

Determination 2005/104

Refusal of a code compliance certificate for a building with a “monolithic” cladding system: House 92

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 applicant is the North Shore City Council (referred to throughout this determination as “the territorial authority”) and, initially, the other party was the original owner, Crown Xu (referred to throughout this determination as the “original owner”). However, the house was sold to the current owner, Xin Jiang, who requested through his legal representative that the territorial authority continue with the determination. The application arises from the refusal by the territorial authority to issue a code compliance certificate for a 1-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 cladding as installed (“the cladding”), which is applied to the external walls of this house complies with the building code (see sections 18 and 20 of the Act). By “external 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 is a two-storey detached house situated on an excavated slightly sloping site, which is in a very high wind zone in terms of NZS 3604: 1999 “Timber framed buildings”. The external walls are of conventional light timber frame construction built on concrete block foundation walls, or on piled timber-framed floors, and are sheathed with monolithic cladding. The house is of a fairly simple shape, but has a complex roofing system constructed at various levels, with numerous wall to roof junctions and some internal gutters. Generally, the eaves have 600 to 700mm wide projections, but the small highest-level roof has parapet walls to some perimeters and minimum projections to the remainder. A small flat roof constructed over the main entrance is extended to intersect two main roofing planes. A full height monolithic-clad timber-framed chimney is built against an external wall, and is set through an upper roof.
- 2.2 The timber supplier issued a producer statement dated 3 March 2005, verifying that the exterior house framing was H3.1LOSP treated.
- 2.3 The cladding system is what is described as monolithic cladding, and is a 60mm thick “Insulclad” system, fixed over polystyrene battens so as to create a drainage cavity between the building wrap (over the studs) and the backing sheets. The “Insulclad” is finished with an “Ezytek” plaster system.
- 2.4 Plaster Systems Ltd issued a producer statement dated 20 August 2004, covering the cladding.
- 2.5 The cladding system applicator issued an “Insulclad” Workmanship Guarantee dated 29 July 2004, for a period of 5 years; and an “Insulclad” Materials Components Guarantee dated 29 July 2003, for a period of 15 years.

Sequence of events

- 2.6 The territorial authority issued a building consent on 26 October 2000. There were conditions attached to the consent that pertained to the cladding, including the requirements for inspections, producer statements, and warranties.
- 2.7 Work on the house started late in 2003, and the territorial authority carried out inspections during the course of construction. The territorial authority approved the pre-line building inspection on 19 April 2004 and the post-line re-check inspection on 8 May 2004. However, after a visit on 20 March 2004, the territorial authority noted its concerns about some aspects of the cladding.
- 2.8 In a letter to the owner dated 1 October 2004, the territorial authority stated that the building code required the durability of the cladding to be 15 years, and that of the timber framing 50 years. The territorial authority then listed 8 defects found after the cladding had been inspected on 21 September 2004, and noted that due to various factors, the territorial authority could not be satisfied, on reasonable grounds, that the building was code compliant. The territorial authority also listed other building and plumbing items that required rectification.
- 2.9 On 15 October 2004, the territorial authority faxed the original owner advising that remedial work should not be undertaken prior to going through the determination process.
- 2.10 Following a 22 October 2004 meeting, the territorial authority wrote to the original owner on the same day, noting that it was agreed that the owner would engage a suitably qualified weathertightness inspector to investigate the cladding issues. An outline for briefing the consultant was also included.
- 2.11 The original owner wrote to the territorial authority on 16 November 2004, stating that as he had been unable to obtain the services of a consultant, the territorial authority should re-inspect the critical areas of work. The owner also noted that the remedial work described in a territorial authority memo would be carried out.
- 2.12 The territorial authority did not issue a Notice to Rectify as required under section 43(6) of the Act.
- 2.13 The territorial authority applied for a determination on 7 February 2005.

3 THE SUBMISSIONS

- 3.1 The territorial authority made a submission in the form of a letter to the Department dated 7 February 2005, which summarised the consent and inspection processes relating to the house. The territorial authority also noted that due to the complexity of the house, specific construction detailing was requested during construction, and this information had not been received. Work had continued without the territorial authority's approval, and the territorial authority is unable to verify that the completed work was code compliant. The owner was requested to provide

certification as to weathertightness, but had been unable to obtain the services of a suitable consultant. The territorial authority noted that the matter of doubt was:

...whether the installed cladding system complies with clauses B2.3.1 and E2.3.2 of the Building Code.

3.2 The territorial authority supplied copies of:

- The plans, and part of the specifications;
- The consent and inspection documentation;
- The cladding manufacturer's technical data;
- The correspondence with the owner; and
- A set of photographs.

3.3 In a letter to the Department dated 2 March 2005, the original owner described the construction timeline and identified the designer, the engineer, and the timber supplier.

3.4 The original owner supplied copies of:

- The producer statements and guarantees; and
- Sketches showing the junctions between the fascia board and the cladding.

3.5 The copies of the submissions and other evidence were provided to each of the parties. Neither the owner nor the territorial authority made any further submissions in response to the submissions of the other party.

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 Department 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 18 May 2005 and on 24 May 2005, and furnished a report that was dated June 2005. It noted that the cladding is apparently installed to a satisfactory standard, but has many small design and workmanship faults. There was no evidence of cracking, and the plaster finish generally appeared to be satisfactory. No control joints are evident in the cladding, and the expert noted that the dimensions of the walls in this house only slightly exceeded the independent product appraisal requirement for horizontal control joints at the chimney and adjoining east wall. The expert removed the plaster coating to reveal the window perimeter details at one location, and noted that the windows were adequately flashed. It was the expert's opinion that the absence of a perforated jamb flashing return did not detract from the performance of the flashing system. I accept that the details revealed by the invasive inspection are representative of the other similar locations throughout the house. Removal of the plaster at the end of the south porch fascia revealed a proprietary type sill flashing. The expert also made the following comments regarding the cladding:

- There are no control joints at the junction between the base of the cladding and the concrete foundation at the east and west elevations;
- The ground clearances at the base of the cladding are insufficient at the northwest corner of the garage;
- There is no slotted cavity closer to the base of the cladding on the south and east elevations;
- The butyl-rubber membrane of the entrance roof/gutter is adhesive fixed to the cladding face;
- The pvc flashings at the junctions between the reverse slope eaves soffits and the cladding are ineffectively installed. In addition, there is a gap at the soffit junction of the south facing bedroom wall;
- There is an unsatisfactory detail between the oversailing upper roof and the roof underneath it;
- The cladding termination at the boundary joist of the living room does not effectively protect the joist;

- There are no flashings where the ends of the roof barge fascias/flashings adjoin the cladding at some locations, and the junctions are also inadequately sealed;
- The apron flashings to the two east elevation roofs are turned up in front of the slotted wall cavity closers;
- There is an ineffective junction between the cladding above the south porch and the sloping roof apex;
- There is no “jamb” flashing at the end of the south porch fascia board;
- A section of plaster is missing at the intersection of the apron flashing adjoining the kitchen area and the cladding;
- There is a gap at one barge/eaves/cladding junction; and
- The tap penetration through the cladding is inadequately sealed, and there are no uPVC flanges around any of the pipe penetrations.

5.2 The expert took non-invasive readings at the interior linings of the exterior walls and no elevated readings were obtained. Further invasive readings were then taken and all readings were well within acceptable limits, with the exception of a reading at the base of the south elevation wall above the porch/foyer roof, which registered 99%. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure. The expert also noted that the readings were taken after a prolonged period of dry weather.

5.3 Copies of the expert’s report were provided to each of the parties.

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 the weathertightness characteristics, I find that the house:

- Has generally 600mm to 700mm wide eaves projections that provide good

protection to the cladding areas below them;

- Has an upper level roof that has no effective projections;
- Is two storeys high;
- Is of a fairly simple shape on plan, with a complex roofing system that has numerous roof to wall junctions and some internal gutters;
- Has no balconies or decks;
- Has windows and doors that are adequately flashed;
- Has lower level roof spaces to some locations that may assist in the ventilation of the external wall cavities above them; and
- Has external wall framing that is treated to a level that would help prevent decay if it absorbs and retains moisture.

Weathertightness performance

6.3 Generally, 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 described in paragraph 5.1, and in the expert's report, as being:

- There lack of control joints at the junction between the base of the cladding and the concrete foundation at the east or west elevations;
- The insufficient ground clearances at the base of the cladding at northwest corner of the garage;
- The lack of a slotted cavity closer to the base of the cladding on the south and east elevations;
- The adhesive fixed butyl-rubber membrane of the entrance roof/gutter to the cladding face;
- The ineffectively installed pvc flashings at the junctions between the reverse slope eaves soffits and the cladding, and the gap at the soffit junction of the south facing bedroom wall;
- The unsatisfactory detail between the oversailing upper roof and the roof underneath it;
- The ineffective cladding termination at the boundary joist of the living room;
- The lack of flashings where the ends of the roof barge fascias/flashings adjoin the cladding at some locations, and the inadequately sealed junctions;
- The apron flashings to the two east elevation roofs being turned up in front of

the slotted wall cavity closers;

- The ineffective junction between the cladding above the south porch and the sloping roof apex;
- The lack of a "jamb" flashing at the end of the south porch fascia board;
- The missing section of plaster at the intersection of the apron flashing adjoining the kitchen area and the cladding;
- The gap at one barge/eaves/cladding junction; and
- The inadequately sealed tap penetration through the cladding, and the lack of PVC flanges around any of the pipe penetrations.

6.4 I also find that there are compensating factors that assist the performance of the cladding in this particular case:

- Apart from several small design and workmanship faults, the cladding generally appears to have been installed according to good trade practice;
- The house generally has wide eaves projections that provide protection to the cladding below them;
- The house has no balconies or decks;
- The external doors and windows are adequately flashed;
- The house has cladding with a drained and ventilated cavity between it and the wall framing;
- The house has lower level roof spaces to some locations that assist in the ventilation of the external wall cavities above them; and
- The house has external wall framing that is treated to a level that would help prevent decay if it absorbs and retains moisture.

6.5 I consider that these factors allow the house to comply with the weathertightness and durability provisions of the building code.

6.6 I note that the expert has commented on the requirements regarding control joints in the cladding, and I accept that this instance control joints are not required in the cladding applied to this house. I also accept the expert's comment that the external windows and doors are adequately flashed.

6.7 I note that all elevations of the house demonstrate a high weathertightness risk 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 house in at least one location, which could affect the cladding of the house. Consequently, I am not satisfied that the cladding system as installed on the house complies with clause E2 of the building code.
- 7.2 In addition, the house 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 to remain weathertight. Because the cladding faults on 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 is likely to result in the house being weathertight and in compliance with clauses B2 and E2.
- 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 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 on the house 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 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 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.
- 8.3 I note that the territorial authority has not issued a Notice to Rectify. The territorial authority should now issue a Notice to Fix, and the owner is then obliged to bring the extension 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.
- 8.4 I would suggest that the parties adopt the following process to meet the requirements of clause 8.3. Initially, the territorial authority should issue the Notice to Fix, listing all the items that the territorial authority considers to be non-compliant. The owner should then produce a response to this in the form of a technically robust proposal, produced in conjunction with an expert, as to the rectification or otherwise of the specified issues. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination. As indicated earlier in this determination, the Chief Executive might already have decided upon some of the issues that may be raised by the territorial authority in its Notice to Fix, including the territorial authority's requirement, if any, for a ventilated and drained cavity or equivalent.
- 8.5 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 18 July 2005.

John Gardiner
Determinations Manager