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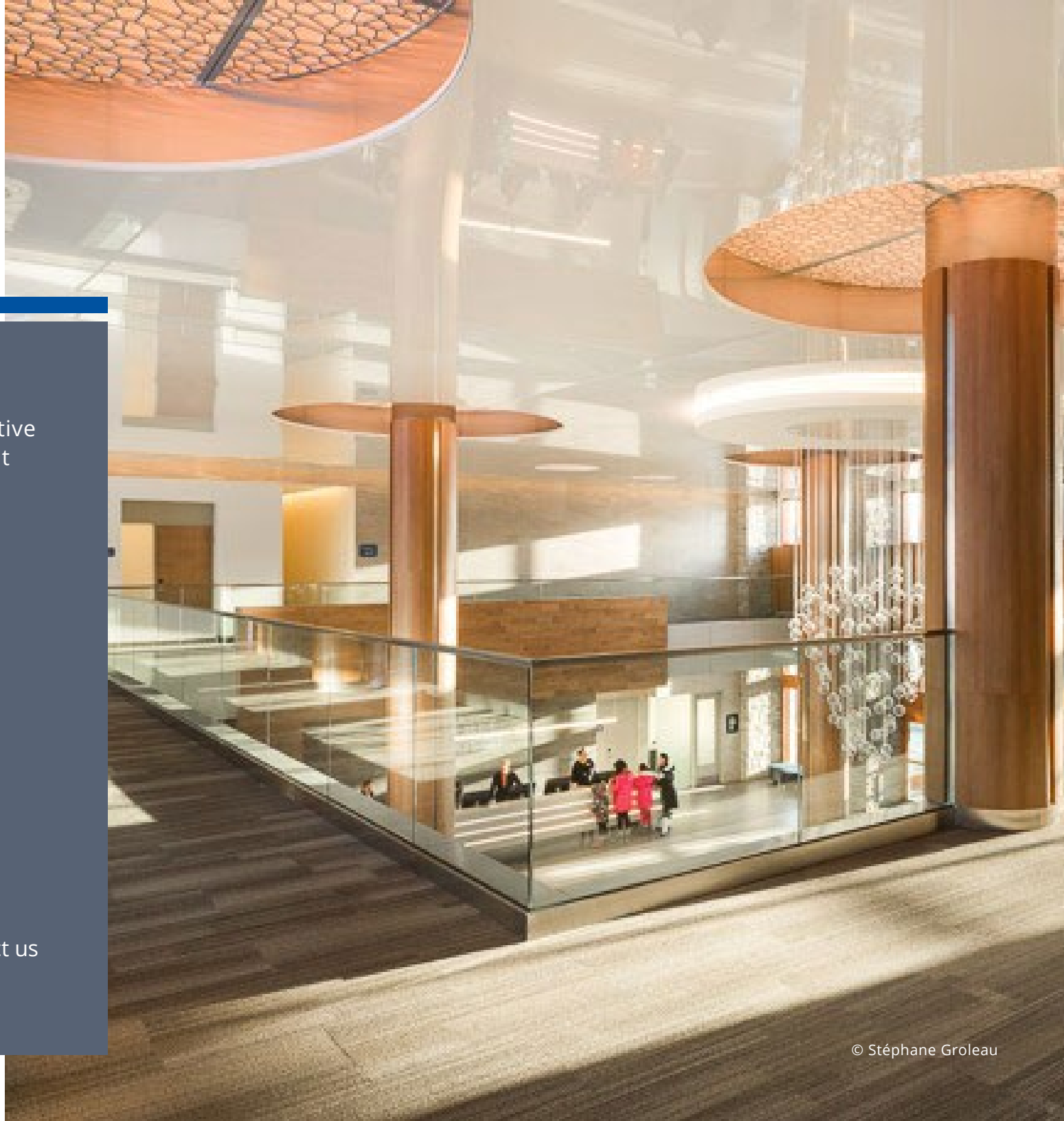
Architectural

A Novatech Group Company 

RAILING

Used as a protective barrier to prevent accidental falls

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BUILDING GUARDS

CSA-A-500 defines building guards as a protective barrier used to prevent accidental falls from one level to another.

HISTORY

Following events of spontaneous breakage of glass panels on balconies in Toronto in 2011, the Ontario government tightened regulations with regard to glass used as railings (90BC SB-13 STANDARD). Subsequently, the CSA-500 standard was developed. Published in 2016, although it is still not yet referenced in the code it should be considered as a set of good practices.

SCOPE

According to 1.1

“This Standard specifies requirements for the materials, design, construction, testing and performance of building guards.

Notes (1)

1. Including walls acting as guards.
2. Guards can be with or without openings, around openings in floors, or at the open sides of stairs, landings, balconies, mezzanines, galleries, raised walkways, or other locations.”

In section 4, the standard set minimum guard height for various locations in accordance with the NBC. Minimum guard height shall be measured from the surface the guard is intended to protect. For walls acting as guards, guard height shall be measured from the top of the finished floor. In addition, it specifies that the elements must be designed in such a way as to prevent them from being climbed.

Table 4.1 - Minimum guard height, Hc (See Clauses 4.1.9.1 and 5.5.1.7)

Location	Minimum height of the guard Hg, mm	
Residential (per NBC Articles 3.3.4.7 and 9.8.8.3)	Withing dwelling units	
	Exterior guards not more than 1800mm above ground level	900
	Flights of stairs, except exit stairs	
	All other residential guards	1 070
Exterior stairs and landing more than 10 m above ground level (per NBC Articles 3.4.6.6 and A-9.9.8.1)	1 500	
Fire escapes (per NBC Article 3.4.7.6)	920	
All other guards (per NBC Articles 3.3.5.4 and 3.3.1.18)	1 070	

SCOPE

Section 6 Materials used for guards and their components

6.3.1.2.2 ⁽¹⁾

“Except for walls acting as guards, glass used in guards that protects a level more than 4.2 m above the adjacent level shall be in accordance with Table 6.1 Selection of monolithic versus laminated glass configuration (glass and interlayer types; i.e., annealed, heat strengthened, or fully tempered glass and soft versus stiff interlayer) shall be determined based on engineering analysis combined with risk assessment. Tempered-tempered laminated glass shall only be used in combination with a stiff interlayer.

Notes

1. Wired glass is not considered safely glass.
2. A stiff interlayer is defined as one with a minimum Young's Modulus of 300 MPa in accordance with ASTM D5026.
3. The selection of the type of glass for an insulated or monolithic laminated assembly for walls acting as guards in either exterior or interior applications (e.g., windows, window walls, curtain walls, structural glass) requires risk assessment and structural analysis and is not covered in this Standard.”

Table 6.1 - Type of glass based on guard location (see Figure 6.1) (See Clause 6.3.1.2.2)

Condition	Location of glass in guard	Type of glass
1	Glass located beyond the edge of a floor or within 50 mm from the outside edge of the area protected by the guard	Laminated glass
2	Glass located more than 50 mm inward from the outside edge of the area protected by the guard	Laminated glass
		Heat soaked tempered glass
3	Glass located more than 150 mm inward from the outside edge of the area protected by the guard	Laminated glass
		Heat soaked tempered glass
		Tempered glass

According to this table, the glass type will be in accordance to the location of the glass in the guard.

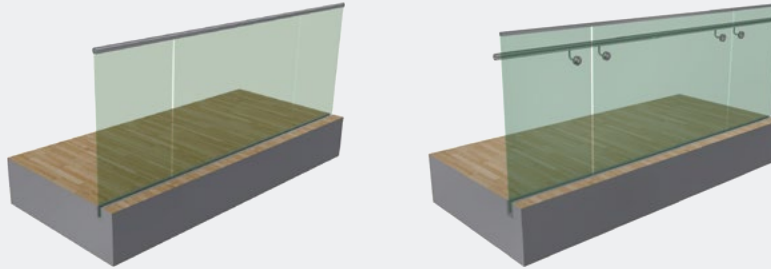
**Condition 1
LAMINATED GLASS REQUIRED**

Glass located beyond the edge of a floor or within 50 mm from the outside edge



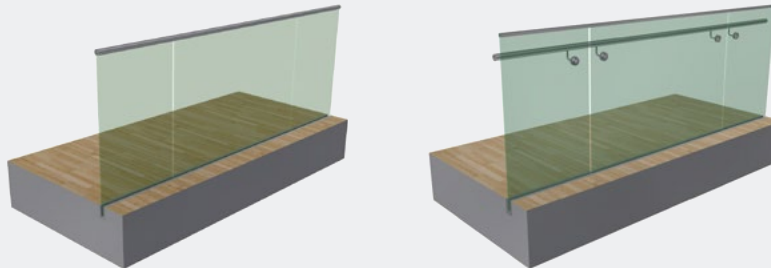
**Condition 2
LAMINATED GLASS OR HEAT SOAK
TEMPERED GLASS**

Glass located more than 50 mm inward from the outside edge of the area Protected by the guard



**Condition 3
LAMINATED GLASS OR HEAT SOAK
TEMPERED GLASS OR TEMPERED GLASS**

Glass located more than 150 mm inward from the outside edge of the area protected by the guard



Additional Conditions:

Condition 6.1.3.1.2.2 : Laminated tempered-tempered glass, must be laminated with a rigid interlayer.

The glass thickness selection must be made in accordance to a calculation of load based on a risk coefficient. We recommend consulting an engineer.

1 CSA A-500(16) Building guards