

## ***Heart macrocarpa veranda posts***

### **1 THE MATTER TO BE DETERMINED**

- 1.1 The matter before the Authority is whether untreated heart macrocarpa timber veranda posts (“the posts”) comply with the building code (the First Schedule to the Building Regulations 1992).
- 1.2 There being no dispute as to whether the posts comply with clause B1 “Structure” of the building code, the Authority takes the view that it is being asked solely to determine whether the posts comply with clause B2 “Durability”.
- 1.3 In making its determination, the Authority has not considered any other aspects of the building code.

### **2 THE PARTIES**

- 2.1 The applicant was the owner acting through an architectural designer. The only other party was the territorial authority.

### **3 THE BUILDINGS AND THE SEQUENCE OF EVENTS**

- 3.1 The buildings concerned are five new two-storey or three-storey apartment buildings each containing two four-bedroom or six-bedroom apartments on each storey.
- 3.2 The 200 mm x 200 mm posts at each level are exposed to the weather and support either the balcony or the roof above. There is no dispute, and therefore the Authority accepts, that the posts are of heart macrocarpa and are not in contact with the ground.
- 3.3 The territorial authority issued a building consent on 3 March 2004 but apparently refused to issue a code compliance certificate and asked the owner to apply for a determination. The Authority received the owner’s application for this determination on 26 July 2004.

## 4 THE BUILDING CODE AND THE ACCEPTABLE SOLUTION

- 4.1 There is no dispute that the posts are structural members and that the relevant provisions of clause B2 of the building code are:

### **Clause B2—DURABILITY**

#### **OBJECTIVE**

**B2.1** The objective of this provision is to ensure that a building will throughout its life continue to satisfy the other objectives of this code.

#### **FUNCTIONAL REQUIREMENT**

**B2.2** Building materials, components and construction methods shall be sufficiently durable to ensure that the building, without reconstruction or major renovation, satisfies the other functional requirements of this code throughout the life of the building.

#### **PERFORMANCE**

**B2.3.1** Building elements must, with only normal maintenance, continue to satisfy the performance requirements of this code for the lesser of the specified intended life of the building, if stated or:

- (a) The life of the building, being not less than 50 years, if:
  - (i) Those building elements (including floors, walls, and fixings) provide structural stability to the building, or . . .

- 4.2 The acceptable solution B2/AS1, as amended on 1 April 2004, says:

**3.2.1** Part 1 of NZS 3602: 2003 is an acceptable solution for meeting the durability requirements of timber *building elements*.

**3.2.2** From 1 April 2004 to 31 March 2005 nothing in Paragraph 3.2.1 shall apply to the issue of *code compliance certificates* or building certificates under sections 43 or 56(3) of the Building Act 1991, but the previous acceptable solution Part 1 of NZS 3602: 1995 will continue to apply as an acceptable solution until 31 March 2005.

- 4.3 For posts exposed to exterior weather conditions and dampness but not in ground contact, NZS 3602:1995 specifies H3 treated radiata pine, whereas NZS 3602: 2003 *Timber and wood-based products for use in building* specifies H3.2 treated radiata pine.

## 5 THE SUBMISSIONS AND THE EXPERT'S REPORT

### 5.1 The applicant

- 5.1.1 The applicant submitted that:

- (a) “Experts in this field have concluded that heart Macrocarpa was the equivalent of H3 treated timber in the NZS3602 1995 Code.”
- (b) “. . . we could suggest that we could paint our Verandah posts on the cut ends with a Proprietary product . . . which contains Copper Naphthenate . . .”

- (c) ". . . we have the right to consider Compliance only with the current NZS 3602 1995 Code because of the one year overlap provided for by the BIA in the implementation of the new NZS 3602 2003 Code."
  - (d) ". . . [the posts] are well oversize for the structural integrity requirement [which could be met by 100 mm x 100 mm posts], which would provide a large safety margin should surface deterioration occur on any of the posts, they are completely visible and able to be inspected regularly, (perhaps as part of the Warrant of Fitness Annual inspection . . .)"
  - (e) Determination 2004/10 was not applicable because it concerned untreated macrocarpa posts milled on site with no information as to whether the timber was heart or sap.
- 5.1.2 The applicant supported its submissions with relevant technical data about macrocarpa and preservative treatment, together with a letter dated 23 July 1996 to another territorial authority from an expert timber research organisation saying:

"In summary, our opinion is that heart untreated macrocarpa is the equivalent of H3 treated radiata in terms of its durability, certainly for 15-year durability and probably for 50-year life . . ."

## **5.2 The territorial authority**

- 5.2.1 The territorial authority made no submissions.

## **5.3 The expert commissioned by the Authority**

- 5.3.1 The Authority commissioned a report from an expert in the preservative treatment of timber. Points made in the report included:
- 5.3.2 Whereas horizontal members, such as decking, tend to trap moisture, thus raising the moisture content to levels suitable for decay to occur, vertical members, such as posts, shed water, reducing the likelihood of such moisture contents being attained.
- 5.3.3 The results of durability tests of heart macrocarpa by an expert timber research organisation were:

- (a) Ground contact:

The average life of 50 mm x 50 mm stakes was 10 years.

The average life of 125 mm x 75 mm fence posts was 15 years.

"It is a generally accepted rule that by doubling the lesser cross section dimension will double the average life."

- (b) Above ground:

Weatherboards: 17 years exposure, no decay observed

Shingle roofs: 27 years exposure, some decay in edges and ends

Decking: 9 years exposure, some decay in most boards and one board failed.

5.3.4 “The salient points for the current determination are:

- “• The size of the posts – vertical orientation
- “• The degree of exposure to the weather – sheltered on three faces
- “• Not in contact with the ground
- “• Use of *in situ* superficial preservative treatment on ends of posts
- “• The wood is 100% heartwood.”

5.3.5 “Taking overall results of the [durability] tests, we have concluded that [the posts in question have] equivalent durability to that conferred to radiata pine by preservative treatment to Hazard Class H3.”

## 6 DISCUSSION

### 6.1 General

- 6.1.1 The Authority accepts the expert’s opinion that the posts, as installed in this situation and with cut ends of the posts painted with a copper naphthenate preservative (i.e. as described in 5.3.4 above), will have a durability equivalent to that of H3 treated pinus radiata.
- 6.1.2 Accordingly, the durability of the posts is equivalent to that achieved by posts complying with B2/AS1 as in force until 31 March 2005.
- 6.1.3 Section 50(1)(d) of the Building Act 1991 (“the Act”) provides in effect that compliance with an acceptable solution must be accepted as establishing compliance with the corresponding provisions of the building code.
- 6.1.4 The Authority therefore takes the view that, for the purposes of this determination, it must, as a matter of law, accept that the posts comply with clause B2 of the building code.

### 6.2 Compliance schedule

- 6.2.1 The applicant suggested that an annual inspection of the posts could be required by the compliance schedules for the buildings. The Authority considers that to be unnecessary but offers no opinion as to whether it has the power to amend the compliance schedule as suggested.

## 7 THE AUTHORITY'S DECISION

- 7.1 In accordance with section 20 of the Building Act, the Authority hereby determines that the posts, with their cut ends painted with a copper naphthenate preservative, must be accepted as complying with clause B2 of the building code. The Authority accordingly reverses the territorial authority's decision to refuse to issue the code compliance certificate on that account.

Signed for and on behalf of the **Building Industry Authority** on 15 November 2004.



**John Ryan**  
Chief Executive