

Determination

under the

Building Act 1991

No. 94/003: Fire protection between unit titles

1. The matter to be determined

- 1.1 The matter before the Authority was expressed as being whether, in order to comply with paragraph 4.6 of Approved Document C3/AS1, walls which divide a building into unit titles must extend above the roof to form a parapet when the fire hazard category of the building is 3 or greater and the roof has no fire resistance rating. A sketch accompanying the application showed a "typical site plan" of a building with a flat roof subdivided into two unit titles. An external wall of the building just inside the title boundary of the site was shown as being as extending above the roof to form a parapet for the protection of an adjacent building on the other side of the site boundary. The internal fire-rated wall that separated the unit titles was shown as extending to the under side of the roof cladding. Although not noted on the sketch, the roof presumably had no fire resistance rating.
- 1.2 The applicant was a firm of consulting engineers, the other party was a territorial authority. The application was not made in relation to any particular building or proposed building. Neither of the parties wished to speak and call evidence.
- 1.3 The Authority takes the view that it is being asked in effect to determine whether a building as shown in the sketch would comply with the New Zealand Building Code (the First Schedule to the Building Regulations 1992) if the building was within fire hazard category 3 or 4 in accordance with paragraph A2.0 of Appendix A to Approved Documents C2, C3, C4.

2. Discussion

- 2.1 The applicant contended that the internal wall shown on the sketch met the objectives and performance requirements of the New Zealand Building Code.
- 2.2 In support of that contention the applicant submitted a report from a member of another firm of consulting engineers ("the consultant") acting in effect as an independent fire design reviewer. In his report, the consultant discussed the spread of fire in terms of a "radiator", the flame front emerging from the unprotected roof, and a "receiver", the other property to be protected. In the case of the external wall, the

adjacent building, if higher than the building concerned, would be a receiver oriented at 90° to the radiator. In the case of the internal wall:

" . . . the neighbour's property (receiver) is orientated 180° to the unprotected roof of the building on fire, ie the radiator. This is similar to the vertical walls of adjacent buildings where the walls of both buildings line on the same plan (eg. shop fronts facing the footpath). In the case of shop fronts and the like, no wall extension or horizontal fire rating of the external wall is required since (ignoring wind shift) the radiant energy seen by the receiver is considered insufficient to cause spread of fire from the radiator to the receiver."

2.3 The Authority does not agree that flames emerging from an opening in a roof can be treated similarly to flames emerging from an opening in a wall because:

- (a) In the case of a roof, the flame front will emerge vertically. It can extend 10 or 20 metres, or even higher above the roof, so that, depending on the length of the opening along the roof, the vertical radiating surface can be quite extensive. That radiating surface can heat a neighbouring horizontal roof surface to the point where ignition of combustible components, in the roof cladding or supporting the roof cladding, may occur.
- (b) By contrast, in the case of a wall a flame emerging from an opening will turn vertically upwards, and will project only 1 or 2 metres horizontally from the opening. The area of flame on each side of an opening which can radiate to a neighbouring wall in the same plane as the wall on fire will generally be much smaller than for roof flames. The equivalent in the roof case would be a flame projecting only 1 or 2 metres above the roof, which experience indicates is rarely the case.

2.4 The Authority therefore does not accept that the requirements for walls that are on the same line in a vertical plane can be applied to roofs that are on the same line in a horizontal plane. The Authority concludes that for the protection of other property against the spread of fire at roof level, then in general either:

- (a) Flames must be prevented from breaking through the roof within an acceptable horizontal distance from the other property, or
- (b) A parapet must be provided to lift the radiating front an acceptable distance above the other property.

2.5 The applicant also argued that:

" . . . a unit title wall is not covered by the requirements of [paragraph 4.6 of Approved Document C3/AS1] and complies with the acceptable solution without a parapet or fire rating of the roof. [paragraph] 4.6 applies to *external walls* within 1.0 m of a *relevant boundary* and . . . the unit title wall does not come within this description".

(In the New Zealand Building Code and the Approved Documents, italic type indicates defined words or phrases.)

- 2.6 The relevant definitions in the "Fire Safety Annex" to the Approved Documents, and paragraph 4.6 of Approved Document C3/AS1 read:

External wall Any exterior face of a *building* within 30° of vertical, consisting of *primary* and/or *secondary elements* intended to provide protection against outdoor environment, but which may also contain *unprotected areas*.

Relevant boundary A line from which space separation requirements are measured. It may be:

- a) The boundary between 2 property titles,
- b) The property boundary on the far side of an abutting street, railway, or public place, or
- c) *A notional boundary.*

4.6 Horizontal fire spread

4.6.1 Where the roof of a *building* is closer than 1.0 m to a *relevant boundary* and contains unsprinklered *firecells* with a *fire hazard category* of 3 or greater, below that roof, horizontal *fire spread* shall be resisted by either:

- a) Providing a *FRR* of no less than 30/30/- to that part of the roof within 1.0 m of the *relevant boundary*, or
- b) Providing a parapet by extending the *external wall* no less than 450 mm above the adjoining roof line.

- 2.7 The Authority considers that the boundary between two unit titles is the "boundary between two property titles" and therefore comes within the definition of a *relevant boundary*. Paragraph 4.6 therefore applies.

- 2.8 The Authority accepts that the internal wall concerned does not come within the definition of *external wall* and that therefore paragraph 4.6.1(b) cannot be met. However, paragraphs 4.6.1(a) and (b) are alternatives, so that if paragraph 4.6.1(b) cannot be met then the only way of complying with the acceptable solution is to meet paragraph 4.6.1(a) by providing the necessary fire resistance rating to those parts of the roof that are within 1.0 m of the boundary between the unit titles.

- 2.9 However, there is no statutory requirement for any building to comply with any acceptable solution in order to comply with the relevant provisions of the New Zealand Building Code, which are:

C3.2 *Buildings* shall be provided with safeguards against *fire spread* so that:

...

- (c) Adjacent *household units* and *other property* are protected from damage,

C3.3.2 *Fire separation* shall be provided within *buildings* to avoid the spread of *fire* and smoke to:

(a) Other *firecells*,

- 2.10 The Authority considers that areas within a building held under different unit titles are *other property* in relation to each other, and that each such area as shown in the applicant's sketch is a separate *firecell*.
- 2.11 In this case the Authority considers that a suitable alternative solution would be to extend the internal wall no less than 450 mm above the adjoining roof-line.
- 2.12 The Authority makes the general observation that it is unfortunate that Approved Document C3 does not mention "party walls" as well as "external walls" in relation to fire separation. That will be a matter for review when Approved Document C3 is next considered for amendment.
- 2.13 The applicant stated that it was "not seeking a determination for roofs forming a valley at the unit title wall". However, this determination applies to roofs of any slope.

3. The Authority's decision

- 3.1 In accordance with section 20(a) of the Building Act the Authority hereby determines that, in a building which is subdivided into unit titles and which has a fire hazard category of 3 or greater, in order to comply with Approved Document C3/AS1, a fire resistance rating of no less than 30/30/- shall be provided to that part of the roof within 1.0 m of the internal wall along the boundary between the unit titles.
- 3.2 The Authority also determines that an appropriate alternative solution would be to form a parapet by extending the fire rated internal wall separating the unit titles no less than 450 mm above the adjoining roof line instead of providing any fire resistance rating to the roof.

Signed for and on behalf of the Building Industry Authority on this 5th day of September 1994

J H Hunt
Chief Executive