



Christchurch City Council

**Awa-iti Domain
Office Building
PRK 3746 BLDG 008**

**Detailed Engineering Evaluation
Quantitative Assessment Report**



Christchurch City Council

Awa-iti Domain Office Building Quantitative Assessment Report

40 Western Valley Road, Little River

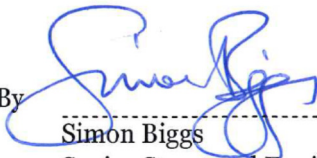
Prepared By



Clayton Taylor
Structural Engineer

Opus International Consultants Ltd
Christchurch Office
20 Moorhouse Avenue
PO Box 1482, Christchurch Mail
Centre, Christchurch 8140
New Zealand

Reviewed By



Simon Biggs
Senior Structural Engineer

Telephone: +64 3 363 5400
Facsimile: +64 3 365 7858

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Status: Final

Approved By



Dave Dekker
Principal Structural Engineer
MIPENZ, CPEng 1003026

Summary

Awa-iti Domain – Office Building
PRK 3746 BLDG 008

Detailed Engineering Evaluation
Quantitative Report - Summary
Final

Background

This is a summary of the quantitative report for the Awa-iti Domain Office Building, and is based on the Detailed Engineering Evaluation Procedure document (draft) issued by the Structural Advisory Group on 19 July 2011 and visual inspections on 14 June 2012 and 21 January 2013.

Key Damage Observed

Key damage observed included minor cracks in masonry bond beam around door frames in three locations.

Critical Structural Weaknesses

No critical structural weaknesses were identified.

Indicative Building Strength

The structure has been found to have a seismic capacity of 69%NBS as limited by the inadequate reinforcement in the masonry walls for out of plane bending.

Recommendations

It is recommended that the cracking observed around door openings is repaired.

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1 Introduction

Opus International Consultants Limited has been engaged by Christchurch City Council to undertake a detailed seismic assessment of Awa-iti Domain Office Building, located at 40 Western Valley Road, Little River following the Canterbury Earthquake Sequence since September 2010.

The purpose of the assessment is to determine if the building is classed as being earthquake prone in accordance with the Building Act 2004.

The seismic assessment and reporting have been undertaken based on the qualitative and quantitative procedures detailed in the Detailed Engineering Evaluation Procedure (DEEP) document (draft) issued by the Structural Engineering Society (SESOC) [3] [4].

2 Compliance

This section contains a brief summary of the requirements of the various statutes and authorities that control activities in relation to buildings in Christchurch at present.

2.1 Canterbury Earthquake Recovery Authority (CERA)

CERA was established on 28 March 2011 to take control of the recovery of Christchurch using powers established by the Canterbury Earthquake Recovery Act enacted on 18 April 2011. This act gives the Chief Executive Officer of CERA wide powers in relation to building safety, demolition and repair. Two relevant sections are:

Section 38 – Works

This section outlines a process in which the chief executive can give notice that a building is to be demolished and if the owner does not carry out the demolition, the chief executive can commission the demolition and recover the costs from the owner or by placing a charge on the owners' land.

Section 51 – Requiring Structural Survey

This section enables the chief executive to require a building owner, insurer or mortgagee to carry out a full structural survey before the building is re-occupied.

We understand that CERA require a detailed engineering evaluation to be carried out for all buildings (other than those exempt from the Earthquake Prone Building definition in the Building Act). CERA have adopted the Detailed Engineering Evaluation Procedure (DEEP) document (draft) issued by the Structural Engineering Society (SESOC) on 19 July 2011. This document sets out a methodology for both initial qualitative and detailed quantitative assessments.

It is anticipated that a number of factors, including the following, will determine the extent of evaluation and strengthening level required:

1. The importance level and occupancy of the building.

2. The placard status and amount of damage.
3. The age and structural type of the building.
4. Consideration of any critical structural weaknesses.

Christchurch City Council requires any building with a capacity of less than 34% of New Building Standard (including consideration of critical structural weaknesses) to be strengthened to a target of 67% as required under the CCC Earthquake Prone Building Policy.

2.2 Building Act

Several sections of the Building Act are relevant when considering structural requirements:

Section 112 - Alterations

This section requires that an existing building complies with the relevant sections of the Building Code to at least the extent that it did prior to the alteration. This effectively means that a building cannot be weakened as a result of an alteration (including partial demolition).

The Earthquake Prone Building policy for the territorial authority shall apply as outlined in Section 2.3 of this report.

Section 115 – Change of Use

This section requires that the territorial authority is satisfied that the building with a new use complies with the relevant sections of the Building Code ‘as near as is reasonably practicable’.

This is typically interpreted by territorial authorities as being 67% of the strength of an equivalent new building or as near as practicable. This is also the minimum level recommended by the New Zealand Society for Earthquake Engineering (NZSEE).

Section 121 – Dangerous Buildings

This section was extended by the Canterbury Earthquake (Building Act) Order 2010, and defines a building as dangerous if:

1. In the ordinary course of events (excluding the occurrence of an earthquake), the building is likely to cause injury or death or damage to other property; or
2. In the event of fire, injury or death to any persons in the building or on other property is likely because of fire hazard or the occupancy of the building; or
3. There is a risk that the building could collapse or otherwise cause injury or death as a result of earthquake shaking that is less than a ‘moderate earthquake’ (refer to Section 122 below); or
4. There is a risk that other property could collapse or otherwise cause injury or death; or

5. A territorial authority has not been able to undertake an inspection to determine whether the building is dangerous.

Section 122 – Earthquake Prone Buildings

This section defines a building as earthquake prone (EPB) if its ultimate capacity would be exceeded in a ‘moderate earthquake’ and it would be likely to collapse causing injury or death, or damage to other property.

A moderate earthquake is defined by the building regulations as one that would generate loads 33% of those used to design an equivalent new building.

Section 124 – Powers of Territorial Authorities

This section gives the territorial authority the power to require strengthening work within specified timeframes or to close and prevent occupancy to any building defined as dangerous or earthquake prone.

Section 131 – Earthquake Prone Building Policy

This section requires the territorial authority to adopt a specific policy for earthquake prone, dangerous and insanitary buildings.

2.3 Christchurch City Council Policy

Christchurch City Council adopted their Earthquake Prone, Dangerous and Insanitary Building Policy in 2006. This policy was amended immediately following the Darfield Earthquake on 4 September 2010.

The 2010 amendment includes the following:

1. A process for identifying, categorising and prioritising Earthquake Prone Buildings, commencing on 1 July 2012;
2. A strengthening target level of 67% of a new building for buildings that are Earthquake Prone;
3. A timeframe of 15-30 years for Earthquake Prone Buildings to be strengthened; and,
4. Repair works for buildings damaged by earthquakes will be required to comply with the above.

The council has stated their willingness to consider retrofit proposals on a case by case basis, considering the economic impact of such a retrofit.

If strengthening works are undertaken, a building consent will be required. A requirement of the consent will require upgrade of the building to comply ‘as near as is reasonably practicable’ with:

- The accessibility requirements of the Building Code.

- The fire requirements of the Building Code. This is likely to require a fire report to be submitted with the building consent application.

Where an application for a change of use of a building is made to Council, the building will be required to be strengthened to 67% of New Building Standard or as near as is reasonably practicable.

2.4 Building Code

The Building Code outlines performance standards for buildings and the Building Act requires that all new buildings comply with this code. Compliance Documents published by The Department of Building and Housing can be used to demonstrate compliance with the Building Code.

On 19 May 2011, Compliance Document B1: Structure was amended to include increased seismic design requirements for Canterbury as follows:

- increase in the basic seismic design load for the Canterbury earthquake region (Z factor increased to 0.3 equating to an increase of 36 – 47% depending on location within the region);
- Increased serviceability requirements.

2.5 Institution of Professional Engineers New Zealand (IPENZ) Code of Ethics

One of the core ethical values of professional engineers in New Zealand is the protection of life and safeguarding of people. The IPENZ Code of Ethics requires that:

Members shall recognise the need to protect life and to safeguard people, and in their engineering activities shall act to address this need.

- 1.1 *Giving Priority to the safety and well-being of the community and having regard to this principle in assessing obligations to clients, employers and colleagues.*
- 1.2 *Ensuring that reasonable steps are taken to minimise the risk of loss of life, injury or suffering which may result from your engineering activities, either directly or indirectly.*

All recommendations on building occupancy and access must be made with these fundamental obligations in mind.

3 Earthquake Resistance Standards

For this assessment, the building's earthquake resistance is compared with the current New Zealand Building Code requirements for a new building constructed on the site. This is expressed as a percentage of new building standard (%NBS). The loadings are in accordance with the current earthquake loading standard NZS1170.5 [1].

A generally accepted classification of earthquake risk for existing buildings in terms of %NBS that has been proposed by the NZSEE 2006 [2] is presented in Figure 1 below.

Description	Grade	Risk	%NBS	Existing Building Structural Performance	Improvement of Structural Performance	
					Legal Requirement	NZSEE Recommendation
Low Risk Building	A or B	Low	Above 67	Acceptable (improvement may be desirable)	The Building Act sets no required level of structural improvement (unless change in use) This is for each TA to decide. Improvement is not limited to 34%NBS.	100%NBS desirable. Improvement should achieve at least 67%NBS
Moderate Risk Building	C	Moderate	34 to 66	Acceptable legally. Improvement recommended		Not recommended. Acceptable only in exceptional circumstances
High Risk Building	D or E	High	33 or lower	Unacceptable (Improvement required under Act)	Unacceptable	Unacceptable

Figure 1: NZSEE Risk Classifications Extracted from table 2.2 of the NZSEE 2006 AISPBE Guidelines

Table 1 below compares the percentage NBS to the relative risk of the building failing in a seismic event with a 10% risk of exceedance in 50 years (i.e. 0.2% in the next year).

Table 1: %NBS compared to relative risk of failure

Percentage of New Building Standard (%NBS)	Relative Risk (Approximate)
>100	<1 time
80-100	1-2 times
67-80	2-5 times
33-67	5-10 times
20-33	10-25 times
<20	>25 times

3.1 Minimum and Recommended Standards

Based on governing policy and recent observations, Opus makes the following general recommendations:

3.1.1 Occupancy

The Canterbury Earthquake Order¹ in Council 16 September 2010, modified the meaning of “dangerous building” to include buildings that were identified as being EPB’s. As a result of this, we would expect such a building would be issued with a Section 124 notice, by the Territorial Authority, or CERA acting on their behalf, once they are made aware of our assessment. Based on information received from CERA to date and from the DBH guidance document dated 12 June 2012 [6], this notice is likely to prohibit occupancy of the building (or parts thereof), until its seismic capacity is improved to the point that it is no longer considered an EPB.

3.1.2 Cordoning

Where there is an overhead falling hazard, or potential collapse hazard of the building, the areas of concern should be cordoned off in accordance with current CERA/territorial authority guidelines.

3.1.3 Strengthening

Industry guidelines (NZSEE 2006 [2]) strongly recommend that every effort be made to achieve improvement to at least 67%NBS. A strengthening solution to anything less than 67%NBS would not provide an adequate reduction to the level of risk.

It should be noted that full compliance with the current building code requires building strength of 100%NBS.

3.1.4 Our Ethical Obligation

In accordance with the IPENZ code of ethics, we have a duty of care to the public. This obligation requires us to identify and inform CERA of potentially dangerous buildings; this would include earthquake prone buildings.

¹ This Order only applies to buildings within the Christchurch City, Selwyn District and Waimakariri District Councils authority

4 Building Description

4.1 General

The single storey reinforced concrete masonry structure is approximately 13.4m long and 8.3m wide. The roof is supported by timber trusses pitched at an angle of 25 degrees. Partially reinforced concrete masonry walls are supported off a concrete slab. It is expected that this building would be founded with shallow footings, although this cannot be confirmed without design drawings or invasive investigation.



Figure 2: Awa-iti Domain Office Building location (Courtesy Google Earth)

4.2 Gravity Load Resisting System

The gravity system transfers roof load by roof trusses supported by external masonry walls and to ground by the concrete floor and footings.

4.3 Seismic Load Resisting System

Seismic induced loads at eaves level are distributed to masonry walls by way of a flexible roof diaphragm, and to the ground by in plane and out-of plane actions of walls on footings.

5 Survey

Inspections were undertaken by Opus on 14 June 2012 and 21 January 2013, to measure, photograph and ascertain the structural systems and extent of damage.

6 Damage Assessment

Some minor cracking was observed to the masonry bond beam around door openings, likely to have been caused by racking of adjacent walls during seismic activity. There were some cracks evident in the slab, which do not appear to be a result of recent seismic activity.

7 Detailed Seismic Assessment

The detailed seismic assessment has been based on the NZSEE 2006 [2] guidelines for the “Assessment and Improvement of the Structural Performance of Buildings in Earthquakes” together with the “Guidance on Detailed Engineering Evaluation of Earthquake Affected Non-residential Buildings in Canterbury, Part 2 Evaluation Procedure” [3] draft document prepared by the Engineering Advisory Group on 19 July 2011, and the SESOC guidelines “Practice Note – Design of Conventional Structural Systems Following Canterbury Earthquakes” [5] issued on 21 December 2011.

7.1 Critical Structural Weaknesses

The term Critical Structural Weakness (CSW) refers to a component of a building that could contribute to increased levels of damage or cause premature collapse of a building.

No CSW's were identified for this building.

7.2 Seismic Coefficient Parameters

The seismic design parameters based on current design requirements from NZS1170.5:2004 and the NZBC clause B1 for this building are:

- Site soil class C, clause 3.1.3 NZS 1170.5:2004;
- Site hazard factor, $Z=0.3$, B1/VM1 clause 2.2.14B;
- Return period factor $R_u = 1.0$ from Table 3.5, NZS 1170.5:2004, for an Importance Level 2 structure with a 50 year design life;

7.3 Expected Ductility Factors

Limited details were available for the lightly reinforced concrete masonry walls. It is estimated that these walls will behave at best as nominally ductile and so a structural ductility factor of 1.25 has been used in this assessment.

7.4 Detailed Seismic Assessment Results

A summary of the structural performance of the building is shown in the following tables. Note that the values given represent the worst performing elements in the building, as these effectively define the building's capacity. Other elements within the building may have significantly greater capacity when compared with the governing elements.

Table 2: Summary of Seismic Performance

Structural Element/System	Failure mode and description of limiting criteria	Critical Structural Weakness and Collapse Hazard	% NBS based on calculated capacity
Concrete Masonry Bracing Walls	In-plane shear	No	>100
Concrete Masonry Bracing Walls	Out-of-plane flexure	No	69

7.5 Discussion of Results

The building has a calculated seismic capacity of 69% NBS, which is limited by the inadequate vertical reinforcing to resist out of plane bending. The structure is therefore not classified as an earthquake prone building in accordance with NZSEE guidelines.

7.6 Limitations and Assumptions in Results

The observed level of damage suffered by the building was deemed low enough to not affect the capacity. Therefore the analysis and assessment of the building was based on it being in an undamaged state. There may have been damage to the building that was unable to be observed that could cause the capacity of the building to be reduced; therefore the current capacity of the building may be lower than that stated.

The results have been reported as a %NBS and the stated value is that obtained from our analysis and assessment. Despite the use of best national and international practice in this analysis and assessment, this value contains uncertainty due to the many assumptions and simplifications which are made during the assessment. These include:

- a. Simplifications made in the analysis, including boundary conditions such as foundation fixity.
- b. Assessments of material strengths based on limited drawings, specifications and site inspections
- c. The normal variation in material properties which change from batch to batch.
- d. Approximations made in the assessment of the capacity of each element, especially when considering the post-yield behaviour.

8 Summary of Geotechnical Appraisal

Due to a lack of observed ground damage, no specific geotechnical assessment has been undertaken. The seismic site parameter used for the structural analysis was Soil Class Type C, based on geotechnical advice from Opus.

9 Conclusions

This building has been assessed to have a seismic capacity of 69% NBS and therefore is not classed as an earthquake prone building.

10 Recommendations

It is recommended that the cracking observed around door openings is repaired.

11 Limitations


- (a) This report is based on an inspection of the structures with a focus on the damage sustained from the 22 February 2011 Canterbury Earthquake and aftershocks only. Some non-structural damage is mentioned but this is not intended to be a comprehensive list of non-structural items.
- (b) Our professional services are performed using a degree of care and skill normally exercised, under similar circumstances, by reputable consultants practicing in this field at the time.
- (c) This report is prepared for the CCC to assist with assessing remedial works required for council buildings and facilities. It is not intended for any other party or purpose.

12 References




- [1] NZS 1170.5: 2004, Structural design actions, Part 5 Earthquake actions, Standards New Zealand.
- [2] NZSEE (2006), Assessment and improvement of the structural performance of buildings in earthquakes, New Zealand Society for Earthquake Engineering.
- [3] Engineering Advisory Group, Guidance on Detailed Engineering Evaluation of Earthquake Affected Non-residential Buildings in Canterbury, Part 2 Evaluation Procedure, Draft Prepared by the Engineering Advisory Group, Revision 5, 19 July 2011.
- [4] Engineering Advisory Group, *Guidance on Detailed Engineering Evaluation of Non-residential buildings, Part 3 Technical Guidance*, Draft Prepared by the Engineering Advisory Group, 13 December 2011.
- [5] SESOC (2011), Practice Note – Design of Conventional Structural Systems Following Canterbury Earthquakes, Structural Engineering Society of New Zealand, 21 December 2011.
- [6] DBH (2012), Guidance for engineers assessing the seismic performance of non-residential and multi-unit residential buildings in greater Christchurch, Department of Building and Housing, June 2012.

Appendix 1 - Photographs




Awa-iti Domain Office Building– Detailed Engineering Evaluation

Awa-iti Domain Office Building		
No.	Item description	Photo
1	South West Corner of Office Building	
2	South East Corner of Office Building	
3	North End of Office Building	




Awa-iti Domain Office Building– Detailed Engineering Evaluation

4	Changing Room Interior (Home)	
5	Changing Room Interior (Visitors)	
6	Referees Room	

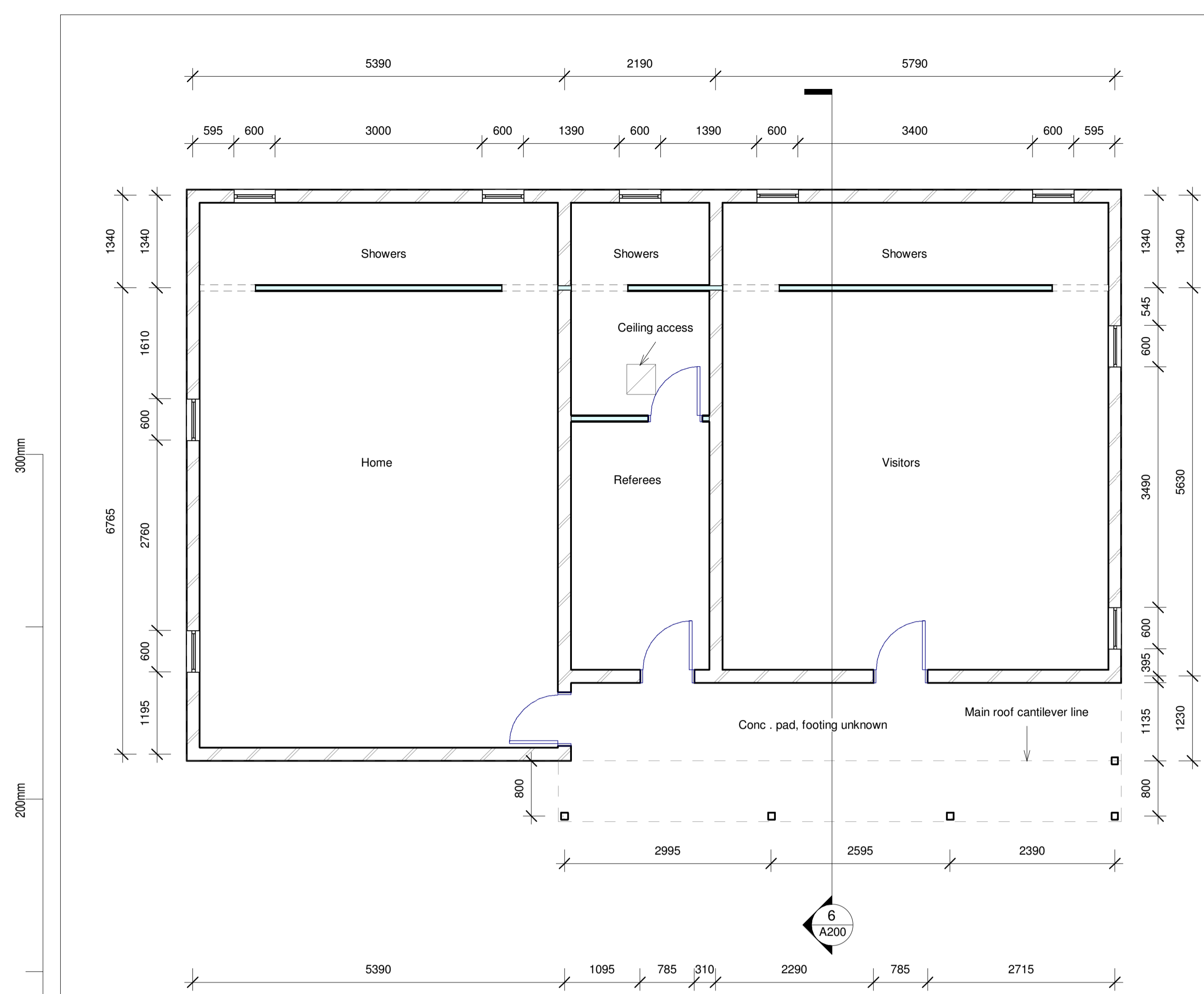
Awa-iti Domain Office Building– Detailed Engineering Evaluation

7	Roof Space	
8	Roof Space	
9	Evidence of Cracking over Door Frame	

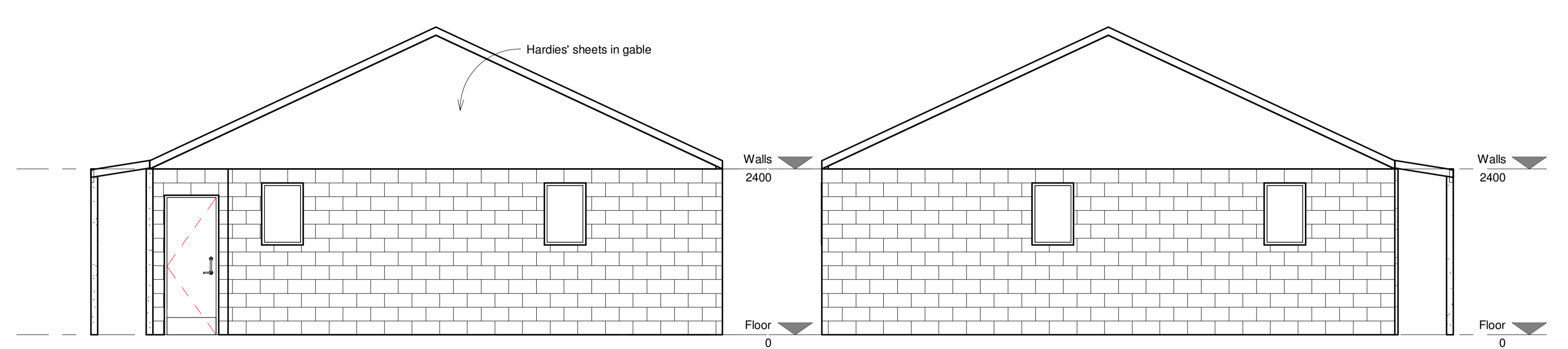
Awa-iti Domain Office Building– Detailed Engineering Evaluation

10	Evidence of Cracking over Door Frame	
11	Evidence of Cracking over Door Frame	
12	Cracking in Slab	

Appendix 2 – Sketch Plan

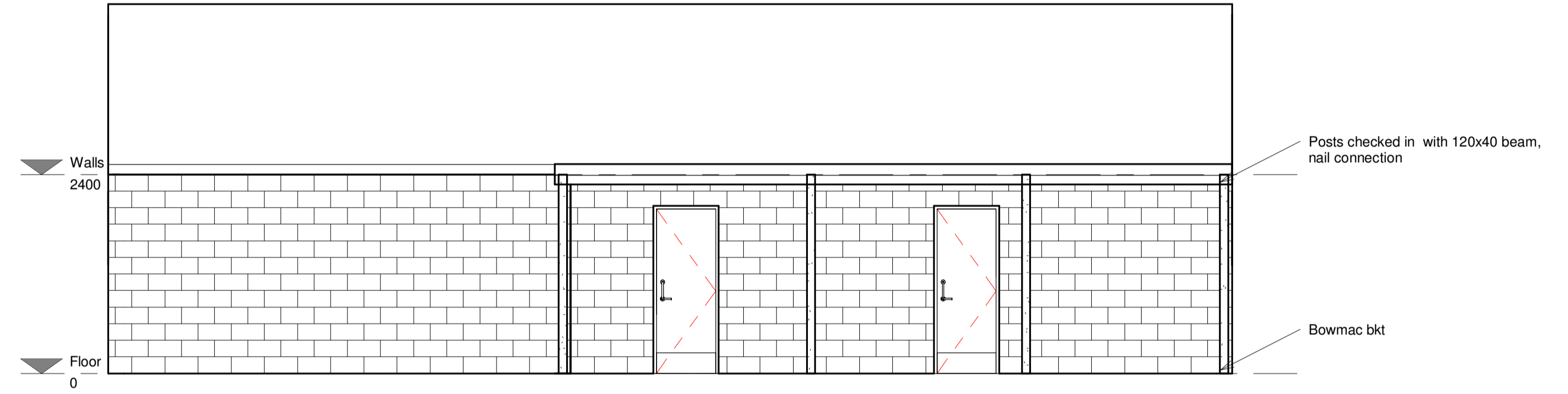


1 Level 1 Plan
A200
1 : 50

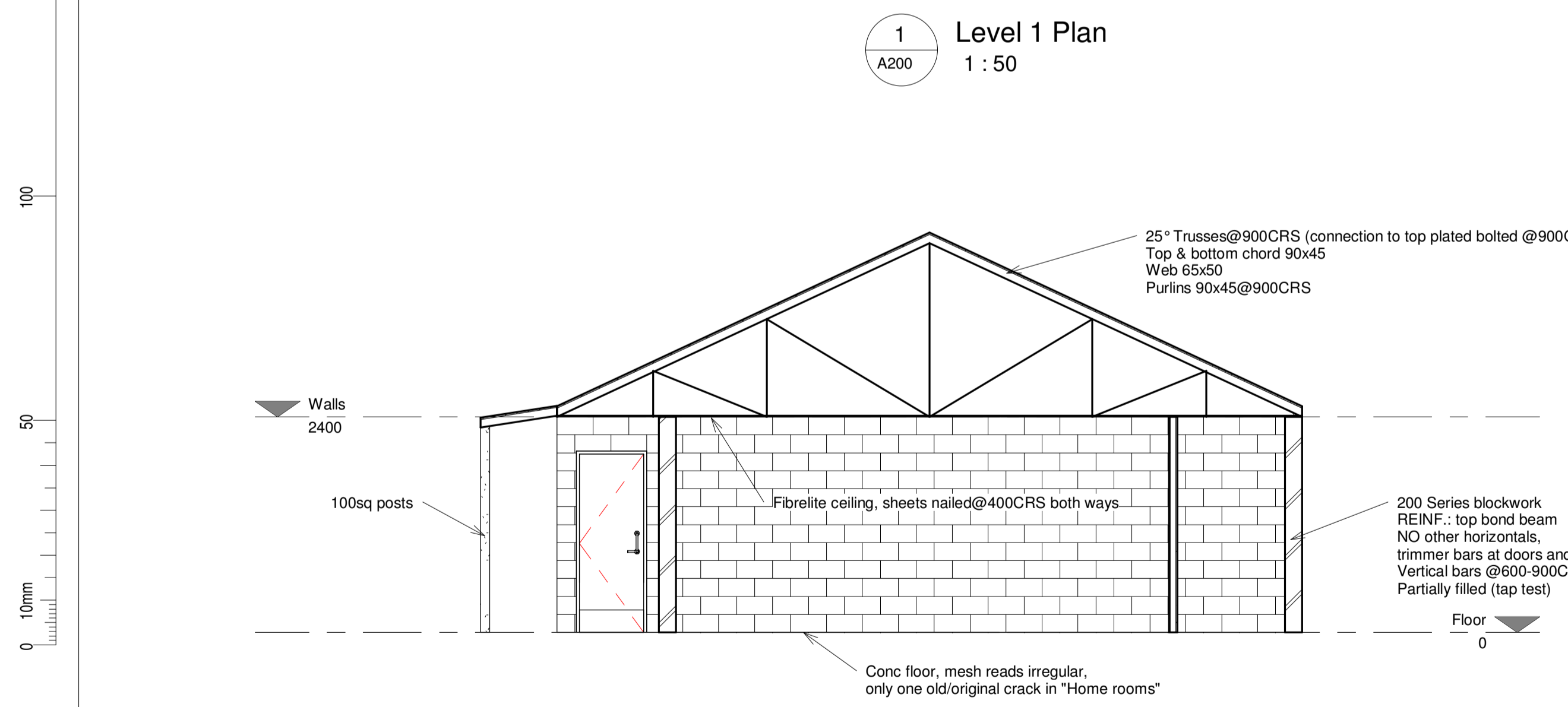


2 East Elevation
1 : 50

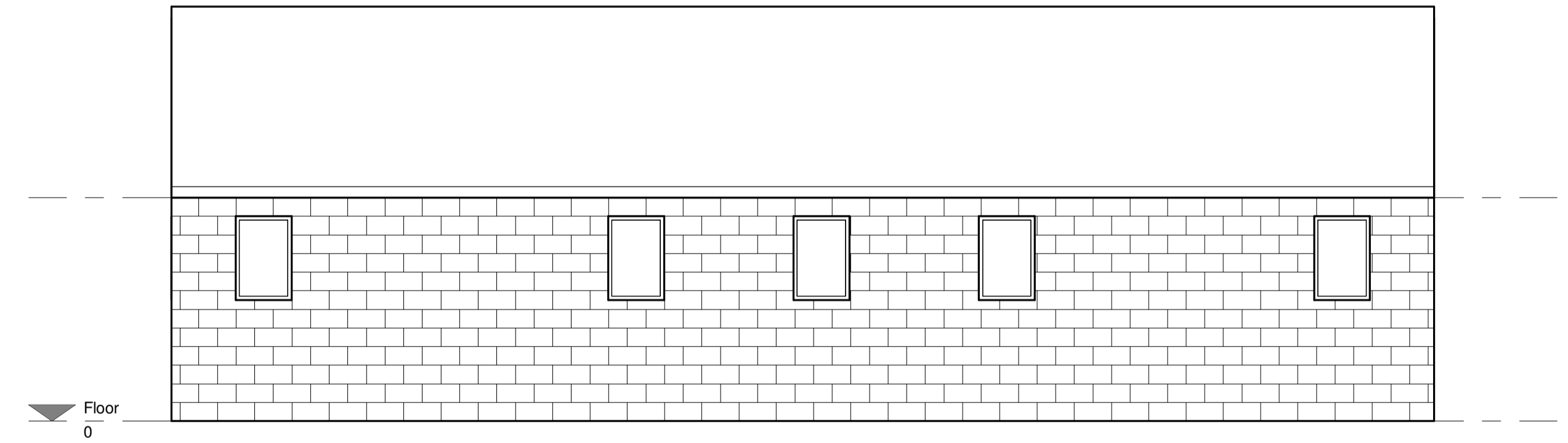
3 West Elevation
1 : 50



4 South Elevation
1 : 50



6 Section 1
A200
1 : 50



5 North Elevation
1 : 50

Revision	Amendment	Approved	Revision Date

OPUS
Christchurch Office
+64 3 363 5400

PO Box 1482
Christchurch 8140
New Zealand

Project
CCC
Little River, Awa-iti Domain
Referees Rooms
Title
Existing Floor Plan, Elevations, Section

Drawn	Designed	Approved	Revision Date
A.Senior			

Project No.	Scale	Drawing No.	Sheet No.	Revision
6-QUCC1.24	1 : 50	6/1366/333/8602	A200	RA

Draft

Appendix 3 – CERA DEE Spreadsheet

Location		Building Name: <input type="text" value="Awa-iti Domain Offices"/>	Unit No: <input type="text" value="40"/>	Street: <input type="text" value="Western Valley Road"/>	Reviewer: <input type="text" value="Dave Dekker"/>
Building Address: <input type="text"/>	Legal Description: <input type="text"/>				CPEng No: <input type="text" value="1003026"/>
			Company: <input type="text" value="Opus International Consultants"/>		
			Company project number: <input type="text" value="6-QUCC1.24"/>		
			Company phone number: <input type="text" value="03 363 5400"/>		
GPS south: <input type="text" value="43 45 52.00"/>		Degrees		Min	Sec
GPS east: <input type="text" value="172 47 47.00"/>					
Building Unique Identifier (CCC): <input type="text" value="PRK_3746_BLDG_008"/>			Date of submission: <input type="text" value="19-Mar-13"/>		
			Inspection Date: <input type="text" value="14/06/2012 and 21/01/2013"/>		
			Revision: <input type="text" value="Final"/>		
			Is there a full report with this summary? <input type="text" value="yes"/>		

Site		Site slope: <input type="text" value="flat"/>	Max retaining height (m): <input type="text"/>
Soil type: <input type="text"/>		Soil Profile (if available): <input type="text"/>	
Site Class (to NZS1170.5): <input type="text" value="C"/>		If Ground improvement on site, describe: <input type="text"/>	
Proximity to waterway (m, if <100m): <input type="text"/>		Approx site elevation (m): <input type="text"/>	
Proximity to cliff top (m, if <100m): <input type="text"/>			
Proximity to cliff base (m, if <100m): <input type="text"/>			

Building		No. of storeys above ground: <input type="text" value="1"/>	single storey = 1	Ground floor elevation (Absolute) (m): <input type="text"/>
Ground floor split?: <input type="text" value="no"/>		Ground floor elevation above ground (m): <input type="text"/>		
Storeys below ground: <input type="text" value="0"/>		if Foundation type is other, describe: <input type="text" value="Raft assumed. Documentation unavailable"/>		
Foundation type: <input type="text" value="raft slab"/>		height from ground to level of uppermost seismic mass (for IEP only) (m): <input type="text"/>		
Building height (m): <input type="text" value="2.40"/>		Date of design: <input type="text"/>		
Floor footprint area (approx): <input type="text" value="115"/>				
Age of Building (years): <input type="text" value="40"/>				
Strengthening present?: <input type="text" value="no"/>		If so, when (year)? <input type="text"/>		
Use (ground floor): <input type="text" value="other (specify)"/>		And what load level (%g)? <input type="text"/>		
Use (upper floors): <input type="text"/>		Brief strengthening description: <input type="text" value="Recreation and storage"/>		
Use notes (if required): <input type="text"/>				
Importance level (to NZS1170.5): <input type="text" value="IL2"/>				

Gravity Structure		Gravity System: <input type="text" value="load bearing walls"/>	
Roof: <input type="text" value="timber truss"/>		truss depth, purlin type and cladding	<input type="text" value="1300mm, 70x45 timber, corrugated steel"/>
Floors: <input type="text" value="other (note)"/>		describe system	<input type="text" value="concrete slab on ground"/>
Beams: <input type="text"/>			
Columns: <input type="text"/>			
Walls: <input type="text"/>			

Lateral load resisting structure		Lateral system along: <input type="text" value="partially filled CMU"/>	Note: Define along and across in detailed report! ##### enter height above at H31	note total length of wall at ground (m): <input type="text"/>
Ductility assumed, μ: <input type="text" value="1.25"/>		wall thickness (m): <input type="text"/>		
Period along: <input type="text" value="0.12"/>		estimate or calculation? <input type="text" value="estimated"/>		
Total deflection (ULS) (mm): <input type="text"/>		estimate or calculation? <input type="text"/>		
maximum interstorey deflection (ULS) (mm): <input type="text"/>				
Lateral system across: <input type="text" value="partially filled CMU"/>		note total length of wall at ground (m): <input type="text"/>		
Ductility assumed, μ: <input type="text" value="1.25"/>		wall thickness (m): <input type="text"/>		
Period across: <input type="text" value="0.12"/>		estimate or calculation? <input type="text" value="estimated"/>		
Total deflection (ULS) (mm): <input type="text"/>		estimate or calculation? <input type="text"/>		
maximum interstorey deflection (ULS) (mm): <input type="text"/>				

Separations:		north (mm): <input type="text"/>	leave blank if not relevant
east (mm): <input type="text"/>			
south (mm): <input type="text"/>			
west (mm): <input type="text"/>			

Non-structural elements		Stairs: <input type="text"/>	describe
Wall cladding: <input type="text"/>			
Roof Cladding: <input type="text" value="Metal"/>			
Glazing: <input type="text" value="aluminium frames"/>			
Ceilings: <input type="text" value="fibrous plaster, fixed"/>			
Services(list): <input type="text"/>			

Available documentation		Architectural: <input type="text" value="none"/>	original designer name/date: <input type="text"/>
Structural: <input type="text" value="none"/>		Mechanical: <input type="text" value="none"/>	original designer name/date: <input type="text"/>
Electrical: <input type="text" value="none"/>		Geotech report: <input type="text" value="none"/>	original designer name/date: <input type="text"/>
			original designer name/date: <input type="text"/>

Damage		Site performance: <input type="text"/>	Describe damage: <input type="text"/>
Site: (refer DEE Table 4-2)		Settlement: <input type="text" value="none observed"/>	notes (if applicable): <input type="text"/>
Differential settlement: <input type="text" value="none observed"/>		Liquefaction: <input type="text" value="none apparent"/>	notes (if applicable): <input type="text"/>
Lateral Spread: <input type="text" value="none apparent"/>		Differential lateral spread: <input type="text" value="none apparent"/>	notes (if applicable): <input type="text"/>
Ground cracks: <input type="text" value="none apparent"/>		Damage to area: <input type="text" value="none apparent"/>	notes (if applicable): <input type="text"/>

Building:		Current Placard Status: <input type="text"/>	
Along	Damage ratio: <input type="text" value="0%"/>	Describe (summary): <input type="text"/>	Describe how damage ratio arrived at: <input type="text"/>
Across	Damage ratio: <input type="text" value="0%"/>	Describe (summary): <input type="text"/>	
$Damage_Ratio = \frac{(\%NBS\ (before) - \%NBS\ (after))}{\%NBS\ (before)}$			
Diaphragms	Damage?: <input type="text" value="no"/>	Describe: <input type="text"/>	
CSWs:	Damage?: <input type="text" value="no"/>	Describe: <input type="text"/>	
Pounding:	Damage?: <input type="text" value="no"/>	Describe: <input type="text"/>	
Non-structural:	Damage?: <input type="text" value="no"/>	Describe: <input type="text"/>	

Recommendations		Level of repair/strengthening required: <input type="text" value="none"/>	Describe: <input type="text" value="Wall reinforcement to be improved"/>
Building Consent required: <input type="text" value="no"/>		Interim occupancy recommendations: <input type="text" value="full occupancy"/>	Describe: <input type="text" value="if 100%NBS is desired. (Significant Structural)"/>
Along	Assessed %NBS before: <input type="text" value="69%"/>	Assessed %NBS after: <input type="text" value="69%"/>	##### %NBS from IEP below
Across	Assessed %NBS before: <input type="text" value="69%"/>	Assessed %NBS after: <input type="text" value="69%"/>	##### %NBS from IEP below
			If IEP not used, please detail assessment methodology: <input type="text" value="Quantitative"/>



Opus International Consultants Ltd
20 Moorhouse Avenue
PO Box 1482, Christchurch Mail Centre,
Christchurch 8140
New Zealand

t: +64 3 363 5400
f: +64 3 365 7858
w: www.opus.co.nz