Determination 2005/57

Refusal of a code compliance certificate for a building with a "monolithic" cladding system: House 49

1 THE DISPUTE TO BE DETERMINED

1.1 This is a determination by 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 applicant was the original owner (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 3-year old house unless changes are made to its monolithic cladding system.

1.2 My task in this determination is to consider whether I am satisfied on reasonable grounds that the external monolithic wall cladding as installed ("the cladding") on the walls of the house complies with the building code (see sections 18 and 20 of the Act). By "external 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 No other aspects of the Act or the building code have been considered in this determination.

2 PROCEDURE

The building

2.1 The building is a part single-storey and part two-storey-storey house situated on a level site in a high wind zone in terms of NZS 3604: 1999 "Timber framed buildings". The house is of conventional light timber frame construction on a concrete slab and blockwork foundations. The timber-framed external walls of the building are lined with monolithic cladding. The house is of a relatively simple shape, but the pitched roofs are set at two main levels with hip, valley and wall to roof junctions. The building has one balcony constructed at the first-floor level, which is partially cantilevered and partially constructed over a habitable space. The eaves have 600mm wide projections and the verges have 300mm wide projections. The current owners have constructed a low deck to the north elevation of the house and a porch adjacent to the rear garage door.

2.2 The expert commissioned by the Department notes that the specification calls for H3 treatment for the timber framing, and observes that, while the balcony deck and balustrade timber framing is H3 treated, most of the other timber framing appears to be a mix of H1 treated timber or untreated timber. I have not received any further evidence of the treatment, if any, of the timber used in the construction of the exterior walls.

2.3 The cladding system incorporates 7.5mm fibre-cement backing sheets fixed through the building wrap directly to the wall framing and finished with a proprietary exterior coating system.

2.4 The finishing system manufacturer has provided a "Final Release Certificate" dated October 2001, and a "Producer Statement" dated 15 June 2004, for the cladding finishing system.

Sequence of events

2.5 The territorial authority issued a building consent in mid-2001.

2.6 The territorial authority made various inspections during the course of construction, passed the pre-lining inspection on 18 September 2001, and carried out a completion inspection on 8 December 2003.

2.7 According to the original owner, the territorial authority will not issue a code compliance certificate due to the cladding that has been installed on the house.

2.8 The house was recently sold to the present owners.

2.9 The territorial authority did not issue a Notice to Rectify as required by section 43(6) of the Act.

2.10 The Authority received the original owner's application for a determination on 20 September 2004.

3 THE SUBMISSIONS

3.1 The owner provided copies of:

- The building plans;
- Some of the consent documentation;
- One of the territorial authority's inspection sheets; and
- The producer statement and the final release certificate from the cladding finishing system's manufacturer.

3.2 The copies of the evidence were provided to each of the parties and neither party made a further response.

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 and E2 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; and

- 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 3 March 2005, and furnished a report that was completed on 15 March 2005. It stated that the house has a "good appearance" and the expert was of the opinion that the cladding is mostly installed satisfactorily. The expert cut away the cladding adjacent to one window sill and established that foam "Inseals" are installed at the external window and door jambs and sills. The expert's report made the following specific comments on the cladding:

- There is no effective horizontal joint installed in the eastern elevation cladding;

- The base of the cladding has insufficient ground clearance at some locations;

- No "Inseal" strips have been installed to the 6 mm gap at the base of the cladding where it oversails the foundation wall;

- The sealant at the junction of the top of the balcony balustrade where it adjoins the roofing is inadequate;

- The top of the balcony balustrade lacks the required cross fall, is inadequately waterproofed, and lacks saddle flashings at the main wall junctions;

- The southern elevation barge flashing is inadequately finished at its junction with the cladding;

- The paint coating is hard down onto the head flashings of the external windows and doors, and the head flashing finishes onto the face of the frames;

- The "Inseal" insert to the external window and door sills does not comply with the manufacturer's recommendations;

- The deck of the balcony only has one drainage outlet instead of the two that are required to this area;

- The timber-framed deck adjacent to the northern elevation is too close to the cladding;

- A number of penetrations through the cladding lack rubber flanges and silicone seals;
- Flashings are not installed to the electrical meter box; and
- There is a build up of plant growth against the cladding of the western elevation.

5.2 The expert also noted that the ground clearance between the base of the cladding and the deck of the balustrade would be insufficient if tiles were to be laid on the deck in the future. In addition, the deck membrane is under stress and the deck has an inadequate fall, although at the time of viewing water was draining well with no evidence of ponding.

5.3 The expert also described the use of sealants in lieu of metal flashings at some roofing junctions, and the inadequate sealing under the northern roof valley.

5.4 The expert took moisture readings though both the interior and the exterior of the monolithic-clad external walls throughout the house using a non-invasive meter. The expert then carried out further invasive testing through the exterior cladding and obtained the following high readings:

- 22.0% at the east of the balcony wall; and
- 24.0% at the north of the balcony wall.

Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.

5.5 Copies of the expert's report were provided to each of the parties. The owner responded with a letter dated 23 March 2005, which outlined the owner's concern at the number of defects that had been identified in the report. The owner was discussing the issues with a registered builder and would also discuss the matters with the territorial authority.

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 B2.3.1 and E2.3.2, 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 the weathertightness characteristics, I find that the house:

- Has 600mm wide eaves projections that provide good protection to the cladding areas below them; and 300mm wide verge protections that provide some protection;
- Is in a high wind zone;
- Is in part two storeys high;
- Is of a relatively simple shape on plan, with roofs that have hip, valley and wall to roof junctions;
- Has one balcony, which is partially constructed over a habitable space;
- Has lower level roof spaces that assist in the ventilation of the external wall cavities above them; and
- Has some external wall framing, which as it is untreated, will be less able to resist decay if it absorbs and retains moisture.

Weathertightness performance

6.3 I find that, generally, some aspects of the cladding appears to have been installed according to good trade practice and to the manufacturer's instructions, but some junctions, edges, and penetrations are not well constructed. These areas are:

- The lack of an effective horizontal joint in the eastern elevation cladding;
- The insufficient ground clearance at the base of the cladding at some locations;
- The lack of "Inseal" strips to the 6 mm gap at the base of the cladding where it oversails the foundation wall;
- The inadequate seal of the top of the balcony balustrade at its junction with the roofing;
- The inadequately finished southern elevation barge flashing where it adjoins the cladding;
- The lack of the required cross fall to the top of the balcony balustrade, the inadequately waterproofed top, and the lack of saddle flashings at the main wall junctions;
- The paint coating being hard down onto the head flashings of the external windows and doors, and the head flashing finishing onto the face of the frames;
- The non-complying "Inseal" insert to the external window and door sills;

- The omission of one drainage outlet to the deck of the balcony;
- The timber-framed deck adjacent to the northern elevation being too close to the cladding;
- The lack of rubber flanges and silicone seals to a number of penetrations through the cladding;
- The lack of flashings to the electrical meter box; and
- The build up of plant growth against the cladding of the western elevation.

6.4 Notwithstanding the fact that the backing sheets are fixed directly to the timber framing, thus inhibiting drainage and ventilation behind the cladding sheets, I find that there are compensating factors that assist the performance of the cladding in this particular case:

- The cladding generally appears to have been installed according to good trade practice;
- The lower roof spaces afford some ventilation to the upper external wall cavities; and
- The moisture ingress is entirely related to the balcony balustrades, the timber framing of which and of the deck below it, is H3 treated.

6.5 I consider that these factors help compensate for the lack of a drainage and ventilation cavity, and can allow the house to comply with the weathertightness and durability provisions of the building code, providing that corrective measures are undertaken.

6.6 I also recommend that the question of the deck membrane stress and the deck's inadequate fall, the use of sealants in lieu of metal flashings at some roofing junctions, and the inadequate sealing under the northern roof valley be investigated and appropriate measures be taken to ensure continuing code compliance. Care should also be taken to ensure that adequate base clearance is maintained if tiles are installed over the deck membrane in the future.

6.7 I note that one elevation of the house demonstrates a low weathertightness risk rating, one elevation demonstrates a medium rating, and the remaining two elevations a high rating, as calculated 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 current performance of the cladding is not adequate because it is allowing water penetration into the wall framing in the region of the balconies at present. 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 specified life, and that includes the requirement for the house to remain weathertight. Because the cladding faults in the house will allow the ingress of moisture in the future, the house does not comply with the durability requirements of clause B2 of the building code.

7.3 I consider that, because the faults that have been identified with this cladding occur in discrete areas, I am able to conclude that satisfactory rectification of the items outlined in paragraph 6.3, together with any remediation required to the balcony deck and the roofing, will consequently lead to the building being weathertight and in compliance with clauses B2 and E2, notwithstanding the lack of a ventilated cavity.

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. I note also that the expert has recommended that the cladding be repainted as a matter of urgency.

7.5 It is emphasised that each determination is conducted on a case-by-case basis. Accordingly, the fact that a particular cladding system has been established as being code compliant in relation to a particular building does not necessarily mean that the same cladding system will be code compliant in another situation.

7.6 I decline to incorporate any waiver or modification of the building code in this determination.

8 THE DECISION

8.1 In accordance with section 20 of the Building Act 1991, I hereby determine that the cladding system as installed does not comply with clause E2 of the building code. There are also a number of items to be remedied to ensure that the house remains weathertight and thus meet the durability requirement of the code. Consequently, I find that the house does not comply with clause B2. Accordingly, I confirm the territorial authority's decision to refuse to issue a code compliance certificate.

8.2 I also find that rectification of the items outlined in paragraph 6.3, together with any

remediation required to the balcony deck and the roofing, to the approval of the territorial authority, along with any other faults that may become apparent in the course of that work, will consequently result in the house being weathertight and in compliance with clauses B2 and E2, notwithstanding the lack of a ventilated cavity.

8.3 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 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.

8.4 Finally, I consider that the cladding will require on-going maintenance to ensure its continuing code compliance.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 28 April 2005.

John Gardiner
Determinations Manager