

Bevel-back Weatherboards Without Weather Grooves.

1 BACKGROUND

- 1.1 The matter before the Authority is whether a weatherboard cladding system without weather grooves meets the requirements of clause E2 “External moisture” (and consequentially clause B2 “Durability”) of the building code (the First Schedule to the Building Regulations 1992).
- 1.2 The applicant is the building owner acting through the builder. The only other party is the territorial authority.
- 1.3 The Authority engaged the services of an independent expert (“the expert”) to give advice as to whether the weatherboard cladding would comply with the building code.
- 1.4 In making its determination, the Authority has not considered any other aspects of the building code.

2 THE BUILDING WORK

- 2.1 The building work in question is an extension to an approximately 70-year old single-storey house. The extension, which has been completed, is clad with bevel-back weatherboards which match the profile of the existing weatherboards on the house.
- 2.2 The weatherboards are ex 150 x 25 mm and overlap each other by 25 mm. The weatherboards do not have weather grooves. The house, and the extension, has 900 mm wide eaves and is located in a High wind zone according to the classifications given in NZS 3604: 1999 “Timber framed buildings”.
- 2.3 The territorial authority issued a building consent for the building work based on advice in the plans and specifications which indicated that the “Exterior cladding shall be ex 150x25 bevelback weatherboards to match existing fixed over breathable building wrap”.
- 2.4 The territorial authority is refusing to issue a code compliance certificate for the building work as it does not accept that the weatherboards, without weather grooves, meet the requirements of the building code as regards the prevention of penetration of water.

3 THE LEGISLATION

3.1 The relevant provisions of the building code are:

Clause E2 External moisture

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

Clause B2 Durability

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

4 THE SUBMISSIONS FROM THE PARTIES

General

4.1 The Authority received a submission in the form of a letter from the applicant, together with photographs of the building work, a letter from the supplier of the weatherboards and a copy of an inspection report from the territorial authority. The territorial authority indicated that it did not intend making a submission.

The Applicant's Letter

4.2 The applicant noted:

The existing dwelling is approximately 70 years old with no signs of leaking or decay, and does not have building paper on it.

The extension is constructed of ... H1 [framing] with studs at 600cm (*sic*) and 3 rows of dwangs. It is fully covered with [building paper]. The Bevel back weatherboard has been manufactured to match exactly the existing weatherboard and covers 125 with 25 mm lap. The weatherboard has been fully primed on all four sides.

The weatherboard does not have a weather groove in it.

4.3 The applicant also noted

The dwelling has wooden joinery with 150 mm facings and scribes, 900 mm wide soffits and has good shelter from the prevailing winds.

4.4 The applicant noted that despite discussing the matter with various organisations it was unable to produce evidence in writing that the weatherboards would perform satisfactorily without a weather groove. The applicant concluded with the statement:

Surely the existing house clad in weatherboard with no weather groove, **without building paper** and some 70 years of age, in the same environment is prove (sic) enough.

The Supplier's Letter

- 4.5 The supplier noted that the weatherboard in question had been supplied over a wide area for a considerable time and this was the first time that its effectiveness had been queried. It was in agreement with the view expressed by some builders that weather grooves had a detrimental effect as they were holding places for water which encouraged rotting. Notwithstanding that, the supplier noted that from this point on its weatherboards would incorporate a weather groove.

The Territorial Authority's Inspection Report

- 4.6 The territorial authority's inspection report included the following note

Bevel back weather boards are to comply with NZS 3604 Section 11.5.2.1 and NZS 3617 1979 Profiles of weather boards, fascia boards, and flooring.

Options: To replace with complying profiles or obtain a registered engineers report signed and submit to Council with back up evidence.

- 4.7 The Authority understands that the territorial authority's only concern regarding the weatherboard profile installed was that it did not contain a weather groove as required by the above mentioned Standards.

Other information

- 4.8 In the course of the determination the applicant provided plans and specifications for the work and advice as to the building's wind zone. Included in the plans were a site plan, a detailed cross section through the exterior walls and window details. The applicant also confirmed the particular type of building paper that had been used.
- 4.9 The window details forwarded have not been considered in this Determination as the adequacy of those details was not in dispute.

5 THE EXPERT'S REPORT

- 5.1 The expert provided detailed technical discussion on both the theory, and its observations, of the performance of weatherboard claddings. Those discussions are complex and not included here, however, the expert concluded:

Weathergrooves and capillary breaks are common in facade jointing and have a long history of application. Theoretical arguments support their use in the lap joints in weatherboard walls and it is recommended by [the expert] that weathergrooves continue to be factored into weatherboard designs. There will be cases where a weathergroove can be achieved in a another way (as is the case in bevel backed weatherboards) and it may be unnecessary to machine additional grooves into the overlapping joint.

The subject of this determination is a single storey weatherboard house in a high wind zone. In our opinion, the weathertight performance of the wall is likely to be limited more by other

leakage paths such as at butt joints, defects in the weatherboards and corner joints, than by the absence of weathergrooves. We note also that the bevel backed profile creates a natural weathergroove at the top of the lap joint and that water held in the joint will not contact framing or any other absorbent material.

In our opinion the existing weatherboards on this particular house will meet the performance requirements of E2 without another weathergroove in the body of the lap joint. Adequate performance of the cladding without weathergrooves and a 25 mm overlap is already confirmed by the track record of a similar profiled weatherboard on the existing house. Other key factors in this decision are the dimensions of the weatherboard profile, the 900 mm eaves protecting the cladding, the single storey height and the presence of some local sheltering.

- 5.2 The expert's report was copied to the parties for their information. No comments were received from the parties in respect of the report.
- 5.3 On the request of the Authority, and subsequent to the expert's report being received and circulated, the applicant advised from what timber species the existing and new weatherboards were made. The existing weatherboards were untreated Rimu, while the new weatherboards were made from "No. 1 clear Pine treated to H3". This information was forwarded to and discussed with the expert who advised that it did not alter its report in any way.

6 THE AUTHORITY'S VIEW

- 6.1 To the Authority's knowledge, the territorial authority has not written officially to the applicant advising that the code compliance certificate will not be issued nor has it issued a notice to rectify. The Authority notes that these are the appropriate actions required under the Building Act. Notwithstanding that, and for the purposes of this Determination, the Authority accepts that the note on the territorial authority's inspection report (see 4.6 above) amounts to the same thing.
- 6.2 In several previous determinations, the Authority has made the following general observations about acceptable solutions and alternative solutions:
- Some acceptable solutions cover the worst case, so that in less extreme cases they may be modified and the resulting alternative solution will still comply with the building code.
 - Usually, however, when there is non-compliance with one provision of an acceptable solution it will be necessary to add some other provision to compensate for that in order to comply with the building code.
- 6.3 The Authority agrees with the opinion of the expert that the weatherboards in question meet the requirements of clause E2 of the building code. While the Authority acknowledges that the profile does not comply with the relevant sections of NZS 3604 or NZS 3617 as noted by the territorial authority, or with acceptable solution E2/AS1, it nevertheless considers that in the circumstances of this particular case, sufficient compensating factors exist which ensure code compliance results.
- 6.4 Those compensating factors include those mentioned by the expert, namely that:

- a) the particular bevel-back weatherboard profile creates a natural weather groove at the top of the lap joint,
- b) the extension is single storey, and
- c) the extension has 900 mm wide eaves.

Although mentioned in the expert's report the above list does not include the presence of local sheltering. The Authority does not doubt the effect of such sheltering but notes it has not put any great weight on this factor as the sheltering in question is provided by vegetation and its continued presence is not something that can be controlled by the Building Act.

- 6.5 The specification for the work also calls for the weatherboards to be painted (to match the existing house) with a 3 coat paint system. The Authority notes that a well maintained paint system contributes to the effectiveness of any weatherboarding system.
- 6.6 The Authority also notes as a significant factor the satisfactory performance of the existing weatherboards on the house over approximately 70 years. The weatherboards in question in this Determination match those on the house in terms of structural performance, thickness, height and overlap and additionally have the benefit of a breathable building paper behind.
- 6.7 The Authority therefore concludes that despite being in a "High" wind zone and departing from the Standards and acceptable solution E2/AS1 that the requirements of Clause E2, and consequentially clause B2, will be met.

7 THE AUTHORITY'S DECISION

- 7.1 In accordance with section 20 of the Building Act, the Authority hereby determines that the weatherboard cladding, without weather grooves meets the requirements of the building code, and accordingly reverses the decision of the territorial authority to refuse to issue a code compliance certificate.

Signed for and on behalf of the Building Industry Authority on this 18th day of March 2004

J Ryan
Chief Executive