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# STANDATA variance 19-BCV-020(REV1)

## Building

### Structural Insulated Panels

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### Purpose

This variance allows for the use of Structural Insulated Panels (SIPs) in buildings constructed under Part 9 of the National Building Code – 2019 Alberta Edition (NBC(AE)).

### Discussion

SIPs are generally a sandwich-structured composite panel, consisting of an insulating layer of rigid core situated between two layers of structural board (OSB, MgO board, etc.), assembled to form the exterior of the building (walls, roof, floors, etc.). Currently SIPs are not a referenced product or system in the NBC(AE), which historically has created obstacles to the use of SIPs, other than by interpretation or variance provided by the authority having jurisdiction (AHJ). This variance is intended to provide the AHJ the guidance to accept the use of SIPs anywhere in Alberta, by applying a consistent set of criteria to achieve an acceptable degree of safety for the building occupants.

Persons responsible for ensuring a material, product, system or service meets the objectives of the NBC(AE) have several means available to assist them. These means vary from on-site inspection to the use of certification services provided by accredited third-party organizations. Where no recognized standard exists for measuring performance, the Canadian Construction Materials Centre (CCMC) provides a national evaluation service for new and innovative materials, products, systems and services that is recognized by provincial and territorial building regulatory bodies. CCMC evaluations provide confirmation that the product, material, system or service complies with the National Building Code of Canada (NBC).

Compliance with the NBC(AE) can be achieved by complying with the acceptable solutions of Division B, or by an alternative solution as provided in Section 2.3. of Division C.

Unless stated otherwise, all Code references in this STANDATA are to the National Building Code - 2019 Alberta Edition

Issued by the Provincial Building Administrator

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Sentence 1.2.2.1.(2) of Division A also permits an evaluation report issued by CCMC, a division of the National Research Council of Canada, to be used to determine compliance with the NBC(AE) requirements. CCMC-evaluated products are deemed to comply with the requirements of the NBC when designed and installed in conformance with the conditions and limitations stated in the evaluation report.

CCMC evaluations that determine compliance to the NBC are recognized as equivalent compliance to the NBC(AE) and applicable to previous Alberta Building Code editions. As a result, CCMC evaluations recognized by the Provincial Building Administrator do not require a variance issued by a safety codes officer or Administrator under the Safety Codes Act to be used or sold in Alberta.

Due to the complexity of constructing with SIPs that have not undergone the evaluation process by CCMC, Sentence 2.4.2.1.(9) of Division C allows the AHJ to require not only plans and specifications stamped/sealed by a registered professional, but also field reviews during the construction of the building, which also can apply to the in-factory fabrication work. While buildings subject to this STANDATA do not require full Schedules of Professional Involvement, letters with similar wording to that used in the Schedules can be used to confirm the registered professional is taking responsibility for the field review, and the applicable aspects of the project substantially comply with the registered professional's design that was submitted in support of the application for the building permit.

Sentence 2.2.10.9.(4) of Division C states a vendor or supplier shall ensure their materials meet the requirements of the NBC(AE). In the case of new and innovative products or materials for which no NBC(AE) requirement exists, the registered professional(s) is responsible for ensuring the product or material is capable of meeting an equivalent performance level to the prescriptive NBC(AE) requirements, through the alternative solution application process.

Information or an alternative solution presented to the AHJ when demonstrating compliance to the NBC(AE) includes, but is not limited to, the information provided in the Appendix A example.

## Code References

### Division A, Article 1.2.1.1. states:

#### 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

Note A-1.2.1.1.(1)(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 Note A-1.2.1.1.(1)(b)).

2) For the purposes of compliance with this Code as required in Clause 1.2.1.1.(1)(b), the objectives and functional statements attributed to the acceptable solutions in Division B shall be the objectives and functional statements referred to in Subsection 1.1.2. of Division B.

### Division A, Sentence 1.2.2.1.(2) states:

1.2.2.1. Characteristics of Materials, Appliances, Systems and Equipment

2) Evaluation reports issued by the Canadian Construction Materials Centre, National Research Council of Canada, or an organization approved by the *Provincial Building Administrator* may be used in determining compliance with the requirements of this Code.

**Division C, Sentences 2.2.10.9.(4) & (5) state:**

2.2.10.9. Responsibility for Compliance

4) Every vendor or supplier of materials and items used in the construction of a *building* shall ensure that the materials and equipment they advertise, display, sell, lease or otherwise dispose of meet the requirements of this Code.

5) The *designer* shall ensure that the plans and specifications comply with the requirements of this Code.

**Division C, Sentence 2.4.1.1.(1) (Note A 2.4.1.1.(1)) states:**

A-2.4.1.1.(1) Professional Design and Review. Section 2.4. applies to buildings referred to in

Sentences 2.4.2.1.(4) and (5) (for which the Acts governing the professions require registered professionals to be involved). Though not intended for use with other buildings (those not covered by Sentences 2.4.2.1.(4) and (5)), letters with similar wording to that used in the Schedules of Professional Involvement could be used to have various elements of the building verified.

**Division C, Sentence 2.4.2.1.(9) states:**

2.4.2.1. Professional Involvement General

9) If the size or complexity of a *project* may give rise to special safety concerns, the *authority having jurisdiction* may require

a) that all or part of the plans and specifications of a *building* be imprinted with a stamp or seal affixed by

- i) a *registered engineering professional* where engineering work is involved,
- ii) a *registered architectural professional* where architectural work is involved, or
- iii) both a *registered engineering professional* and *registered architectural professional*, and

b) that *field reviews* during construction of a *building* be performed by

- i) a *registered engineering professional* where *engineering work* is involved,
- ii) a *registered architectural professional* where *architectural work* is involved, or
- iii) both a *registered engineering professional* and *registered architectural professional*.

**Application**

Structural Insulated Panels (SIPs) forming an integral component for buildings constructed under Part 9.

**Variance**

This variance provides approximately equivalent or greater safety performance with respect to persons and property as provided for by the Safety Codes Act and the NBC(AE).

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Acceptance of SIPs are recognized provided the applicable conditions are met:

1. CCMC evaluations that state materials, products and systems for SIPs are in compliance with the NBC are recognized in Alberta as meeting the requirements of the NBC(AE) and do not require an alternative solution. SIPs must be used in accordance with the manufacturer's instructions and meet the conditions and limitations specified in the CCMC evaluation report. As part of this variance, provision of a CCMC evaluation report for the SIP to the AHJ is required to demonstrate compliance, along with the SIP installation being subject to the field inspections of the AHJ.<sup>(1)</sup>
2. Any other alternative means for compliance that does not rely on the CCMC evaluation process requires an alternative solution, presented in conformance with Section 2.3. of Division C of the NBC(AE). Due to the complexity involved, the alternative solution is required to be submitted by a registered professional, as described in Sentence 2.4.2.1.(9) of Division C—being responsible for ensuring a material, product, system or service meets the objectives of the NBC(AE). Sentence 2.4.2.1.(9) requires the plans and specifications be approved by a registered professional, and field reviews be conducted during construction as well.<sup>(1)</sup>
3. When a registered professional provides a design, review or verification required to demonstrate compliance to condition 1 and 2 of this variance: letters with similar wording to that used in the Schedules of Professional Involvement are provided to the Authority Having Jurisdiction to verify a registered professional is taking responsibility as noted in Division C, Note A 2.4.1.1.(1).

<sup>(1)</sup> Note: The use of SIPs may require the evaluation of one or more registered professionals to demonstrate compliance with condition 1 and 2 of this variance to address the materials, products, systems or service and installation, or if required, demonstrate the conditions and limitations specified in the CCMC evaluation report have been met. An evaluation or evaluations submitted by a registered professional shall be project specific.

This VARIANCE is applicable throughout the Province of Alberta.

**(APPENDIX A)**

Example of the requirements of a proposed alternative solution (Variance)

**Product, material, and use description, etc.**

- Structural Insulated Panels factory manufactured with wood/steel framing members and foam plastic insulation.
- Panels sizes (width, height and thickness)
- Panel's interior face and exterior face
- Factory-installed Foam Plastic insulation

**Supporting Documentation**

- Reference standards
- Testing Reports
- Design drawings/details/sections/connection and fastening specifications

**Information concerning any:**

- Limitations
- Special maintenance
- Operational requirements
- Including any building component commissioning

necessary for the alternative solution to achieve compliance with the NBC(AE) after the building is constructed.

**Code analysis**

Identifying 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 an NBC(AE) compliance assessment.

- NBC(AE) Part 3 and Part 9 Sections, Subsection, Articles identified for review
  - 3.1.5. Noncombustible Construction (all applicable Articles) noting the objective and functional statements
  - 3.1.7. Fire-Resistance Ratings (all applicable Articles) noting the objective and functional statements
  - 9.4 Structural Requirements (all applicable Articles) noting the objective and functional statements
  - 9.10 Fire Protection (all applicable Articles) noting the objective and functional statements
  - Section 9.25. Heat Transfer, Air Leakage and Condensation Control (all applicable Articles) noting the objective and functional statements

**Credentials**

- information about the qualifications of the person or persons taking responsibility for the design, and
- only one person shall submit a proposal on behalf of all parties involved in the project

This subject is discussed in further detail in “Recommended Documentation Requirements for Projects Using Alternative Solutions in the Context of Objective-Based Codes,” which was prepared for the CCBFC Task Group on Implementation of Objective-Based Codes and is available on NRC’s website at the following location:

[https://nrc.canada.ca/sites/default/files/2019-03/documentation\\_requirements.pdf](https://nrc.canada.ca/sites/default/files/2019-03/documentation_requirements.pdf)