *occupancy* that would not be permitted by the Safety Codes Act, this Code or other legislation.
- 2) The *authority having jurisdiction* may refuse to allow any *building, project, work* or *occupancy* if
  - a) Incorrect information is submitted, or
  - b) The information submitted is inadequate to determine compliance with the provisions of the Safety Codes Act, this Code or other legislation.
- 3) A person who is refused a *permit* may appeal the refusal in accordance with the Safety Codes Act and regulations made pursuant to the Act.

**Position of the Parties**

*Appellants*

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

12. The Wall Cladding System's manufacturer's representative provided the Appeal Panel with a brief history of the Wall Cladding System, initially developed for the New Orleans Superdome after Hurricane Katrina, which structure had experienced damage to 20% of the existing exterior panels.
13. The system was developed to withstand hurricane force winds while allowing replacement of individual panels without affecting the others.
14. Although initially designed without the Polyamide inserts, these were added to prevent a clicking/tinking noise that occurred as the metal panels expanded and contracted with temperature changes.
15. The representative of the Building Envelope Trade produced a sample of the product for the Panel Members' information, demonstrating how the panels would attach to the railing, even without the Polyamide insert. In his May 5, 2016 letter to the Safety Codes Council, the representative points out, "the manufacturer does not permit installation without this spacer."

16. The system has been installed in Canada and around the world, with the Wall Cladding System becoming a major player in the industry with more than a billion square feet installed.
17. The system has been installed on a variety of buildings from single family residences to high-rises, including other buildings in Alberta.
18. The use of the Wall Cladding System is only a small component of the project in question, and while its representative acknowledged he was not a code expert, he said he understands codes are primarily intended to protect the public, and even if there were a fire and the Polyamide inserts were destroyed, the panels themselves would not come off, having been tested in Austria to withstand 150 mile per hour winds. Also in the aftermath of a fire, the panels would have to be replaced anyway so any clicking/tinking would be short lived.
19. The Polyamide clips are to address thermal movement only and are not, in the representative's opinion a structural component as determined by the Accredited Municipality.
20. The Appellant believes the Wall Cladding System meets the intent of the 2014 Alberta Building Code (ABC) and that there are not enough of the Polyamide components to spread any fire that might reach them. This opinion is supported by a letter dated April 6, 2016 from a Professional Engineer, who, along with other credentials, is past President of Underwriters Laboratories of Canada (ULC).
21. In his letter the Engineer refers to fire testing performed in an Austrian testing facility, which he believes "was very similar to the CAN/ULC-S134 test referenced in the ABC (see excerpt from 3.1.5.5 above); pointing out that "additional plastic inlays were installed to increase the combustible element of the wall" notwithstanding which, at the conclusion of the test, "while all of the plastic inlays and guidance snappers were completely melted above the window opening, the aluminum panels remained in place as a result of the click rails and the fixed point clamp" and that there was "no evidence of fire spread up the wall behind the panels as a result of the burning plastic."
22. It is the Engineer's professional opinion the Wall Cladding System is a non-combustible cladding system (the plastic inlays and guidance snappers being "minor combustible components" which are permitted in a non-combustible building. The basis of the Engineer's opinion is explained on page four of his April 6, 2016 letter which forms part of the Record (pages 40 and 41, double sided).
23. The Engineer concludes saying, his opinion is conditional upon "the installation of steel flashing, 1 mm minimum thickness, above and around window and door openings in an exterior wall. The flashing must be of sufficient width to seal the entire thickness of the Wall Cladding System as described in the Austrian test report."
24. The Appellant stated this condition could be easily and affordably met and as documented in the e-mail, dated April 6, 2016 (page 165 of the Respondent submission), and reaffirmed during the hearing, they are prepared to make these necessary changes if the Accredited Municipality wishes.
25. In response to questions from the Appeal Panel, the Appellant confirmed that the use of an Alternative Solution was raised and that they have come up with a "stop gap" measure, but this involves 20 – 30 year old technology, would not be as aesthetically pleasing and would add approximately 2 million dollars to the cost of the project. The panels would also not be easily replaceable.

26. The Appellant confirmed the Wall Cladding System has not applied for product testing by ULC or another agency as no one, including developers in Canada, have asked that this to occur. The testing done in Austria was part of the original product development and not at the request of a code agency. As the Engineer stated in his April 6, 2016 letter referred to above, the fire test conducted was “very similar” to the CAN/ULC-S134 test referenced in the 2014 ABC.
27. The Polyamide inserts are strictly for friction reduction and the panels cannot be removed without a special tool, even without the inserts in place. The product would never be installed without the inserts.
28. While developed specifically for the Superdome in New Orleans, many buildings in North America have used the system, including perhaps 14 in Alberta, some of which are high-rise developments. Several more projects await the outcome of this hearing.
29. In response to the Respondent’s submission that the plastic inserts would certainly melt at sufficiently high temperature, leaving the remaining metal panels, while still in place, “possibly unable to withstand the full design wind load,” the Appellant said there is no reason to test the system without the inserts as they are not permitted to be installed that way, and in the event of a fire sufficient to melt the plastic inserts, individual panels, also damaged by any fire, would need to be replaced thus eliminating any risk.
30. In conclusion, the Appellant said the use of the Wall Cladding System in this project is more than cosmetic, given the fact that there is asbestos present in the current stucco cladding. They believe it meets the intent of the ABC. The testing performed in Austria confirms that fire is not an issue, so if the only concern is “the rattling after a fire”, the Panel Members and the Accredited Municipality should be assured it would never be left that way.

*Respondent*

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

31. The Respondent referred the Panel Members to the photographs on pages 156 and 157 of their written submission, showing the building in question and demonstrating the condition of the existing stucco cladding.
32. Pages 153 – 155 (b) of their submission sets out the 2014 ABC provisions relevant to the issue before the Appeal Panel. Specific reference was made to clause 4.1.1.3. Design Requirements (page 155 (b)) which states, “*Buildings* and their structural members and connections, including formwork and falsework, shall be designed to have sufficient structural capacity and structural integrity to safely and effectively resist all loads, effects of loads and influences that may reasonably be expected, having regard to the expected service life of *buildings*, and shall in any case satisfy the requirements of this Section (See Appendix A).”
33. The Respondent referred the Members to the e-mail communication (pages 159 – 165) between the parties, documenting discussions regarding this matter and leading up to the decision to refuse the permit application.
34. The Respondent then walked the Panel Members through the Briefing contained on page 151 of the Record which summarizes the rationale for the decision to refuse the permit application.



35. He noted, Division B of the 2014 ABC, article 4.1.1.3. requires “that buildings and their structural members and connections (emphasis theirs) have sufficient capacity to resist all loads.” The Accredited Municipality is of the opinion the Polyamide inserts are connections.
36. The Panel Members were asked to note the February 29, 2016 letter from the Building Envelope Trade Contractor (page 171 of the Record) which acknowledges that without the plastic inserts, the individual panels would be rather loose fitting but still retained by the structural rail, which is not to say, “that the system will withstand the full design wind load under such condition;...”
37. The letter continues saying that at sufficiently high temperatures, “we would expect that the plastic inserts would certainly melt” with the result that the individual panels would be “loosely retained by the structural rail.”
38. Given that the plastic inserts would melt at high temperature with the result that the remaining panels would not withstand all environmental loads, the Accredited Municipality concludes the inserts are “structural.”
39. Section 3.1.5.2. of the 2014 ABC addresses Minor Combustible Components that are permitted in buildings required to be of non-combustible construction. The Respondent acknowledged reference to “similar minor components” (3.1.5.2. (1) (h)) but concludes, the plastic inserts cannot be considered such, as they are combustible and are structural connections.
40. The Accredited Municipality acknowledges the testing performed in Austria, and the suggestion made by the Professional Engineer in his April 6, 2016 letter (pages 172 – 175 of the Record) that the Austrian fire test is similar though not identical to the CAN/ULC-S134 test referenced in the 2014 ABC. The Respondent said they would consider an Alternative Solution application but to date no such request from the Appellant has been received.
41. The Panel Members were assured the site is currently made safe for occupants and passers-by, with hording, and referred to the photograph on the bottom of page 156 of their submission confirming this. There is however a serious safety issue that must be addressed as the current cladding contains asbestos.
42. The Respondent confirmed they have no concern that the Wall Cladding System is not structurally sound with the clips in place. Their issue is installation without the clips, such as after a fire, as it is acknowledged in such a circumstance, wind load would be a concern.

In response to questions from the panel, both parties acknowledged that the subject of an Alternative Solution had been discussed. The Respondent asked the Panel Members to note the e-mail communication regarding this on February 5, 2016 (page 160 of the Record).

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

*The Appeal Panel makes the following findings:*

43. There are three factors that impact the Panel’s decision in this matter, the first being whether the Polyamide inserts should be considered as a “Minor Combustible Component” as per Section 3.1.5.2. (h) of the 2014 ABC.

44. While acknowledging that the Wall Cladding System has not been tested at a recognized Canadian facility, the conclusions reached following testing at the Research Centre, Laboratory and Certification Services facility in Vienna, Austria, and the professional opinion of LRI Fire Protection and Building Code Engineers, satisfies the Appeal Panel the Wall Cladding System is a non-combustible cladding system, and that aspect of this matter should not be a factor in refusing to issue a permit.
45. The second factor the Appeal Panel must consider, is whether the Polyamide clips are “structural members and/or connections” as per the 2014 ABC Section 4.1.1.3. Design Requirements.
46. In a February 19, 2016 letter (page 166 of the Record), from the Building Envelope Trade Contractor to the Architectural Firm, the writer states when referring to the plastic components of the assembly, “They are not structural; the rail is” He continues saying, “these should be considered minor combustible components, similar in nature to plastic shims, thermal breaks, sealant backer rod, foamed plastic air sealants, gaskets and electrical boxes”, which opinion the Appeal Panel shares.
47. This second factor should not therefore, in the opinion of the Appeal Panel, be a factor in refusing a permit.
48. It is the third factor that the appeal Panel agrees is an appropriate reason for the permit application to have been refused, and the basis on which the decision was made to CONFIRM the Respondent’s decision in this matter. Article 3.1.5.5. of the 2014 ABC (Combustible Components for Exterior Walls) requires (among other things) that when an exterior non-loadbearing wall assembly that includes combustible components (as is the case here) is permitted to be used in a *building* required to be of *noncombustible construction*, the wall assembly must satisfy certain criteria “when subjected to testing in conformance with CAN/ULC S134, Fire Test of Exterior Wall Assemblies.”As documented, the Wall Cladding System has not undergone such testing, and while future testing may well satisfy the identified criteria; without it, no one can know this for certain, and as such, the Appeal Panel must confirm the Respondent’s decision in this matter.
49. Having said that, the Appeal Panel would strongly suggest both parties further and immediately explore the possibility of an Alternative Solution application.
50. Having heard both parties regarding this matter, the Panel Members are of the opinion the Appellant does not have a complete understanding of what this involves and notwithstanding previous communication in this regard, it remains the responsibility of the Respondent to provide them with this understanding.
51. Notwithstanding the Respondent’s testimony that the Appellant was provided with a clear understanding of the process to have an Alternative Solution considered, in the opinion of the Appeal Panel this did not occur.
52. There is evidence to suggest an application for an Alternative Solution may well be successful and likely would have been considered had the Appellant had a complete understanding of what was being suggested and made application for consideration of such.
53. In this regard the Panel Members note that when asked about the discussion surrounding an Alternative Solution, the Appellant mentioned a “stopgap” solution using old technology, not as aesthetically pleasing and at considerable greater cost, satisfying the Panel Members they did not understand the meaning of an Alternative Solution as set out in the ABC.
54. The Respondent’s own testimony confirms consideration would be given to the Wall Cladding System as an Alternative Solution, as suggested during the hearing, and in the

Briefing document identified as Page 151 of the Record, wherein the Respondent states, “Therefore there would appear to be enough evidence to suggest that an Alternative Solution proposal could be entertained.”

- 55.** The Respondent again notes that no such application has been received and in the Appeals Panel’s opinion this is because the Appellant does not have a good understanding of this process.
- 56.** The Panel notes such consideration would require the installation of steel flashing as noted by the Professional Engineer in the last paragraph of his April 6, 2016 letter on behalf of the Engineering Company.

Dated at Edmonton, Alberta this 30 day of September, 2016

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Chair, Building Sub-Council Appeal Panel