Animal Control Administration Team
Dog Pound Portacom
Detailed Engineering Evaluation
BU 0890-003 EQ2
Qualitative Report

Prepared for Christchurch City Council

By Beca Carter Hollings & Ferner Ltd (Beca)

11 February 2013

Revision History

Revision Nº	Prepared By	Description	Date
A	Daniel Bastiao	First Draft For CCC Review	26 June 2012
B	Daniel Bastiao	Final	11 February 2013

Document Acceptance

Action	Name	Signed	Date
Prepared by	Daniel Bastiao		26 June 2012
Reviewed by	Mike Bransfield		26 June 2012
Approved by	David Whittaker		26 June 2012
on behalf of	Beca Carter Hollings & Ferner Ltd		

Animal Control Administration Team
Dog Pound Portacom
BU 0890-003 EQ2

Detailed Engineering Evaluation
Qualitative Report – SUMMARY
Version 1

Address
10 Metro Place
Bromley
Christchurch

Background

This is a summary of the Qualitative report for the building structure, and is based on the document 'Guidance on Detailed Engineering Evaluation of Earthquake Affected Non-residential Buildings in Canterbury – Part 2 Evaluation Procedure' (draft) issued by the Engineering Advisory Group (EAG) on 19 July 2011.

The Portacom is located at 10 Metro Place, Bromley, Christchurch. The building is relocatable and proprietary construction of sandwich panels. The building has an approximate floor area of 200m^2 internally. Construction supported on, and secured to, timber framing with timber piles embedded in concrete.

Key Damage Observed

Based on the visual inspection performed on 28 May 2012, no key damage was observed.

Critical Structural Weaknesses

The Following the potential Critical Structural Weakness has been identified:

- Site characteristics, due to liquefaction which occurred throughout the site. However, no liquefaction was observed in the surrounding area during the visual inspection (post clean up).

Indicative Building Strength (from IEP and CSW assessment)

As an IEP is not useful in the case of this proprietary construction system, the building has been assessed to have a seismic capacity in the range of 73% based on age in comparison with current code, and is therefore classified as not Earthquake Risk or Earthquake Prone and Seismic Grade B.

Recommendations

It is recommended that:

- In accordance with CCC guidance / Policy Document 'Guidance for Engineers 2' dated 10 May 2012; no restrictions are required to the occupancy of the building.

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1 Background

Beca Carter Hollings & Ferner Ltd (Beca) has been engaged by the Christchurch City Council (CCC) to undertake a qualitative Detailed Engineering Evaluation (DEE) of the Dog Pound Portacom located at 10 Metro Place in Bromley.

This report is a Qualitative Assessment of the building structure, and is based on the document 'Guidance on Detailed Engineering Evaluation of Earthquake Affected Non-residential Buildings in Canterbury – Part 2 Evaluation Procedure' (draft) issued by the Engineering Advisory Group (EAG) on 19 July 2011.

A qualitative assessment involves inspections of the building and a desktop review of existing structural and geotechnical information, including existing drawings and calculations, if available and an assessment of the level of seismic capacity against current code using the Initial Evaluation Procedure (IEP).

The purpose of the assessment is to determine the likely building performance and damage patterns, to identify any potential critical structural weaknesses or collapse hazards, and to make an initial assessment of the likely building strength in terms of percentage of new building standard (%NBS).

At the time of this report, no intrusive site investigation, detailed analysis, or modelling of the building structure had been carried out. Full architectural/structural drawings were made available and these have been considered in our evaluation of the building. The building description below is based on a review of the drawings and our visual inspections.

The format and content of this report follows a template provided by CCC, which is based on the EAG document.

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 carry out a full structural survey before the building is re-occupied.

We understand that CERA will 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). It is understood that CERA is adopting the Detailed Engineering Evaluation Procedure document (draft) issued by the Structural Advisory Group on 19 July 2011, which sets out a methodology for both qualitative and quantitative assessment. We understand this report will be used in response to CERA section 51.

The qualitative assessment includes a thorough visual inspection of the building coupled with a desktop review of available documentation such as drawings, specifications and IEP's. The quantitative assessment involves analytical calculation of the buildings strength and may require non-destructive or destructive material testing, geotechnical testing and intrusive investigation.

It is anticipated that factors determining the extent of evaluation and strengthening level required will include:

- The importance level and occupancy of the building
- The placard status that was assigned during the state of emergency following the February 22 2011 Earthquake.
- The age and structural type of the building
- Consideration of any critical structural weaknesses
- The extent of any earthquake damage

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 any alteration. This effectively means that a building cannot be weakened as a result of an alteration (including partial demolition).

Section 115 – Change of Use

This section requires that the territorial authority (in this case Christchurch City Council (CCC)) be satisfied that the building with a new use complies with the relevant sections of the Building Code 'as near as is reasonably practicable'. Regarding seismic capacity 'as near as reasonably practicable' has previously been interpreted by CCC as achieving a minimum of 67%NBS however where practical achieving 100%NBS is desirable. The New Zealand Society for Earthquake Engineering (NZSEE) recommend a minimum of 67%NBS.

Section 121 – Dangerous Buildings

The definition of dangerous building in the Act was extended by the Canterbury Earthquake (Building Act) Order 2010, and it now defines a building as dangerous if:

- 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
- 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
- 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
- There is a risk that that other property could collapse or otherwise cause injury or death; or

- 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 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 ground shaking 33% of the shaking 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 of the 4th September 2010.

The 2010 amendment includes the following:

- A process for identifying, categorising and prioritising Earthquake Prone Buildings, commencing on 1 July 2012;
- A strengthening target level of 67% of a new building for buildings that are Earthquake Prone;
- A timeframe of 15-30 years for Earthquake Prone Buildings to be strengthened; and,
- 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.

It is understood that any building with a capacity of less than 33%NBS (including consideration of critical structural weaknesses) will need to be strengthened to a target of 67%NBS of new building standard as recommended by the Policy.

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.

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:

a. Hazard Factor increased from 0.22 to 0.3 (36% increase in the basic seismic design load)

b. Serviceability Return Period Factor increased from 0.25 to 0.33 (80% increase in the serviceability design loads when combined with the Hazard Factor increase)

The increase in the above factors has resulted in a reduction in the level of compliance of an existing building relative to a new building despite the capacity of the existing building not changing.

3 Earthquake Resistance Standards

For this assessment, the building's Ultimate Limit State 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 new building standard load requirements have been determined in accordance with the current earthquake loading standard (NZS 1170.5:2004 Structural design actions - Earthquake actions - New Zealand).

No consideration has been given at this stage to checking the level of compliance against the increased Serviceability Limit State requirements.

The likely ultimate capacity of this building has been derived in accordance with the New Zealand Society for Earthquake Engineering (NZSEE) guidelines 'Assessment and Improvement of the Structural Performance of Buildings in Earthquakes' (AISPBE), 2006. These guidelines provide an Initial Evaluation Procedure that assesses a building's capacity based on a comparison of loading codes from when the building was designed and currently. It is a quick high-level procedure that can be used when undertaking a Qualitative analysis of a building. The guidelines also provide guidance on calculating a modified Ultimate Limit State capacity of the building which is much more accurate and can be used when undertaking a Quantitative analysis.

The New Zealand Society for Earthquake Engineering has proposed a way for classifying earthquake risk for existing buildings in terms of %NBS and this is shown in Figure 3.1 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	B or 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	Unacceptable	Unacceptable

Figure 3.1: NZSEE Risk Classifications Extracted from table 2.2 of the NZSEE 2006 AISPBE Guidelines

Table 3.1 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). It is noted that the current seismic risk in Christchurch results in a 6% risk of exceedance in the next year.

Table 3.1: %NBS compared to relative risk of failure

Building Grade	Percentage of New Building Standard (*%NBS*)	Approx. Risk Relative to a New Building
A+	>100	<1
A	80-100	1-2 times
B	67-80	2-5 times
C	33-67	5-10 times
D	20-33	10-25 times
E	<20	>25 times

4 Building Description

4.1 General

Summary information about the building is given in the following table.

Table 4.1: Building Summary Information

Item	Details	Comment
Building name	Dog Pound Portacom	
Street Address	10 Metro Place Bromley Christchurch	
Age	Construction Approx. 2001	
Description	Single storey office	Relocatable and proprietary design building
Building Footprint / Floor Area	9mx22m = 200m^2	Excluding entry canopy
No. of storeys / basements	1 storey with no basement	
Occupancy / use	Office	Importance Level 2
Construction	Proprietary portable construction	Per existing drawings
Construction Documentation	Architectural Drawings Structural Drawings Geotechnical Report	
Gravity load resisting system	Timber roof truss supported by steel beam and posts along with prefab perimeter load bearing panels	Per existing drawings
Seismic load resisting system	Proprietary prefabricated composite wall panels	Per existing drawings
Foundation system	Timber joist & bearer on concrete encased timber piles	Bearers bolted to piles
Stair system	N.A.	
Other notable features	None	
External works	Asphalt pavement, car parking	

Item	Details	Comment
Likely design standard	NZS 4203:1992 (Loading Std.) NZS 3604:1990 (Timber Const.)	Inferred from Age of Buildings
Heritage status	No heritage status	
Other		

5 Site Investigations

5.1 Previous Assessments

No previous Level 1 or 2 assessments for the building have been sighted. No historical reports or calculations relating to this structure were available.

5.2 Level 4 Damage Inspection

Visual inspection as part of this Level 4 damage assessment was undertaken on 28 May 2012.

6 Damage Assessment

6.1 Damage Summary

The table below provides a summary of damage observed during our inspection. Refer to Appendix A for photographs of the observed damage.

Table 6.1: Damage Summary

Damage type	Unknown	Minor	Moderate	Major	Comment
settlement of foundations	✓				
tilt of building	✓				None observed during visual inspection. Verticality survey may be required to confirm
liquefaction	✓				None observed at the time of visual inspection. Contacts on site stated it had occurred in areas throughout the site.
settlement of external ground	✓				None observed during visual inspection
lateral spread / ground cracks					Not Applicable
frame					Not Applicable
concrete walls					Not Applicable
cracking to concrete floors					Not Applicable
bracing					Not Applicable

Damage type	Unknown	Minor	Moderate	Major	Comment
precast flooring seating					Not Applicable
stairs					Not Applicable
cladding /envelope	✓				None observed during visual inspection
internal fit out	✓				None observed during visual inspection
building services	✓				No inspection of services
other					Not Applicable

6.2 Surrounding Buildings

There are no adjacent buildings that are close enough that may affect this building during an earthquake.

6.3 Residual Displacements and General Observations

No evidence of permanent settlement or displacements were observed during our visual inspection, however a global settlement survey may reveal movement that could be described as damage under insurance entitlement.

6.4 Implication of Damage

The structure has suffered no visible structural damage and therefore we believe the structural capacity of the building has not been affected.

7 Generic Issues

None of the generic issues referred to in Appendix A of the EAG guideline document are applicable to the Portacom building.

8 Critical Structural Weakness

8.1 Site Characteristics

Liquefaction may have occurred throughout the site as nearby areas have been affected as internet aerial reconnaissance images indicate. However, no liquefaction was observed in the surrounding area during the visual inspection (post clean up).

9 Geotechnical Consideration

There is no geotechnical report available relating to this building, to our knowledge. There is no evidence that liquefaction or foundation failure affected this building.

10 Survey

No level or verticality surveys were carried out as there was no evidence of settlement or displacement observed during the inspection. CCC may wish to undertake a level survey as part of insurance entitlement considerations.

11 Initial Capacity Assessment

11.1 %NBS Assessment

As an IEP is not useful in the case of this proprietary construction system, the building has had its seismic capacity assessed based on a comparison with current code and with the information available. The building's capacity is expressed as a percentage of new building standard (%NBS); however due to the increased Z factor, the seismic performance is in the order of that shown below in Table 11.1, where previously it may have been considered at about 100%. These capacities are subject to confirmation by a quantitative analysis which is more detailed. The post damage capacity is considered to be the same as the original capacity.

Table 11.1: Indicative Building Capacities

System	Direction	Seismic Performance in *%NBS*	Notes
Proprietary Prefabricated Composite Shear Panels	Longitudinal	73%	NZSEE Initial Evaluation Procedure. IL 2, Z=0.3.
Proprietary Prefabricated Composite Shear Panels	Transverse	73%	NZSEE Initial Evaluation Procedure. IL 2, Z=0.3.

11.2 Seismic Parameters

The seismic design parameters based on current design requirements from NZS1170:2002 and the NZBC clause B1 for this building are:

- Site soil class: D – NZS 1170.5:2004, Clause 3.1.3, Soft Soil (Assumed)
- Site hazard factor, Z = 0.3 – NZBC, Clause B1 Structure, Amendment 11 effective from 19 May 2011
- Return period factor Ru = 1 – NZS 1170.5:2004, Table 3.5, Importance level 2 structure with a 50 year design life.
- Near fault factor N(T,D) = 1 – NZS 1170.5:2004, Clause 3.1.6, Distance more than 20 km from fault line.

11.3 Expected Structural Ductility Factor

The lateral load resisting system in both the longitudinal and transverse directions is a proprietary prefabricated composite shear panel system which may have been assumed to have a ductility factor of 2.0. This value is limited to the maximum values suggested in the NZSEE IEP for the age of the building.

11.4 Discussion of results

Based on the age and comparison of codes, the Portacom is considered to have a seismic grade B.

12 Initial Conclusions

The building has been assessed to have a seismic capacity of 73% and is therefore not earthquake prone or earthquake risk.

13 Recommendations

13.1 Occupancy

In accordance with CCC guidance notes to engineers dated 10 May 2012 no restrictions are recommended to occupancy of the building as a result of our qualitative assessment.

13.2 Further Investigations, Survey or Geotechnical Work

No further investigation, level or verticality survey is required for this building.

13.3 Damage Reinstatement

No damage has been observed.

14 Design Features Report

No structural repair is required and no retrofit or change to the structural systems or load paths are recommended as being required.

15 Limitations

The following limitations apply to this engagement:

- Beca and its employees and agents are not able to give any warranty or guarantee that all defects, damage, conditions or qualities have been identified.
- Inspections are primarily limited to visible structural components. Appropriate locations for invasive inspection, if required, will be based on damage patterns observed in visible elements, and review of the construction drawings and structural system. As such, there will be concealed structural elements that will not be directly inspected.
- The inspections are limited to building structural components only.
- Inspection of building services, pipework, pavement, and fire safety systems is excluded from the scope of this report.
- Inspection of the glazing system, linings, carpets, claddings, finishes, suspended ceilings, partitions, tenant fit-out, or the general water tightness envelope is excluded from the scope of this report.
- The preliminary assessment of the lateral load capacity of the building is limited by the completeness and accuracy of the drawings provided. Assumptions have been made in respect of the geotechnical conditions at the site and any aspects or material properties not clear on the drawings. Where these assumptions are considered material to the outcome further investigations may be recommended. It is noted the assessment has not been exhaustive, our analysis and calculations have focused on representative areas only to determine the level of provision made. At this stage we have not undertaken any checks of the gravity system, wind load capacity, or foundations.

- The information in this report provides a snapshot of building damage at the time the detailed inspection was carried out. Additional inspections required as a result of significant aftershocks are outside the scope of this work.

This report is of defined scope and is for reliance by CCC only, and only for this commission. Beca should be consulted where any question regarding the interpretation or completeness of our inspection or reporting arises.

Appendix A

Photographs

Figure 1A – Site Plan

Photo 1 – Main Entrance of Dog Pound Portacom Building


Photo 2 – Internal Steel Beam and Post


Photo 3 – Internal Steel Beam and Post

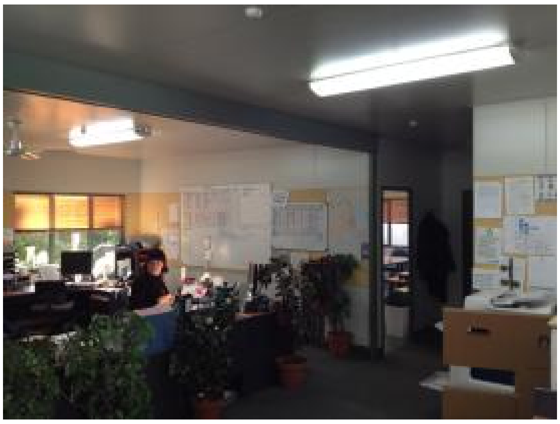


Photo 4 – Main Administrative Area


Photo 5 – Binder Storage Shelving


Photo 6 – Interior view of file storage room


Photo 7 – Rear Entrance

Photo 8 – Rear view

Photo 9 – Rear view

Photo 10 – Timber Framing Foundation System

Photo 11 – Timber Framing Foundation System

Photo 12 – Front view

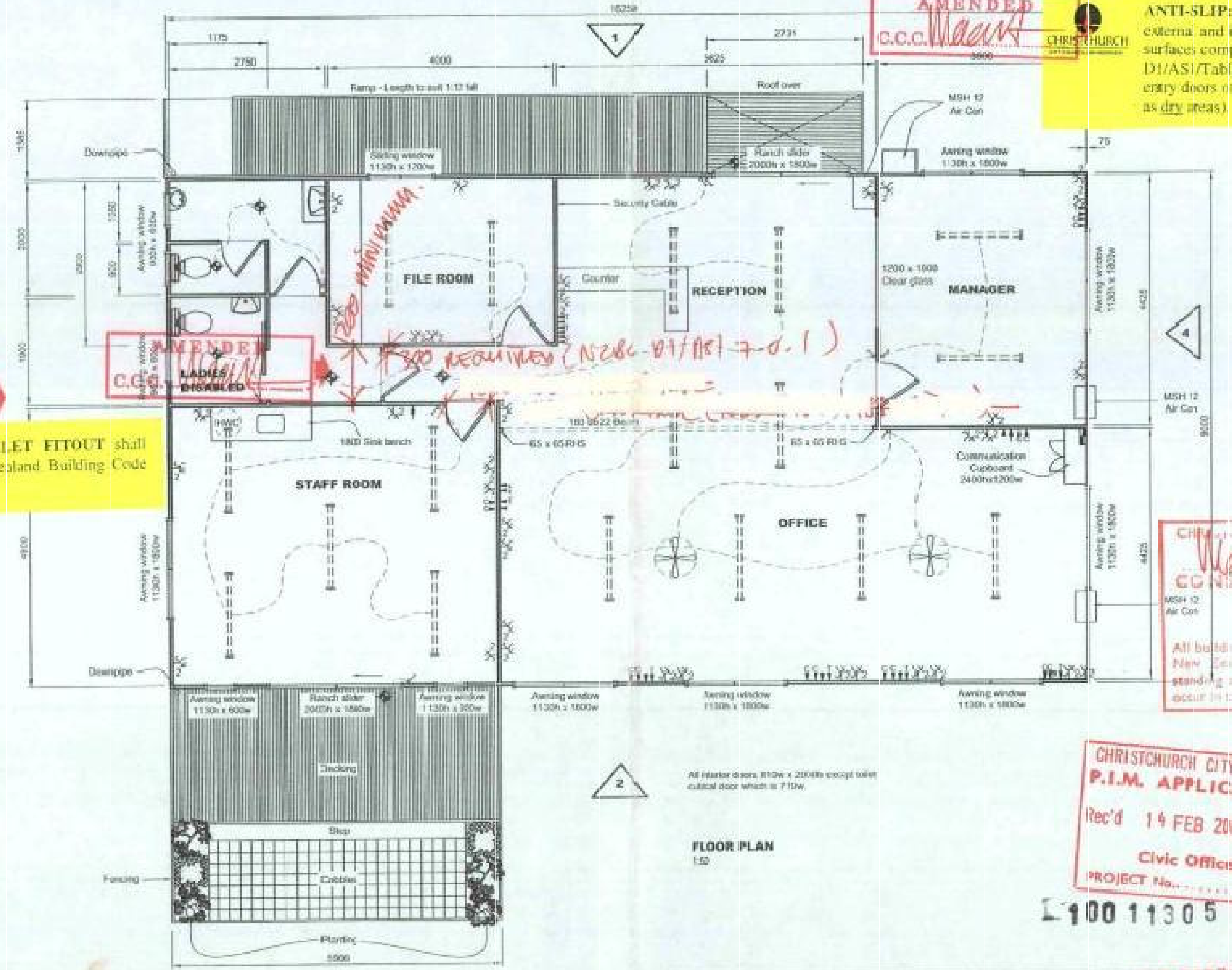
Photo 13 – Side view

Appendix B

Existing Drawings

ANTI-SLIP: On all access routes (both external and internal), provide anti-slip surfaces complying with NZBC D1/AS1/Table 2 (except that surfaces inside entry doors of housing may be considered as dry areas).

AMENDED C.C.C. [signature]



AMENDED C.C.C. [signature]

ACCESSIBLE TOILET FITOUT shall comply with New Zealand Building Code G1/AS1.

CHRISTCHURCH CITY COUNCIL
CONSENT DOCUMENT
01 MAR 2001
All building work shall comply with the New Zealand Building Code notwithstanding any inconsistencies which may occur in the drawings and specifications.

CHRISTCHURCH CITY COUNCIL
P.I.M. APPLICATION
Rec'd 14 FEB 2001
Civic Offices
PROJECT No.
10011305

COUNCIL COPY

DO NOT SCALE - IF IN DOUBT, ASK

ORIGINAL SIZE A3

LEGEND: Single power point; 2 Double power point; Lightswitch; Electrical switchboard; Single flourescent light; Double flourescent light; Incandescent light; Telephone Jack; Computer jack; Bulkhead light

REV	AMENDMENTS	DATE	INIT
	Modified as per customers request	26.01.01	
	Changes as instructed	12.02.01	

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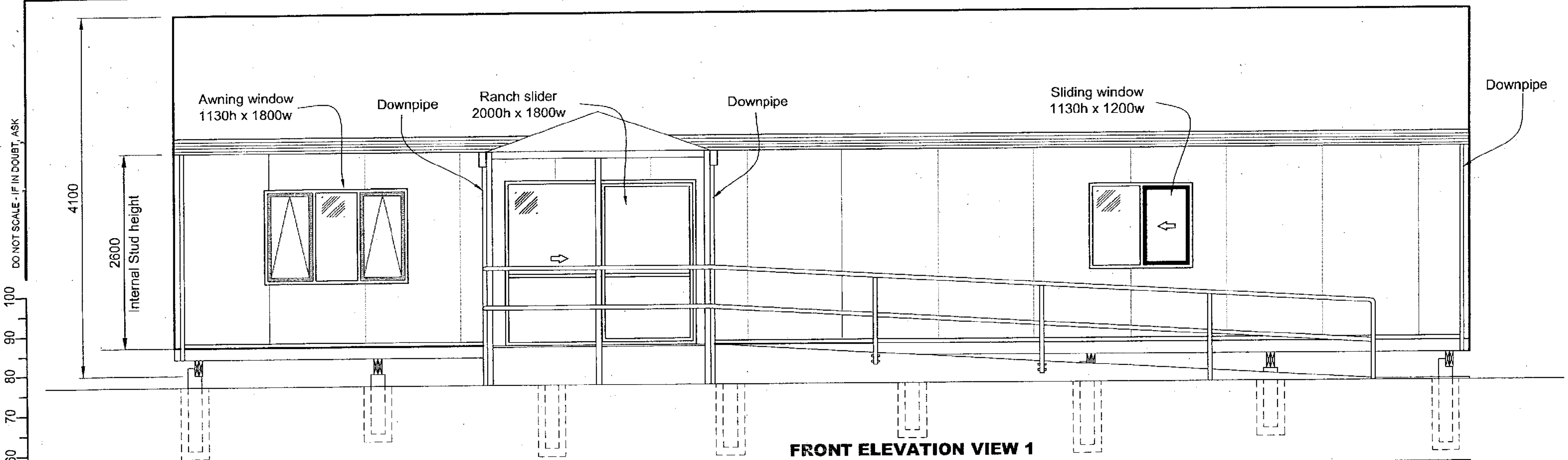
PORTACOM
MODULAR BUILDINGS
49A Buchanans Road
Sockburn, Christchurch
Ph: 03 342 8890
Fx: 03 342 6176
E-Mail: ian.nichols@portacom.co.nz

Christchurch City Council

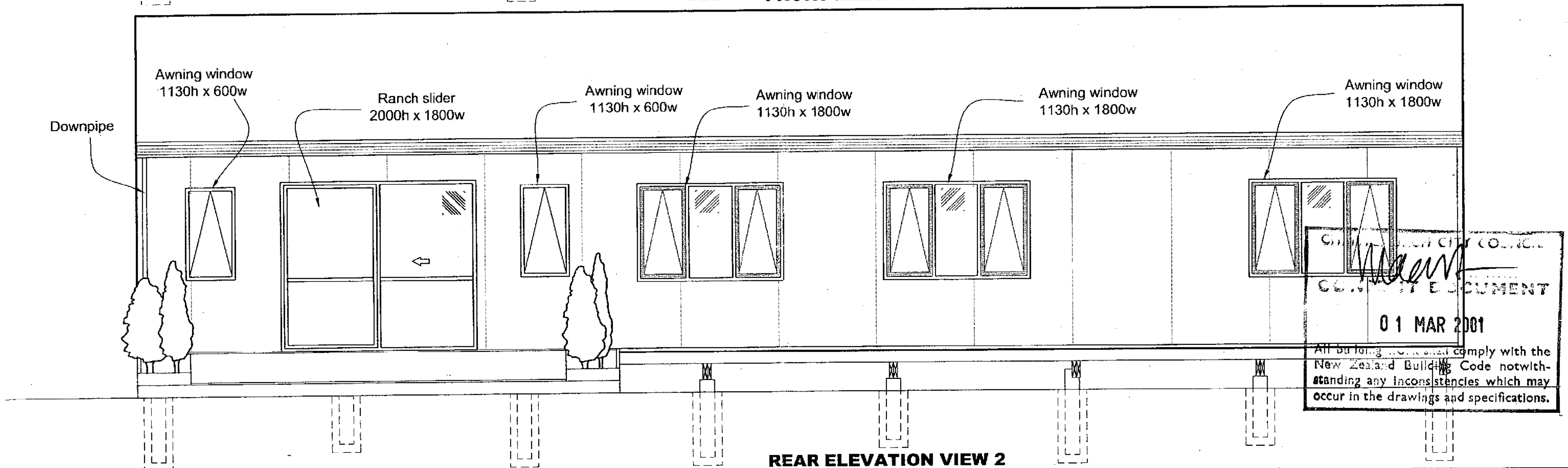
Dog Control Office - Metro Place

FLOOR PLAN

Job No. | Sheet No. S1 | Rev 3



FRONT ELEVATION VIEW 1



REAR ELEVATION VIEW 2

ORIGINAL SIZE A3

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PORTACOM

MODULAR BUILDINGS
49A Buchanans Road
Sockburn, Christchurch
Ph: 03 342 8890
Fx: 03 342 6176
E-Mail: ian.nichols@portacom.co.nz

Christchurch City Council

Dog Control Office - Metro Place

ELEVATIONS

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	S2	2

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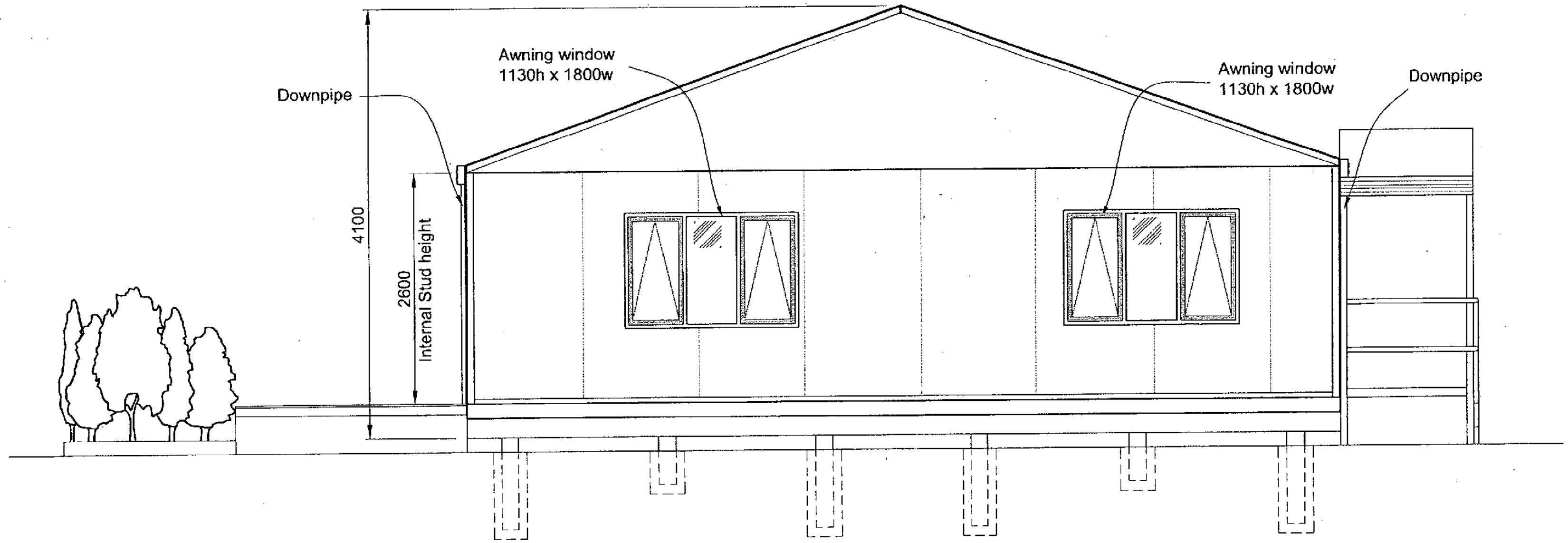
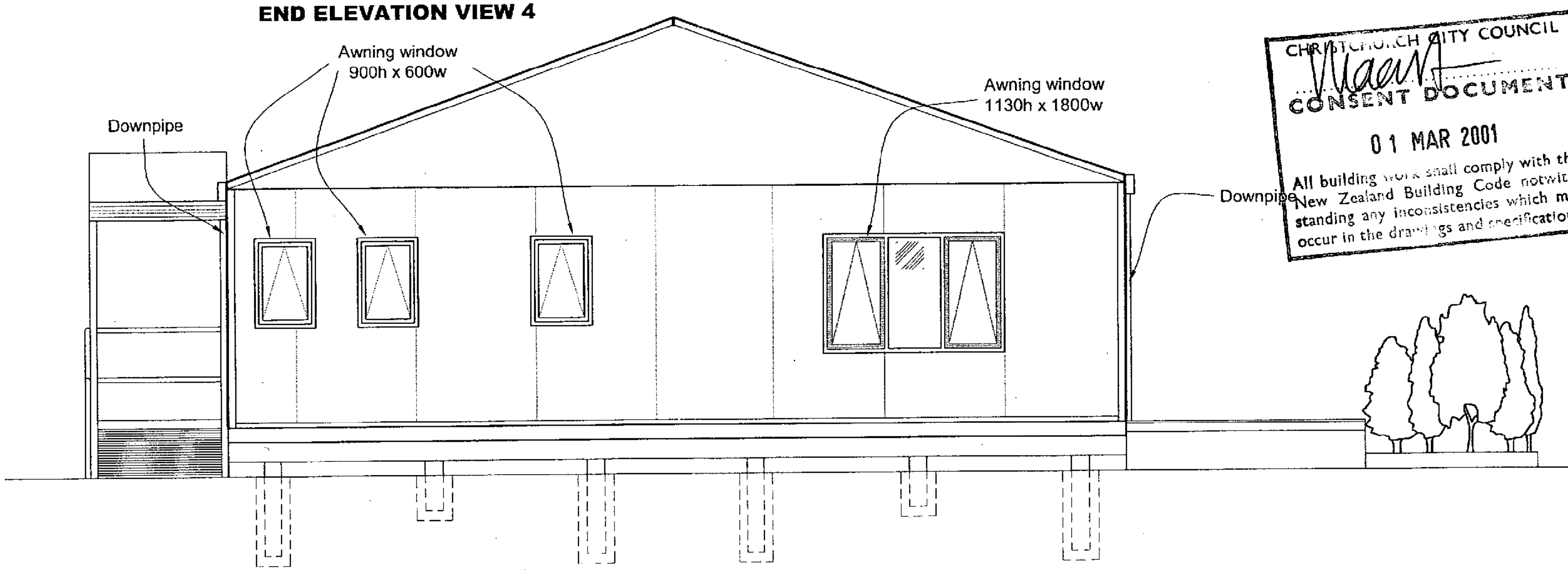


END ELEVATION VIEW 4



END ELEVATION VIEW 3

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01 MAR 2001
All building work shall comply with the New Zealand Building Code notwithstanding any inconsistencies which may occur in the drawings and specifications.

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PORTACOM

MODULAR BUILDINGS
49A Buchanans Road
Sockburn, Christchurch
Ph: 03 342 8890
Fx: 03 342 6176
E-Mail: ian.nichols@portacom.co.nz

Christchurch City Council

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ELEVATIONS -2-

Job No.	Sheet No.	Rev.
	S3	1

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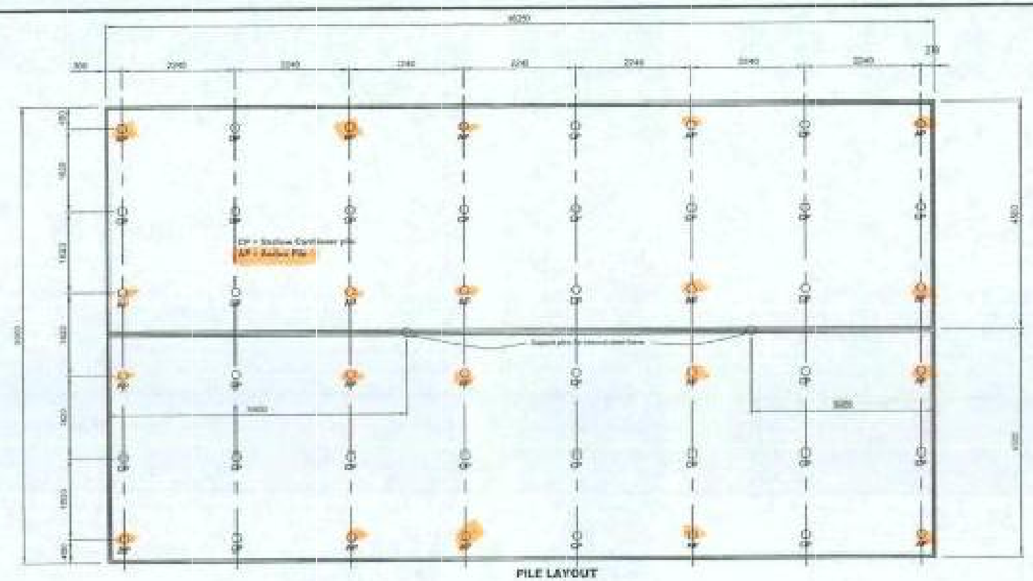

PILE LAYOUT
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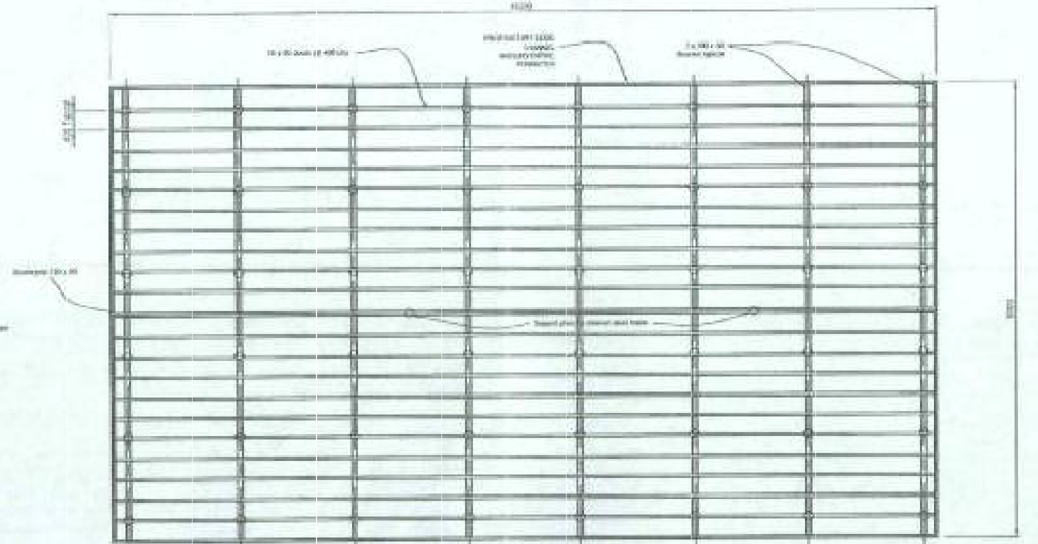

PLAN - TIMBER BASE FRAME DUO
(On site layout)

NOTE:
- Joists are to be continuous with no joins
- Bearers to be joined over pile locations
- All connections to NZS 3604 1995 or 1990 Timber Framed Buildings or as per Engineers Design

CHRISTCHURCH CITY COUNCIL
CONSENT DOCUMENT
01 MAR 2001
All building work shall comply with the New Zealand Building Code notwithstanding any inconsistencies which may occur in the drawings and specifications.

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PORTACOM
MODULAR BUILDINGS
49A Buchanans Road
Sockburn, Christchurch
Ph: 03 342 8890
Fx: 03 342 6176
E-Mail: ian.nichols@portacom.co.nz

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BASE DETAILS

Job No.	Sheet No.	Rev.
	S4	2

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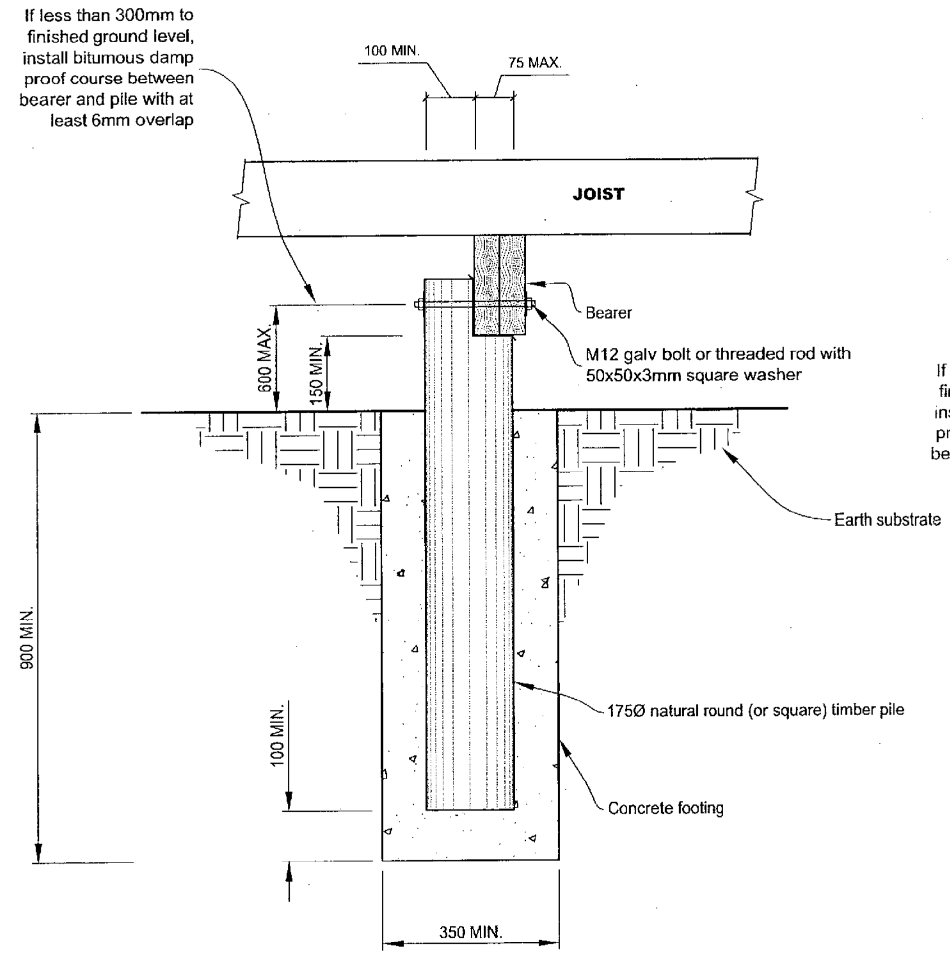
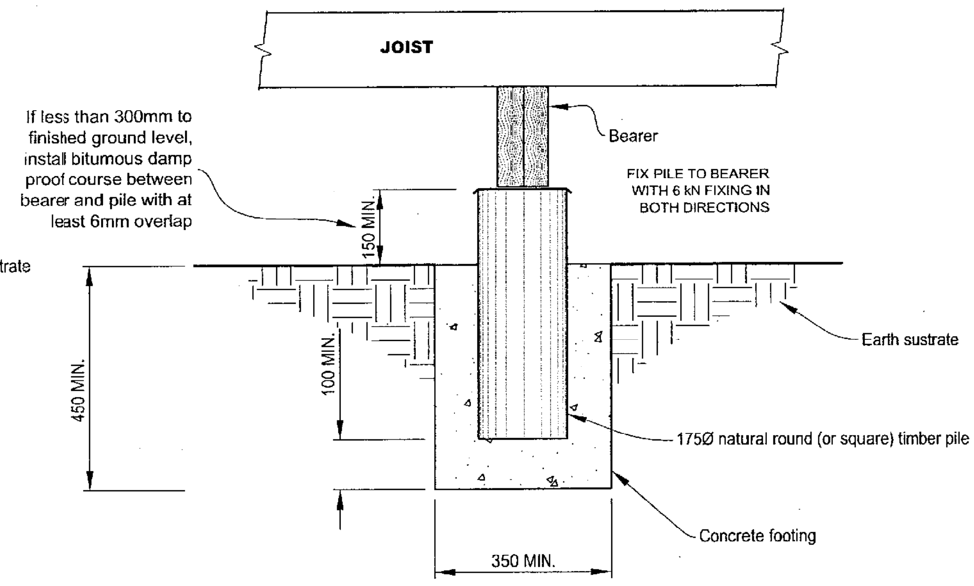
ORIGINAL SIZE A3



TYPICAL ANCHOR PILE
1:10



Ø175 SHALLOW CANTILEVERED PILE
1:10

LEGEND: Single power point · 2 Double power point · Lightswitch · Electrical switchboard · Single flourescent light · Double flourescent light · Incandescent light · Telephone Jack · CC Computer Jack · B Bulkhead light

CAD Ref :
XRefs :

REV	AMENDMENTS	DATE	INIT

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SCALES SCALES

	BY	DATE
DESIGNED	RT	22.12.00
DRAWN	HKM	15.01.01
APPROVED		

PORTACOM

MODULAR BUILDINGS
65 Buchanans Road
Sockburn, Christchurch
Ph: 03 342 3715
Fx: 03 342 6389

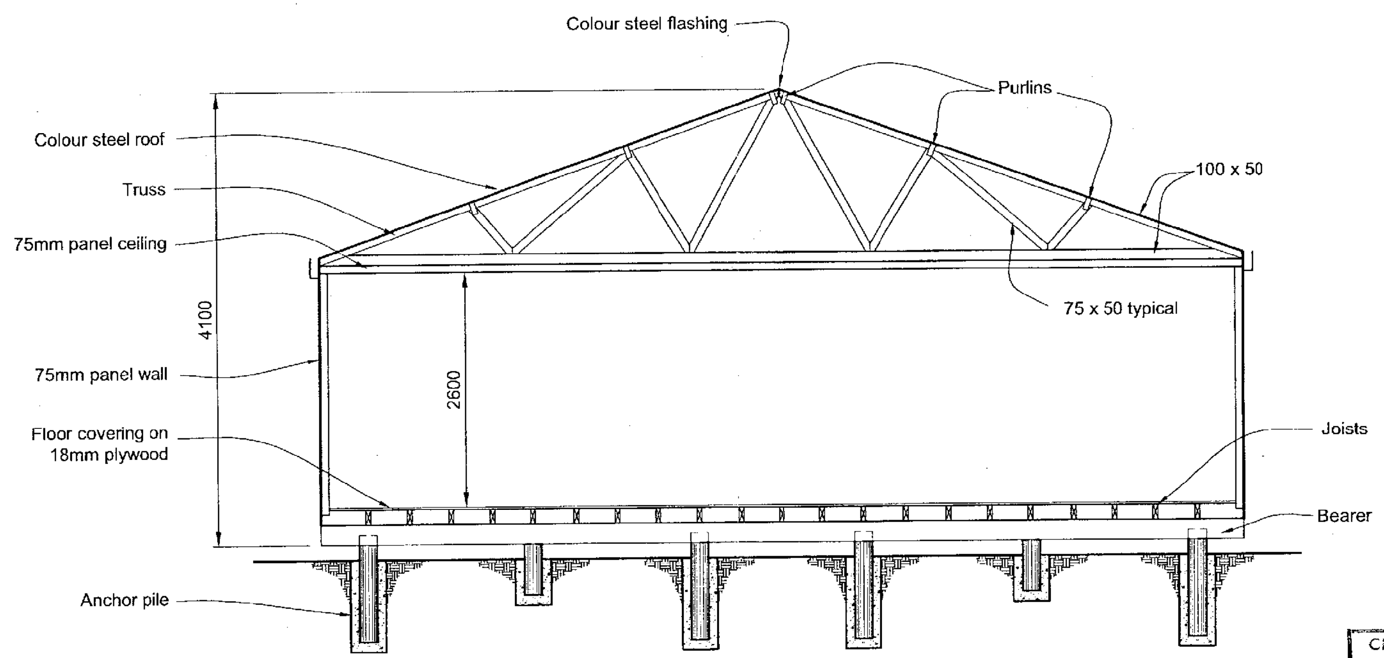
Christchurch City Council

Dog Control Office - Metro Place

FOUNDATION DETAIL

Job No.	Sheet No.	Rev.
	S5	1

DO NOT SCALE - IF IN DOUBT, ASK



SECTIONAL ELEVATION - VIEW 4

ORIGINAL SIZE A3

CHRISTCHURCH CITY COUNCIL
CONSENT DOCUMENT
01 MAR 2001
All building work shall comply with the New Zealand Building Code notwithstanding any inconsistencies which may occur in the drawings and specifications.

LEGEND: Single power point; Double power point; Lightswitch; Electrical switchboard; Single flourescent light; Double flourescent light; Incandescent light; Telephone Jack; Computer Jack; Bulkhead light

CAD Ref :	COPYRIGHT © PORTACOM NEW ZEALAND LTD	SCALES 1:50	
XRefs :			
		BY	DATE
	DESIGNED	IN	13.02.01
	DRAWN	HKM	13.02.01
REV AMENDMENTS DATE INIT	APPROVED		

PORTACOM

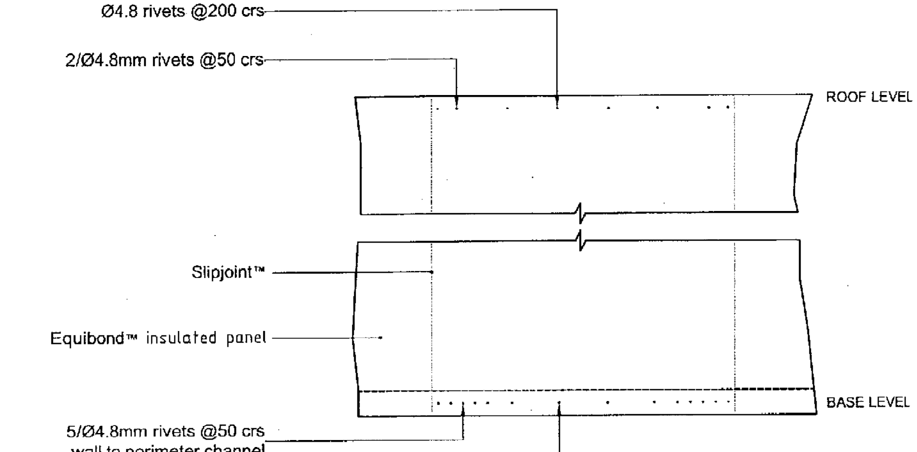
MODULAR BUILDINGS
49A Buchanans Road
Sockburn, Christchurch
Ph: 03 342 8890
Fx: 03 342 6176
E-Mail: ian.nichols@portacom.co.nz

Christchurch City Council

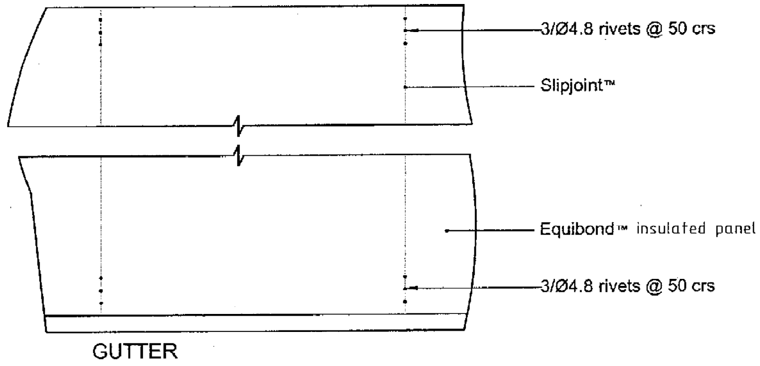
Dog Control Office

SECTIONAL ELEVATION

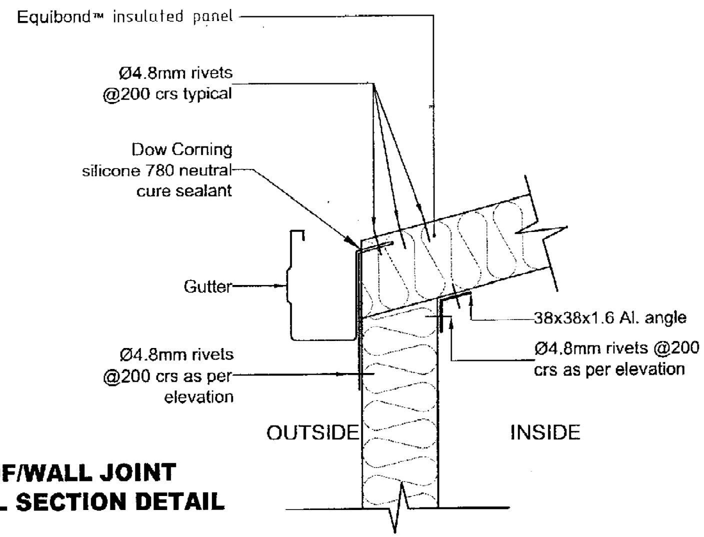
Job No.	Sheet No.	Rev.
	S5	1



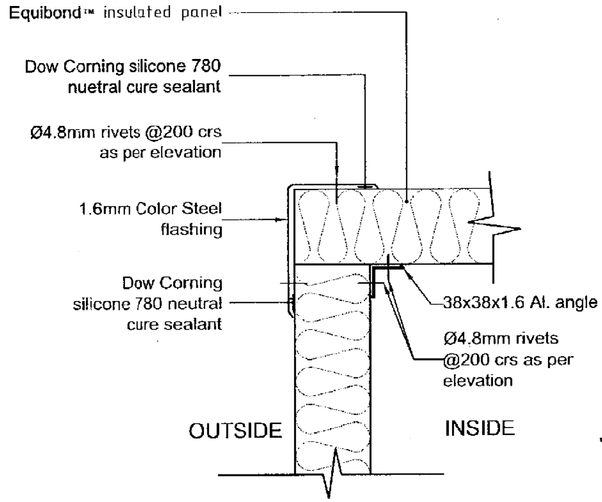
WALL PANEL FIXING TYPICAL



ROOF PANEL FIXING TYPICAL



ROOF/WALL JOINT TYPICAL SECTION DETAIL



WALL/WALL JOINT TYPICAL SECTION DETAIL

DO NOT SCALE - IF IN DOUBT, ASK

ORIGINAL SIZE A3

LEGEND: Single power point · 2 Double power point · Lightswitch · Electrical switchboard · Single flourescent light · Double flourescent light · Incandescent light · Telephone Jack · CC Computer Jack · B Bulkhead light

CAD Ref :
XRefs :

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SCALES SCALES

	BY	DATE
DESIGNED	RT	22.12.00
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APPROVED		

REV | AMENDMENTS | DATE | INIT

PORTACOM

MODULAR BUILDINGS
49A Buchanans Road
Sockburn, Christchurch
Ph: 03 342 8890
Fx: 03 342 6176
E-Mail: ian.nichols@portacom.co.nz

Christchurch City Council

Dog Control Office - Metro Place

PANEL DETAILS

Job No. | Sheet No. S6 | Rev. 1

Appendix C

CERA DEE Summary Data

Detailed Engineering Evaluation Summary Data V1.11

Location

Building Name:	Dog Pound Portacom	Reviewer:	Samir Govind
Unit / No: / Street		CPEng No:	167736
Building Address:	10 Metro Place, Bromley 8062	Company:	Beca
Legal Description:		Company project number:	5323355
		Company phone number:	03 3663521
Degrees / Min / Sec			
GPS south:		Date of submission:	15/06/2012
GPS east:		Inspection Date:	28/05/2012
		Revision:	A
Building Unique Identifier (CCC):		Is there a full report with this summary?	yes

Site

Site slope:	flat	Max retaining height (m):	0
Soil type:	silty sand	Soil Profile (if available):	
Site Class (to NZS1170.5):	D		
Proximity to waterway (m, if <100m):		If Ground improvement on site, describe:	
Proximity to clifftop (m, if < 100m):			
Proximity to cliff base (m,if <100m):		Approx site elevation (m):	0.00

Building

No. of storeys above ground:	1	single storey = 1	Ground floor elevation (Absolute) (m):	0.00
Ground floor split?	no		Ground floor elevation above ground (m):	0.50
Storeys below ground	0			
Foundation type:	other (describe)		if Foundation type is other, describe:	Raised Floor on Concrete Piles
Building height (m):	4.10		height from ground to level of uppermost seismic mass (for IEP only) (m):	3
Floor footprint area (approx):	162			
Age of Building (years):	11		Date of design:	1992-2004
Strengthening present?	no		If so, when (year)?	
			And what load level (%g)?	
Use (ground floor):	commercial		Brief strengthening description:	
Use (upper floors):	commercial			
Use notes (if required):	Administrative			
Importance level (to NZS1170.5):	IL2			

Gravity Structure

Gravity System:	load bearing walls		
Roof:	timber framed	rafter type, purlin type and cladding	sawn lumber
Floors:	timber	joist depth and spacing (mm)	unknown
Beams:	steel non-composite	beam and connector type	UB beam and SHS posts
Columns:	structural steel	typical dimensions (mm x mm)	180UB22 w/ 65x65 SHS
Walls:	non-load bearing	0	

Lateral load resisting structure

Lateral system along:	other (note)	**Note: Define along and across in detailed report!**	describe system	prefab composite panels
Ductility assumed, μ:	2.00			
Period along:	0.17	0.00	estimate or calculation?	estimated
Total deflection (ULS) (mm):			estimate or calculation?	
maximum interstorey deflection (ULS) (mm):			estimate or calculation?	
Lateral system across:	other (note)		describe system	prefab composite panels
Ductility assumed, μ:	2.00			
Period across:	0.17	0.00	estimate or calculation?	estimated
Total deflection (ULS) (mm):			estimate or calculation?	
maximum interstorey deflection (ULS) (mm):			estimate or calculation?	

Separations:

north (mm):		leave blank if not relevant
east (mm):		
south (mm):		
west (mm):		

Non-structural elements

Stairs:	other (specify)	describe	external
Wall cladding:	other light	describe	prefab composite panels
Roof Cladding:	Metal	describe	Light corrugated steel
Glazing:	aluminium frames		
Ceilings:	strapped or direct fixed		75mm prefab panel
Services(list):			

Available documentation

Architectural	partial	original designer name/date	Portacom 2001
Structural	full	original designer name/date	Portacom 2001
Mechanical	none	original designer name/date	
Electrical	partial	original designer name/date	Portacom 2001
Geotech report	none	original designer name/date	

Damage

Site: (refer DEE Table 4-2)

Site performance:	??	Describe damage:	Minor cracking to asphalt
Settlement:	0-25mm	notes (if applicable):	Survey required to confirm
Differential settlement:	0-1:350	notes (if applicable):	Survey required to confirm
Liquefaction:	0-2 m²/100m²	notes (if applicable):	Survey required to confirm
Lateral Spread:	0-50mm	notes (if applicable):	Survey required to confirm
Differential lateral spread:	0-1:400	notes (if applicable):	Survey required to confirm
Ground cracks:	0-20mm/20m	notes (if applicable):	Survey required to confirm
Damage to area:	slight	notes (if applicable):	

Building:

	Current Placard Status:	green		
Along	Damage ratio:	27%	Describe how damage ratio arrived at:	Due to increase of Z factor in codes
	Describe (summary):	0		
Across	Damage ratio:	27%		
	Describe (summary):	0		
Diaphragms	Damage?:	no	Describe:	
CSWs:	Damage?:	no	Describe:	
Pounding:	Damage?:	no	Describe:	
Non-structural:	Damage?:	no	Describe:	

$$Damage\_Ratio = \frac{(\%NBS(before) - \%NBS(after))}{\%NBS(before)}$$

Recommendations

	Level of repair/strengthening required:	none		Describe:	
	Building Consent required:	no		Describe:	
	Interim occupancy recommendations:	full occupancy		Describe:	
Along	Assessed %NBS before:	100%	##### %NBS from IEP below	If IEP not used, please detail assessment methodology:	Comparison of codes
	Assessed %NBS after:	73%			
Across	Assessed %NBS before:	100%	##### %NBS from IEP below		
	Assessed %NBS after:	73%			

IEP

Use of this method is not mandatory - more detailed analysis may give a different answer, which would take precedence. Do not fill in fields if not using IEP.

Period of design of building (from above): 1992-2004

h_n from above: 3m

Seismic Zone, if designed between 1965 and 1992:

not required for this age of building

Design Soil type from NZS4203:1992, cl 4.6.2.2:

	along	across
Period (from above):	0.17	0.17
(%NBS)nom from Fig 3.3:	0	

Note:1 for specifically design public buildings, to the code of the day: pre-1965 = 1.25; 1965-1976, Zone A =1.33; 1965-1976, Zone B = 1.2; all else 1.0
Note 2: for RC buildings designed between 1976-1984, use 1.2
Note 3: for buildngs designed prior to 1935 use 0.8, except in Wellington (1.0)

	along	across
Final (%NBS)$_{nom}$:	**0%**	**0%**

2.2 Near Fault Scaling Factor

Near Fault scaling factor, from NZS1170.5, cl 3.1.6:

	along	across
Near Fault scaling factor (1/N(T,D), **Factor A**:	#DIV/0!	#DIV/0!

2.3 Hazard Scaling Factor

Hazard factor Z for site from AS1170.5, Table 3.3:
Z_{1992}, from NZS4203:1992
Hazard scaling factor, **Factor B**: #DIV/0!

2.4 Return Period Scaling Factor

Building Importance level (from above):
Return Period Scaling factor from Table 3.1, **Factor C**:

2.5 Ductility Scaling Factor

	along	across
Assessed ductility (less than max in Table 3.2)		
Ductility scaling factor: =1 from 1976 onwards; or =kμ, if pre-1976, fromTable 3.3:		
Ductility Scaling Factor, **Factor D**:	1.00	1.00

2.6 Structural Performance Scaling Factor:

	along	across
Sp:		
Structural Performance Scaling Factor **Factor E**:	#DIV/0!	#DIV/0!

2.7 Baseline %NBS, (NBS%)$_b$ = (%NBS)$_{nom}$ x A x B x C x D x E **%NBS$_b$:** **#DIV/0!** **#DIV/0!**

Global Critical Structural Weaknesses: (refer to NZSEE IEP Table 3.4)

3.1. Plan Irregularity, factor A: insignificant 1

3.2. Vertical irregularity, Factor B: insignificant 1

3.3. Short columns, Factor C: insignificant 1

3.4. Pounding potential
Pounding effect D1, from Table to right
Height Difference effect D2, from Table to right

Therefore, Factor D: 0

3.5. Site Characteristics insignificant

Table for selection of D1	Severe	Significant	Insignificant/none
Separation	0<sep<.005H	.005<sep<.01H	Sep>.01H
Alignment of floors within 20% of H	**0.7**	**0.8**	**1**
Alignment of floors not within 20% of H	**0.4**	**0.7**	**0.8**

Table for Selection of D2	Severe	Significant	Insignificant/none
Separation	0<sep<.005H	.005<sep<.01H	Sep>.01H
Height difference > 4 storeys	0.4	0.7	1
Height difference 2 to 4 storeys	0.7	0.9	1
Height difference < 2 storeys	1	1	1

3.6. Other factors, Factor F

	Along	Across
For ≤ 3 storeys, max value =2.5, otherwise max value =1.5, no minimum		
Rationale for choice of F factor, if not 1		

Detail Critical Structural Weaknesses: (refer to DEE Procedure section 6)
List any: Refer also section 6.3.1 of DEE for discussion of F factor modification for other critical structural weaknesses

3.7. Overall Performance Achievement ratio (PAR) **0.00** **0.00**

4.3 PAR x (%NBS)b: PAR x Baselline %NBS: **#DIV/0!** **#DIV/0!**

4.4 Percentage New Building Standard (%NBS), (before) **#DIV/0!**