



Determination 2009/43

Determination regarding the code compliance of chimney flashings on a house at 119 Derwent Crescent, Invercargill

1. The matters to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ (“the current 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 owner, Mt T Lowen (“the applicant”) acting through a plumber (“the plumber”), and the other party is the Invercargill City Council (“the authority”), carrying out its duties as a territorial authority and a building consent authority.
- 1.2 This determination arises from the decision of the authority to refuse to amend a building consent, and subsequently refuse to issue a code compliance certificate, for the installation of a wood-burning appliance and flue (“the appliance”) in an existing house because it was not satisfied that the roof flashing would comply with Clause E2 of the Building Code² (Schedule 1, Building Regulations 1992).
- 1.3 I take the view that the matters for determination, in terms of sections 177(a), and 188 is whether the proposed roof flashing complies with Clauses E2 “External Moisture” and B2 “Durability”
- 1.4 In making my decision I have considered the submissions of the parties and the other evidence in this matter.

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

² The Building Code is available from the Department’s website at www.dbh.govt.nz.

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 work

Figure 1: chimney section

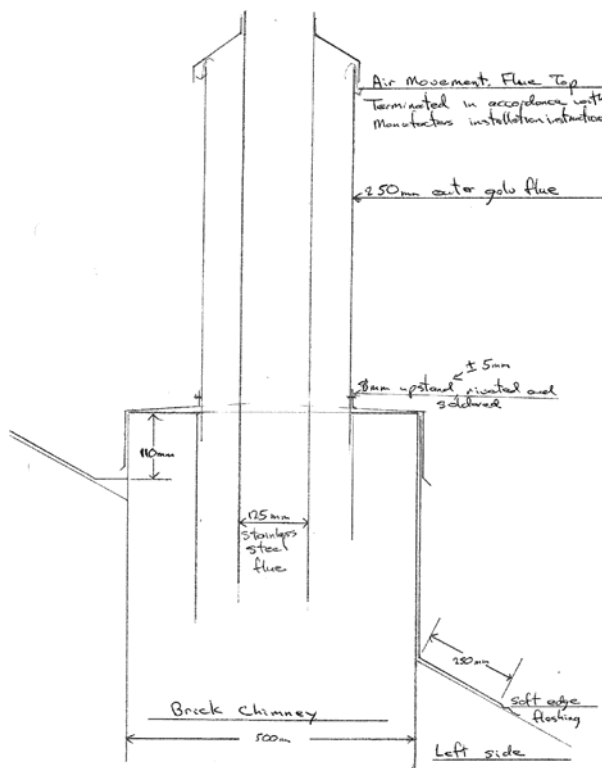
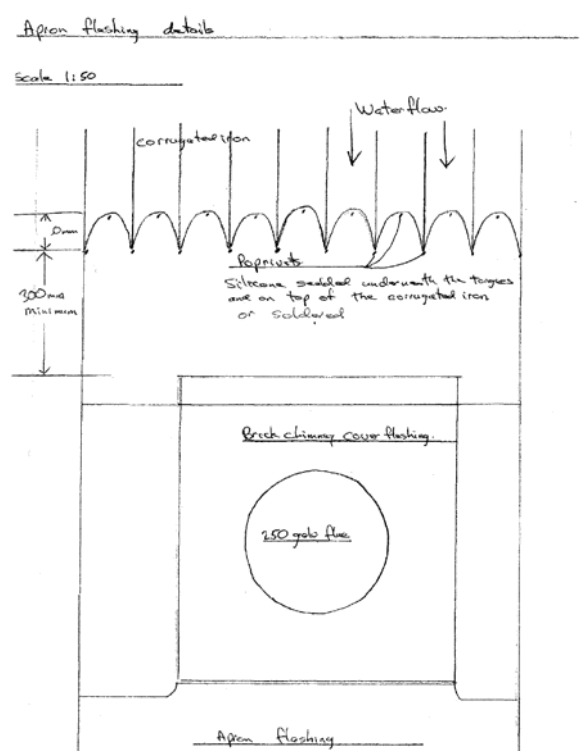


Figure 2: The apron flashing details



- 2.1 The building work in question relates to the flashing of an existing brick chimney which accommodates the flue of the appliance and is as shown on the above Figures 1 and 2. I have been informed that the chimney in question is located at the lower section of the pre-painted corrugated iron roof to a house.
- 2.2 Part of the apron flashing detail included 60mm “tongues” cut to fit the corrugations of the roof, with either silicone sealant applied between the two surfaces pop-riveted together or the tongues soldered to the roof (see paragraph 3.7).
- 2.3 The authority has concerns about the detailing where the flashing abuts the roofing corrugations.

3. Background

- 3.1 In November 2008 the authority issued a building consent (No 2008/1703) for the installation of the appliance. Following an inspection during the installation of the appliance, the authority wrote to the applicant on 6 January 2009 noting the existing chimney had been taken down below the roof line. The authority stated that the chimney required rebuilding to above the roof line, and a detailed drawing was required for an amendment to the building consent showing how the flue of the appliance was to be installed.

- 3.2 On 14 January 2009 the authority wrote to the plumber noting that the details provided did not comply with Figure 55 of E2/AS1 and asked for further clarifications.
- 3.3 The plumber supplied two sketches of the proposed method of flashing the flue and chimney (refer figures 1 and 2), and described the installation in terms of an alternative solution to the Compliance Document E2/AS1. In a letter to the plumber dated 16 February 2009, the authority did not accept the proposed alternative solution as being code-compliant.
- 3.4 On 12 March 2009, the plumber provided the authority with a completed “Alternative Solution Assessment” form for the proposed flashings. In a fax to the plumber sent on 30 March 2009, the authority rejected the proposal on the grounds that it relied on silicone to prevent water entering the building. The authority understood that the basis for the proposal was that the method had been used in previous projects.
- 3.5 The plumber provided the authority with a set of photographs and a commentary regarding flashings that he had installed in 1984 and 1986, and which the plumber stated had prevented the entry of water.
- 3.6 The plumber wrote to the authority on 7 April 2009 proposing to solder the tongues to the roof instead of using silicone and noting that other products rely solely on silicone to achieve a weathertight seal.
- 3.7 The authority responded on 16 April 2009 suggesting that in addition to the soldering ‘an over-flashing over the top like rubber glued down or another flashing siliconed over the top’ would be acceptable.
- 3.8 The Department received an application for a determination from the plumber, on behalf of the applicants, on 17 April 2009.

4. The submissions

- 4.1 In the application for a determination the plumber noted that the issue related to the reliance on silicone to seal the flashing.
- 4.2 The plumber forwarded copies of:
- the correspondence with the authority
 - the sketches and photographs used to support the applicant’s submission.
- 4.3 The authority provided the Department with copies of relevant documentation relating to the project.

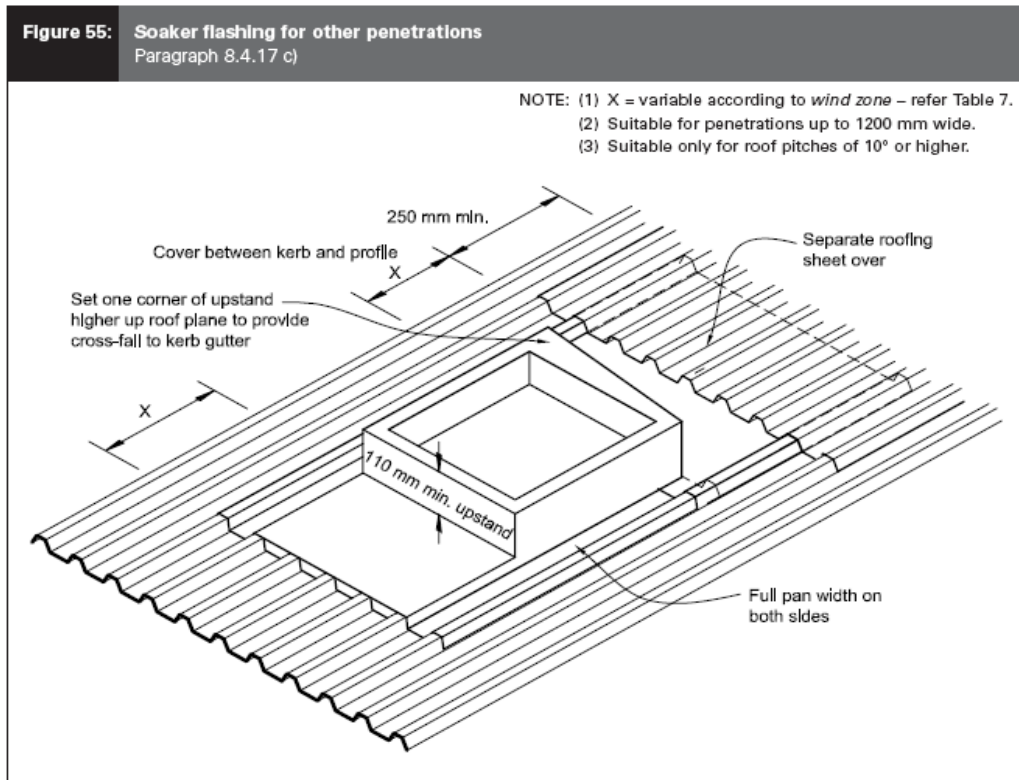
5. The relevant legislation

- 5.1 The relevant section of the current Act is:

49 Grant of building consent

- (1) A building consent authority must grant a building consent if it is satisfied on reasonable grounds that the provisions of the building code would be met if the building work were properly completed in accordance with the plans and specifications that accompanied the application.

5.2 The relevant figure from Acceptable Solution E2/AS1 is:



6. The draft determination

- 6.1 Copies of a draft determination were issued to the parties for comment on 13 May 2009.
- 6.2 The applicant accepted the draft but raised some queries as to the effectiveness of the acceptable solution in Figure 55 of E2/AS1, and commented on authorities' reliance on acceptable solutions as the only method of compliance. The applicant also noted that:
- the initial proposed seal would use 'a minimum of 10-15mm thick bead applied to the edge of the flashing before being pop-riveted down', the silicone 'merely seals it' and there is no problem with expansion and contraction using this method
 - within Clause B2 there is no requirement for the flashing to last the expected life of the roofing.
- 6.3 The authority accepted the outcome of the determination and commented as follows:
- The applicant had not applied for an amendment to the consent, the determination should address the authority's decision to refuse a code compliance certificate.

- The Department appeared to have doubts as to the method proposed as the determination requires the authority to inspect the workmanship on completion. The authority's methods for checking high-level constructions are conducted from the ground, due to health and safety requirements.

7. The evaluation for code-compliance

- 7.1 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solutions³, 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 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.
 - 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 authority's concern is that the gutter flashing behind the chimney is not detailed in accordance with Figure 55 of E2/AS1 and in the initial proposal relied on silicone to seal the junction with the roofing. The plumber maintains that the detail provided, using silicone and pop rivets, is an alternative solution that is as effective as that shown in Figure 55.
- 7.3 I have closely examined the detail forwarded by the plumber and contrasted it to the acceptable solution in Figure 55 above and have considered the plumber's comments in response to the draft. I concur with the authority's concern that the initial proposal using silicone would be reliant on sealant for compliance with Clause E2. While the flashing may not leak initially, it is at risk of leaking within the expected life of the roofing. Therefore, I am satisfied that that the chimney flashing as detailed in the initial proposal using silicone would not comply with Clause B2 of the Building Code.
- 7.4 In response to the plumber's comment regarding the expected life of the flashing, I note that Table 1 of B2/AS1 describes 'all flashings to roof cladding, flues and other roof penetrations' as requiring a durability of 15 years, not the 5 years indicated by the plumber.
- 7.5 I would be prepared to accept that provided the flashing is pop-riveted and soldered to the roofing, and that a fall equivalent to that indicated by Figure 55 is provided in the length of the gutter flashing so that water cannot pond at the joint, that this detail could comply with Clauses E2 and B2. I note the proposed detail would be dependent on a high standard of workmanship and that the authority, in its final inspection, would need to be satisfied on reasonable grounds as to the standard of workmanship when issuing the code compliance certificate.

³ 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.

7.6 I acknowledge the comments made by the plumber (refer paragraph 3.7) that the use of an EPDM boot described in E2/AS1 is also reliant on sealant to achieve a weathertight joint. However, an EPDM boot is easily moulded to a roofing profile and has provision for the sealant to be applied between two parallel mating surfaces. In this instance the sealant joint would be applied between the surface of the roof and the tapering edge of the flashing.

7.7 I note that the authority states that its inspectors carry out roof inspections and the like from the ground (refer paragraph 6.3). The authority has provided a copy of its Health and Safety Policy Statement which notes:

Roof/Ladder Safety:

Inspectors are not to climb onto roofing to inspect flashings, penetrations etc unless the builder/contractor has provided the appropriate safety gear, eg. secured ladder, harness etc.

7.8 While I appreciate the need for the authority's inspectors not to put themselves at risk, I also note that an authority is required to adequately inspect work to ensure its code-compliance. I therefore urge the parties to make suitable arrangements for the safe inspection of the roof flashing.

8. What is to be done now?

8.1 I would suggest that the applicant provides a revised flashing/gutter detail to the authority showing the use of pop rivets and solder to seal the tongues of the flashing to the roof. The authority can then issue an amendment to the building consent and, if the final inspection satisfies the authority, a code compliance certificate may be issued.

9. The decision

9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the proposed roof flashing, if pop-riveted and soldered to the roofing as detailed in paragraph 7.5, would comply with Clauses E2 and B2 of the Building Code

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 11 June 2008.

John Gardiner
Manager Determinations