

To whom it may concern

BALUSTRADES & NZ BUILDING CODE COMPLIANCE GENERAL

The New Zealand Building Code provides mandatory performance criteria for Balustrades. The Eclipse Vogue Balustrade system has been designed to make it easy for specifiers to ensure that balustrade compliance is achieved. The main building code clauses which affect balustrades are as below. Some areas of the code may not necessarily affect every balustrade application.

B1: STRUCTURE - Structural strength and stability

B2: DURABILITY - Durability requirements

C2: MEANS OF ESCAPE - Fire Escape routes

D1: ACCESS ROUTES – Handrails

E2: WATER EGRESS – Water proofing

F2: HAZARDOUS BUILDING MATERIALS - Glazed Balustrades

F4: SAFETY FROM FALLING - Barrier Heights, Opening Sizes etc and Pool Fence Requirements

The performance criteria contained in the Building Code stipulates what is to be achieved, without prescribing how it is to be achieved. For more specific guidance, the Department of Building & Housing issues 'Approved Documents' which provide detailed methods of establishing NZBC compliance, in the form of 'Verification Methods' or 'Acceptable Solutions'. While other criteria may be acceptable, the onus is on the designer to demonstrate adequate compliance with the prime requirements of the NZ Building Code. A brief summary of the Building Code clauses relevant to balustrades and handrails, is found on the following pages.

CLAUSE B1, STRUCTURES

Balustrades are required to be capable of resisting certain loads. These include 'Live Loads' such as may be induced by persons leaning on the balustrade. Live Loads vary with the application, eg:- Residential, Public etc. Balustrades with glass or other solid or semi-solid infill panels also need to withstand 'Wind Loads', which will vary with the location and other factors.

Eclipse Vogue Balustrades have been designed to withstand the various human impact and wind loads as stipulated in the New Zealand Building Code.

HUMAN IMPACT LOADS

These vary with the designated use of the building they are situated in and are detailed in two loading standards cited (or previously cited) in the NZ Building Code. These standards are: AS/NZS 1170:2002 Structural Design Actions, and NZS 4203:1992 General Structural Design and Design Loadings for Buildings. For reference, the various loadings have been designated with a "Loading Class" in the Eclipse Vogue specifications.

CLAUSE F4, SAFETY FROM FALLING AND POOL FENCES

This clause stipulates when barriers such as balustrades and pool fences are required, and provides generalized requirements for barriers such as: “Barriers shall be of appropriate height”. Acceptable Solution F4/AS1 provides more specific information on barriers and pool fences, and covers such things as barrier heights, opening sizes, and restrictions on toeholds.

Eclipse Vogue balustrades are entirely versatile, and can be fabricated in virtually any height or configuration. It is therefore, the responsibility of the fabricator to ensure that the finished product complies in all respects to the requirements of Clause F4, with reference to the intended use of the area as obtained from the specifier or owner.

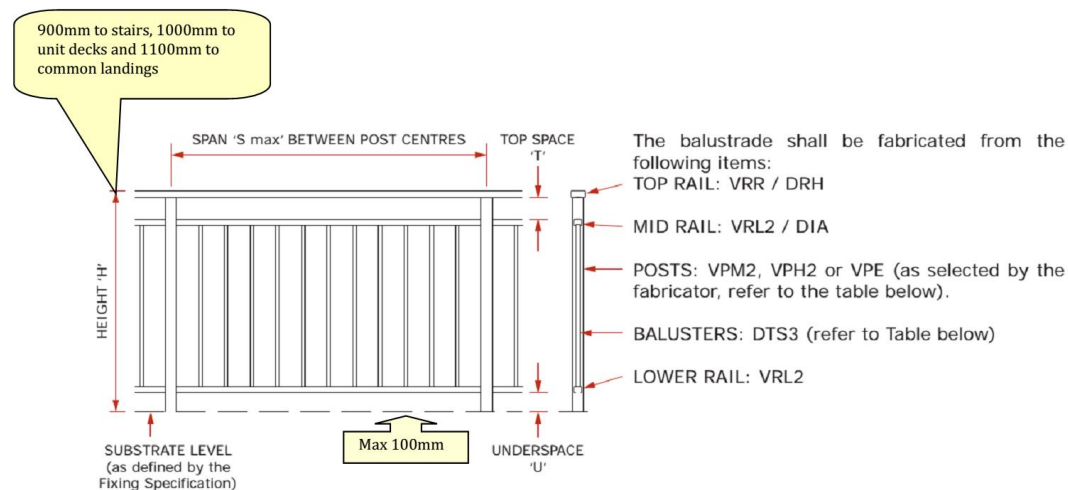
Typical Specification shown below

Balustrade Style Specification - Decks

‘WINDSOR’ (VRR TOP RAIL) - STYLE SPECIFICATION 3.12.3

This specification details the members to be used for this style and the maximum spacing of the posts. A separate specification must be referred to for fixing to the substrate (refer to Chapter 4). Post spacing must not exceed the lesser of the spacing from both Chapter 3 and Chapter 4.

1. Fabrication and Installation are to be in accordance with ASSEMBLY SPECIFICATION 5.12.3 and all relevant portions of this MANUAL.



⚠ BALUSTER TYPE AND MAXIMUM POST CENTRES 'S max' (metres) ALWAYS TAKE THE LESSER OF THE VALUE BELOW AND THE VALUE FROM THE FIXING SPECIFICATION								
Height (Note 2)	Post Type (Note 4)	Line No.	LOADING CLASS (Note 1)					
			A1		A2		No Fall	
			BALUSTER TYPE (Note 3)	SPAN 'S'	BALUSTER TYPE (Note 3)	SPAN 'S'	BALUSTER TYPE (Note 3)	SPAN 'S'
1.0	VPM2	1	DTS3	1.10	DTS3	1.62	DTS3	1.95
	VPH2	2	DTS3	1.38	DTS3	1.62	DTS3	1.95
	VPE	3	DTS3	1.59	DTS3	1.62	DTS3	1.95
	Rails Only	4	DTS3	1.62	DTS3	1.62	DTS3	1.95
1.1	VPM2	5	DTS3	1.00	DTS3	1.62	DTS3	1.95
	VPH2	6	DTS3	1.25	DTS3	1.62	DTS3	1.95
	VPE	7	DTS3	1.44	DTS3	1.62	DTS3	1.95
	Rails Only	8	DTS3	1.62	DTS3	1.62	DTS3	1.95

Acceptable Solution F4/AS1

1.0 Barriers in Buildings

1.1 Barrier heights

1.1.1 Minimum barrier heights are given in Table 1.

COMMENT:

Refer to NZBC Clause D1 for *handrails* on stairs. *Handrails* can be constructed as an integral part of a barrier.

1.2 Barrier construction

1.2.1 In housing and other areas likely to be frequented by children under 6 years of age:

- a) Figures 1-4 show acceptable barrier constructions
- b) Openings anywhere over the full height of the barrier shall be such a size that a 100 mm diameter sphere cannot pass through them, and
- c) The triangular opening formed by the riser, tread, and bottom rail of the barrier on a stair shall be of such a size that a 150 mm diameter sphere cannot pass through it (see Figure 4).

COMMENT:

1. *Buildings* classified as housing are always likely to be frequented by children under 6 years of age. However, 'Likely to be frequented' in regard to other *buildings* means something more than that children under 6 will be present from time to time. There should be an expectation that small children will be present on a regular basis (see Determination No. 2001/9 on www.dbh.govt.nz). Different parts of a *building* may have different barrier requirements, such as shopping malls where children under 6 are likely to frequent the public areas, but not the areas used for food preparation or the handling of stock.
2. The Clause F4.3.4(g) requirement that barriers restrict the passage of children under 6 years of age does not mean that all children under 6 must be unable to climb them. The Acceptable Solutions given here will prevent almost all children up to the age of 3 years from climbing. They can also be used as a guide for alternative designs.
3. Barriers with full height vertical members are the hardest for children to climb. Horizontal or near horizontal rails can easily be climbed by 2 year olds if the rails extend the full height of a barrier, even if the barrier includes a 200 mm wide top rail or if it slopes inwards at 15°.

Table 1: Minimum Barrier Heights
Paragraph 1.1.1, Figures 1-5

Building type	Location	Barrier height (mm) (Note 1)
Detached dwellings and within <i>household units</i> of multi-unit dwellings	Stairs and ramps and their landings	900
	Balconies and decks, and edges of internal floors or mezzanine floors	1000
All other <i>buildings</i> , and common areas of multi-unit dwellings	Stairs or ramps	900
	Barriers within 530 mm of the front of fixed seating	800
	All other locations	1100

Note:

1. Heights are measured vertically from finished floor level (ignoring carpet or vinyl, or similar thickness coverings) on floors, landings and ramps. On stairs the height is measured vertically from the *pitch line* or stair *nosings*.
2. A landing is a platform with the sole function of providing access.
3. Clause F4.3.1 has a limit on its application that may exclude the need for barriers in certain locations such as working wharves and loading docks.
4. An 800 mm high barrier in front of fixed seating would be appropriate in cinemas, *theatres*, and stadiums.

Figure 1: Barriers in areas likely to be frequented by children under 6 years of age – mesh and composite
Paragraph 1.2.1 a)

