Determination 2016/023

Regarding a building consent application and the compliance of the proposed bracing system for a single-storey building at 15/17 Rankin Street, Stewart Island

Summary

This determination considers a proposed bracing system designed by the applicant and whether the authority had sufficient information in order to establish on reasonable grounds that the building work would comply with the requirements of the Building Code.

1. The matter to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004[1] ("the Act") made under due authorisation by me, John Gardiner, Manager Determinations and Assurance, Ministry of Business, Innovation and Employment ("the Ministry"), for and on behalf of the Chief Executive of the Ministry.

1.2 The parties to the determination are:

- the owner of the property, Mr A Musson ("the applicant")
- Southland District Council ("the authority"), carrying out its duties as a territorial authority or building consent authority.

1.3 This determination arises from a difference in view between the parties as to whether the information provided by the applicant is sufficient to establish that the proposed bracing to two buildings would comply with Clause B1 Structure of the Building Code (First Schedule, Building Regulations 1992). The bracing includes a steel structure designed by the applicant ("the brace frame").

1.4 The matter to be determined[2] is whether the authority correctly exercised its powers of decision in respect of a building consent application on the basis that the information supplied was not adequate for the authority to be satisfied on reasonable grounds that the building work, if completed in accordance with the plans and specifications, would comply with the Building Code.

1.5 In making my decision, I have considered the submissions of the parties, and the other evidence in this matter.

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[1] The Building Act, Building Code, Acceptable Solutions, past determinations and guidance documents issued by the Ministry are all available at www.building.govt.nz or by contacting the Ministry on 0800 242 243.

[2] Under sections 177(1)(b) and 177(2)(a) of the Act.

2. The building and the proposed brace frame

2.1 The applicant proposes to construct two store rooms on adjacent sites; one a single-storey on the Rankin Street property ("the shed"), which is the subject of this determination, and the other a two-storey building on the Thule Street property.

2.2 The proposed shed is a 5.5 x 4m structure and is intended to be used for storage. In an email on 4 May 2015, the applicant described it as follows:

> 5.5m x 4.0m shed has a firewall 200mm x 75mm solid profile T&G on the entrance side 5.5m wall. Support posts internal and external wall, through bolts 600mm centers, additional L brackets either side of external posts bolted to the 200 x 75.

2.3 The site is in a high corrosion zone. At the technical meeting (refer paragraph 5), the authority confirmed that for a bracing schedule the predominant loading would be wind rather than earthquake on the island, and that wind zones would be high to very high. Those present at the meeting also discussed the geotechnical conditions on the island, and at the site; the authority indicated that the site was likely a clay base.

2.4 The applicant confirmed that the 40mm SHS (square hollow section) brace frame would be checked into the timber framing, with M12 bolts into the top and bottom plates at 300mm centres. The brace frame is to be welded with 7018 shipping grade welding rods, and no treatment of the weld affected zones is proposed because the brace frames will be fully enclosed. The galvanised anchors are located at the corners into the concrete. There would be two brace-frames (pairs) in each external wall, with the maximum sized brace frames being 2.3 x 2.3m.

2.5 The roofing is proposed to be corrugated iron with timber sarking over 150x50mm rafters, with steel RHS (rectangular hollow section) in the roof 'connecting all the braces together'. The cladding is proposed to be weatherboard over a vapour barrier, with internal timber lining and thermal barrier. The applicant proposes insulation 'to a house standard' to meet the needs for the intended storage use.

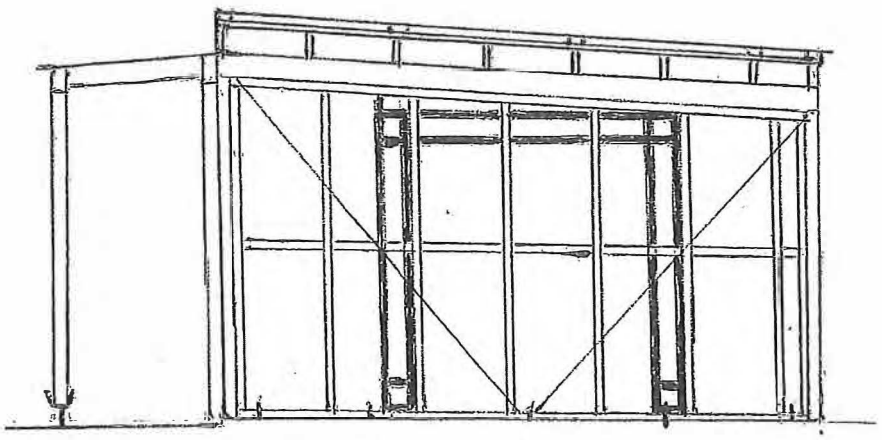

Figure 1: Elevation indicating brace frame (Not to scale)

3. Background

3.1 The application for building consent for 8 Thule Road, dated 9 March 2015, records that the Acceptable Solution B1/AS1 is to be used as the means of compliance.

3.2 On 30 March 2015 the applicant emailed the authority stating that 'the brace is in the [NZS] 3604[3] Timber Frame Building book, the brace fits the description of steel reinforced concrete and timber beam sizes'. The authority responded to the applicant on the same day, noting that the proposed bracing was not part of NZS 3604 and needed to be designed using AS/NZS 1170[4] and covered by a Producer Statement PS1 from a chartered professional engineer as required by the Verification Method B1/VM1.

3.3 The applicant engaged a consulting engineer to provide calculations on the bracing system. On 14 February 2015 the consulting engineer provided an analysis of the bracing frame, noting that it 'does not perform anywhere near as efficiently as the braced frame'. The consulting engineer advised that certifying the bracing of the building could be achieved by either:

> bracing the timber with strap bracing, ply on the outside, or your SHS[5] idea with diagonals.

3.4 In a further email to the applicant on 16 April 2015, the consulting engineer advised:

> The design of these frames are limited by their deflection. A sway frame (which is what you want) has to move a lot more to bring the load to the ground. As a result you need a larger frame in the order to get the load to ground. This also has a high pull and push force (tension and compression forces) with this type of system. This results in a bigger foundation which you have not allowed for.
>
> For wind you need 7.5kN for a building of this size in a high wind zone, which relates to 150BU.
>
> Nothing has been sent to [the authority] as we have just shown your 25SHS brace does not work for the applied wind loading as it is too flexible.

The consulting engineer advised the applicant consider flat strap or ply.

3.5 In emails on 16 April 2015 the applicant advised the authority that

> ... the test of the brace frame results do not compare with the brace design already in use. The descriptions [engineer] indicate the diagonal brace anchor point failure',

The applicant noted that in comparison:

> ... using 3604 bracing with three 75mm nails to anchor the brace to the bottom plate, is enough bracing for the wind loadings of 100+mph that are common in the area.

3.6 A further email from the applicant stated 'they are saying the brace frame is too flexable *(sic)* at 2.1M height. Two frames measuring 1.050M x 1M would stiffen the frame to a satisfactory standard.' The authority responded to this, stating that a PS1 and details to support it would enable the consent to be processed.

3.7 In another email of 16 April 2015, the applicant expressed the view that consulting engineers would 'not provide supportive tests on bracing that is better' as it would raise issues with liability in respect of existing buildings using different bracing systems. In an email to the authority on 17 April 2015 the applicant stated the authority did not need a PS1, that the frame 'is in use, is tested satisfactory, is code compliant as a brace for the conditions and any earthquake levels it may be subjected

[3] New Zealand Standard NZS 3604:2011 Timber framed buildings
[4] Australian and New Zealand Standard AS/NZS 1170 Structural design actions
[5] SHS – square hollow section

to'. The applicant also advised that building work would start on the foundations, and on 20 April forwarded a photograph of what appeared to be a 500mm deep pile hole. The authority responded by email on 21 April that building work done without a building consent when one is required is illegal building work. By reply email the applicant suggested the authority forward its concerns to IPENZ[6] if the authority had any reason not to process the consent.

3.8 On 20 April 2015 the authority wrote to the applicant, returning the building consent application and advising that it had not been completed sufficiently to enable it to be processed. The authority noted the following was required:

> The Bracing needs to be clarified. The bracing that has been detailed does not detail how compliance with the New Zealand Building Code has been achieved.
>
> If bracing is to comply with the requirements of NZS 3604:2011 it will need to have completed a P21 test[7] ...
>
> Or Bracing not tested to the P21 Test will need to be covered by a PS1 design producer statement from a CPEng registered engineer.

3.9 The applicant emailed the authority on 21 April 2015 stating that:

> The design brace is in use and tested in a practical application and proven three times stronger than diagonal X brace. The Consulting engineers have no examples of the design brace in use, they proof *(sic)* of their computer simulator being accurate.

And further:

> No one has any practical use of the brace design to back there *(sic)* opinion of the brace not being adequate.

3.10 It appears from correspondence that the applicant approached BRANZ to obtain a professional opinion on the matter. In an email on 4 May 2015, the applicant provided a description of the bracing system (which I have included in paragraph 2.2) and requested BRANZ provide a statement regarding performance of the system in-use as establishing compliance.

3.11 A technical advisor for BRANZ responded on 5 May 2015, noting that bracing systems are required to last for 50 years and that an in-service history of 15 years may be insufficient for the authority to be satisfied.

3.12 In a further email to the authority on 2 June 2015, the applicant stated:

> [Consulting engineers] both test calculated the 25mm SHS frame without the combined timber frame support. ... The drawing of the building will be reset with all corrective settings. Because of their argument, material size is increased to 40mm SHS. ... The use of the frame has provided satisfactory results. The comments of the [consulting engineers] are definitely false statements.

And further:

> ... the brace is 15years in use and has not faulted. It is showing the brace has not been used elsewhere.

3.13 The applicant again emailed the authority on 3 June 2015, reiterating his view that the reason for consulting engineers and the authority not accepting the bracing system as an alternative solution was an issue with liability because the acceptance of the bracing system would mean that existing buildings would need to be upgraded.

3.14 From email correspondence it appears that the applicant continued to seek the advice of various consulting engineers and intended to have the bracing system tested.

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[6] The Institution of Professional Engineers New Zealand
[7] The P21 test is cited in NZS 3604

3.15 The applicant approached BRANZ, and provided drawings of the bracing system. In an email on 10 November 2015, a technical advisor for BRANZ requested further information, including:

1) [The] intended attachment to concrete, it appears to be a plate 50 wide x 5 mm thick x 140 high with 60mm of the 140 high section embedded in the slab (this anchor plate appears to have a shoe on the base, size of shoe?)
2) How are the timber frames intended to be attached to the steel work ie fixing types and fixing locations?
3) What is the proposed wall thickness of the SHS.

The advisor went on to set out the sample requirements and cost of a P21 test, alongside the cost of a rudimentary test calculating the likely deflection of the frame.

3.16 It appears that the applicant provided BRANZ with further information, and in an email to the applicant on 11 November 2015 BRANZ advised that 'the design would likely have a low bracing rating'. The applicant responded to BRANZ and advised the authority of the same on 16 November 2015. BRANZ then advised the applicant that 'it is unlikely we will be able to provide you the results you expect' and recommend the applicant contact a consulting engineer to evaluate the bracing system.

3.17 This was followed with an email from the applicant to the authority on 19 November 2015, stating that material strength calculations were provided and that a load test of the frame would provide 'loadings on the frame in 1. normal earthquake movements'.

3.18 The applicant contacted the Ministry on 17 December 2015, and was advised on 18 December 2015 to make an application for a determination. The Ministry received the application for determination on 26 January 2016. Further information was requested from the applicant on 29 January 2016, including clarification of whether the application was in respect of both buildings and whether an application for building consent had been lodged.

3.19 On 17 February 2016 the applicant was again requested to clarify the scope of the application with regard to the two-storey store room, and to confirm whether a building consent had been lodged for that building. The parties were also requested to supply a copy of all relevant correspondence and the authority was requested to supply a copy of any relevant consent application documents.

4. The submissions

4.1 The applicant

4.1.1 The applicant provided copies of the following documents with the application:

- The application for building consent, dated 9 March 2015, including excerpts from the BRANZ House Building Guide showing details for external weatherboard corners and timber window/bevel-back weatherboard junctions
- A "producer statement"[8] authored by the applicant, dated 14 January 2016.
- A photograph of a frame being tested by the applicant using a pneumatic ram.

[8] The applicant's "producer statement" is not a producer statement used by professional engineers and commonly referred to as a PS1 Design.

- A test certificate for the proprietary steel tubing (4x40x40mm, and 5x50x50mm) from an IANZ[9] accredited laboratory.
- A set of undated drawings for the two proposed buildings indicating location of the subject brace frame.

4.1.2 In an email on 15 February 2016, the applicant confirmed that the determination was to consider both the single-storey storeroom and the two-storey future storeroom. In a further email on 17 February 2016, the applicant stated 'Thule Road application for determination will be after 15 Rankin Street is processed 8 Thule Road is more complicated'.

4.1.3 In a series of emails on 19 February 2016, the applicant provided copies of correspondence with BRANZ and the consulting engineer, along with photographs of drawings.

4.2 The authority

4.2.1 The authority acknowledged the application for determination, and provided a "file note" dated 20 January 2016 setting out some of the background to the dispute along with copies of email correspondence from 30 March 2015 to 1 December 2015. The authority advised that a pre-application meeting had been held in March 2015, at which time the authority advised the applicant that the plans were not adequate and not up to the standard required. In addition, and in relation to the proposed bracing system, the authority advised that a PS1 from a Chartered Professional Engineer was required or the proposed bracing needed to be assessed as an alternative solution.

4.2.2 The authority's file note also stated:

> The new plans and information that have now been presented do not match or represent the first lot of information that was sent back. The information now presented would also be sent back, due to lack of information and construction details.

4.2.3 On 24 February 2016 the authority emailed a response to the requests for further information, noting that it considered

> ... the plans and specifications submitted were not of sufficient standard to be accepted into the system and were consequently sent back to the applicant.

4.3 The draft determination and submissions in response

4.3.1 A draft of the determination was issued to the parties for comment on 10 June 2016.

4.3.2 The authority responded on 13 June 2016, noting that the description of the matter to be determined required amendment as the building consent application 'had never been accepted so therefore could not be amended.'

4.3.3 The applicant made a number of submissions responding to the draft determination. The applicant did not accept the findings of the draft, stating that there were 'no legal grounds' for the conclusion reached. The applicant reiterated his views regarding compliance of the brace frame (in summary):

- The movement of 8mm over 2.4m in height allowed for in NZS 3604 is excessive (refer paragraph 6.1.4).
- With the brace frame using 40mm or 50mm material and the correct number of braces, the building will not move any greater than 3mm.

[9] International Accreditation New Zealand

- The 40mm material brace frame has the equivalent strength value of 150mm UB18 welded pillar and beam system.
- The test that was carried out on the brace frame would meet the requirements of the P21 test. The brace doesn't move at 100psi, which establishes that the four frames in the building would withstand winds up to 400mph and would move 1mm in winds over that speed.
- The brace design meets the performance requirements in NZS 3604 (refer paragraph 6.2.4); it is safe in extreme wind loading and earthquakes.
- There was sufficient information to compare the performance with 150 and 250 UB18 and the draft determination did not make a proper comparative analysis with UB profiles.
- All welds are to ASME9 6G Standard[10] and there is no corrosion to the welds.
- Diagonal bracing is solid and not designed to move. When it moves in rotation the foundation anchor lifts and it loses its brace value. Diagonal bracing fails in high wind and earthquake movements.
- Diagonal bracing does not perform in earthquake movement, particularly wave movements underneath the building; whereas the proposed brace frame will flex without rotating and the verticals remain parallel.
- The wind load stated in the draft determination (refer paragraph 3.4) would equate to speeds in excess of (variously) 750mph to 2000mph. The Ministry has not provided evidence of such extreme winds occurring and this would not be applicable to strap bracing or ply.
- The pile hole referred to in paragraph 3.7 was a 300x300 hold to locate 'where solid is' because several tree roots needed to be removed.

4.3.4 The applicant also submitted that the brace frame design was in use and has proven satisfactory in high-to-extreme wind loadings and in earthquakes; there is no indication of movement, deformation, or deflection (refer paragraph 6.1.5). The applicant submitted that the calculation for the amount of movement of the building in various extreme wind speeds is 1mm. The applicant also noted that the brace design 'is going to be re tested', but in a later submission advised that BRANZ had no test facilities to test it.

4.3.5 I have amended the determination as I consider appropriate.

5. The technical meeting

5.1 General

5.1.1 On 15 April 2016 I held a technical meeting in Bluff. The meeting was attended by two officers of the authority, and the applicant. I was accompanied by a Referee engaged by the Chief Executive under section 187(2) of the Act, together with an officer of the Ministry.

5.1.2 All the attendees spoke at the meeting and were of assistance to me in preparing this determination. The discussions held at the meeting are summarised below. The

[10] American Society of Mechanical Engineers

applicant also confirmed some of the construction details and I have included that information in the descriptions in paragraph 2.

5.1.3 The authority confirmed its view that there was insufficient evidence provided by the applicant to support the alternative solution. The authority acknowledged that the proposed shed may well meet the requirements of the Building Code, but that the applicant needed to provide sufficient information to establish that; the authority had requested the applicant obtain a Producer Statement PS1 Design from a Chartered Professional Engineer.

5.2 The design intent

5.2.1 The applicant explained that the frame design initially came about for a closet where space was limited and timber framing was too large. The applicant noted that in heavy wind loading the installed brace frame didn't rupture the anchor points and retracted back to its original shape.

5.2.2 The applicant indicated that the brace frame design was developed specifically to address movement caused by earthquakes, in particular rapid lateral movement and could be used as a retro-fitted solution for housing.

5.2.3 The applicant is of the view that:

- The bracing would be over and above what is required by the Building Code and is an improvement on the solutions offered in NZS 3604.
- The brace frame using 40mm SHS is as strong as a 150 UB18, and a 50mm brace frame has the strength value of a 300 UB18.
- The performance of the bracing increases with an increase in the loading put on it; during the 22 February 2011 Canterbury earthquake the brace that had been installed in another building (refer paragraph 5.5.1) performed well with the building 'compressing'.
- The brace works as a spring, with the top and bottom plates remaining parallel regardless of the lateral loading.
- The outer frames are the main support and take the load down to the foundation. The inner frame loads back in the opposite direction to the outer frame; it rotates anti-clockwise to the load and transfers the load to the opposite side, going back in the direction it is coming from. The bracing effectively pulls the building down onto its foundations.
- Under worst case loading situation the structure will remain within its elastic limits because the amount of movement will be reduced, and the placement of the number of brace frames are balanced throughout the building. If there is failure of one of the braces the load would move to the others.
- There is allowance for movement between the brace frames, and the braces are flexible enough to move with any ground movement without transferring the movement through the structure.
- The anchor points would take 10% of the forces that a diagonal load would take. To lift the anchor the inner-square at the corners would need to distort first.

- The wind capacity would place a loading of 100kg[11] on the brace; the testing shows that the frame is twice as strong as what is required.

5.2.4 The applicant confirmed that the bracing had not been tested as a whole system with the framing, nor had the design limits been calculated.

5.3 The testing

5.3.1 The material strength had been tested (test certificates were provided with the application), and the movements and loadings were well within the material strength.

5.3.2 The applicant set up a test rig for the brace frame. The test rig consisting of two legs of 2x150 UB18s; the two legs were welded at right angles. The test rig was not bolted to the floor. The brace frame was made from 40mm SHS and welded to the test rig with 50mm welds at the bottom corners.

5.3.3 A hydraulic ram was placed between the test rig and the top of the brace frame. At 0.7 ton[12], the deflection was approximately 50mm with the UB18 beginning to bend also. The top and bottom of the brace frame stayed parallel.

5.3.4 The applicant considered the results were a conservative indication of the brace frames performance because in use it would have floor joist, rafter on top, would be set into the timber frame, the outer frame bolted to studs, and top inner frame checked into studs, which would all providing stiffening.

5.3.5 The applicant had consulted an engineer, but did not accept the engineer's comparative analysis.

5.3.6 The frame used in the testing by the consultant engineer was 25mm SHS, but it was not checked into a timber frame. The applicant is of the view that there was little value in the engineer's testing because it was not in the timber frame and the distance the brace frame would bend in use or in a test using the timber frame would be restricted to the distance between the studs.

5.3.7 The authority queried how the brace frame would satisfy the durability requirements, in particular given the amount of and number of movements expected over the building's lifetime. Those at the meeting acknowledged that it was unlikely to exceed the fatigue life of the steel in 50-years, though the weld quality and weld fatigue life would also be a factor in durability. The risk of salt-rich atmosphere reaching the brace-frame was also discussed, as well as the painting of weld affected zones, with the concern being the period during exposure prior to being enclosed.

5.4 NZS 3604 bracing methods

5.4.1 The applicant is of the view that although NZS 3604 design structures are satisfactory with regard to wind loading, they are inadequate in terms of earthquake movement, particularly inertia shock load. The applicant considers that diagonal bracing is too rigid and ruptures, and though plywood bracing allows movement it is not much different in terms of performance.

5.4.2 The applicant is of the view that the proposed brace frame is a significant improvement on what is in NZS 3604 because 'it does not place loads on the anchor points, it is containing hazardous shock movements within the frame and sending them to ground, [and] the building compresses when it is loaded'.

[11] 100kg = 0.980665 kilonewtons
[12] 700kg = 6.864655 kilonewtons

5.4.3 It was acknowledged at the meeting that the subject building would be Importance Level 1[13]. Discussion was held regarding commercial kitset style sheds and garages, and the differences between those designs and the applicant's proposed design.

5.5 The brace frame as installed

5.5.1 The applicant confirmed that the brace frame had been installed in one location already, a two-storey house with pole foundations. The building in which it was installed has not received a code compliance certificate and the applicant advised there were 'other issues' with regards to earthquake and wind loadings in respect of foundations, wall bracing, and stabilising the second floor roof.

5.5.2 The applicant's views regarding the performance of standard diagonal bracing were as a result of the performance of that building in high wind and earthquake movement.

6. Discussion

6.1 The compliance of the brace frame

6.1.1 A number of options are available to a building consent applicant to provide sufficient information to establish compliance with the Building Code. These options include calculations, comparative analysis with a similar accepted product or solution, or physical testing.

6.1.2 I note that the applicant is of the view that the proposed brace frame is a significant improvement on what is in NZS 3604. I consider that comparison with specific engineering design to the Verification Method B1/VM1, which references AS/NZS 1170 Structural Design Actions[14], would be the most appropriate basis on which to establish Building Code compliance.

6.1.3 The testing on the brace undertaken by the applicant indicated a deflection of 50mm at a maximum applied load of 6.76kN. A theoretical calculation for deflection at this load is 65mm. The reason for this difference is not clear, but is not considered materially relevant to this determination.

6.1.4 Of more direct relevance is consideration of how this order of deflection or deformation translates to compliance with the Building Code. A deformation of, say, 60mm at the design wind loading of 7.5kN would cause significant damage to the structure. For comparison, buildings designed using NZS 3604 would be considered to have a serviceability deformation limit of approximately 8mm per 2.4m height.

6.1.5 A structure using the tested bracing frame would deflect to the extent it would be considered to have become unserviceable when the wind speed reaches only 38% of the expected maximum design wind speed. Such wind speeds could reasonably be expected to occur frequently (from annually to 10-yearly).

6.1.6 This is consistent with advice the applicant has been given by engineers with whom he has consulted. The essence of that advice is that the bracing frame has a relatively low bracing value, which was borne out by the testing. That in itself is not an impediment to compliance, but the applicant must still demonstrate how compliance with the Building Code is to be achieved given the degree to which the building is expected to deform when under load.

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[13] Importance Levels are set out in Australian/New Zealand Standard AS/NZS 1170:2002 Structural design actions, Part 0: General principles, which is cited as a means of compliance with the Verification Method B1/VM1

[14] Commentary on serviceability limits is contained in Table C1 of AS/NZS 1170.0

6.1.7 I note that the building would be classified as Importance Level 1. As such the requirements of the Building Code would be less compared with the requirements for an Importance Level 2 building (implicit in scope of NZS 3604), with respect to both capacity and stiffness. This, however, does not detract from my observation above that the applicant must demonstrate how compliance is to be achieved.

6.2 The building consent

6.2.1 The Building Act makes specific requirements of both an applicant and an authority when a building consent is being sought. The applicant is required to provide sufficient relevant information to clearly describe the proposed work and demonstrate how compliance with the Building Code is to be achieved. The Ministry has issued guidance that describes the minimum documentation that should be supplied with a building consent application to demonstrate compliance with relevant clauses of the Building Code – "Guide to applying for a building consent (residential buildings)"[15].

6.2.2 Plans and specifications submitted in support of a building consent must:

- provide a compliant solution, and
- be sufficiently clear to describe how that solution is to be achieved through the construction process, and
- detail critical features.

6.2.3 Where there are shortcomings in the documentation in an application for building consent, authorities are entitled to refuse to grant the building consent on the basis that without adequate documentation it cannot be satisfied on reasonable grounds that the provisions of the Building Code will be met if the proposed building work is completed in accordance with the plans and specifications that accompanied the application for the consent. Documentation must be of a quality that allows an authority to fulfil its responsibilities under the Building Act, providing reasonable grounds to be satisfied that the proposal will comply with the Building Code.

6.2.4 In this case the applicant provided drawings showing the proposed work including the location of steel frame braces, extracts from the BRANZ House Building Guide showing weatherboard wall cladding details, and a producer statement from him outlining the intended structural function of the brace frame. The consent application indicated the means of compliance with B1 Structure was B1/AS1 (which I take to mean reference to NZS 3604).

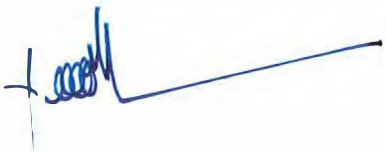
6.2.5 I consider the documentation is inadequate, in that it lacks supporting calculations that demonstrate the building has sufficient capacity and stiffness to resist design loads (earthquake and wind) as required by the Building Code. The design differs from NZS 3604 in that bracing is provided by the brace frames which are not included in NZS 3604. The structural design is therefore a specific design, and the producer statement from the applicant does not provide an adequate engineering basis to support the design.

[15] http://www.building.govt.nz/publications-about-the-building-act-2004#guide

7. The decision

7.1 In accordance with section 188 of the Building Act 2004, I hereby determine that with regard to the proposed method of bracing the authority correctly exercised its powers in respect of the building consent application, and I confirm the authority's decision in this respect.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 4 July 2016.



John Gardiner
Manager Determinations and Assurance