

## When is a Structural Engineer Required?

A guide to when Registered Professionals are required in relation to structural design for Simple building projects.

### Purpose

This Bulletin has been created to clarify the City's requirements to engaging 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.

### Background

Due to the increasing complexity of residential and commercial buildings, new building methods and the use of proprietary building components, the City 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 – Part 2 Administrative Provisions**
- **City of Penticton Building Bylaw 2018-01**

As where the form and character of the Building or Property requiring unique oversight, the City has the authority to request the involvement of a Registered Professionals (R.P.). Where an R.P. is involved they will become responsible for the design and applicable field reviews in lieu of inspection audits carried out by the City. Building Permit fees will be reduced depending on the type of project and R.P.'s involved. The City'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 typically accomplished with obtaining R.P. field review reports in conjunction with the Letters of Assurance – Schedules A, C-A, and Schedules B, and C-B's.

### Implementation

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

#### 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 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 9.23 BCBC
- Structural members (including truss spans) exceeding 12.2m (40') are to be designed to Part 4 of BCBC
- Specified Loads for wall, floor, and roof planes that exceed the limits stated within 9.4.2.1(1) BCBC
- Live loads for floors do exceed 2.4 kPa (50 psf)
  - 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) 9.15.3.3(1)
  - proximity to slopes or surcharging,
  - step footings exceed 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 (9.15.4.2.(1),
  - Backfill heights greater than permitted in Table 9.15.4.2.
  - Or where there is potential surcharging
- Floor spans exceeding 4.9m (16.1ft) in length
- Tall walls in excess of 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 9.24.1.1 (2)
- Multiple point loaded beams throughout the building or point loads on cantilevered areas.
- Cantilevered areas exceeding 600 m/24"
- 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,
  - Structural Insulation Panels (SIPs), 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 an 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 neighbouring structure or is within an Environmentally Sensitive area (Riparian or steep slope hazard).

Please refer to Building Bulletin 12-05 Retaining Wall Requirements

## **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.

Refer to [Building Bulletin No13-03 Glass Guardrail for Part 9 Buildings](#)

## **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 \(CCMC\)](#) can be used as part of the approval process. An [Alternative Solution Request](#) may be required.

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 Solution 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 structural engineer to review under Part 4 BCBC

- Structural Modifications or creation of mezzanines
- Structural modification 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 the intended use, a structural engineer maybe required to verify the floors and supporting elements to the changes in live loads.

Refer to [Building Bulletin No. 15-08 House Conversions](#)

## **Relocating Existing Homes**

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

Have questions? We're here to help. Please contact the Building Department at 250-490-2501 or [buildinginfo@penticton.ca](mailto:buildinginfo@penticton.ca) for more information.

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