Bulletin: Structural Engineering Requirement

Purpose

This bulletin has been created to clarify the District's requirements to engage a Registered Professional – Structural Engineer for Part 9 Simple building projects.

Simple buildings are classified as buildings regulated under Part 9 of the BC Building Code. These would include the following:

- Group C, residential occupancies (see Appendix Note A-9.1.1.1.(1) of Division B),
- Group D, business and personal services occupancies,
- Group E, mercantile occupancies, or
- Group F, Divisions 2 and 3, medium and low-hazard industrial occupancies.

Free Online access to the BC Codes can be found here: **BC Codes**

Background

Due to the increasing complexity of residential and commercial buildings, new building methods and the use of proprietary building components, the District has undergone a review of engineering requirements for simple buildings and structures related to the design and on-site reviews.

Reference and Authority:

- BC Building Code (BCBC) – Part 2 Administrative Provisions
- District of Peachland Building Bylaw No. 2273, 2020

Where the form and character of the Building or Property requires unique oversight, the District has the authority to request the involvement of a Registered Professionals (R.P.). Where a Registered Professional is involved, they will become responsible for the design and applicable field reviews in lieu of inspection audits carried out by the District.

Building Permit fees will be reduced depending on the type of project and R.P.'s involved. The District's role for the project or portion thereof having a R.P. turns to a monitoring only process to ensure field reviews for that discipline or coordination of the project is being adequately provided. This is accomplished by obtaining R.P. field review reports prior to inspection and in conjunction with the Letters of Assurance – Schedules A, C-A and Schedules B, and C-B's.

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Implementation

The following projects will trigger the involvement of a Structural Engineer registered to practice in BC:

BCBC Part 9 (Simple Buildings) Residential and Commercial:

- An engineer will be required to review the following **individual building components** including the transfer of that load to the foundations.
- **Where there are six (6) or more components listed below on one project then a Structural Engineer will be required to review the project in its entirety** (Structural Engineer of Record or SER), seal the drawings and provide a Letter of Assurance (Schedule B) for design and field reviews.

Six (6) or More Components Below require a Structural Engineer Review:

- Separate suppliers for Engineered floor system and associated beams & Engineered roof truss systems,
- Metal fasteners, brackets and other structural components not referenced in BCBC 9.23
- Structural members (including truss spans) exceeding 12.2m (40') are to be designed to Part 4 of the BCBC 9.4.1.1.
- Specified Loads for wall, floor and roof planes that exceed the limits stated within BCBC 9.4.2.1.(1)
- Live loads for floors that exceed 2.4kPa (50psf) BCBC 9.4.1.1. and BCBC Table 4.1.5.3.
    - **Note:** office and storage mezzanines are rated higher than 2.4kPa
- Footing designs such as examples below:
    - Potential high-water table
    - Poor soil conditions of less than 75kPA (1566 psf)
    - Supported joists exceed 4.9m (16.1ft) BCBC 9.15.3.3.(1)
    - Proximity to slopes or surcharging
    - Step footings exceeding 600mm (24") vertically or less than 600mm horizontally
    - Large point loads exceeding 6000 lbs
- Foundation(s) that exceed:
    - 3.0m (9.84ft) in unsupported height BCBC 9.15.4.2.(1),
    - Backfill heights greater than permitted in BCBC Table 9.15.4.2.-A or B
    - Or where there is potential surcharging
- Suspended Slabs
    - **Note:** A Building Envelope Consultant (Architect or Engineer) will be required for the Design and Field Review of the suspended slab membrane.

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- Floor spans exceeding 4.9m (16.1ft) in length BCBC 9.15.3.
- Tall walls in excess of BCBC Table 9.23.10.1.
    - 4.2m for interior or 3.6m for exterior, including non-structural demising walls between tenant spaces
- Loadbearing steel studs to be designed to Part 4 BCBC 9.24.1.1.(2)
- Multiple point loaded beams throughout the building or point loads on cantilevered areas
- Cantilevered areas exceeding 400mm (16”) for 2x8 floor joists; 600mm (24”) for 2x10 floor joists beyond their supports; or supporting floor loads from other storeys BCBC 9.23.9.9.
- Minimal interior partitions in combination with large exterior openings (open concept layouts)
- Heavy timber or log construction
- Load surcharges such as large heating and ventilation equipment
- Building methods or materials beyond the normal scope of Part 9 such as:
    - Structural Insulation Panels (SIPs)
    - Pre-Insulated Panel Systems (floor, wall, roof)
    - Cross laminated timber, etc.

Design Criteria

The Structural Engineer of Record (SER) should evaluate the combination of components which support the building’s self-weight (gravity) and the applicable live load based on occupancy, use of the spaces in the building and environmental loads such as wind (lateral) and snow.

Other Structures that may also require and Engineer:

Retaining Walls and Lot Grading

A Registered Professional (R.P.) is required for all retaining walls greater than 1.2m (48”) or where the earth works may create a surcharge hazard to a neighboring structure or is within an Environmentally Sensitive area (Riparian or steep slope hazard).

Glass Guards – Residential or Commercial Projects

Glass guard/handrail systems relying on the glass to form the major structural component of the railing system (topless guards) will be required to be designed and field reviewed by a Structural Engineer.

New Proprietary Building Products or Recycled Materials

New products not referenced within the code or other standards shall be reviewed by a R.P. certified to practice within British Columbia. The product specifications and limitations should be indicated on the product literature to be verified under local climatic conditions and Provincial Codes.

Third Party Agency testing such as Warnock Hersey, Quality Auditing Institute or the Canadian Construction Materials Centre can be used as part of the approval process. An **Alternative Solutions Request** may be required.

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Where the use of recycled materials or site produced products (site milled timber) may require the review of a R.P. to confirm conformity to standards set within the BC Building Code. An **Alternative Solutions Request** may be required.

Tenant Alterations including change of use (internal renovations)

Renovations to existing tenant spaces for Part 9 and Part 3 base buildings will require a structural engineer to review under Part 4 of the BC Building code:

- Structural modifications or creation of mezzanines
- Structural modifications or addition of floor levels
- Alterations proposing removal of loadbearing walls or beams
- New roof top mechanical units and addition of solar panels where additional loads to structure should be considered

Single Family Homes to Commercial Uses

Depending on the intended use, a structural engineer may be required to verify the floors and supporting elements to the changes in live loads.

Relocating Existing Homes

Prior to relocating homes or building within the District, a certified registered professional may be required to review the structure compliance with the current version of the Building Code.

Resources:

- GUIDE TO THE LETTERS OF ASSURANCE IN THE BC BUILDING CODE 2018 AND VANCOUVER BUILDING BY-LAW 2019 v6.1 Feb 11-22
- GEOTECHNICAL ENGINEERING SERVICES FOR BUILDING PROJECTS v2.1 Sept 22-2021
- DESIGNING GUARDS FOR BUILDING PROJECTS v2.0 Dec 11-2018

Please note: *Building Bulletins are prepared to provide convenient information for clients and should not be considered a replacement for reviewing the bylaw or associated legal documents. If there is any contradiction between this guide and relevant municipal bylaws and/or applicable codes, please refer to the bylaws and/or codes for legal authority.*

Contact Information

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