

## NZ BUILDING CODE COMPLIANCE

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### GENERAL

The New Zealand Building Code provides mandatory performance criteria for balustrades. The UNEX 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
- F9: RESTRICTING ACCESS TO RESIDENTIAL POOLS

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. A Producer Statement is included on the last page of this manual.

Disclaimer: Note that the information provided on the Building Code and other regulations is provided in good faith, and as applicable at the time of writing (2008). However it is provided on a 'no liability' basis, and as these documents are up-dated from time to time, the latest documents should be consulted for full information and checked for subsequent amendments.

**View The New Zealand Building Code online at  
[www.building.govt.nz](http://www.building.govt.nz)**

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Specifications subject to change without notice

### **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.

UNEX Balustrades have been designed to withstand the various human impact and wind loads as stipulated in the New Zealand Building Code. This will be achieved if the balustrade heights and spacings between posts or other fixing points do not exceed the maximum given for the particular balustrade style's specification and method of fixing as given in Chapters 2 and 3. The maximum post spacing should be determined from these chapters by the building designer and checked by the Fabricator. The building designer must also ensure that an appropriate design of the substrate to adequately resist the loads imposed by the balustrade for the particular spans and fixing methods chosen is included in the drawings and specifications.

#### **INCREASES IN MAXIMUM POST SPACINGS FOR SHORT RUNS**

Where a run of balustrade has only 1, 2 or 3 panels, i.e. - spans between end posts or supports (or corner posts where the balustrade returns within 90°), an increase may possibly be permitted in the Maximum Post spacing stated by the Style or Fixing Specifications. The factor required for calculating this increase will need to be advised by UNEX Systems, and will depend on a number of factors such as the style, run length, barrier height and wind speed.

#### **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 UNEX specifications. When using Chapters 2 and 3, the Loading Class must firstly be selected from the table on the following page. Then the maximum post spacings can be determined for this class (along with the designated wind load if applicable), as indicated on the tables given in Chapters 2 and 3.

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### **WIND LOADS**

Balustrades with solid infill such as “glazed” styles must also withstand wind loads imposed, to the degree as stipulated in the New Zealand Building Code. These loads are defined by the Design Wind Speed for the particular project (refer Chapter 3). This must be determined and the appropriate wind speed columns used in the tables in Chapters 3 and 4, to conclude the maximum post spacing.

### **CLAUSE B2 - DURABILITY**

The New Zealand Building Code requires all balustrading to be sufficiently durable so as to remain functional for certain specified periods of time. These periods are given in the Acceptable Solution B2/AS1, which indicates a ‘serviceable’ durability requirement of 50 years for balustrade posts and top rails, and 15 years for infill members. Note that this durability requirement does not apply to non-serviceable aspects such as the surface finishes (eg. Powdercoating). For further information on these finishes refer to page 3.

The durability aspect of the UNEX balustrade system has been assessed by a Materials and Corrosion consultant. A brief summary of this report is that in their opinion, UNEX Balustrades will meet these requirements if the balustrades are fabricated, installed and maintained in accordance with UNEX Systems’ recommendations, including specific requirements relating to durability as outlined on Page 167-168. Note that this does not cover aesthetics, but only serviceability.

Certain Care and Maintenance procedures to be followed are given on Page 4.

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### **CLAUSE D1 - ACCESS ROUTES**

Acceptable solution D1/AS1 stipulates requirements for handrails on all stairways, and on ramps steeper than 1:20 on "accessible" routes. The top rail on a balustrade may serve as a handrail on an access route providing it meets certain requirements including; the profile, a minimum distance perimeter of the top of the profile and the height of the top rail above the ramp or pitch line of the stairs is between 900 – 1000mm.

The standard UNEX Balustrade top rails comply with the handrail profile requirements of D1/AS1 for "Private" and "Common" stairways, but not for "Accessible Stairways or Ramps".

Where a top rail of a balustrade on a stairway does not comply with D1/AS1, an auxiliary complying handrail can be bracketed to the side of the balustrade posts.

D1/AS1 also limits the projection of a balustrade or handrail on an escape route including a stairway or ramp, so that it does not reduce the minimum width by more than 100mm. Particular attention should be given to the width of the stairs and ramps on escape routes to ensure there will be the minimum permitted width inside the balustrade(s) or handrail(s). This is particularly where balustrades are "top fixed". It is advisable to coordinate with the balustrade fabricator/installer early in the design process.

In some situations, balustrades may be required to be "imperforate and non-combustible". Whilst UNEX balustrades are not specifically designed to fulfill this requirement, they can usually be adapted to do so. UNEX Systems should be consulted if this is a requirement on any particular project.

*UNEX Systems recommends that the New Zealand Building Code is sighted in its entirety*

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### **CLAUSE E2 - WATER EGRESS**

Where the balustrade attachment to the substrate incorporates water-proofing considerations, clause E2 of the NZ Building Code should be observed. Figure 19 of the Acceptable Solutions (E2/AS1 dated 1 July 2005) shows a detail which could apply to a balustrade. To sight the full details, please refer direct to the original documents in E2/AS1. There are some key points to be noted in figure 19 which must be incorporated in any application;

- The balustrade is side-mounted to a vertical' surface (i.e. not top-mounted to a horizontal surface).
- The balustrade post is attached via a spacer which keeps the post from directly bearing against the wall, and clears the drip edge above by a minimum of 25mm (Smaller clearances are usually accepted by Territorial Authorities).
- It shows a Neoprene or EPDM WASHER between the spacer and the cladding.
- It shows the fixing which anchors into the framing, going through a BATTEN in the cavity. It is important that any battens or packers used to transfer the compression loads within the cavity behind the cladding are vertical and extend over the full width and depth of the post, bracket or spacer.
- It shows a layer of sealant between the fixing and the sides of the hole in the cladding through which the fixing passes.

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## **CLAUSE F2 - HAZARDOUS BUILDING MATERIALS**

This clause has particular application to balustrades with glass infill panels, which are required by Acceptable Solution F2/AS1 to comply with NZS 4223. This requires that Grade A safety glazing material not less than 6mm thick be used. However in some situations the glass may be thicker than this 6mm minimum (and Grade A safety) to meet this clause.

It is the responsibility of the fabricator to ensure that the balustrade glazing design complies with NZS 4223 in all respects; including glass thickness, glass span, panel size, containment, etc; However the Eclipse Vogue Balustrade System has been designed to make this easily achievable in most situations.

All glass used in UNEX Balustrades should be safety toughened.

## **CLAUSE F4 - SAFETY FROM FALLING**

This clause stipulates when barriers such as balustrades 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 toe-holds.

UNEX 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.

*UNEX Systems recommends that the New Zealand Building Code is sighted in its entirety.*

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## **CLAUSE F9 - RESTRICTING ACCESS TO RESIDENTIAL SWIMMING POOLS**

Residential pools that are filled or partly filled with water must have physical barriers that restrict access by unsupervised children under five years of age. This requirement applies to pools that can be filled with water to a depth of 400mm or more.

Building work for residential pools requires a building consent unless it is exempt under Schedule 1 of the Act. Pools below certain thresholds are exempt under clause 23 of Schedule 1.

Residential pool barriers must comply with either:

- the current Building Code; or
- the Building Code that applied when the pool was installed (if a building consent, code compliance certificate or certificate of acceptance was issued).

This requires owners to maintain their residential pool barriers to at least the standard that applied when those barriers were originally approved.