

Determination 2024/008

Whether a timber barrier to a retaining wall complies with Building Code clauses F4.3.1 and F4.3.4.

1206B Hikuai Settlement Road

This determination considers whether a timber barrier to a retaining wall complies with Building Code clauses F4.3.1 and F4.3.4(b), (e) and (g). The determination also assesses whether the Limit on Application of F4.3.1 applies to the as-built structure.



In this determination, unless otherwise stated, references to “sections” are to sections of the Building Act 2004 (“the Act”) and references to “clauses” are to clauses in Schedule 1 (“the Building Code”) of the Building Regulations 1992.

The Act and the Building Code are available at www.legislation.govt.nz. Information about the legislation, as well as past determinations, compliance documents (eg Acceptable Solutions) and guidance issued by the Ministry, is available at www.building.govt.nz.

1. The matter to be determined

- 1.1. This is a determination made under due authorisation by me, Peta Hird, Principal Advisor Determinations, Ministry of Business, Innovation and Employment (“the Ministry”), for and on behalf of the Chief Executive of the Ministry.¹
- 1.2. The parties to the determination are:
 - 1.2.1. J and L Pausina, the owners of the property (“the owners”), who applied for the determination
 - 1.2.2. Thames-Coromandel District Council (“the authority”), carrying out its duties as a territorial authority or building consent authority.
- 1.3. This determination arises from the authority’s view that a timber barrier to a retaining wall does not comply with clause F4 *Safety from falling*.
- 1.4. The matter to be determined, under section 177(1)(a), is whether a timber barrier to a retaining wall, as constructed, complies with clauses F4.3.1 and F4.3.4 of the Building Code².
- 1.5. In deciding this matter, I must consider:
 - 1.5.1. whether F4.3.1 applies, including whether the retaining wall is considered to be a “building” under the Act
 - 1.5.2. whether the limit on application of F4.3.1 applies
 - 1.5.3. whether the barrier’s performance meets the requirements of F4.3.4(b), (e), and (g), which require that barriers:
 - b) Be of appropriate height
...
 - e) Be constructed to prevent people from falling through them, and
...

¹ The Building Act 2004, section 185(1)(a) provides the Chief Executive of the Ministry with the power to make determinations.

² Building Regulations 1992, Schedule 1 The building Code, Clause F4 – Safety from falling

- 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.

1.6. I have not considered any other aspects of the Act or of the Building Code. This determination is limited to considering only the performance criteria described above.

2. The building work

2.1. The barrier in question was constructed at the top of a timber retaining wall on the north side of the property. The barrier is made of vertical timber posts, with three horizontal timber members. The retaining wall supports a lawn area located at the end of a driveway, which provides access to the dwelling (see Figure 1).

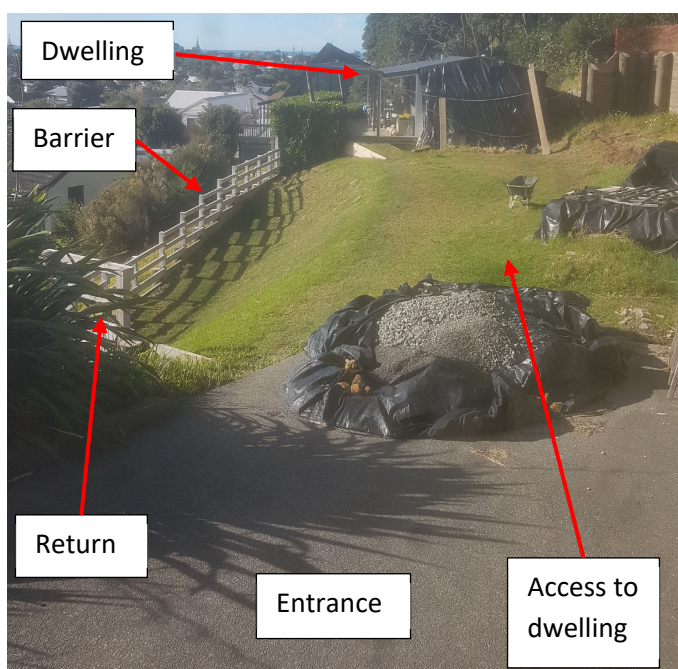


Figure 1: Photograph showing the barrier and layout of the property.

- 2.2. I note that this determination does not consider the return at the western end of the barrier, as it is not clear whether there is a fall of 1m or more associated with that section of the barrier.
- 2.3. The height of the barrier to the ground level varies due to the stepped nature of its construction relative to the sloping ground. Dimensions provided by the applicant confirm its height at the central section of the barrier to be 930mm, with the gaps between horizontal members of 135mm (between bottom rail and top of retaining wall), 205mm and 205mm. See figure 2.

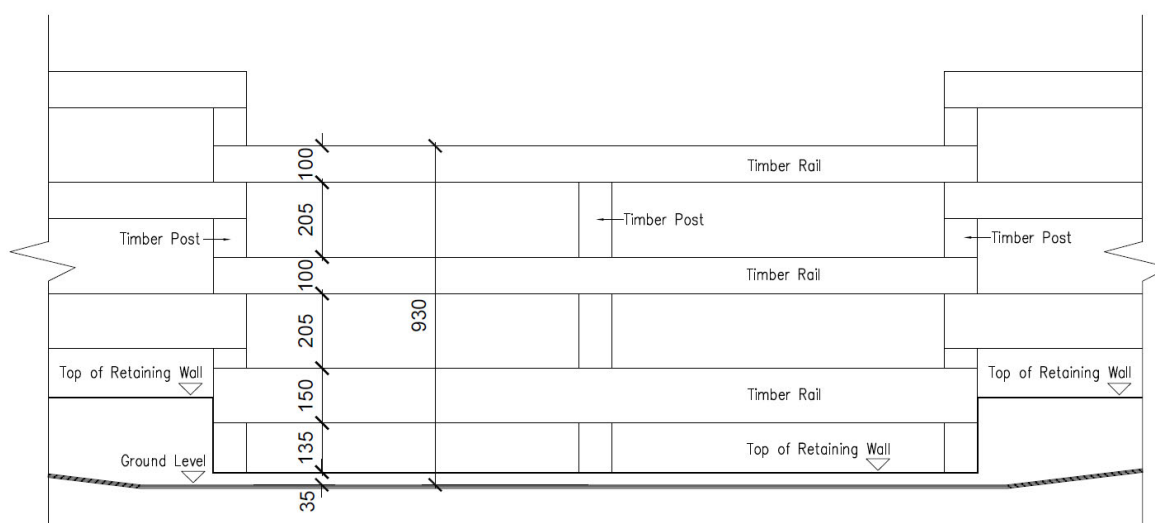


Figure 2: Diagram of barrier construction

3. Background

- 3.1. On 16 June 2020, the owner applied for a Certificate of Acceptance for the construction of the retaining wall.
- 3.2. On 17 February 2022 the authority carried out an on-site inspection of the retaining wall and barrier. On that date the barrier comprised several timber vertical posts with top and bottom timber rails spanning between.
- 3.3. Following their on-site inspection, the authority requested that the owner “install a barrier to the top of the wall where there is a fall height greater than 1.000m. The barrier needs to comply with the New Zealand Building Code F4 Safety from Falling (as per NZBC requirements)”.
- 3.4. The owner then installed an additional horizontal timber member spanning between the posts and covering the length of the barrier, as shown in Figure 2. The owner believes that this additional building work satisfies the requirements of clause F4.
- 3.5. The authority acknowledged that the owner had carried out additional building work in an effort to meet the requirements of Clause F4. However, the authority believed that based on the evidence the owner provided, the barrier still did not comply.

4. Submissions

The owner

4.1. The owner believes that neither the retaining wall nor barrier fits the definition of a building and therefore clause F4, which requires that [all buildings] should safeguard people from injury caused by falling, does not apply.

4.2. The owner is of the view that:

The area is not a direct penetration of a house/building. It is reasonably far away from the deck area that is clearly a direct penetration. To access the retaining wall from deck, one must go down the ramp, 2 meters, then around the ramp 2-3 meters and down a set of stone steps, 4 meters. It is not a deck area or is nearby. It is not an area that affords access way or is a path to and from the property to the street. The barrier is fit for purpose and is robust, the property is not a kindergarten and has a very narrow gap. The barrier is not a style used as a seat. Access to the area is down the side, then down a path. It is safe, suitable to stop any rolling rocks, dive bottles etc. We feel it is fit for purpose and is safe.

4.3. Regarding the safety requirements of F4, the owner believes that the barrier does not pose a safety risk, as there is no possibility of children falling through the gaps between the timber members.

4.4. The owner stated that they do not wish to change the design, because the barrier in its current state “looks good and [is] working”.

The authority

4.5. The authority maintains its view that the barrier does not comply with clause F4.

4.6. In response to the owner’s application for a Certificate of Acceptance, the authority submitted that at the time of the inspection, the barrier was not compliant with clause F4.

4.7. Regarding the building work carried out after the inspection, the authority believes that based on the evidence provided by the owner, the barrier is still non-compliant in its current state.

5. Discussion

Compliance with clause F4 *Safety from falling*

5.1. This determination is concerned with the application of and the compliance with clause F4 *Safety from falling*, and specifically the performance requirements of F4.3.1 and F4.3.4.

5.2. Performance F4.3.1 states:

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.

5.3. To assess whether F4.3.1 applies, I must consider:

5.3.1. whether the retaining wall fits the legislative definition of a building

5.3.2. the change of level associated with the retaining wall

5.3.3. if the Limit on Application of F4.3.1 applies, meaning whether the barrier would be “incompatible with the intended use of an area” as outlined in the Building Code.

5.4. Subject to the above, I will then consider compliance with F4.3.4 (b), (e), and (g).

Can the retaining wall be considered a building?

5.5. I will now consider whether the legislative definition of a “building” is applicable to the retaining wall. If the retaining wall meets the definition of a building, then it is subject to the requirements of clause F4.

5.6. Section 8(1)(a) of the Building Act 2004 defines a building as:

... a temporary or permanent movable or immovable structure (including a structure intended for occupation by people, animals, machinery, or chattels)

5.7. The retaining wall meets the criteria of permanent and immovable. Previous determinations have considered the meaning of the term “structure” in the definition of a building. Determination 2016/002 found that a shared driveway did not meet the legislative definition of a building:

For something to be a ‘structure’ for the purposes of the Act, it must have some elements or constituent parts and/or be of some complexity... The shared driveway in this instance is comprised of unreinforced in situ concrete and lacks any of the parts or complexity that would make it a ‘structure’.³

5.8. Unlike the driveway referenced above, I consider this retaining wall to have constituent parts (the timbers) and some degree of complexity. The retaining wall is a structure, and therefore a building.

5.9. Further, the Building Code clause A1 *Classified Uses* supports this interpretation. It includes retaining walls as an example of a type of building that is regulated under the Act. Clause A1, 8.0 *Ancillary* states:

³ Determination 2016/002 *Regarding the issue of a dangerous building notice in respect of a damaged shared driveway* (issued 20 January 2016), at [4.2.5].

8.0.1 Applies to a building or use not for human habitation and which may be exempted from some amenity provisions, but which are **required to comply with structural and safety-related aspects of the building code**. Examples: a bridge, derrick, fence, free standing outdoor fireplace, jetty, mast, path, platform, pylon, **retaining wall**, tank, tunnel or dam.

5.10. In conclusion, the retaining wall falls under the definition of a building and is therefore subject to clause F4.

The change in level associated with the building

5.11. I now address the change in level associated with the building. The change of level from the high side to the low side of the retaining wall is indisputable, as shown in figure 3.



Figure 3: Photograph showing the retaining wall and barrier (taken from Google Maps on 4 August 2023).

5.12. While the change in level varies along the length of the retaining wall, photographs provided by the applicant, images obtained via google street view and photos provided by the authority, confirm that the change in level is 1 metre or more. Neither party disputes this.

5.13. This change in level results in the obligation under clause F4 to have a barrier that reduces the likelihood of accidental fall.

Does the Limit on Application of F4.3.1 apply?

5.14. Having established that the retaining wall is a building that is subject to clause F4, I must now consider whether the limit on the application of clause F4.3.1 applies.

Performance F4.3.1 shall not apply where such a barrier would be incompatible with the intended use of an area, or to temporary barriers on construction sites where the possible fall is less than 3 metres or to buildings providing pedestrian access in remote locations where the route served presents similar natural hazards.

5.15. The area adjacent to the retaining wall and barrier is a maintained “lawn” area. It is located between the barrier and the access way serving the dwelling. I expect that this area would be used in a way that any green space associated with a dwelling would be. There is no evidence that would suggest that the area would have any specialised use with which the barrier would be incompatible.

5.16. The barrier is not a temporary construction barrier.

5.17. The retaining wall is not a building providing pedestrian access to a remote location where the route served presents similar natural hazards.

5.18. Therefore, the Limit on the Application for F4.3.1 does not apply.

5.19. I have established:

5.19.1. the retaining wall fits the legislative definition of a building

5.19.2. there is a change of level associated with the retaining wall

5.19.3. the Limit on Application of F4.3.1 does not apply

5.20. I must now consider whether the barrier complies with the relevant parts of clause F4.3.4.

Compliance with F4.3.4(b)

5.21. To determine whether a barrier complies with F4.3.4(b), I must consider whether the barrier is an appropriate height.

5.22. The Building Code does not prescribe any dimensions for appropriate barrier height. What matters is whether a barrier achieves the performance criteria of F4.

5.23. An Acceptable Solution is one means by which compliance with the Building Code can be established. Subparagraph 1.1.1 and Table 1 of Acceptable Solution F4/AS1 (“F4/AS1”)⁴ set out heights for barriers that achieve compliance with F4. While the Acceptable Solution does not specify a particular height for a retaining wall barrier,

⁴ Acceptable Solution F4/AS1 (amendment 2, effective 1 January 2017).

Table 1 specifies a height of 1100mm for “all other buildings” and “all other locations” (see below).

Table 1: Minimum Barrier Heights Paragraph 1.1.1, Figures 1-5		
Building type	Location	Barrier height (mm) (Note 1)
Detached dwellings and within <i>household units</i> of multi-unit dwellings	Stairs and ramps and their intermediate landings	900
	Balconies and decks, and edges of internal floors or mezzanine floors	1000
All other buildings, and common areas of multi-unit dwellings	Stairs or ramps	900
	Barriers within 530 mm of the front of fixed seating	800
	All other locations	1100

Note:

- 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*.
- A landing is a platform with the sole function of providing access.
- 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.
- An 800 mm high barrier in front of fixed seating would be appropriate in cinemas, *theatres*, and stadiums.
- Where a *handrail* is mounted on top of a stairway barrier it may transition up to a height of 1100 mm on the intermediate landings.

5.24. To use the Acceptable Solution as a means of achieving compliance with clause F4, the minimum height of the barrier must be 1100mm. The barrier does not meet the design specifications of F4/AS1, so I must assess compliance with the Building Code as an alternative solution.

Compliance as an alternative solution

5.25. It is important to note that barrier designs that are not in accordance with F4/AS1 may also achieve compliance, provided that the elements of the barrier are constructed in a way that meets the performance requirements of the Building Code.

5.26. The height requirement in the Acceptable Solution is a useful starting point for considering an appropriate height for a barrier under clause F4.3.4(b). A barrier set at this height accounts for the centre of gravity of most people that would be in proximity to the barrier and would prevent people from falling over the barrier. The lower height of this barrier reduces its effectiveness. A previous determination 2011/114 discussed at length the safety of barriers in relation to the risk of toppling. The reasoning applied still holds true, and in my opinion the barrier at 930mm is not an appropriate height.

5.27. The barrier on the owner’s property is not constructed with any other compensatory features that would mean the lower height would still be effective.

- 5.28. I therefore conclude the barrier's height of 930mm is not an appropriate height and does not achieve compliance as an alternative solution to F4.3.4(b).

Compliance with F4.3.4 (e)

- 5.29. To determine whether the barrier complies with F4.3.4(e), I must consider whether it is constructed to prevent people from falling through it.
- 5.30. Acceptable Solution F4/AS1 provides some design solutions for barriers that will comply. Subparagraph 1.2.1(b) of the Acceptable Solution states that:

Openings anywhere over the full height of the barrier shall be such a size that a 100 mm diameter sphere cannot pass through them

- 5.31. The barrier does not meet the requirements of F4/AS1. I must therefore assess compliance with the Building Code as an alternative solution.

Compliance with F4.3.4(e) as an alternative solution

- 5.32. In assessing the barrier's performance against F4.3.4(e), I must examine the spacing between the barrier's members and the likelihood that a person (including children and adults) could fall through.
- 5.33. The regular vertical spacing between the barrier members is 135mm and 205mm, with the maximum noted by the owner as 208mm. Given the size, shape and centre of gravity of a person (either child or adult), I believe it is unlikely that one would accidentally fall through these spaces. Rather a deliberate action would need to be applied in order to pass through the 205mm gaps.
- 5.34. Therefore, I consider that the barrier complies with F4.3.4(e) as an alternative solution.

Compliance with F4.3.4(g)

- 5.35. To determine whether a barrier complies with F4.3.4(g), I must firstly consider whether the area in which the change of level occurs (i.e. the lawn area adjacent to the retaining wall) is likely to be frequented by children and subsequently whether the barrier restricts the passage of children under 6 years of age.
- 5.36. The applicant has submitted that in this case, the area is unlikely to be frequented by children because the building is not a kindergarten/creche.
- 5.37. The area adjacent to the retaining wall is associated with the dwelling and children are likely to frequent any household at some time in its life. This is why the Acceptable Solution F4/AS1 requires safety barriers that restrict the passage of children in any building that can be classified as "housing". Though a current owner or tenant may not have children or be likely to have children visit, houses

tend to change ownership and occupation, and therefore, the current circumstances cannot be considered a factor in the assessment of compliance.

- 5.38. As discussed earlier, F4/AS1 provides some design solutions for barriers that will comply, and subparagraph 1.2.1(b) of the Acceptable Solutions limits the size of openings in the barrier to 100mm.
- 5.39. The Acceptable Solution also contains several figures showing acceptable means to prevent children gaining hand or footholds that could aid passage up, over or through the barrier.
- 5.40. The barrier does not meet these requirements and therefore, the barrier does not comply by way of F4/AS1. Consequently, I must assess compliance with the Building Code as an alternative solution.

Compliance with F4.3.4(g) as an alternative solution

- 5.41. Dimensions provided by the applicant confirm that there are clearances of 135mm, 205mm and 205mm between the retaining wall and the three horizontal members of the barrier, with a maximum vertical dimension between the horizontal members of 208mm. (See figure 2)
- 5.42. In my opinion, the dimensions between the retaining wall and the horizontal members of the barrier provide a readily climbable ladder by which a child could easily make passage up the face of the barrier and over the top.
- 5.43. There is no feature of the barrier's horizontal members (size, shape, rigidity etc.) that serve to reduce the ease at which a child might climb the barrier.
- 5.44. I am also of the opinion that a gap of 205mm in height extending between the vertical posts allows a child under 6 years of age to pass through the barrier.
- 5.45. For these reasons, I conclude the barrier does not restrict the passage of children under 6 years of age, and therefore does not comply with clause F4.3.4(g).

6. Conclusion

- 6.1. In conclusion:
- 6.1.1. the timber retaining wall as constructed, is subject to the requirements of clause F4.3.1, F4.3.4, and its subparts (b), (e) and (g)
- 6.1.2. the barrier does not comply with F4.3.4 (b)
- 6.1.3. the barrier complies with Clause F4.3.4(e) as an alternative solution.
- 6.1.4. the barrier does not comply with Clause F4.3.4 (g).

7. Decision

- 7.1. In accordance with section 188 of the Building Act 2004, I determine that the timber barrier to the retaining wall, as constructed, does not comply with Building Code clauses F4.3.1 and F.3.4.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 29 February 2024.

Peta Hird

Principal Advisor Determinations