SAFETY CODES COUNCIL

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COUNCIL ORDER No. 0015441

BEFORE THE BUILDING TECHNICAL COUNCIL
On September 30, 2014

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 July 15, 2014 issued by an accredited municipality (the Respondent) against a development company (the Appellants).

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

Issue:

1. The Appeal concerns a building.

2. The issues on appeal are:
   a) The issue, pursuant to subsection 52(2)(b) of the *Safety Codes Act* is whether, having regard, for the position of the Appellants, set out below, the Building Permit Refusal was issued unreasonably;
   b) The Appellants propose an alternative solution to the requirements of 3.2.2.42 of Division B of the Alberta Building Code 2006 (ABC 2006). The proposed solution is provided in the Appellant's Brief (The Record 8 b));
   c) Whether the alternative solution proposed by the Appellants provides an equivalent or greater level of safety to persons and property as required by Division B in the areas defined by the objective and functional statements attributed to the applicable acceptable solutions as required by Article 1.2.1.1. of Division A of the ABC 2006.

Appearances, Preliminary, Evidentiary or Procedural Matters:

3. Appearing for the Appellants, the Appeal Panel heard from an engineer and an architect.

4. Appearing for the Respondent, the Appeal Panel heard from the Building Safety Codes Officer from the accredited municipality.

5. 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.

6. The Chair then explained the process for hearing this appeal, and read out a list of the written material before the panel, consisting of the documents listed below in The Record, paragraph 8 as items a) to h). 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.

7. At the commencement of the hearing, the Chair sought clarity with regard to the municipal address of the building at issue. Documentation provided by the parties indicated two different addresses. The Respondent confirmed and the Appellants accepted the correct address.

The Record:

8. The Appeal Panel considered, or had available for reference, the following documentation:

   a) Copy of Notice of Appeal dated July 25, 2014 (pages 1 to 5)
   b) "Alternative Solution for Construction Requirements" dated July 7, 2014 (pages 6 to 25)
   c) Acknowledgment Letter dated August 7, 2014 (page 26)
   d) Appeal Hearing Brief Preparation Guide (page 27)
   e) Written Notification of Appeal Hearing dated August 11, 2014 (pages 28 & 29)
   f) Appeal Hearing Brief from the Appellant consisting of a bound set of Architectural drawings (pages 30, 31 and A1 to A145) and a stapled package of appendix drawings (pages appendix 1 to appendix 8)
   g) A coil bound Appeal Hearing Brief from the Respondent (pages 32 to 48)
   h) Two Engineering Letters submitted by the Appellant (pages 49 & 50)

Provisions of the Safety Codes Act:

9. The Safety Codes Act provides:

   Part 3 Standards
   Permit issues
   44(1) On receipt of any application, a safety codes officer or other person designated by an administrator may issue a permit to a person who complies with the requirements of this Act or issue a permit with respect to a thing, process or activity if it complies with the requirements of this Act.

   44(3) If a safety codes officer or other person designated by an Administrator refuses to issue a permit, the safety codes officer or other person designated by an Administrator shall

serve the application with a written notice of the refusal.

Part 5 Orders, Appeals
Council considers appeal
52(2) The Council may by order
(b) confirm a refusal or direct that a designation, certificate or permit be issued and direct that inclusion of terms and conditions in the designation, certificate or permit,

Provisions of the Safety Codes Act Building Code Regulation

10. 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):

11. The Alberta Building Code 2006 thereto provides, *inter alia*:

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).

Appendix A Explanatory Material
A-1.2.1.1.(1)(b) Code Compliance via Alternative Solutions.
Where a design differs from the acceptable solutions in Division B, then it should be treated as an "alternative solution." A proponent of an alternative solution must demonstrate that the alternative solution addresses the same issues as the applicable acceptable solutions in Division B and their attributed objectives and functional statements. However, because the objectives and functional statements are entirely qualitative, demonstrating compliance with them in isolation is not possible. Therefore, Clause 1.2.1.1.(1)(b) identifies the principle that Division B establishes the quantitative performance targets that alternative solutions must meet. In many cases, these targets are not defined very precisely by the acceptable solutions – certainly far less precisely than would be the case with a true performance code, which would have quantitative performance targets and prescribed methods of performance measurement for all aspects of building performance. Nevertheless, Clause 1.2.1.1.(1)(b) makes it clear that an effort must be made to demonstrate that an alternative solution will

perform as well as a design that would satisfy the applicable acceptable solutions in Division B – not "well enough" but "as well as."

In this sense, it is Division B that defines the boundaries between acceptable risks and the "unacceptable" risks referred to in the statements of the Code's objectives, i.e. the risk remaining once the applicable acceptable solutions in Division B have been implemented represents the residual level of risk deemed to be acceptable by the broad base of Canadians who have taken part in the consensus process used to develop the Code.

1.3.3.4. Building Size Determination

1) Where a *firewall* divides a *building*, each portion of the *building* so divided shall be considered as a separate *building*, except when this requirement is specifically modified in other parts of this Code. (See Appendix A.)

1.4. Terms and Abbreviations

1.4.1.2. Defined Terms

Building height (in *storeys)* means the number of *storeys* contained between the roof and the floor of the *first storey.*

First storey means the uppermost *storey* having its floor level not more than 2 m above *grade*.

Grade (as applying to the determination of *building height*) means the lowest of the average levels of finished ground adjoining each exterior wall of a *building*, except that localized depressions such as for vehicle or pedestrian entrances need not be considered in the determination of average levels of finished ground. (See *First storey.*)

Division B

Part 3 Fire Protection, Occupant Safety and Accessibility

3.2. Building Fire Safety

3.2.2. Building Size and Construction Relative to Occupancy

3.2.2.42. Group C, Any Height, Any Area, Sprinklered

1) Except as permitted by Articles 3.2.2.43. to 3.2.2.48., a *building* classified as Group C shall conform to Sentence (2).

2) Except as permitted by Article 3.2.2.16., the *building* referred to in Sentence (1) shall be of *noncombustible construction*, and
   a) Except as permitted by Sentences 3.2.2.7.(1) and 3.2.2.18.(2), *the building* shall be *sprinklered* throughout,
   b) Except as permitted by Sentence (3), floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 2 h,
   c) *mezzanines* shall have a *fire-resistance rating* not less than 1 h, and
   d) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.

3) In a *building* that contains *dwelling units* that have more than one *storey*, subject to the requirements of Sentence 3.3.4.2.(3), the floor assemblies, including floors over

basements, which are entirely contained within these *dwelling units*, shall have a *fire-resistance rating* not less than 1 h but need not be constructed as *fire separations*.

3.2.2.43. Group C, up to 6 Storeys, Sprinklered

1) A *building* classified as Group C is permitted to conform to Sentence (2) provided:
   a) except as permitted by Sentences 3.2.2.7.(1) and 3.2.2.18.(2), the *building* is *sprinklered* throughout,
   b) it is not more than 6 *storeys* in *building height*, and
   c) it has a *building area*
      i) that is not limited if the *building* is not more than 2 storeys in *building height*,
      ii) not more than 12 000 m^2 if 3 *storeys* in *building height*,
      iii) not more than 9 000 m2 if 4 *storeys* in *building height*,
      iv) not more than 7 200 m2 if 5 *storeys* in *building height*, or
      v) not more than 6 000 m2 if 6 *storeys* in *building height.*

2) Except as permitted by Article 3.2.2.16., the *building* referred to in Sentence (1) shall be of *non-combustible construction*, and
   a) except as permitted by Sentence (3), floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 1 h,
   b) *mezzanines* shall have a *fire-resistance rating* not less than 1 h, and
   c) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.

3) In a *building* that contains *dwelling units* that have more than one *storey*, subject to the requirements of Sentence 3.3.4.2.(3), the floor assemblies, including floors over *basements*, which are entirely contained within these *dwelling units*, shall have a *fire-resistance rating* not less than 1 h but need not be constructed as *fire separations*.

Division C
Part 2 Administrative Provisions
2.2. Administration
2.2.9. Permits

2.2.9.8 Refusal to Proceed

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

Appellant
From the Appellants' submissions and testimony:

12. The proposed building is of non-combustible construction situated on a sloped site and has six storeys completely above ground level at the front of the building and three levels partially below ground. The three levels below ground contain storage areas, parking, and

residential suites. The principle entrance is at level four on the street-side of the building. The South and East sides of the building face a ravine.

13. The Appellants propose an alternative solution to use the construction requirements of Division B, Article 3.2.2.43. applicable to buildings up to six storeys and sprinklered, with a Group C major occupancy on a nine level building.

14. The basis of the alternative solution is that the portion of the building above grade on the West side, starting at Level 4, is considered for application of Division B, Article 3.2.2.43. applicable to buildings up to 6 storeys and Sprinklered, with a Group C major occupancy, and the three lower levels above grade on the East side are considered similar to basement levels. The building area for the application of Division B, Article 3.2.2.43 is based on the footprint of Level 4 and above and is less than 6000 m^2 as per Division B, Subclause 3.2.2.43.(1)(c)(v).

15. The alternative solution consists of the following components:

    a) The building is compartmentalized by a fire separation with a 4 hour fire resistance rating to fire separate the residential portion only on Levels 1-3 from the remainder of the building. The four-hour fire resistance rating of the wall and floor assembly is similar to a parking garage slab separation which would reduce fire exposure to adjacent spaces. Fire and smoke spread is limited to areas of the building that will not impede egress. The remaining floor assemblies and supporting members will have a one-hour fire resistance rating by the application of Division B, Article 3.2.2.43.

    b) Enhanced rating of the exit stairs provides a level of fire safety. The three lower levels of exit stairs are separated from the six upper levels of stairs by a four-hour fire resistance rating floor assembly. The stairs have independent access and are connected by a vestibule. During regular operation of the building, make-up air units provide corridor pressurization to the building while not delivering any air to the exit stairs. In the event the building's fire alarm is activated, the air delivered by the make-up air units is redirected, by a series of dampers, to the exit stairs only and not to the corridors. Emergency power is provided for the pressurized venting.

    c) Emergency responder access is through the principle entrance facing the street on level four. Emergency responder access is equivalent to a standard six storey building as emergency responders would climb a maximum of five levels to reach the uppermost residential level of the building and two storeys down to reach the lowest residential area, from the principle entrance. For occupant egress, the building performs like a six storey building where occupants travel a maximum of five storeys down or two storeys up to reach the exit level.

16. The building site is unique with some elevation drops of up to 35 feet (10.7 m) and has poor soil conditions similar to quicksand. Foundation piles (45 kg) were installed to support the weight of a 3.2.2.42 building.

17. In designing the building there could have been one big parking area reaching across the entire floor area of the lower levels from the street side to the ravine, this design utilizes the view of the ravine by incorporating residential suites facing the ravine.

18. The alternative solution separates the building into two separate components, but not two separate buildings. Through testimony, and when asked by the Appeal Panel, the Appellants indicated that the building is proposed as one building, that the four-hour fire resistance rating for the floor and wall assemblies are intended to compartmentalize the building; it does not separate it into two separate buildings as prescribed in Division A article 1.3.3.4. of the ABC 2006, where each portion of a building can be considered as a separate building if the building is divided by a firewall.

19. The proposed alternative solution reduces the overall weight by eliminating the requirement for two-hour fire resistance ratings in floor assemblies as per Division B, Article 3.2.2.42, it is less expensive to build, provides fire safety measures, and enhanced opportunity for design while demonstrating performance is equal to the application of the Division B provisions.

Respondent
From the Safety Codes Officer submissions and testimony:

20. The original building permit application was for a Division B, Article 3.2.2.42 Group C, Any Height, Any Area, Sprinklered building. During the plans examination stage of the permit application process, the Appellants expressed a concern with soil conditions on the building site and requested that the original permit be cancelled and that the Appellants would propose an alternative solution.

21. Upon review the Respondent determined that the proposed alternative solution did not clearly demonstrate compliance with the provisions of the ABC 2006.

22. Where portions of the proposed building are separated by vertical and horizontal fire separations, with the intention of creating separate fire compartments, the building must not exceed three storeys in building height and an unobstructed path of travel must be maintained. The municipality's fire rescue services are concerned with the path of travel to the proposed lower three storey portion and request compliance with the requirement for a two-hour fire resistance rating for floor assemblies and supporting elements as per Division B, Article 3.2.2.42.

23. The South facing portion of the building is adjacent to a forested area and has an asphalt walking path for access only, with a steep grade or potential retaining wall structure separating the path from the building face. This does not allow for firefighting access to the lower three floors on the South and East elevations.

24. The most significant difference between 3.2.2.43 and 3.2.2.42 is the requirement of floor assemblies and their supporting elements. Article 3.2.2.42 requires a minimum two hour fire

resistance rating. Additionally 3.2.2.42 allows for a building of any height /any area. The proposed structure in two phases would exceed the building area designated in 3.2.2.43. Proceeding under 3.2.2.43 may reduce the weight of the building structure by eliminating one layer of drywall and potentially reducing the weight of the concrete floor assemblies. However, there is an increased risk to occupants and to emergency responders.

25. A building permit was issued for the foundation portion of the building, using Division B, Article 3.2.2.42, and the remainder of the building permit was formally refused. Progress on the foundation and parkade was allowed to continue, enabling the project to remain on schedule.

26. The respondent conducted research and was unable to locate any buildings in North America constructed with features similar to those proposed by the Appellants' alternative solution. No evidence is available to confirm the performance level of the proposed alternative solution will match the expectations under the current provisions of Division B of the ABC 2006. A building classified and constructed under Article 3.2.2.42 has proven, through product and assembly testing over time, to perform in a manner that will facilitate safe evacuation and allow emergency responders sufficient time to undertake their activities.

27. The proposed alternative solution does not adequately demonstrate compliance with the provisions of the ABC 2006.

28. The proper classification of the building is Group C, Any Height, Any Area, Sprinklered, Article 3.2.2.42 of the ABC 2006. It does not comply with the requirements of 3.2.2.43. of the ABC 2006. The building height is more than six storeys.

29. The building height is nine storeys when measuring from the floor of the first storey on the South and East facing elevations to roof level. Using the average grade level on the South elevation, the building height would be seven or eight storeys depending on the actual final landscaped grade level.

Reasons for Decision (Findings of Fact and Law):

The Appeal Panel makes the following findings:

30. The Appeal Panel finds that the proper classification of the building is 3.2.2.42. Group C, Any Height, Any Area, Sprinklered.

31. The Appellants propose an alternative solution to use the building code requirements of Division B, Article 3.2.2.43 (Group C, up to six storeys, sprinklered) on a Division B 3.2.2.42 building (Group C, any height, any area, sprinklered) by incorporating safety enhancements into portions of the fourth level floor assembly and walls and stairwells below.

32. The Appeal Panel finds that the proposed alternative solution and description of the proposed building presented by the Appellants does not satisfy the requirements of a Group C, up to six storeys, sprinklered building, nor does it provide an equivalent level of safety to a Group C, any height, any area, sprinklered (3.2.2.42.) building.

33. The Appeal Panel accepts the position of the Respondent that level four of the building is not the lowest of the average levels of finished ground adjoining each exterior wall of a building according to the definition of grade. The definition of grade defines the lowest ground level for the determination of building height. Constructing the principle entry of the building on the fourth level does not change grade and thus does not change the classification of the building.

34. The Appeal Panel finds that the first level of the building is the first storey of the building. The building is a single building from the uppermost floor level to the lowest level, in accordance with the grade definition. The lowest level exposed on the East side of the building is the first level.

35. An alternative solution is required to provide equivalencies to Division B and the Appellants' proposal does not provide equivalences to grade for building height classification. Further, the proposal diminishes the life safety building code requirements in the upper levels of the building by not incorporating a two hour fire resistance rating in the floor assemblies.

36. The alternative solution proposes enhanced compartmentalization of the building, but does not provide equivalency for the measures required for a Division B, 3.2.2.42. building.

37. The Appeal Panel does not accept the Appellants' position that the three lower levels are parking areas. These levels vary in height above grade, are part of the entire building, are not separated by a firewall, and contain residential occupancy. The three lower levels are not singularly a storage garage. Further, even as a storage garage, the grade and storey definitions would apply.

38. The design of the East and South sides of the building includes residential suites on the first three levels. The surrounding area south of the building is a forested area, with a ravine and pathway that does not provide access for emergency responders for firefighting on the South side of building. There is no street access for firefighting equipment on the East and South sides of the building, causing an increased risk to occupant safety.

39. The Appeal Panel is concerned about the safety of the building occupants. The lower levels are not basement levels as they are not entirely contained below grade. All nine floor levels have the same fire exposure with no less risk of fire spreading from unit to unit.

40. The Appellants were asked by the Appeal Panel if their proposal was for two separate buildings divided by a firewall and the Appellants indicated that it was not. The Appeal Panel accepts the Appellants' testimony that it is not proposing that the building is two separate buildings.

41. Alternatively, if it were proposed that the building is two separate buildings, separated by a horizontal separation with six storeys above and four storeys below, the alternative solution proposal does not present any equivalencies for each portion of the building to be recognized independently nor does the proposal provide fire department access to both buildings.

42. The Appeal Panel notes that the Appellants propose sprinklering and fire suppression for the building. These measures are a requirement of both Division B classifications at issue, the 3.2.2.42. Group C, any height, any area and the 3.2.2.43. Group C, up to six storeys. Fire sprinkling and fire suppression are not enhanced measures proposed as part of an alternative solution; it is a requirement of both classifications.

43. The Appeal Panel also finds, based on Drawing A2 (The Record, item 8 f)) that the entire building area of 89,492 square feet exceeds 6000 m² on the first floor level and therefore could not be considered under Division B, 3.2.2.43.

Dated at Edmonton, Alberta this 21st day of October 2014

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Chair, Building Technical Council Appeal Panel