
When is a Structural Engineer Required?

A Guide to When Registered Professionals are Required in Relation to Structural Design for Simple Building Projects

November 1, 2022 Bulletin No. 22-02 Revised:

Purpose

This bulletin has been created to clarify the City's requirements to engaging a registered professional - structural engineer for Part 9 Standard building projects.

Standard 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
- 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 reviewed engineering requirements for standard buildings and structures related to the design and on-site reviews.

Reference and Authority:

- BC Building Code - Part 2 Administrative Provisions
- City of Kamloops Building Bylaw No. 11-80

Where the form and character of a building or property requires unique oversight, the City has the authority to request the involvement of a registered professional. 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 City. Building permit fees will be reduced depending on the type of project and registered professional involved. The City's role for the project or portion thereof having a registered professional 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 registered professional field review reports in conjunction with the Letters of Assurance - Schedules A, C-A, and Schedules B, and C-Bs.

Implementation

The following projects will trigger the involvement of a structural engineer registered to practice in BC:

Part 9 (Standard 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 or more **components listed** below on one project, a structural engineer will be required to review the project **in its entirety** as the structural engineer of record, seal the drawings, and provide letter of assurance (Schedule B) for design and field reviews.

Six or More Components Below Require a Structural Engineer Review

- Separate suppliers for engineered floor system and associated beams and engineered roof truss systems
- Metal fasteners, brackets, and other structural components not referenced in 9.23 BCBC
- Structural members (including truss spans) exceeding 12.2 m (40 ft.) are to be designed to Part 4 of the BC Building Code
- Specified loads for wall, floor, and roof planes that exceed the limits stated within 9.4.2.1(1) of the BC Building Code
- Live loads for floors that exceed 2.4 kPa (50 psf)
 - Note: Office and storage mezzanines are rated higher than 2.4 kPa
- Footing designs, such as examples below:
 - potential high water table,
 - poor soil conditions of less than 75 kPa (1,566 psf)
 - supported joists exceed 4.9 m (16.1 ft.) (9.15.3.3[1])
 - proximity to slopes or surcharging
 - step footings exceed 600 mm (24 in.) vertically or less than 600 mm horizontally
 - large point loads exceeding 6,000 lb
- foundation(s) that exceed
 - 3.0 m (9.84 ft.) in unsupported height (9.15.4.2.[1])
 - backfill heights greater than permitted in Table 9.15.4.2
 - where there is potential surcharging
- Floor spans exceeding 4.9 m (16.1 ft.) in length
- Tall walls in excess of Table 9.23.10.1
 - 4.2 m for interior or 3.6 m for exterior, including non-structural demising walls between tenant spaces
- Load-bearing steel studs (9.24.1.1 [2])
- Multiple point-loaded beams throughout the building or point loads on cantilevered areas
- Cantilevered areas exceeding 600 mm (24 in.)
- 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, cross-laminated timber, etc.

Design Criteria

The structural engineer of record should evaluate the combination of components that 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. City of Kamloops specific climatic data can be found within the Kamloops Building Bylaw.

Other Structures That May Also Require an Engineer

Retaining Walls and Lot Grading

A registered professional is required for all retaining walls greater than 1.2 m (48 in.) or where the earthworks 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 TBD.

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 No 22-05 Glass Guardrail for Part 9 Buildings.

New Proprietary Building Products or Recycled Materials

New products not referenced within the BC Building Code or other standards shall be reviewed by a registered professional. 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 solution request](#) may be required.

Where the use of recycled materials or site produced products (site-milled timber) may require the review of a registered professional 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 of the BC Building Code:

- Structural modifications or creation of mezzanines
- Structural modification or addition of floor levels
- Alterations proposing removal of loadbearing walls or beams
- New rooftop 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 that the floors and supporting elements can support the changes in live loads.

Refer to Building Bulletin No. TBD

Relocating Existing Homes

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

Have questions? We're here to help. Please contact the Building Inspection Section at 250-828-3554 or building@kamloops.ca for more information.