Tredsafe®

THE EDGE ON SAFETY

NEW ZEALAND BUILDING CODE

In relation to Tredsafe

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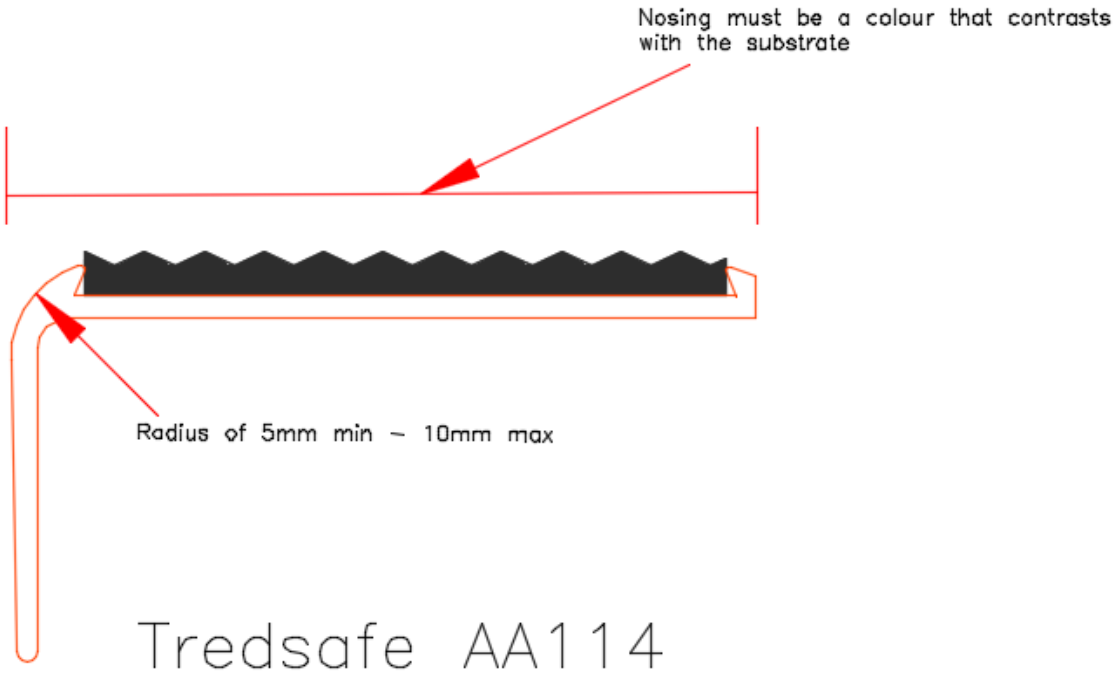
NZBC Summary

In relation to Tredsafe

Stair nosing compliances: NZS 1421:2001 Design for Access and Mobility

- Leading edges of treads or nosings (if any) on accessible stairways shall Be rounded to avoid a sharp edge and;
- Be colour contrasted with the rest of the tread.

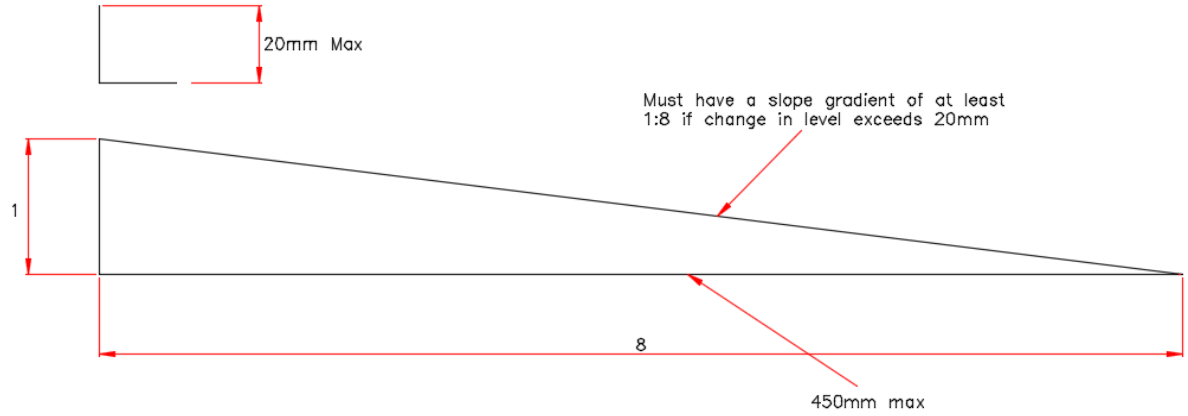


Compliant nosings: All of our nosings comply when the correct insert is used

Refer to appendix A for additional information.

Change in level compliances: NZS 1421:2001 Design for Access and Mobility

- When a change in floor level occurs at an entrance the maximum vertical transition allowed is 20mm; anything above 20mm must have a ramp with a 1:8 gradient slope with a maximum run/going of 450mm.



Complying Detail trims: Because there is limited detail around this compliance there is no reference to flooring transisition as such, referencing any of our detail trims would make no sense.

Refer to appendix B for additional information.

Fire Resistance Compliences: NZBC Clause C3-Fire affecting areas beyond the fire source

- Floor surface materials in certain areas of buildings must meet the performance criteria specified on table F in appendix C.

Refer to appendix C for additional information

Slip Resistance Compliences: NZS 1421:2001 Design for Access and Mobility

- If a stair tread (Run) has a glazed or polished surface they must have a nosing with anti slip properties no less than 50mm wide. (See appendix D, table 2, note 3)

Refer to appendix D for additional information

Means of egress Compliences: NZBC Clause F6 visibility in escape routes

This requirement does not apply to Detached Dwellings, household unit within Multi-unit Dwellings, Outbuildings, Back country, or Ancilliary buildings.

- *Specified features* in escape routes must be made *reasonably visible* by lighting systems, other systems, or both, during failure of main lighting.
- Visibility systems must operate to certain percentages of their design levels within a given time time in certain locations.
- Visibility systems must operate for a certain amount of time based on the risk group the building falls into.

Refer to appendix E for additional information

Appendices

A. NZS 1421:2001 Design for Access and Mobility

4.1.7 Leading edges of treads or nosings (if any) on accessible stairways shall:

a) Be rounded to avoid a sharp edge (see Figure 13), and

b) Be colour contrasted with the rest of the tread.

Figure 12: Measurement of Rise and Tread Depth
Paragraphs 4.1.2 and 4.1.6

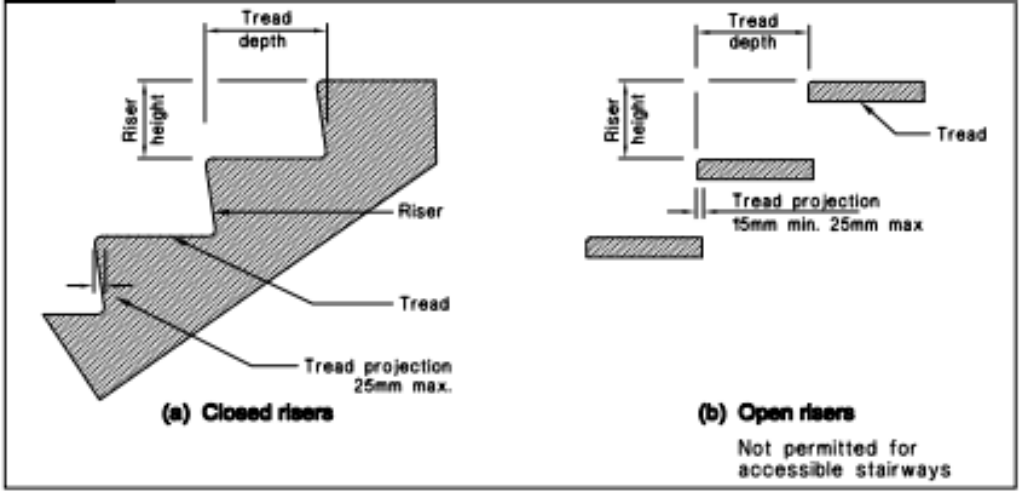
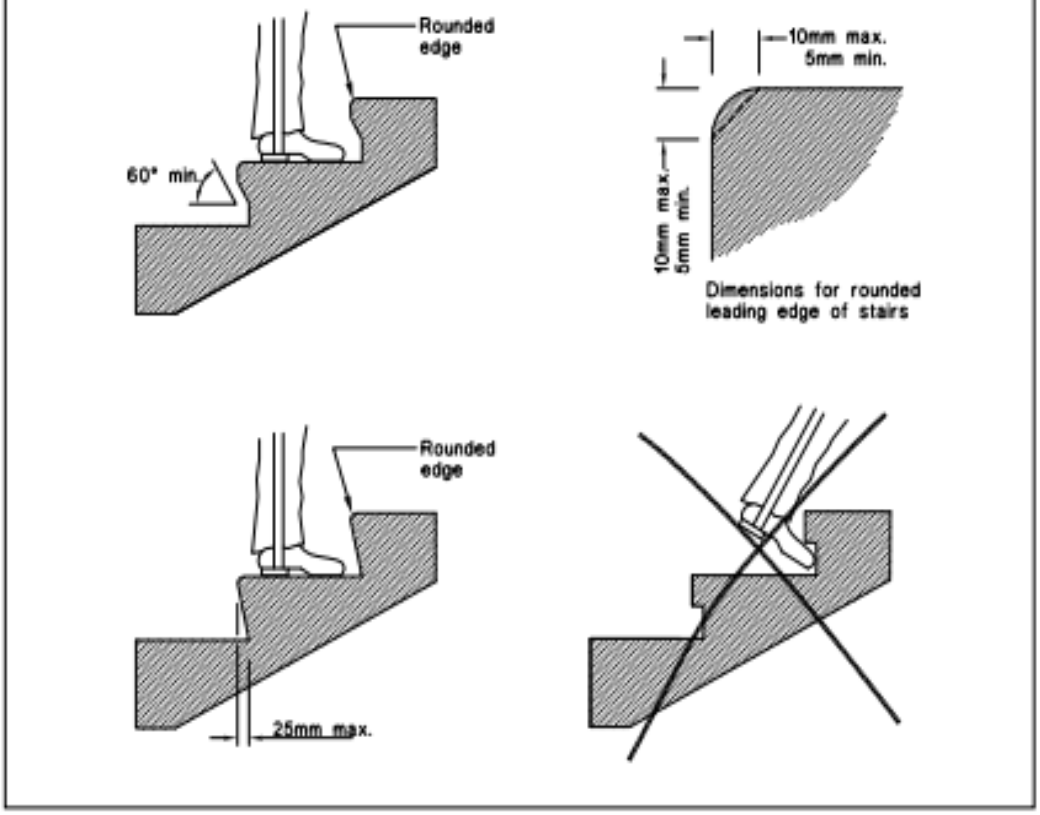


Figure 13: Accessible Stairway Projections
Paragraph 4.1.7



B. NZS 1421:2001 Design for Access and Mobility

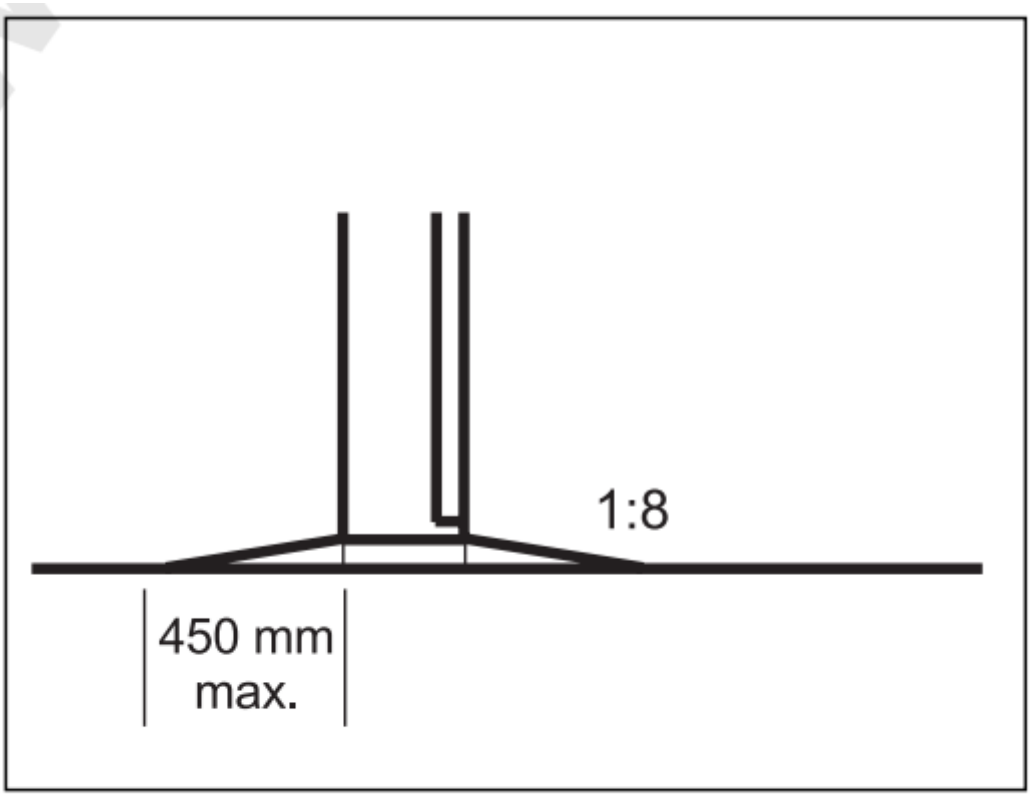


Figure 17 – Threshold ramp

7.1.4 Thresholds

Accessible entrances to a building or premises or to rooms within the premises shall have a level threshold. If a stepped threshold is necessary it shall be designed as follows.

7.1.4.1 Stepped thresholds

When a stepped threshold is required and the change in level is 20 mm or less, no ramp is required. A strong visually contrasted strip shall be incorporated that is effective when approaching from either direction.

7.1.4.2 Ramped thresholds

If the change in level is greater than 20 mm a ramp is required which shall have a gradient not steeper than 1 in 8 and a going of not more than 450 mm (see figure 17).

C. NZBC Clause C3-Fire affecting areas beyond the fire source

Floor surface materials in the following areas of buildings must meet the performance criteria specified below:

Table F

Area of *building*	Minimum critical radiant flux when tested to ISO 9239-1: 2010	
	***Buildings* not protected with an automatic *fire* sprinkler system**	***Buildings* protected with an automatic *fire* sprinkler system**
Sleeping areas and exitways in *buildings* where care or detention is provided	4.5 kW/m^2	2.2 kW/m^2
Exitways in all other *buildings*	2.2 kW/m^2	2.2 kW/m^2
Firecells accommodating more than 50 persons	2.2 kW/m^2	1.2 kW/m^2
All other occupied spaces except *household units*	1.2 kW/m^2	1.2 kW/m^2

D. NZS 1421:2001 Design for Access and Mobility

4.0 Stairways

4.1.4 Stair treads – Acceptable stair treads (see Figure 11) have:

a) A tread depth of no less than that specified in Table 6,

b) A level surface,

c) Slip resistant surfaces complying with Table 2.

Comment:

1. Adequate tread depth is essential for stair way safety. Analysis of stair way related accidents shows that overstepping of treads is a common cause of accidents.

2. Glazed or polished surfaces are normally unsuitable for stair treads unless the stairs are fitted with slip resistant nosings. (See Table 2, Notes 3 and 7.)

Table 2

Table 2: Acceptable Slip Resistance for Walking Surfaces
Paragraphs 2.1.2, 3.1.4 and 4.1.4 c)

Walking surface[12]	Level surface[1]		Sloping surface[2] or stairs[3]		Typical values for coefficient of friction (wet)
	Acceptable dry slip resistance	Acceptable wet slip resistance	Acceptable dry slip resistance	Acceptable wet slip resistance	
Timber					
Uncoated smooth	Yes	No	No	No	0.20 – 0.35
Uncoated profiled[4]					
– across profile	Yes	Yes	Yes	Test	0.35 – 0.60
– along profile	Yes	No	No	No	0.15 – 0.20
Coated (paint, polyurethane, etc)	Yes	No	No	No	0.10 – 0.30
Coated and sand/grit impregnated[5]	Yes	Yes	Yes	Yes	0.55 – 0.90
Portland cement concrete					
Smooth trowelled finish (Class U3)[6]	Yes	No	Yes	No	0.30 – 0.45
Broomed (Class 5 or 6)[6] or wood float finish (Class U2)	Yes	Yes	Yes	Yes	0.65 – 0.85
Coated (paint, polyurethane, etc)	Yes	No	No	No	0.20 – 0.30
Coated and sand/grit impregnated[5]	Yes	Yes	Yes	Yes	0.55 – 0.90
Exposed aggregate finish					
– rounded aggregate	Yes	Test	Yes	Test	0.40 – 0.70
– crushed aggregate	Yes	Yes	Yes	Yes	0.60 – 0.90
Asphaltic concrete	Yes	Yes	Yes	Yes	0.60 – 1.00
Marble and granite					
Polished surface[7]	Yes	No	No	No	0.10 – 0.20
Honed finish[8]	Yes	Test	Yes	Test	0.10 – 0.60
Flamed finish	Yes	Yes	Yes	Yes	0.50 – 0.80
Fully sandblasted surface[8]	Yes	Test	Yes	Test	0.30 – 0.50
Patterned sandblasted surface	Yes	Test[9]	Yes	Test[9]	0.15 – 0.45
Split slate	Yes	Test	Yes	Test	0.40 – 0.55
Terrazzo					
Polished	Yes	Test	No	No	0.15 – 0.45
Honed	Yes	Test	Yes	Test	0.20 – 0.60
Sandstone	Yes	Yes	Yes	Test	0.55 – 0.65
Ceramic tiles					
Unglazed					
– smooth finish	Yes	Test	Yes	Test	0.10 – 0.60
– profiled	Yes	Test[9]	Yes	Test[9]	0.10 – 0.65
– grit finish	Yes	Test[10]	Yes	Test[10]	0.35 – 0.65
Glazed					
– smooth or polished finish[7]	Yes	No	No	No	0.10 – 0.20
– profiled	Yes	Test[9]	Yes	Test[9]	0.10 – 0.45
– grit finish	Yes	Test[10]	Yes	Test[10]	0.45 – 0.60
Clay pavers					
Wire cut	Yes	Yes	Yes	Test	0.50 – 0.70
Smooth texture	Yes	Test	Yes	Test	0.30 – 0.65

Concrete pavers					
Dry press concrete	Yes	Yes	Yes	Test	0.45 – 0.70
Interlocking concrete block paving[11]	Yes	Yes	Yes	Test	0.45 – 0.70
Moulded surface (e.g. simulated slate or concrete cobbles)	Yes	Test	Yes	Test	0.35 – 0.75
Compressed fibre-cement sheet					
Uncoated	Yes	Yes	Yes	Test	0.45 – 0.65
Coated (paint, polyurethane, etc)	Yes	No	No	No	0.10 – 0.30
Coated and sand impregnated[5]	Yes	Yes	Yes	Yes	0.55 – 0.90
Rubber tiles/sheeting					
Smooth	Yes	Test	Yes	Test	0.20 – 0.60
Profiled	Yes	Test[9]	Yes	Test[9]	0.35 – 0.60
Vinyl and linoleum					
Smooth or with imprinted pattern	Yes	Test	Yes	No	0.25 – 0.50
Profiled (studs or ribs)	Yes	Test[9]	Yes	Test[9]	0.30 – 0.70
Grit/flaked finish	Yes	Test	Yes	Test	0.30 – 0.70
Carpet					
Tufted or loop pile[13]	Yes	Yes	Yes	Yes	0.55 – 0.70
Artificial turf[13]	Yes	Yes	Yes	Yes	0.65 – 0.80
Timber composites (chipboard, cork tiles, etc)					
Uncoated	Yes	No	Yes	No	0.35 – 0.45
Coated (paint, polyurethane, etc)	Yes	No	No	No	0.10 – 0.30
Coated and sand/grit impregnated[5]	Yes	Yes	Yes	Yes	0.55 – 0.90
Anti-slip tapes[14]	Yes	Yes	Yes	Test	0.40 – 0.85

Notes:

1. Level surfaces including surfaces with slopes no steeper than 1:50.
2. Sloping surfaces with slopes greater than 1:50 but less than 1:10 for wet conditions, or less than 1:8 for dry conditions.
3. Acceptability as shown is based on stair treads without slip resistant *nosings*. When testing stair treads without *nosings* acceptability for slip resistance from AS/NZS 3661.1 should be based on a slope of 1:10. With slip resistant *nosings* at least 50 mm wide, acceptability criteria for stair treads is based on the requirements for level surfaces.
4. Profile at right angles to direction of pedestrian traffic. Algal growth on uncoated timber walkways significantly reduces slip resistance when wet and requires regular removal, e.g. by high pressure waterblasting.
5. The sand/grit, which is sprinkled over the complete surface of the final paint coating, should be a hard angular material such as silica sand or calcined bauxite. The particle size should not be less than 0.2 mm so that it is not submerged by the coating and not greater than about 2 – 3 mm so that it remains tightly bound to the surface. If overpainted, testing is required to establish acceptability of slip resistance.
6. Concrete surface finishes complying with NZS 3114.
7. Glazed or polished surfaces are unsuitable in either wet or dry conditions for sloping surfaces or for stairs, even though test measurements may indicate adequacy, because of the effect of foot placement. Note also that when tested in the dry, very smooth surfaces can give anomalous high readings arising from slip-suction effects between the test slider and the test surface.
8. The coefficient of friction can vary significantly with the extent of surface preparation.
9. It is noted in AS/NZS 3661.1 that the slip resistance tests prescribed in that Standard may not be suitable for heavily profiled (or patterned) surfaces. The Standard references other tests which may be more suitable for such surfaces.
10. When the grit finish has a "feel" rougher than 80 grit sandpaper, the surface may be deemed to have acceptable wet slip resistance, for either level or sloping surfaces or for stair treads, without testing.
11. Interlocking concrete block paving to NZS 3116.
12. To meet durability requirements of NZBC B2, the surface should have at least a five year life under normal maintenance.
13. Validity of the listed typical values for coefficient of friction is uncertain as the test methods may not be applicable to carpets.
14. Anti-slip tapes will normally require regular replacement to remain effective. To ensure foot contact, tapes should be placed at right angles to the line of travel and be spaced at no more than 150 mm centres.

E. NZBC CLAUSE F6—VISIBILITY IN ESCAPE ROUTES

Provisions	Limits on application
OBJECTIVE F6.1 The objective of this provision is to help safeguard people from injury in escape routes during failure of the main lighting.	
FUNCTIONAL REQUIREMENT F6.2 Specified features in escape routes must be made reasonably visible by lighting systems, other systems, or both, during failure of the main lighting.	*Requirement F6.2 does not apply to Detached Dwellings, household units within Multi-unit Dwellings, Outbuildings, backcountry huts, or Ancillary buildings.*
PERFORMANCE F6.3.1 Specified features in escape routes must, when the systems for visibility are at their design level, be reasonably visible.	*Performance F6.3.1 does not apply to specified features in the initial 20 metres of an escape route if the risk of injury, or impediment to movement of people, due to the specified features not being visible is low (for example, because people are familiar with the escape route, the escape route is level, and people do not require assistance to escape).*
F6.3.2 The systems for visibility must operate to the following percentages of their design levels within the following times after failure of the main lighting: (a) 80% in 0.5 seconds in locations (examples of which are given by performance F6.3.3) where there is a high risk of injury due to delay in operation of the systems for visibility; and (b) 10% in 0.5 seconds, and 80% in 30 seconds, in stairs and in locations that are unfamiliar to users; and (c) 10% in 20 seconds, and 80% in 60 seconds, in all other locations.	
F6.3.3 Examples of locations (referred to in performance F6.3.2(a)) where there is a high risk of injury due to delay in operation of the systems for visibility include: (a) areas where dangerous machinery is installed: (b) areas where hazardous processes take place:	

(c) clinical areas of hospitals:

(d) prisons and other buildings in which people are detained:

(e) Any part of an escape route designed for use at any time by more than 250 people.

F6.3.4 The systems for visibility must operate continuously in buildings or parts of buildings in the following risk groups for the following periods after failure of the main lighting:

(a) risk group A, until restoration of the main lighting system:

(b) risk group B, 90 minutes:

(c) Risk group C, 30 minutes.

F6.3.5 Despite performance F6.3.4, if a Building or part of a building falls into both risk group A and risk group B, the systems for visibility must operate for whichever is the longer of the periods specified in performance F6.3.4(a) and (b).

F6.3.6 Signs to indicate escape routes must be provided as required by Clause F8“Signs”.

D. References

Standards New Zealand, NZS 1421:2001 Design for Access and Mobility-Buildings and Associated Facilities.

NZBC Clause F6-Visibility in escape routes

NZBC Clause C3-Fire affecting areas beyond the fire source

F. Definitions

Building has the meaning ascribed to it by sections 8 and 9 of the Building Act 2004.
Building consent means a consent to carry out building work granted by a building consent authority under section 49 of the Building Act 2004.
Building height means the vertical distance between the floor of the lowest final exit from the building, and the highest occupied floor level containing or supporting any purpose group other than IE, IA or ID, or penthouses used to enclose stairways, lift shafts or machinery rooms located on or within the roof.
Classified use means a classified use listed in clause A1 of the Building Code.
Exitway means all parts of an escape route protected by fire or smoke separations, or by distance when exposed to open air, and terminating at a final exit.
Final exit The point at which an escape route terminates by giving direct access to a safe place.
COMMENT:
Final exits are commonly the external doors from a ground floor, but this applies only if such doors open directly onto a safe place. If a safe place can be reached only by passing down an alley, or across a bridge, then the final exit is not reached until the end of such an alley or bridge. Final exits, therefore, should be seen strictly as a point of arrival, rather than as any particular element of a building. They are determined entirely by the definition of safe place.
Illuminance means the luminous flux falling on to a unit area of surface.
Reasonably visible, in relation to a specified feature, and for the purposes of Clause F6, means that the specified feature is visible to a person who—
(a) is 10 metres from it, or the greatest distance from it that it is possible to go in the open space surrounding it, whichever is the lesser; and
(b) has sight that is not defective, or is corrected (for example, by an optical appliance)
Risk group A, for the purposes of performance F6.3.4 and performance F6.3.5, means buildings—
(a) whose occupants are required to remain in the building until the main lighting system is restored; or
(b) whose evacuation time is longer than 90 minutes.
Risk group B, for the purposes of performance F6.3.4 and performance F6.3.5, means buildings—
(a) whose evacuation time is 30 minutes or longer but not longer than 90 minutes; or
(b) whose occupant load is more than 1,000.
Risk group C, for the purposes of performance F6.3.4, means buildings not in risk group A or risk group B.
Safe place A place of safety in the vicinity of a building, from which people may safely disperse after escaping the effects of a fire. It may be a place such as a street, open space, public space, or an adjacent building.
Specified features, for the purposes of Clause F6, means the following:
(a) building elements that may act as obstructions:
(b) safety features required under clauses of the Building Code other than Clause F6 (for example, hand rails required under Clause D1):
(c) changes in direction:
(d) stairs and ramps:
(e) escape doors:
(f) Entries to a safe place.
Travel Distance The length of the escape Route as a whole or the individual lengths of its parts, namely:
(a) Open paths;
(b) Protected paths; and
(c) Safe paths.