

## ***Imported timber weatherboards***

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

- 1.1 The matter before the Authority is a dispute about the refusal of building consent by a territorial authority unless rigid sheet backing was provided behind certain imported timber weatherboards. The building concerned is an imported “kitset” house with exterior walls clad with weatherboards over flexible backing.
- 1.2 The Authority observes that it is the external walls as a whole, not the weatherboards on their own, which are required to comply with the building code. The weatherboards are not proprietary items. However, the flexible backing is a proprietary item. Indeed, the entire house, of which the weatherboards form part, appears to be a proprietary item which could be accredited under section 58. Thus the Authority has some doubts about whether determination rather than accreditation is the appropriate procedure for establishing compliance with the building code.
- 1.3 Nevertheless, the Authority is prepared to issue a determination limited to whether the weatherboards are suitable for use with an appropriate flexible backing. In other words, the Authority assumes without determining that the proprietary backing is suitable for use behind appropriate weatherboards. See also 3.2 and 6.1.1 below.
- 1.4 The Authority wishes it to be clearly understood that it reserves the right to reject an application for determination when it considers that the determination would be seen as amounting to an accreditation. In that respect, the Authority points out that a determination establishes that “certain building work”, in this case the house concerned, complies with certain provisions of the building code, whereas an accreditation establishes that any building work complying with the accreditation complies with such provisions.
- 1.5 The Authority accordingly considers that the matter to be determined is whether the weatherboard concerned, fixed directly over a suitable flexible backing, will perform in such a way that the building complies with clause E2.3.2 of the building code, and, with only normal maintenance, will continue to comply for at least the period required by clause B2.3.1(b).
- 1.6 In making its determination the Authority has not considered any other provisions of the building code.

## 2 THE PARTIES

- 2.1 The applicant is a firm of consulting engineers acting for the owner. The other party is the territorial authority.

## 3 THE WEATHERBOARDS

- 3.1 The weatherboards are of a “tight knot grade” (see 6.2 below) Western Red Cedar (*Thuja plicata*). They are splay cut boards (also referred to as “bevel siding”) 190 mm wide with a profile that tapers from 20 mm to 5 mm with no weather grooves. They are installed with a 40 mm overlap. The installation specification includes requirements for the application of a paint or a water repellent stain finish to the weatherboards.
- 3.2 The territorial authority was unwilling to permit the use of the kitset without either:
- (a) The replacement of the weatherboards by weatherboards complying with E2/AS1 in Approved Document E2, or
  - (b) The replacement of the flexible backing by a rigid backing complying with E2/AS1 in Approved Document E2.

## 4 THE BUILDING CODE AND ACCEPTABLE SOLUTIONS

- 4.1 The relevant provisions of the building code (the First Schedule to the Building Regulations) are:

**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:

- (b) 15 years if:
  - (i) Those building elements (including the building envelope, exposed plumbing in the subfloor space and in-built chimneys and flues) are moderately difficult to access or replace, or

**E2.3.2** Roofs and exterior walls shall prevent the penetration of water that could cause undue dampness, or damage to building elements.

- 4.2 The relevant provisions of the acceptable solution E2/AS2 in Approved Document E2 are:
- (a) That timber weatherboards shall comply with NZS 3617, which in turn requires compliance with NZS 3601 and NZS 3602; and
  - (b) That rigid backing (sheathing) shall be a rigid sheet material such as plywood treated to Hazard Class H3.

## 5 THE SUBMISSIONS

- 5.1 The Authority was assisted by submission from each of the parties. The applicant gave details of the weatherboards and reasons why they should be accepted, whereas, as mentioned in 3.2 above, the territorial authority expressed doubts as to whether the weatherboard would adequately protect the flexible backing, considering that either a different weatherboard or a different backing was necessary for compliance with the building code.
- 5.2 The Authority also obtained reports from an officer of the Building Research Association and from an independent architect. Those reports were copied to the parties, who commented on them to the Authority.
- 5.3 The reports generally agreed that the weatherboards, if installed as specified over flexible backing, would be suitable for use. However, the reports expressed some reservations which are mentioned below.

## 6 DISCUSSION

### 6.1 General

- 6.1.1 The combined effect of clauses B2.3.1 and E2.3.2 of the building code is that the exterior walls, with only normal maintenance, are required to prevent the penetration of water that could cause undue dampness for at least 15 years. The Authority recognises that considerably more than 15 years is frequently achieved by walls incorporating weatherboards complying with the acceptable solution, but that does not mean that alternative solutions also have to achieve more than 15 years.
- 6.1.2 The Authority considers that the weatherboard serves the following purposes:
- (a) It acts as a “water barrier” to reduce the amount of water which reaches the backing;
  - (b) It acts as a “wind barrier” to protect the backing from wind; and
  - (c) It acts as a “sun screen” to protect the backing from sunlight.

In other words, although wind will drive some rainwater through the weatherboard, most of the water will run off the face of the weatherboard, while the air pressure behind the weatherboard will be reduced.

- 6.1.3 The questions are whether the weatherboards will -
- (a) protect the backing from wind, and
  - (b) reduce the water reaching the backing to an amount the backing can shed -
- to a sufficient extent to achieve the required durability of 15 years.

6.1.4 Those questions essentially turn on:

- (a) The specification or grading rules used for selecting suitable timber for the weatherboards;
- (b) The profile of the weatherboards; and
- (c) Installation details.

## **6.2 Specification or grading rules**

6.2.1 The Authority considers, as indicated by the reports obtained, that the specification of the weatherboards is not sufficiently explicit.

6.2.2 The proprietors of the kitsets stated that the grade specification or grading rules under which the weatherboards are purchased for inclusion in the kitset is either:

- “Knotty weatherboards (Tight Knot Unseasoned) bevel siding”, or
- “premium knotty (tight knot) bevel siding”

6.2.3 The applicant supplied the grading rules for the grades “select knotty bevel siding” and “quality knotty bevel siding” published in the “Standard Grading Rules for Canadian Lumber”. Those grade names do not correspond to the names under which the weatherboards are purchased.

6.2.4 The applicant also supplied samples of the weatherboards. Although the samples were helpful, they could not be taken as definitive of the defects which might be present in the weatherboards as purchased and included in the kitsets. However, the samples included at least one loose knot which would have been excluded by the Canadian rules for “select knotty bevel siding”.

6.2.5 The specific set of grading rules applicable to the weatherboards is relevant to both protection from external moisture and durability. The Authority recognises that Canadian “select knotty bevel siding” Western Red Cedar of suitable profile has been successfully used in that country for many years, and accepts that it would be equally acceptable in New Zealand. However, the weatherboards supplied with the kitsets do not appear to comply with those rules.

6.2.6 It is unrealistic to expect New Zealand users to re-grade the boards to the Canadian rules. For New Zealand use, therefore, the Authority considers that the weatherboards shall not contain any holes or openings, or any knots which are likely to fall out and create holes or gaps. That can be achieved in the course of installation by docking from the weatherboards as supplied any lengths which contain holes, bark encased knots, splits, or through shakes, or any decayed, loose, or split knots, or any other defects likely to result in holes or gaps.

### **6.3 Profile**

- 6.3.1 As the territorial authority pointed out, the weatherboard profile is significantly different from those shown in Approved Document E2 and NZS 3617.
- 6.3.2 Compared with the latter, the weatherboards will clearly be under more stress, because, unlike the familiar “bevel back” or “rusticated” profiles, there is no significant area of contact between these splay-cut weatherboards or between each weatherboard and the stud to which it is nailed. Because there is no significant area of contact, there is no need for weather grooves because moisture cannot pass through the overlap between boards by capillary action.
- 6.3.3 As they will be under higher structural stresses from wind loads and will be more prone to flexing-type movement, the weatherboards could well develop holes and openings in use even if defects have been removed as described in 6.2.6 above. Such small openings as can be expected will not immediately prevent the weatherboards from providing the necessary protection against external moisture, but an accumulation over several years might do so.
- 6.3.4 However, the boards will come under scrutiny for such defects when the paint or stain finish is renewed in the course of normal maintenance. The Authority takes such normal maintenance to include the rectification of any holes, splits or other gaps which might have occurred. The Authority considers that such normal maintenance will enable the weatherboards to continue to comply with clause E2.3.2 for at least 15 years.
- 6.3.5 The Authority recognises that the term “normal maintenance” is capable of various meanings, and in any case cannot be enforced under the Building Act (otherwise than by the compliance schedule regime). However, the Authority takes the view that it is reasonable to assume that common-sense maintenance procedures, such as the renewal of paint or stained coatings, will be undertaken at reasonable intervals.

### **6.4 Installation details**

- 6.4.1 The Authority has not seen all of the installation instructions included in the kitsets. However, there is no reason for any departures from the usual good practice common to any weatherboard installation.
- 6.4.2 However, one of the drawings supplied by the applicant calls for “Full length packing at bottom of wall and over openings”. Any such packing must allow for water to drain through it (without entering the building at wall openings), but that does not appear to be specifically required by the instructions.

**7 THE AUTHORITY'S DECISION**

7.1 In accordance with section 20(a) of the Building Act the Authority hereby reverses the territorial authority's decision to refuse building consent for the house as specified, and substitutes the following:

Building consent for the house concerned is to be granted, provided that the specification is amended to provide that:

- (a) The weatherboards as installed shall not contain any holes, bark encased knots, splits, or through shakes, or any decayed, loose, or split knots, or any other defects likely to result in holes or gaps;
- (b) Any full-length packing behind the weatherboard at the bottom of a wall or over an opening shall include provision for water to drain freely through the packing without entering the building.

Signed for and on behalf of the Building Industry Authority on this 20<sup>th</sup> day of December 1999

W A Porteous  
Chief Executive