Bulletin No. 13-03 Revised: Oct 26, 2026

GLASS GUARD REQUIREMENTS

Design requirements related to Part 3, 4 & 9 of the BC Building Code

Purpose

The purpose of this bulletin is to outline the building permit submission requirements for guards that incorporate glass in their design for commercial and residential applications as outlined in Part 4 and Section 9.8 of the BC Building Code.



All guards shall be designed to withstand loads specified in Section 4.1.5.14. (Loads on Guards and Handrails) of the BC Building Code for Part 3 buildings or 9.8.8.2. for Part 9 buildings (including houses). Where glass is a structural element in a guard, the structural redundancy requirement for guards without the top rails under CAN/CGSB-12.20-M, (Structural Design of Glass for Buildings) does apply.

Owners and or Contractors shall be responsible for ensuring documentation is provided at the time of permit plan review, or prior to the installation of the guards.

Case #1 - Manufactured Aluminum/wood with glass infill panels

Where a guard systems with infill glass panels is proposed, Applicants shall provide the Manufacturer's sealed engineering designs showing loading conformance to BCBC Table 9.8.8.2. (Specified Loads for Guards). These are typically sealed engineered designs which set limits on their use and provide installation details for installers.

Case #2 - Custom glass guard systems (free standing with structural top rail)

Where a guard with glass used as a structural element with a top rail is proposed, Applicants shall submit sealed structural design drawings and a structural engineers Schedule B for the guard. A closing Schedule C-B and field reports are required prior to Occupancy Inspection. The custom top rail in these designs must provide the minimum required guard rail loading without the support of the glass panels as required by CAN/CGSB-12.20-M, (Structural Design of Glass for Buildings).

Case #3 - Custom glass guard systems (no structural top rail)

Where a topless glass guard rail systems is proposed, an Alternate Solution application from a structural engineer is required. The City's Alternative Solution Request Package can be found on the City of

Penticton's Building Department webpage under Applications and Forms or at Development Services counter at City Hall.

ASSURANCE OF PROFESSIONAL DESIGN (Schedule B's)

Where Schedule B's are required, as in case #2 and #3, the sealed design drawings must specifically note that the following Building Code regulations and other design requirements are met by the submitted design.

- 9.8.8.2 Loads on Guards
- 9.8.8.3 Height on Guards
- 9.8.8.5 Openings in Guards
- 9.8.8.6 Design of Guards to Not Facilitate Climbing
- 9.8.8.7 Glass in Guards - including the glass guard complies with the structural redundancy requirement without the top rails. (CAN/CGSB-12.1-"Tempered or Laminated Safety Glass")
- 9.6.1.3 Structural Sufficiency of Glass and CAN/CGSB-12.20-M, "Structural Design of Glass for Buildings

Non Compliance

Glass guard/handrail assemblies that cannot be shown to meet these standards are to be removed or remediated to meet structural standards under supervision of a Structural Engineer. On-site installations that vary from the original design/install specification will require a review from a Structural Engineer and non-occupancy of the deck or other building areas until installation confirmation is received.

Background Information



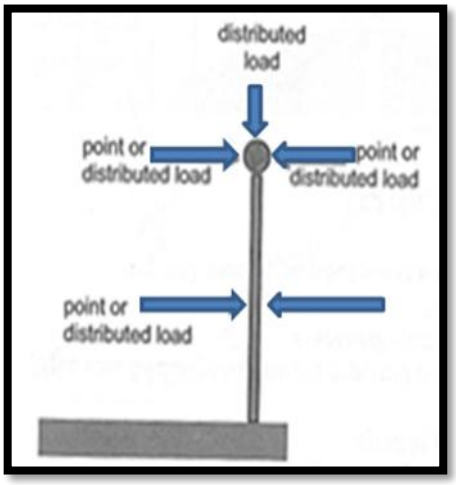
Typical Residential Guard

Glass Guardrail Systems

The use of glass guardrail systems has been increasing for a number years and has led to questions on the structural integrity of the glass and rail components as well as impact resistance to objects both horizontally and vertically. Glass is a strong material but is very brittle and must be designed to meet structural loads and have redundancy of fail-safe load transfer. Failure of the glass can result in instantaneous failure resulting in no protection for a fall hazard.

Concerns with Structural failures when glass is used as a structural component:

- No top rail to resist vertical & horizontal impacts.
- Tempered glass fails instantaneously into many blunt pieces.
- Manufacturing of glass can include imperfections in the glass, which can expand and cause the glass to fail.
- Design and installation of framing brackets to ensure adequate support.



Load Diagram

Loads within the BCBC are expressed in kN or kN/m (kilo Newton metre) in simple terms this is a quantity very similar to 100Kg (220lb) of pressure per metre length. If for example it is stated that there is 1.0kN/m it will be approximate the equivalent of one person weighing 100kg(220lbs) putting their full weight on one metre length.

There are two basic loads that are required to be met; (a) loading on the handrail and (b) loading on the infill. The loading on the handrail is called a "uniformly distributed line load". (Basically, meaning that the load needs to be calculated in a fashion that allows for even distribution of the pressure along the complete length of the element, as opposed to the sum of the load applied to one point). The load on the infill, be it glass, metal, or other, is tested and calculated in two separate ways; a distributed load and a "point load". This means the infill of the railing, balustrade or barrier must be able to stand an evenly distributed pressure as well as a concentrated pressure on a small point.

2024 British Columbia Building Code References

9.6.1.3. Structural Sufficiency of Glass

1) Except as provided in Sentence (3), glass shall be designed in conformance with

a) CAN/CGSB-12.20-M, "Structural Design of Glass for Buildings," or

b) ASTM E1300, "Standard Practice for Determining Load Resistance of Glass in Buildings." (See also Article 4.3.6.1.)

2) Reserved.

3) Individual panes of glass conforming to Table 9.6.1.3. that are used in doors need not comply with Sentence (1).

9.8.8.7. Glass in Guards

1) Glass in *guards* shall be

a) safety glazing of the laminated or tempered type conforming to CAN/CGSB-12.1, "Safety Glazing" or

b) wired glass conforming to CAN/CGSB-12.11-M, "Wired Safety Glass."

9.8.8.2. Loads on Guards

(See Note A-9.8.8.2.)

1) Except as provided in Sentences (2) , (3) and (5), *guards* shall be designed to resist the specified loads prescribed in Table 9.8.8.2.

Table 9.8.8.2.
Specified Loads for Guards
Forming Part of Sentence 9.8.8.2.(1)

Location of *Guard*	Minimum Specified Loads		
	Horizontal Load Applied Inward or Outward at any Point at the Minimum Required Height of the *Guard*	Horizontal Load Applied Outward on Elements Within the *Guard*, Including Solid Panels and Balusters	Evenly Distributed Vertical Load Applied at the Top of the *Guard*
Guards within *dwelling units* and exterior *guards* serving not more than two *dwelling units*	0.5 kN/m OR concentrated load of 1.0 kN applied at any point (1)	0.5 kN applied over a maximum width of 300 mm and a height of 300 mm (2)	1.5 kN/m
Guards serving access ways to equipment platforms and similar areas where the gathering of many people is improbable	Concentrated load of 1.0 kN applied at any point	Concentrated load of 0.5 kN applied over an area of 100 mm by 100 mm located at any point on the element or elements so as to produce the most critical effect	1.5 kN/m
All other *guards*	0.75 kN/m OR concentrated load of 1.0 kN applied at any point (1)	Concentrated load of 0.5 kN applied over an area of 100 mm by 100 mm located at any point on the element or elements so as to produce the most critical effect	1.5 kN/m

Notes to Table 9.8.8.2.:
(1) The load that creates the most critical condition shall apply.
(2) See Sentence (3).