Determination 2008/24

Refusal to issue a code compliance certificate for a new house due to a dispute over compliance of jamb flashing at 213 Minden Road, RD6, Tauranga

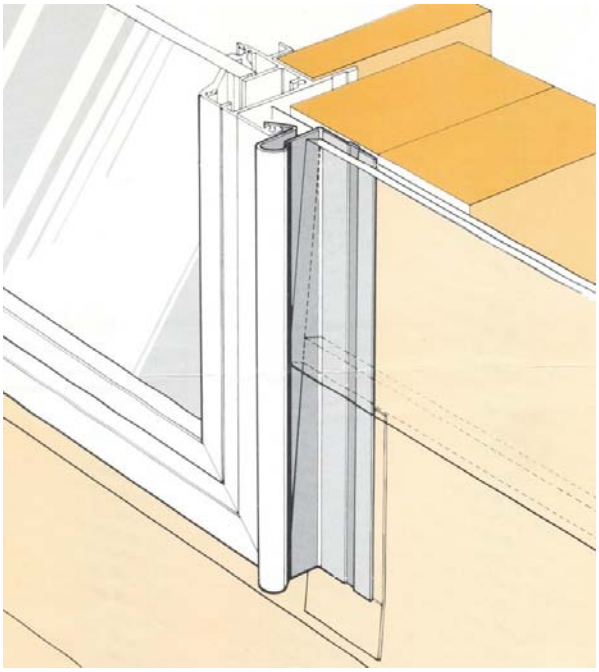

Figure 1: Installation detail showing the aluminium scriber (taken from the manufacturer's literature)

1. The matters to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004[1] ("the Act") made under due authorisation by me, John Gardiner, Manager Determinations, Department of Building and Housing ("the Department"), for and on behalf of the Chief Executive of that Department. The applicant is the DK and S Morris Trust, the owner of the house, acting through an agent ("the applicant") and the other party is the Western Bay of Plenty District Council ("the territorial authority"). The builder has been included as a person with an interest in this determination.

[1] The Building Act 2004 is available from the Department's website at www.dbh.govt.nz.

1.2 This determination arises from the decision of the territorial authority to refuse to issue a code compliance certificate for a new house because it was not satisfied that it complied with Clauses B2 "Durability" and E2 "External Moisture of the Building Code[2] (First Schedule, Building Regulations 1992).

1.3 The matter for determination is whether the jamb flashing system to the exterior joinery units as installed to the walls of the building comply with Clauses B2 and E2 (see sections 177 and 188 of the Act).

1.4 In making my decision, I have considered the submissions of the parties, the report of the expert commissioned by the Department to advise on this dispute ("the expert"), and the other evidence in this matter. I have evaluated this information using a framework that I describe more fully in paragraph 7.

1.5 In this determination, unless otherwise stated, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

2. The building

2.1 The building, which includes the jamb flashings in question, consists of a single-storey house and a detached garage/workshop that is situated on a gently sloping building platform in a very high wind zone for the purposes of NZS 3604[3]. The house is relatively simple in shape and form and is of timber framed construction built on timber-framed floors. The main roof has 600mm wide eaves and verge projections of similar dimension. The exterior joinery units are of standard residential suite construction. Close boarded timber-framed decks are constructed at most ground floor elevations and these are spaced away from the building envelope.

2.2 I have not received any specific information regarding the treatment, if any, of external wall framing timber. However, the expert has suggested that the timber is likely to be treated to current standards.

2.3 The wall cladding applied to the majority of the timber-framed external walls of the buildings consists of "Linea" low-density fibre-cement weatherboards fixed to the framing over building paper. A cavity is formed behind the cladding.

2.4 "Tru Fold" aluminium scribers ("the scribers") are applied as part of the flashing system to the jambs of the external joinery units installed in the weatherboard-clad walls.

3. Background

3.1 On 14 September 2006, the territorial authority issued a building consent (No 75072) for the house. The house was completed some time in 2007.

3.2 The territorial authority refused to issue a code compliance certificate for the house because of concerns regarding the jamb flashings installed in the weatherboard cladding.

3.3 The Department received the application for a determination on 26 November 2007.

[2] The Building Code is available from the Department's website at www.dbh.govt.nz.
[3] New Zealand Standard NZS 3604:1999 Timber Framed Buildings

4. The submissions

4.1 The applicant noted that the territorial authority had refused to issue a code compliance certificate in relation to the "use of aluminium scribers with James Hardy (*sic*) weatherboards on windows and doors".

4.2 The applicant forwarded copies of:

- a letter dated 17 December 1996 from another territorial authority to the manufacturers, noting that the scribers had been used in the Tauranga area for a number of years. The territorial authority was satisfied that the scribers, "when installed as per the manufacturer's specification, will perform in accordance with the New Zealand Building Code". The territorial authority also stated that the letter was not intended to be "a recommendation"
- an undated producer statement for the scribers
- sketch plans showing the jamb and sill flashing details for aluminium joinery frames set into "Linea" weatherboard-clad walls
- two of the "Tru Fold" manufacturer's data sheets showing the scribers.

4.3 On 21 December 2007, in an email to the Department, the territorial authority noted the issue was "that the jamb flashings installed do not match the detail in the Linea weatherboard installation instructions in the James Hardie Ltd literature". The territorial authority did not believe that it was appropriate for it to approve amendments to manufacturer's installation instructions without the agreement of the manufacturer.

4.4 Copies of the documents from the parties and other evidence were provided to the other party. Neither party made any submissions in response to the information that was provided.

4.5 A draft determination was issued to the parties for comment on 23 January 2008. No written comments regarding the draft determination were received from either party.

5. The experts' report

5.1 As mentioned in paragraph 1.4, I engaged an expert, who is member of the New Zealand Institute of Building Surveyors, to provide an assessment of the condition of the building envelope with particular reference to the proprietary aluminium window scribers that are the subject to the determination.

5.2 The expert inspected the property on 18 December 2007 and furnished a report that was completed on 19 December 2007. The expert was of the opinion that the "[g]eneral quality of work is very high to excellent, giving a measure of confidence that unseen work has been done to a similar high standard". The expert was of the opinion that the building work complied with the requirements of Clause E2.

5.3 The expert used a microwave moisture meter to check for indications of moisture penetration through the cladding and no higher readings were recorded. A further check with a thermal-imager, generally on the outer face of the cladding, indicated that there was no moisture intrusion into the building.

5.4 Commenting specifically on jamb and sill details of the external joinery units, the expert noted that:

- the scribers are installed generally in accordance with the manufacturer's instructions
- there is an adequate seal between the top of the scriber and the head flashing
- the weatherboards are sealed to the scribers
- there is free drainage at the lower ends of the scribers and at the ends of lower weatherboards where they met the scriber (after the builder on site cleared small drainage channels)
- the plastic apron flashing installed between the scribers and the weatherboards is an appropriate and effective water deflection and drainage element. However the apron is sealed where it is "sandwiched" at its junction between the adjoining weatherboards
- as the scriber is "tucked in" behind the jamb, extends behind the weatherboards, and provides an effective drainage path, it is comparable to, and in some respects superior to the scriber profile shown in figure 42 of the Linea weatherboard manufacturer's recommendations.

5.5 The expert noted that the very dark colour of the paint applied to the weatherboards would give rise to high temperatures that could shorten the life of the sealant applied between the scribers and the weatherboards.

5.6 The expert also examined the producer statement and the manufacturer's data that was provided by the applicant (which are described in paragraph 4.2), and noted some perceived anomalies. The expert also referred to relevant construction details that had recently been published and provided some suggested revisions that could be made to update the relevant documentation. While these suggestions are not relevant to the determinable matters, I draw them to the attention of the parties.

5.7 In summary, the expert considered that in this particular case the "aluminium jamb flashings used are at least equal to the timber scriber scheme system outlined in Linear (*sic*) manual and in E2/AS1 for timber weatherboards". In the opinion of the expert, the installed system is superior as regards:

- expected lifetime of use
- drainage behind joinery
- drainage behind weatherboards.

5.8 A copy of the expert's report was provided to each of the parties on 20 December 2007.

6. The hearing and site visit

6.1 The applicant requested a hearing, which was held on 15 April 2008 before me. I was accompanied by a Referee engaged by the Chief Executive under section 187(2) of the Act. The hearing was followed by a site visit to the property to inspect the flashings installed to the external joinery units.

6.2 The hearing and site visit were attended by:

- the applicant represented by two of the trustees
- the territorial authority represented by one of its officers

- the builder represented by two of its directors
- the designer of the house
- two other staff members of the Department.

6.3 The hearing

6.3.1 The two parties, the builder, and the designer spoke at the hearing and site visit, and the evidence presented by those present enabled me to amplify or clarify various matters of fact and was of assistance to me in preparing this determination.

6.3.2 The builder described in detail the construction of the flashing elements and the remedial work carried out to comply with the suggestions of the expert following the site inspection carried out on 18 December 2007. The cladding manufacturer's local representative was of the opinion that the amended flashing was effective but the manufacturing organisation did not give its approval. If timber scribers were required to be fitted at the window jambs at this stage, considerable costs would be incurred.

6.3.3 The designer confirmed that the consented plans referred specifically to the Linea manufacturer's details and that he had not been involved with the jamb detail amendments made during the construction process. However, the house in question had a cavity that was not required by E2/AS1 taking into account the cladding system that was used. The designer was of the opinion that the flashing system as installed was equivalent or better than the system set out in the cladding manufacturer's literature. There were also additional backup features that made the system more efficient.

6.3.4 The territorial authority believed that there was an issue regarding the compression of the scriber but accepted that the provision of a cavity was an additional safeguard if moisture penetrated the cladding. If it was certain that the scriber channels released water, then the territorial authority could accept that the jamb detail would comply with clauses B2 and E2.

6.4 The site visit

6.4.1 At the site visit, the builder illustrated how the flashing system, including the scribers, was constructed and pointed out the remedial work that had been undertaken since the expert's site visit.

7. Evaluation framework

7.1 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solution[4], in this case E2/AS1, which will assist in determining whether the features of this house are code compliant. However, in making this comparison, the following general observations are valid:

- Some Acceptable Solutions are conservatively written to cover the worst case, so that they may be modified in less extreme cases and the resulting alternative solution will still comply with the Building Code.

[4] An Acceptable Solution is a prescriptive design solution approved by the Department that provides one way, but not the only way, of complying with the Building Code. The Acceptable Solutions are available from The Department's Website at www.dbh.govt.nz.

- Usually, when there is non-compliance with one provision of an Acceptable Solution, it will be necessary to add one or more other provisions to compensate for that in order to comply with the Building Code.

7.2 The approach in determining whether building work is weathertight and durable and is likely to remain so, is to apply the principles of weathertightness. This involves the examination of the design of the building, the surrounding environment, the design features that are intended to prevent the penetration of water, the cladding system, its installation, and the moisture tolerance of the external framing. The Department and its antecedent, the Building Industry Authority, have also described weathertightness risk factors in previous determinations[5] (for example, Determination 2004/1) relating to cladding and these factors are also used in the evaluation process.

7.3 The consequences of a building demonstrating a high weathertightness risk is that building solutions that comply with the Building Code will need to be more robust. Conversely, where there is a low weathertightness risk, the solutions may be less robust. In any event, there is a need for both the design of the cladding system and its installation to be carefully carried out.

8. Weathertightness risk

8.1 In relation to these characteristics I find that the house:

- is single storey
- is in a very high wind zone
- has wide eaves and verge projections that protect the claddings below them
- has extensive ground floor timber decks
- has a cavity installed behind the external claddings
- has external wall framing that is likely to be treated to a level that provides some resistance to the onset of decay if the framing absorbs and retains moisture.

8.2 The house has been evaluated using the E2/AS1 risk matrix. The risk matrix allows the summing of a range of design and location factors applying to a specific building design. The resulting risk rating can range from ‘low’ to ‘very high’. The risk rating is applied to determine what elements can be used on a building in order to comply with E2/AS1. A higher risk rating will necessitate more rigorous weatherproof detailing; for example, a high risk rating is likely to necessitate particular types of cladding being installed over a drained cavity.

8.3 When evaluated using the E2/AS1 risk matrix, and noting the weathertightness features outlined in paragraph 8.1, all elevations of the house demonstrate a medium weathertightness risk. I also note that in order to comply with E2/AS1, the cladding installed on this building would not require a drained cavity, however, one has been provided which provides a degree of conservatism in the design should other features fail to deflect moisture.

[5] Copies of all determinations issued by the Department can be obtained from the Department’s website.

9 Discussion

9.1 I consider that the expert's report establishes there is no evidence of external moisture entering the building, and accordingly, that its cladding, including the flashings in question, does comply with Clause E2 at this time.

9.2 The building is also required to comply with the durability requirements of Clause B2. Clause B2 requires that a building continues to satisfy all the objectives of the Building Code throughout its effective life, and that includes the requirement for the building to remain weathertight. Based on the evidence that was put before me regarding the construction of the flashing system, the installation of a cavity behind the cladding, and the remedial work that has been undertaken, I am able to conclude that the building will remain weathertight and in compliance with Clauses B2 and E2.

9.3 I emphasise that each determination is conducted on a case-by-case basis. Accordingly, the fact that a particular cladding system or any of its elements has been established as being code compliant in relation to a particular building does not necessarily mean that the same cladding system or elements will be code compliant in another situation. I note too that this particular house has a cavity installed behind the cladding.

9.4 Effective maintenance of building elements is important to ensure ongoing compliance with Clauses B2 and E2 of the Building Code and is the responsibility of the building owner. The Department has previously described these maintenance requirements (for example, Determination 2007/60). This is particularly important in this instance where, as noted by the expert, the dark coloured paint applied to the weatherboards may lead to them reaching high temperatures that may well affect the sealant around the exterior joinery units.

9.5 In its submission, the territorial authority has noted that it did not believe it was appropriate for it to approve amendments to manufacturer's installation instructions without the agreement of the manufacturer. I would like to point out that the territorial authority has first and foremost to observe and enforce the requirements of the Act and the Building Code. Accordingly, I consider that a territorial authority must assess any departure from instructions provided by a manufacturer in terms of the effect, if any, such a departure would have on the code compliance of the building.

9.6 Section 94(1)(a) states that a building consent authority (in this case the territorial authority) must issue a code compliance certificate if it is satisfied on reasonable grounds that building work complies with the building consent. As described in this determination, the flashing system as installed to the external joinery units, while determined as being code-compliant, differs from those detailed in the building consent. Accordingly, the original building consent should be modified to include the flashing system as installed, in order for the code compliance certificate to meet the requirements of section 94(1)(a).

10 The Decision

10.1 In accordance with section 188 of the Building Act 2004, I determine that the building work complies with Clauses B2 and E2 of the Building Code, and accordingly reverse the territorial authority's decision to refuse to issue a code compliance certificate.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 17 April 2008.

John Gardiner
Manager Determinations