

Determination 2005/66

Refusal of a code compliance certificate for a building with a “monolithic” cladding system: House 57

1 THE DISPUTE TO BE DETERMINED

- 1.1 This is a determination of a dispute referred to the Chief Executive of the Department of Building and Housing (“the Chief Executive”) under section 17 of the Building Act 1991 (“the Act”) as amended by section 424 of the Building Act 2004. The applicants are the two joint-owners (referred to throughout this determination as “the owner”), and the other party is the territorial authority. The application arises from the refusal by the territorial authority to issue a code compliance certificate for a relocated and altered house and 3-year old separate garage unless changes are made to their monolithic cladding systems.
- 1.2 The question to be determined is whether on reasonable grounds the monolithic wall cladding as installed to the timber-framed external walls of the house and garage (“the cladding”), complies with the building code (see sections 18 and 20 of the Act). By “the monolithic wall cladding as installed” I mean the components of the system (such as the backing sheets, the flashings, the joints and the plaster and/or the coatings) as well as the way the components have been installed and work together.
- 1.3 This determination is made under the Building Act 1991, subject to section 424 of the Building Act 2004. That section came into force (“commenced”) on 30 November 2004, and its relevant provisions are:
- “ . . . on and after the commencement of this section,—
- “(a) a reference to the Authority in the Building Act 1991 must be read as a reference to the chief executive; and
- “(b) the Building Act 1991 must be read with all necessary modifications to enable the chief executive to perform the functions and duties, and exercise the powers, of the Authority . . . ”

It should be noted that the new legislation does not amend the determination process set out under the 1991 Act, other than to transfer the power to make a determination from the Building Industry Authority (“the Authority”) to the Chief Executive.

- 1.4 This determination refers to the former Authority:
- (a) When quoting from documents received in the course of the determination, and
 - (b) When referring to determinations made by the Authority before section 424 came into force.
- 1.5 In making my decision, I have not considered any other aspects of the Act or the building code.

2 PROCEDURE

The building

- 2.1 The building work consists of an altered single-storey relocated house and a new separate single-storey garage situated on a level site in a high wind zone in terms of NZS 3604: 1999 “Timber framed buildings”. The external walls of the house and garage are of conventional light timber frame construction and are sheathed with monolithic cladding. The house, which has a piled timber-framed floor, is of a very simple shape, with the majority of the low-pitch roof covered with the original corrugated steel. A wide timber-framed deck extends around two elevations at ground floor level and the roof extends over this to form a veranda. There are 325mm wide eaves projections to the laundry extension, but there are no projections to the eaves and verges. The external windows and doors are timber with timber facings fixed to the jambs and heads.
- 2.2 The garage, which contains a “sleepout”, has a concrete floor slab and is of a simple shape, with the low-pitched corrugated steel roof having no eaves projections and narrow verge projections. A small lean-to roof is constructed over the paved entrance area. The external windows are aluminium with the flanges overlapping the cladding.
- 2.3 The expert commissioned by the Department is of the opinion that the timber frames of the garage appear to be untreated. Despite the owner’s submissions referred to in paragraphs 3.3 and 5.4, I consider that no specific evidence has been provided as to what timber treatment, if any, was applied to the external wall framing of the house.
- 2.4 The timber-framed external walls of the house and garage that are the subject of this determination are clad with 7.5mm thick fibre-cement backing sheets fixed through the building wrap directly to the framing timbers, finished with a 3 to 5mm thick sand/cement splatter coat, followed by a paint system.

Sequence of events

- 2.5 The territorial authority issued a building consent for the house on 22 January 2002, and for the garage on 7 March 2002.

- 2.6 The territorial authority carried out various inspections during the construction of the house and the garage. The “Notice of Inspection” for the house dated 19 February 2002, noted that the backing sheets had not been installed in accordance with the manufacturer's specifications, and the “Notice” for 30 April 2004, stated:

Because of the BIA decision that stucco cladding without a cavity cannot be code compliant you will need to seek a Determination from them now to enable us to either issue a CCC or not.

I note in regard to this statement, that while the Authority amended the Approved Document E2/AS1, I do not believe that Authority ever stated that stucco cladding cannot be code compliant without a cavity in a particular situation. E2/AS1 is only one method of achieving code compliance. A territorial authority must also consider alternative methods of construction that might well exclude a cavity, and not just rely on an Approved Document.

- 2.7 The “Notice of Inspection” for the garage dated 30 April 2004, noted that, as for the house, a code compliance certificate could not be issued because of the “stucco cladding finish without a cavity”.
- 2.8 On 6 March 2004, the owner in an e-mail to the backing sheet manufacturer described the paint system used on the buildings. The manufacturer responded by e-mail on 11 March 2004, and stated that the quality of paint was acceptable on textured coating, but the external performance of the bedding and jointing compounds could not be confirmed.
- 2.9 The territorial authority did not issue a Notice to Rectify as required by section 43(6) of the Act.
- 2.10 The owner applied for a determination on 20 May 2004. The owner forwarded further submissions to the Authority on 8 November 2004 and by the territorial authority to the Department on 27 January 2005.
- 2.11 On 8 December 2004, the territorial authority wrote to the backing sheet manufacturer asking whether that company could recommend the coating system that was used over the backing sheets, the details of which were attached to the letter.
- 2.12 The backing sheet manufacturer responded by facsimile on 23 December 2004, stating that the bedding and finishing compounds that had been used have not been tested for external applications. Also, the applied textured finish is not a waterproof finishing system. Accordingly the bedding and finishing compounds and the textured finish that were described “must not be used on the [Named] cladding sheet”.
- 2.13 In an e-mail of 13 March 2005, the owner asked the backing sheet manufacturer whether the reference to textured finish in its letter to the territorial authority of 23 December 2004 was true or was its statement to the owner made in the 11 March 2003 e-mail correct?

3 THE SUBMISSIONS

- 3.1 In a letter to the Authority dated 8 November 2004, the owner described the buildings, the dates of their construction, and the builders involved.
- 3.2 The territorial authority wrote to the Department on 27 January 2005, stating that it believed that the textured finish was too inflexible for use on the backing sheets. After viewing a video supplied by the owner, the territorial authority noted that galvanised steel corners and galvanised nails had been used in association with the cladding. In addition it noted that these items, in conjunction with the bedding compound and the textured finish, were not compatible and may fail. The territorial authority considered that the external cladding was unreinforced stucco on a solid backing without a cavity, rather than a flexible coating. The cladding also finished flush with the bottom of the floor joists and no drip edge was provided.
- 3.3 In a letter to the Department dated 31 January 2005, the owner identified the plasterer and noted that the same type of textured finish had been used on another house some 10 years ago, which had been “signed off” by the territorial authority. There had been no failure of that cladding. The owner described the paint system applied to the house and garage, and disputed the territorial authority’s claim that galvanised nails and metal corners were used. While there was no drip line, the backing sheets are nailed to treated timber and are 700mm above the ground. The owner had video evidence to substantiate that treated timber was used to construct the external walls.
- 3.4 The owner forwarded copies of:
- The territorial authority’s “Inspection Notice”;
 - Information on the cladding jointing; and
 - Some cladding technical information.
- 3.5 The territorial authority forwarded copies of:
- The plans;
 - The consent documentation;
 - The territorial authority’s inspection documentation; and
 - The correspondence with the backing sheet manufacturer.
- 3.6 Copies of the submissions and other evidence were provided to each of the parties.

4 THE RELEVANT PROVISIONS OF THE BUILDING CODE

- 4.1 The dispute for determination is whether the territorial authority’s decision to refuse to issue a code compliance certificate because it was not satisfied that the cladding

complied with clauses B2.3.1 and E2.3.2 of the building code (First Schedule, Building Regulations 1992) is correct.

- 4.2 There are no Acceptable Solutions that have been approved under section 49 of the Act that cover this cladding. The cladding is not accredited under section 59 of the Act. I am therefore of the opinion that the cladding system as installed must now be considered to be an alternative solution.
- 4.3 In several previous determinations, the Authority has made the following general observations, which in my view remain valid in this case, 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, 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.

5 THE EXPERT'S REPORT

- 5.1 The Department commissioned an independent expert ("the expert") to inspect and report on the cladding. The expert inspected the building on 14 March 2005, and furnished a report that was dated 21 March 2005. The expert was of the opinion that the sand/cement coat appears to be in sound condition. No obvious cracks were detected during the inspection, and the paint system appears sound. However, pattern staining is present at the framing lines, and the expert was not certain if this factor was significant. The expert removed a small section of the textured finish at a house window and one jamb lining. The expert also verified that plastic corner flashings had been installed. The expert's report made the following specific comments on the cladding:

The house

- A drip edge has not been formed to the base of the cladding at some locations;
- There are areas of incomplete cladding beneath the deck door sills;
- There are no flashings beneath the window sills;
- The timber jamb facings to the windows lack weather grooves, are unprimed and there is no sealant present where the facing adjoins the cladding;
- The internal corners of the cladding lack the "Inseal" strip as recommended by the manufacturer;
- The end flashing to the western end gable lacks a drip edge;
- A saddle flashing has not been installed where the veranda roof and fascia meet the west wall cladding; and

- A timber pile protrudes below the west wall and this junction is poorly detailed.

The garage

- There is inadequate clearance to the base of the cladding in many locations;
- The foam strip required where the base of the cladding oversails the foundation is missing at some locations, and the installed strip is ineffectual where the base gap is too wide;
- There are no flashings or flashing upstands to the sills of the windows and it is uncertain whether there is sealant applied between the jamb flanges and the cladding; and
- The surface mounted meter board lacks flashings.

5.2 The expert also noted that the existing roof cladding of the house was rusting in places and this raised the question of durability. In addition, the junction of the main roof and the new roof to the extension is poorly formed.

5.3 The expert carried out a series of non-invasive moisture tests at the exterior of the house external walls. Further invasive readings were made at the exterior of the external walls and readings of 25% and 32% were recorded at the horizontal east wall jointer and 32% and 40% at the horizontal west wall jointer. A reading of 24% was also recorded where the cladding had been removed at one window. The expert observed the presence of a black soot-like mould at this location. Readings were also taken where the bottom plate was accessible in the garage. A reading of 32% was recorded adjacent to the garage door, readings of 23% to 25% were recorded along the western wall, and a reading of 40% was recorded. The expert also noticed moisture staining at one jamb of the sleepout door. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the building.

5.4 Copies of the expert's report were provided to each of the parties. In a letter to the Department dated 7 April 2005, the territorial authority noted that the buildings were in a sea spray zone and that the original house roofing would not have the full 15-year durability requirement. The owner also responded in a letter to the Department dated 3 April 2005. The owner noted that at the time of construction a cavity was not a requirement and described the order of cladding application. The owner stated that treated timber was used for some of the floor framing. The owner also referred to correspondence between the owner and the backing sheet manufacturer.

6 DISCUSSION

General

6.1 I have considered the submissions of the parties, the expert's report and the other evidence in this matter. The approach in determining whether building work complies with clauses B2 and E2, is to examine 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 Authority and the Department have described the weathertightness risk factors in previous determinations (Refer to Determination 2004/01 *et al*) relating to monolithic cladding and I have taken these comments into account in this determination.

Weathertightness risk

6.2 In relation to these weathertightness risk characteristics I find that the house and garage:

- Have some eaves and verge projections that provide limited protection to the lower cladding and an extended veranda roof to the house that affords excellent protection;
- Are built in a high wind zone;
- Are single storey;
- Are very simple on plan;
- Have no balconies;
- Have external windows and door without jamb or sill flashings; and
- Have external wall framing that may not be able to resist the onset of decay if it absorbs and retains moisture.

Weathertightness performance

6.3 I find that the monolithic cladding in general does not appear to have been installed according to good trade practice. As a result, there are a number of identified defects, set out in paragraphs 5.1 and 5.2, and in the expert's report, which have contributed to the levels of moisture penetration already evident in several locations in the external walls of the house and garage. In addition, the external wall framing timber is in all likelihood not treated, and thus unable to resist the onset of decay if it gets wet.

6.4 I note that all elevations of the house and garage demonstrate a low weathertightness risk rating, apart from one house elevation that demonstrates a medium risk, using the E2/AS1 risk matrix. The matrix is an assessment tool that is intended to be used at the time of application for consent, before the building work has begun and, consequently, before any assessment of the quality of the building work can be made. Poorly executed building work introduces a risk that cannot be taken into account in the consent stage, but must be taken into account when the building as actually built is assessed for the purposes of issuing a code compliance certificate.

7 CONCLUSION

- 7.1 I am satisfied that the performance of the monolithic cladding is inadequate because it has not been installed according to good trade practice. In particular, it demonstrates the key defects listed in paragraphs 5.1 and 5.2. I have also identified the presence of some known weathertightness risk factors in this design. The presence of the risk factors on their own is not necessarily a concern, but they have to be considered in combination with the significant faults identified in the cladding system. It is that combination of risk factors and faults that indicate that the structure does not have sufficient provisions that would compensate for the lack of a full drainage cavity. Consequently, I am not satisfied that the cladding system as installed complies with clause E2 of the building code.
- 7.2 In addition, 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 house and garage to remain weathertight. The cladding faults in the house and garage are allowing the ingress of moisture into the cladding itself. Accordingly, I find the house and garage do not comply with the durability requirements of clause B2.
- 7.3 I find that because of the apparent complexity of the faults that have been identified with this cladding, I am unable to conclude, with the information available to me, that remediation of the identified faults, as opposed to partial or full recladding, could result in compliance with clauses B2 and E2. I consider that any final decisions on whether code compliance can be achieved by either remediation or recladding, or a combination of both, can only be made after a more thorough investigation of the cladding. This will require a careful analysis by an appropriately qualified expert as to the correct remedial option to be followed. Once that decision has been made, it should be submitted to the territorial authority for its comment and approval. If the territorial authority chooses to reject the proposal, then the owner is entitled to seek a further determination that will rule on whether the proposed remedial work will comply with the requirements of clauses E2 and B2.
- 7.4 I note that effective maintenance of monolithic claddings is important to ensure ongoing compliance with clause B2 of the building code. That maintenance is the responsibility of the building owner. The code assumes that the normal maintenance necessary to ensure the durability of the cladding is carried out. For that reason clause B2.3.1 of the building code requires that the cladding be subject to “normal maintenance”. That term is not defined and I take the view that it must be given its ordinary and natural meaning in context. In other words, normal maintenance of the cladding means inspections and activities such as regular cleaning, re-painting, replacing sealants, and so on.
- 7.5 In the circumstances, I decline to incorporate any waiver or modification of the building code in its determination.

8 THE DECISION

- 8.1 In accordance with section 20 of the Act, I hereby determine that the monolithic cladding system as installed does not comply with clauses B2 and E2 of the building code and accordingly confirm the decision of the territorial authority to refuse to issue a code compliance certificate.
- 8.2 I note that the territorial authority has not issued a Notice to Rectify. The territorial authority should do so and the owner is then obliged to bring the house and garage up to compliance with the building code. It is not for me to decide directly how the defects are to be remedied and the cladding brought to compliance with the building code. That is a matter for the owner to propose and for the territorial authority to accept or reject, with either of the parties entitled to submit doubts or disputes to the Chief Executive for another determination.
- 8.3 Finally, I consider that continuing maintenance of the cladding will be required to ensure its continuing building code compliance. I note that the original roofing has now been in place for several years, and its 15-year durability performance requirement will start once the code compliance certificate is issued. Accordingly, this element will require additional attention.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 5 May 2005.

John Gardiner
Determinations Manager