

Determination 2008/4

Relocating and re-using safety barriers in the alteration of existing bridges on Fitzgerald Avenue, Christchurch

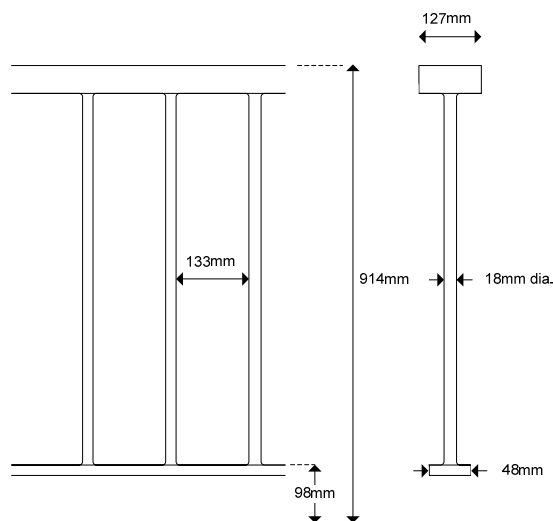


Figure 1: The existing safety barriers

1 The matter to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004 (“the 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 the Department. The applicant is the Christchurch City Council in its role as the owner of the bridge, acting through its Capital Programme Group (“the owner”). The only other party is the Christchurch City Council in its role as the building consent authority for the bridge, acting through its Environmental Policy and Approvals Unit (“the regulator”).

- 1.2 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 Code¹ (the First Schedule to the Building Regulations 1992).
- 1.3 The application arises from a difference of opinion between the owner and the regulator as to whether, under section 112, some or all of the safety barriers on the bridges concerned are required to be upgraded when the bridges are altered. (The parties referred to the safety barriers concerned as “handrails”, but I use the terms “safety barriers” or “barriers” because the term “handrail” as defined in Clause A2 is not appropriate.)
- 1.4 Under section 176(d) I have the jurisdiction to make a determination in relation to a territorial authority’s exercise of its powers under section 112. In this case, the territorial authority has not formally exercised those powers but instead has submitted an internal doubt to me for determination. However, to avoid unnecessary delay and formality, I proceed on the basis that the territorial authority has made a decision to require the relocated barriers to be upgraded, and treat that decision as the matter for determination under section 176.

2 Background

- 2.1 The two bridges were constructed in the 1960s. They are side by side, oriented north-south, and carry a main road across a river. The alteration consists of widening each bridge to provide an additional lane on its eastern side. For each bridge, the widening will require the existing footpath and barrier on the eastern side to be relocated to the new eastern edge of the bridge. The owner proposes to re-use the existing eastern barriers, and to make no alterations to the other barriers. Approximately 30% of the total length of all the bridges’ barriers would be relocated.
- 2.2 All barriers are of steel construction, 914 mm high with top rail 127 mm wide, no intermediate horizontal members, and a clear opening between vertical balustrade members of nominally 133 mm (refer Figure 1).

3 The legislation and the Acceptable Solution

- 3.1 Relevant provisions of the Act include:

7 Interpretation

In this Act, unless the context otherwise requires,—

building work —

- (a) means work—
- (i) for, or in connection with, the construction, alteration, demolition, or removal of a building; and . . .

construct, in relation to a building, includes to design, build, erect, prefabricate, and relocate the building

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

17 All building work must comply with building code

All building work must comply with the building code to the extent required by this Act, whether or not a building consent is required in respect of that building work.

67 Territorial authority may grant building consent subject to waivers or modifications of building code

- (1) A building consent authority that is a territorial authority may grant an application for a building consent subject to a waiver or modification of the building code.
- (2) A waiver or modification of the building code under subsection (1) may be subject to any conditions that the territorial authority considers appropriate.
- (3) The territorial authority cannot grant an application for a building consent subject to a waiver or modification of the building code relating to access and facilities for people with disabilities.

112 Alterations to existing buildings

- (1) A building consent authority must not grant a building consent for the alteration of an existing building, or part of an existing building, unless the building consent authority is satisfied that, after the alteration, the building will—
 - (a) comply, as nearly as is reasonably practicable... , with the provisions of the building code that relate to—
 - (i) means of escape from fire; and
 - (ii) access and facilities for persons with disabilities (if this is a requirement in terms of section 118); and
 - (b) continue to comply with the other provisions of the building code to at least the same extent as before the alteration.

Schedule 1 Exempt building work

A building consent is not required for the following building work:

- (a) any lawful repair and maintenance using comparable materials, or replacement with a comparable component or assembly in the same position, of any component or assembly incorporated or associated with a building, including all lawful repair and maintenance of that nature that is carried out in accordance with the Plumbers Gasfitters and Drainlayers Act 1976

3.2 Relevant provisions of the Building Code include:**Clause F4—SAFETY FROM FALLING**

F4.1 The objective of this provision is to safeguard people from injury caused by falling.

F4.2 Buildings shall be constructed to reduce the likelihood of accidental fall.

F4.3.1 Where people could fall 1 metre or more from an opening in the external envelope or floor of a building, or from a sudden change of level within or associated with a building, a barrier shall be provided.

F4.3.4 Barriers shall:

- (a) Be continuous and extend for the full extent of the hazard,
- (b) Be of appropriate height,

- (d) Be of adequate strength to withstand the foreseeable impact of people and, where appropriate, the static pressure of people pressing against them,
- (e) Be constructed to prevent people from falling through them, and . . .
- (g) Restrict the passage of children under 6 years of age when provided to guard a change of level in areas likely to be frequented by them.
- (h) Be constructed so that they are not readily able to be used as seats.

3.3 Relevant provisions of the Acceptable Solution F4/AS1, as amended in September 2007, include:

1.1 Barrier heights

1.1.1 Acceptable minimum barrier heights are given in Table 1.

Table 1: Minimum Barrier Heights Paragraph 1.1.1, Figures 1-5		
Building type	Location	Barrier height (mm) (Note 1)
Detached dwellings and within household units of multi-unit dwellings	Stairs and ramps and their landings	900
	Balconies and decks, and edges of internal floors or mezzanine floors	1000
All other buildings, and common areas of multi-unit dwelling	Stairs or ramps	900
	Barriers within 530 mm of the front of fixed seating	800
	All other locations	1100
Note:		
1. Heights are measured vertically from finished floor level (ignoring carpet or vinyl, or similar thickness coverings) on floors, landings and ramps. On stairs the height is measured vertically from the pitch line or stair nosings.		
2. A landing is a platform with the sole function of providing access.		
3. Clause F4.3.1 has a limit on its application that may exclude the need for barriers in certain locations such as working wharves and loading docks.		
4. An 800 mm high barrier in front of fixed seating would be appropriate in cinemas, theatres, and stadiums.		

1.2 Barrier construction

1.2.1 In housing and other areas likely to be frequented by children under 6 years of age:

- a) Figures 1-4 show acceptable barrier constructions
- b) Openings anywhere over the full height of the barrier shall be such a size that a 100 mm diameter sphere cannot pass through them, and

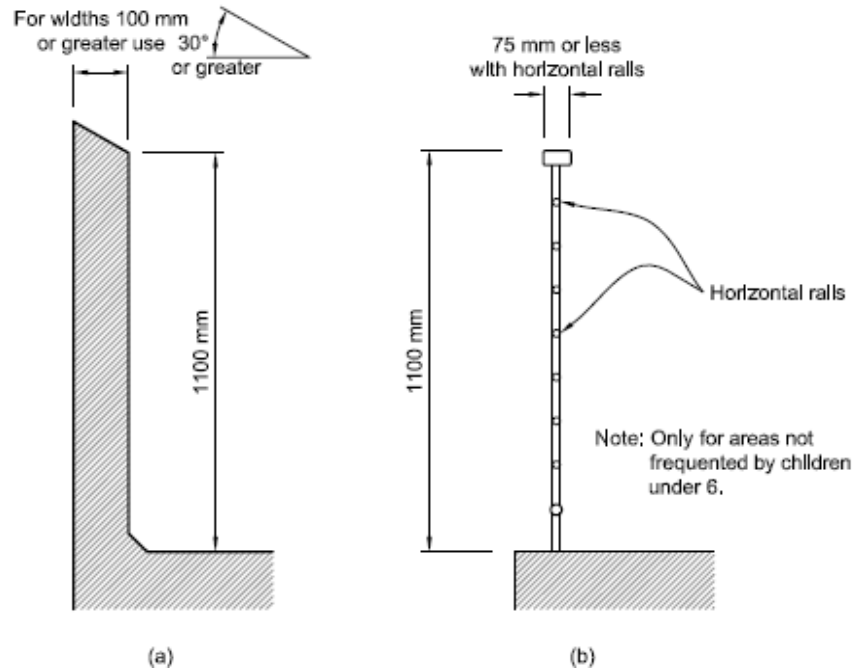
COMMENT:

1. Buildings classified as housing are always likely to be frequented by children under 6 years of age. However, 'Likely to be frequented' in regard to other buildings means something more than that children under 6 will be present from time to time. There should be an expectation that

small children will be present on a regular basis (see Determination No. 2001/9 . . .

- 1.2.3** Barriers in buildings other than housing having a parapet or horizontal rail form of construction shall have the dimensions given in Figure 5.

Figure 5: Parapet and rail barriers
Paragraph 1.2.3



4 The submissions

4.1 The owner submitted that:

- (a) The barriers comply with Clause F4.
- (b) The barriers comply with the acceptable solution F4/AS1 in that:
 - (i) Barriers of the same height “are permitted in residential buildings where there is a higher likelihood of falls due to more frequent use and where children are more likely to be present”.
 - (ii) There were no events or activities on that stretch of the river that would attract crowds to the bridges.

The owner also referred to correspondence with an officer of the Department, who had said, amongst other things, that the height of 1,100 mm mentioned in F4/AS1 “is partly to take account of crowd situations”.

- (c) The bridges are not likely to be frequented by children under 6 because:

- (i) There are no primary schools, major parks, playgrounds, or other areas that young children are likely to frequent in the immediate vicinity;
- (ii) The high volume of traffic using the bridges means that any young children using them are likely to be closely supervised;
- (iii) There is not a high level of pedestrian use.

The owner also referred to Determination 2001/9 (see 5.3 below).

- (d) It would not be reasonably practicable to modify the existing barriers to comply with the acceptable solution F4/AS1 because:
 - (i) It would cost approximately \$30,000 to re-use the re-located barriers without modification, but “to maintain the aesthetics of the bridge all handrails would need to be matching”, which would cost approximately \$100,000.

In previous correspondence with the Department, the owner had said:

. . . to reuse the existing handrails would represent a significant saving (\$60,000+)

- (ii) The additional work on the other barriers would cause additional traffic delays and inconvenience for the public.

4.2 The regulator submitted that:

- (a) The bridges are in a residential area where “footpaths are likely to be frequented by children under the age of six”.
- (b) The extensions of the bridges, including the relocation of parts of their barriers, were new building work and all new building work is required to comply with the Building Code.
- (c) If the location is not frequented by children then “the existing handrail could be used and the vertical support posts could be extended by 186 mm and the height requirement of 1,100 mm be met”.

4.3 The regulator concluded:

If the handrail was considered to be an existing component and it was determined that it could be relocated to a new position without being considered new work it would be possible to accept under section 112(1)(b) that the building continued to comply with the other provisions (namely F4) of the Building Code to at least the same extent as before the alteration. This would allow the handrail to be reinstalled at the original height. We ask that the determination consider this matter.

4.4 The draft determination was sent to the parties for comment on 7 December 2007. Both parties accepted the draft, subject to the correction of a typographical error.

5 Discussion

5.1 Must the relocated barriers comply with the Building Code?

- 5.1.1 The regulator asked me to consider whether the barriers were existing components that could be relocated to new positions and therefore not new work required to comply with the Building Code (refer paragraph 4.3).
- 5.1.2 I take the reference to existing components to relate to exemption (a) of Schedule 1. That schedule identifies building work that is exempted from the need for a building consent, not building work that need not comply with the Building Code.
- 5.1.3 Section 7 defines “construction” as including “relocation”. I therefore take the view that the relocation of the barriers is “building work” as defined in that section. Under section 17, building work must comply with the Building Code “to the extent required by [the] Act”.
- 5.1.4 I conclude that in this case the relocated barriers must comply with the Building Code subject to any waivers or modifications granted under section 67.

5.2 Must the barriers that are not relocated comply with the Building Code?

- 5.2.1 Section 112 says in effect that, after an alteration to “an existing building”, “the building” must comply to the specified extent. I read that as meaning that the entire building must be upgraded as required, not merely those parts of the building that are altered.
- 5.2.2 Accordingly, in this case I take the view that section 112(1)(b) requires that after the alteration, the barriers that are not relocated must comply with the Building Code “to at least the same extent as before the alteration”.
- 5.2.3 I take the view that that requirement is not necessarily satisfied simply because the alteration has not made any change to the relevant parts of the building. For example:
- (a) If a wing is added to the building it might need to include new sanitary facilities to keep the ratio of facilities to numbers of people for the building as a whole the same as before.
 - (b) If the alteration consists of the relocation of the building from a lower to a higher wind or earthquake zone then the building’s structural elements might need to be strengthened to keep the ratio of strength to design load the same as before.
- 5.2.4 In this case, the barriers were constructed before the Act came into force. However, they do not comply with the safety level now required by the Building Code. The safety level has effectively been increased from that of a 900 mm high barrier under the former bylaws to that of a 1,100 mm high barrier under the current Building Code. Thus the barriers currently comply only to a certain extent (crudely, 9/11). I take the view that whether or not they comply “to at least the same extent as before”

is to be determined at the time of considering whether to grant a building consent for the alteration. In other words, for this determination the relevant time is the present.

5.2.5 I conclude that, after the alteration, the barriers will continue to comply with Clause F4 to at least the same extent as before, and that therefore section 112 does not require them to be upgraded.

5.3 Are the barriers in an area frequented by children under 6?

5.3.1 The comment to paragraph 1.2.1 in F4/AS1 says:

'Likely to be frequented' . . . means something more than that children under 6 will be present from time to time . . . see Determination 2001/9

5.3.2 Determination was about a common stair in a multi-unit dwelling. The relevant passage in Determination 2001/9 says:

6.1.5 . . . for a location to be "likely to be frequented by" children under 6 years of age it . . . is not enough that they could well be in the location from time to time. If a location is frequented by children then anyone visiting that location at an appropriate time could well expect children to be present on many if not most occasions.

5.3.3 I recognise that in this case the bridges are in a residential area and within a block of a public park and one if not two childcare facilities. Such a location is significantly different from stairs in a multi-unit dwelling. I do not consider that anyone using the bridges would expect children under 6 years of age to be present on many occasions.

5.3.4 Accordingly, using the same approach as in Determination 2001/9, I conclude that the bridges are not in an area likely to be frequented by children under 6 years of age.

5.4 Complying with the Building Code

5.4.1 For the reasons set out above I consider that:

- (a) The relocated barriers must, subject to any waivers or modifications under section 67, comply with Clauses F4.3.1 and F4.3.4 except that they need not restrict the passage of children under 6.
- (b) The barriers that are not relocated are not required to comply with those requirements.

5.4.2 One way of complying with those provisions of the Building Code is to comply with paragraph 1.2.3 of F4/AS1 by altering the relocated barriers to have a height of 1,100 mm instead of 914 mm, and to have a top rail no more than 75 mm wide instead of 127 mm.

5.4.3 However, complying with an acceptable solution is not the only way of complying with the Building Code. Other ways of complying are usually referred to as alternative solutions. In Determination 2005/9 I adopted the following approach to acceptable solutions and alternative solutions:

- (a) Some acceptable solutions cover the worst case of a building closely similar to the building concerned. If the building concerned presents a less extreme case,

then some provisions of the acceptable solution may be waived or modified (because they are excessive for the building concerned) and the resulting alternative solution will still comply with the building code.

- (b) Usually, however, when there is non-compliance with one provision of an acceptable solution it will be necessary to add some other provision or provisions in order to comply with the building code.

I take the same approach in this determination.

5.4.4 As to whether the bridges are significantly less than the worst case contemplated by F4/AS1:

- (a) The owner said that an officer of the Department had mentioned “crowd situations”. I take that to be based on the fact that Table 1 of F4/AS1 specifies safety barriers of 900 mm for stairs and ramps and of 1,100 mm for all other locations. I take the distinction to be between situations where a person could well lean on a barrier, whether because of crowd jostling or because the person was stationary rather than proceeding to a destination. In this case, I accept that there are not likely to be any events or activities on that stretch of the river so that crowd situations need not be considered. However, I also consider that a person could well stop and lean over the barrier to enjoy the view or look at the river. Accordingly, I do not consider that the 1,100 mm height requirement is excessive.
- (b) As to the width of the top rail, I consider that the F4/AS1 maximum width of 75 mm was introduced in 2007 when Clause F4.3.4(g) was added to the Building Code. That clause is not limited to any particular types of buildings or any particular circumstances. Accordingly, I take the view that I cannot take account of whether the bridges concerned represent less than the worse case contemplated by F4/AS1 because Clause F4.3.4(g) applies to all cases. In this case, therefore, the owner’s point that a person could well stop to admire the view but is unlikely to sit on the barrier is irrelevant and the relocated barriers must be constructed so that they are not readily able to be used as seats.

5.4.5 As to adding new provision to compensate for provisions of F4/AS1 that are not complied with, the owner has not suggested any new provisions to compensate for the non-compliance with the F4/AS1 provisions for height and for maximum top rail width.

5.4.6 I conclude, therefore, that the relocated barriers with a height of 914 mm and a top rail width of 127 mm would not comply with the Building Code as an alternative solution.

5.4.7 As to waivers or modifications under section 67, I take the view that any such waiver or modification must be reasonable in the particular circumstances concerned.

5.4.8 Costs may be taken into account when considering whether particular upgrading is reasonably practicable. Assuming, but not determining, that costs may also be taken into account when considering whether it is reasonable to grant a waiver or modification of the Building Code, I note that in this case:

- (a) I have no information about the cost of the alterations as a whole, but the owner estimates the cost of altering the barriers concerned as approximately \$30,000 and of altering all the barriers as approximately \$100,000. It appears that those estimates were based on extending the vertical members, see 4.2(c) above. If so then it seems likely that a lower cost could be achieved by extending the height by adding a new top rail with a maximum width of 75 mm, with no changes to the vertical members.
- (b) If cost is to be taken into account, so too must the fact that any waiver or modification would reduce the level of life safety provided in a major public facility.

5.4.9 For the reasons set out in 5.2 above, the Act does not require any upgrading of the barriers that are not relocated, so that it is for the owner to decide whether to upgrade them. However, for the purposes of this determination I assume that the owner will upgrade all of the barriers. I do not see that as a matter of aesthetics but as a matter of common sense and public perception of the territorial authority's actions. Of course, if the owner does decide to alter the barriers that are not relocated then they must also be brought to comply with the Building Code.

5.4.10 I would not take any account of increased traffic delays and inconvenience because those are only temporary effects.

5.4.11 Even if cost may be taken into account, as to which I make no determination, I consider that in this case it would not be reasonable to reduce the required level of life safety for this major public facility by waiving Clauses F4.3.4(b) and (h).

6 Decision

6.1 In accordance with section 188 I hereby determine that:

- (a) The relocated barriers must be upgraded to comply with the Building Code.
- (b) The barriers that are not being relocated need not be upgraded but if the owner chooses to alter them then they must comply with the Building Code.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 18 January 2008.

John Gardiner
Manager Determinations