Christchurch City Council

Avice Hill Reserve
Pottery Room
PRK 0284 BLDG 002 EQ2

Detailed Engineering Evaluation

Quantitative Assessment Report

Christchurch City Council

Avice Hill Reserve Pottery Room

Quantitative Assessment Report

395 Memorial Avenue

Prepared By

Mark Ryburn
Senior Structural Engineer

Reviewed By

David Morrison
Senior Structural Engineer
CPEng 229083

Approved By

Alistair Boyce
Senior Structural Engineer
CPEng 209860

Opus International Consultants Ltd
Wellington Civil
L7, Majestic Centre, 100 Willis St
PO Box 12 003, Wellington 6144
New Zealand

Telephone: +64 4 471 7000
Facsimile: +64 4 471 1397

Date: 7 February 2013
Reference: 6-QUCC1.64
Status: Final

Summary

Avice Hill Reserve Pottery Room
PRK 0284 BLDG 002 EQ2

Detailed Engineering Evaluation
Quantitative Report - SUMMARY
Final

Background
This is a summary of the quantitative report for the Avice Hill Reserve Pottery Room, and is based on the Detailed Engineering Evaluation Procedure document (draft) issued by the Structural Advisory Group on 19 July 2011, visual inspections on 20 November 2012 and provided drawings.

Key Damage Observed
No major damage was identified.

Critical Structural Weaknesses
No critical structural weaknesses have been identified.

Indicative Building Strength
Based on the information available, and from undertaking a quantitative assessment, the building's seismic capacity has been assessed to be 45%NBS as limited by the in plane capacity of the ceiling diaphragm. It is therefore classed as a moderate earthquake risk under the NZSEE classification and has a relative risk of failure of 5-10 times that of a building constructed to the New Building Standard. Based on the form of construction and the seismic load resisting systems present we do not believe that the building has a high risk of collapse. It is therefore considered that there is not a high risk imposed to building occupants.

Recommendations
The building has a seismic capacity of 45%NBS. As this is greater than 33%NBS it is not classified as earthquake prone in accordance with the Building Act 2004.

However due to the relatively low capacity and the layout of the building which may increase the displacements it is recommended that retrofit works are carried out to increase the transverse capacity of the building, reduce the eccentricity and reduce displacements.

Contents

1 Introduction

Opus International Consultants Limited has been engaged by Christchurch City Council (CCC) to undertake a detailed seismic assessment of the Avice Hill Reserve Pottery Room, located at 395 Memorial Avenue, 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 quantitative procedures detailed in the Detailed Engineering Evaluation Procedure (DEEP) document (draft) issued by the Structural Engineering Society (SESOC) on 19 July 2011.

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).

2.2.1.1Section 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 responsible 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	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 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 Order[1] 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 Avice Hill Reserve Pottery Room is a single storey building designed in 1988 for the Canterbury Potters Association. The building consists of steel portal frames and a combination of braced and unbraced timber walls in the transverse direction and longitudinal direction with brick veneer to three sides. The internal portal frames are pitched to give a raised ceiling height internally. The front elevation is primarily windows and sliding doors and the internal space is largely open plan studio with some smaller administration rooms to the western end.

The ground floor is an unreinforced slab with ground beams and strip footings for the walls and frames. The roof is corrugated iron on timber rafters.

The building is approximately 16m x 11m in plan and 2.6m at the eaves and 3.9m at the ridge.

4.2 Gravity Load Resisting System

The gravity load system consists of timber rafters spanning onto the steel portal frames and external walls at the overhangs. The portal frames are founded on strip footings typically 400mm deep and foundation beams typically 400mm deep. The portal frames have base plates set 300mm into the foundation pads.

4.3 Seismic Load Resisting System

Seismic loads at roof level are resisted by the timber rafters and framing, with no specific roof bracing identified other than the gib ceiling lining. Portal frames act in the transverse direction with some fixity provided at the base by the baseplate connection and foundation detail. Relatively small lengths of braced timber framed wall are identified in the transverse direction and have not been considered to contribute due to their incompatibility with the portal frames. Braced timber framed walls are identified at the rear of the building in the longitudinal direction with shorter lengths midway and on the front elevation adjacent the original building. The building has a plan eccentricity due to the offset of braced walls in the longitudinal direction. The portal frames are considered to act to resist some of the eccentricity associated with the longitudinal wall layout.

5 Survey

The building currently does not have a placard in place.

Copies of the following drawings were referred to as part of the assessment:

- Fallon & Wilkins Structural Engineer, Canterbury Potters Association – New Building Sheets 1- 6, 1988.

No copies of the design calculations or specification have been obtained for this building.

The sketch drawings and survey photos have been used to confirm the structural systems, investigate potential critical structural weaknesses (CSW) wherever possible, and identify details which required particular attention.

The building was inspected by an Opus Technician on 20 November 2012 to confirm that the building layout was generally the same as per the drawings with no major additions or alterations.

6 Damage Assessment

The building structure does not appear to have suffered major damage as a result of the recent earthquake events.

7 General Observations

The building appears to have performed in a similar manner to the other buildings on the site with no damage observed either to the buildings or the surrounding ground. Overall the building has performed well under seismic conditions although its relatively flexible nature could lead to larger displacements in an event which may affect non-structural elements such as the shelving and the kilns if not suitably secured.

8 Detailed Seismic Assessment

8.1 Critical Structural Weaknesses

As outlined in the Critical Structural Weakness and Collapse Hazards draft briefing document, issued by the Structural Engineering Society (SESOC) on 7 May 2011, 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 the building.

No CSW's have been identified in this building.

8.2 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 D, 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;
- μ_{max} = 3.0 for timber wall bracing elements
- μ_{max} = 2.0 for portal frame elements

8.3 Detailed Seismic Assessment Results

A summary of the structural performance of the building is shown in the following table.

Table 2: Summary of Seismic Performance

Structural Element/System	Description/Discussion	% NBS based on calculated capacity
Walls in the longitudinal direction	In plane capacity	67%
Frames in the transverse direction	In plane capacity	48%
Ceiling diaphragm – long. and trans.	In plane capacity	45%

8.4 Discussion of Results

The building has a calculated capacity of 45%NBS and is therefore classified as a moderate earthquake risk under the NZSEE classification system. This relates to a relative failure risk of 5-10 times that of a building constructed to the New Building Standard, and is therefore considered to pose a moderate risk to occupancy

8.5 Limitations and Assumptions in Results

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:

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

9 Geotechnical Summary

Due to a lack of observed ground damage, no geotechnical assessment was carried out.

10 Conclusions

The building has a seismic capacity of 45%NBS. In accordance with NZSEE guidelines, this relates to a relative failure risk of 5-10 times that of a building constructed to the New Building Standard, and is therefore considered to pose a moderate risk to occupancy.
Based on the form of construction and the seismic load resisting systems present we do not believe that the building has a high risk of collapse. It is therefore considered that there is not a high risk imposed to building occupants.

11 Recommendations

It is recommended that strengthening concepts be developed to increase the seismic capacity of the building to at least 67%NBS and reduce the eccentricity and displacements.

12 Limitations

(a) This report is based on an inspection of the structure 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.

13 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, *Practice Note – Design of Conventional Structural Systems Following Canterbury Earthquakes*, Structural Engineering Society of New Zealand, 21 December 2011.

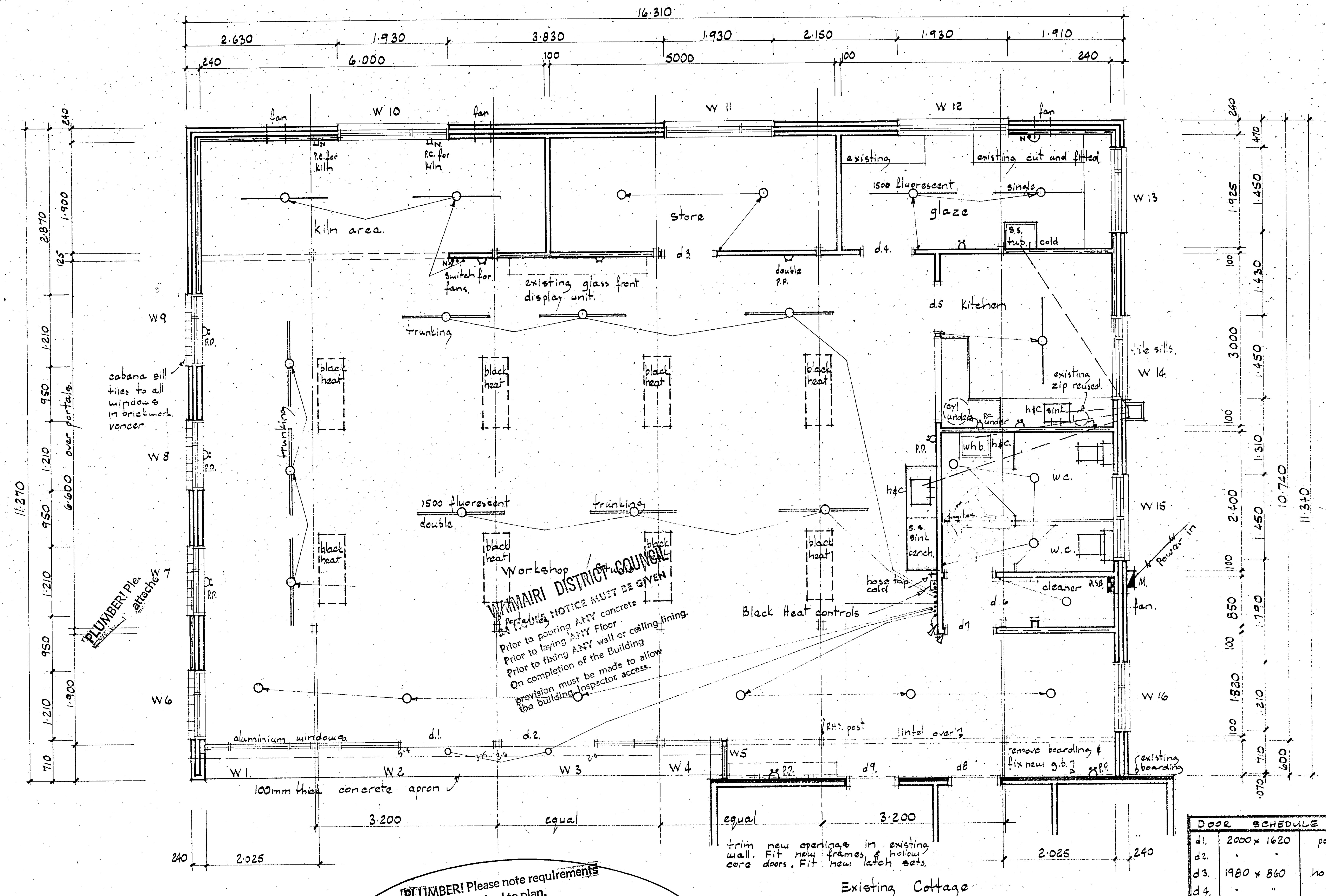
Appendix A – Photographs

Photo 1: External view from west

Photo 2: Internal View

Photo 3: View towards front

Appendix B – Existing Drawings



Door	Schedule		
d1.	2000 x 1620	pair	aluminium glazed
d2.	" "	"	"
d3.	1980 x 860	hollow core	paint finish
d4.	" "	"	"
d5.	" 810	"	"
d6	1850 x 610	"	"
d7	1980 x 810	"	"
d8	" "	"	"
d9	" "	"	"

NOTE: double fluorescents in workshop / studio shall be supported on trunking

control switches for kilns and fans shall have neon indicators

Black Heats controlled by switching on 2 circuits, with 2 hour timer and contactor on M.S.B.

angle bracing shown by broken line in walls.

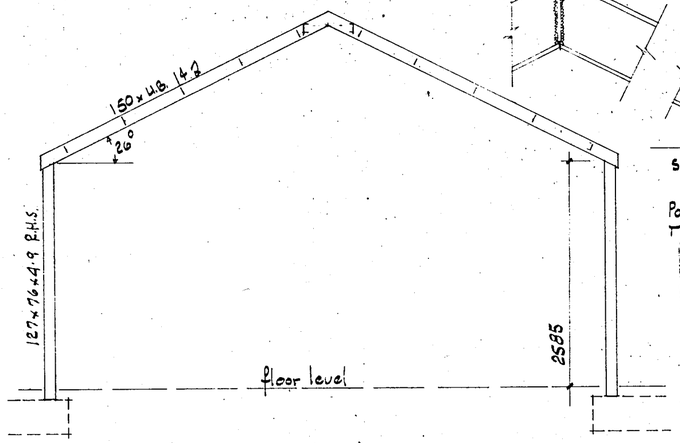
PLUMBER! Please note requirements attached to plan.

access for Disabled to Bldg to be provided

4. — 2.
3.
elevation identification.

date: Aug. 88	CANTERBURY POTTERS ASSOCIATION	107
scale: 1:50	New Building at 395 Memorial Avenue	SHEET No. 1 OF 6 SHEETS
	FLOOR PLAN	

FALLOW + WILKINS STRUCTURAL ENG



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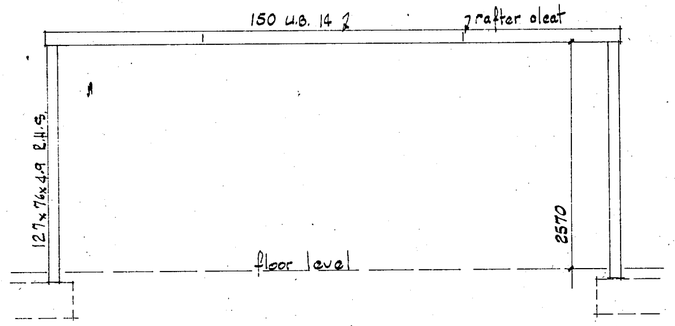

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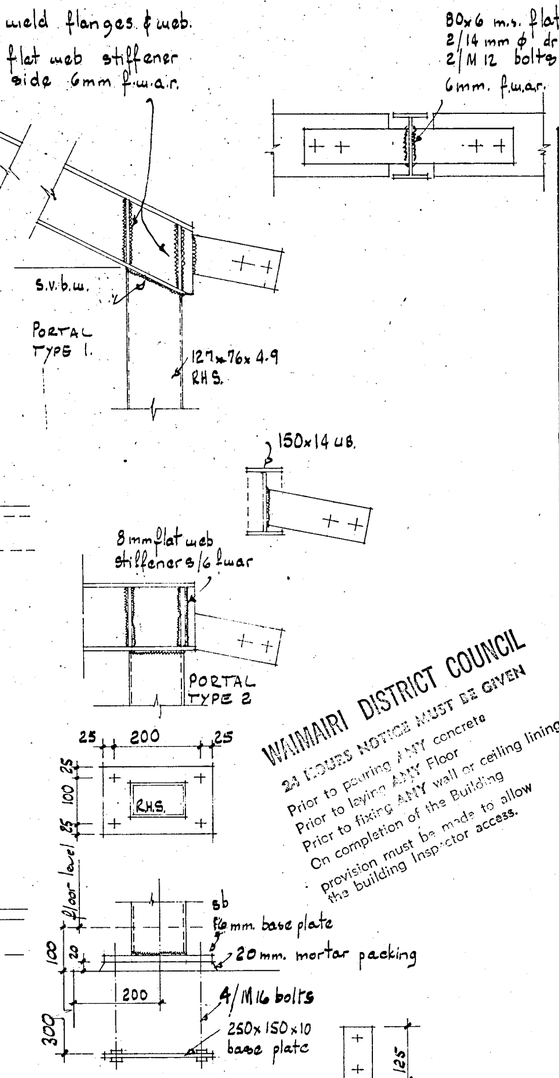
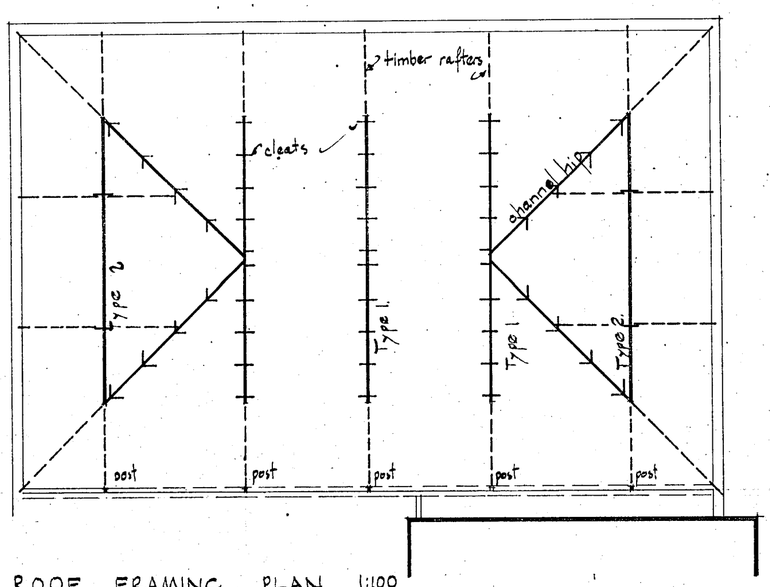
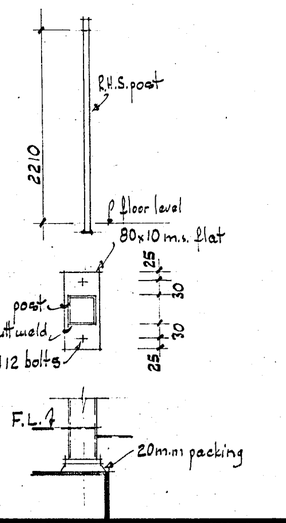


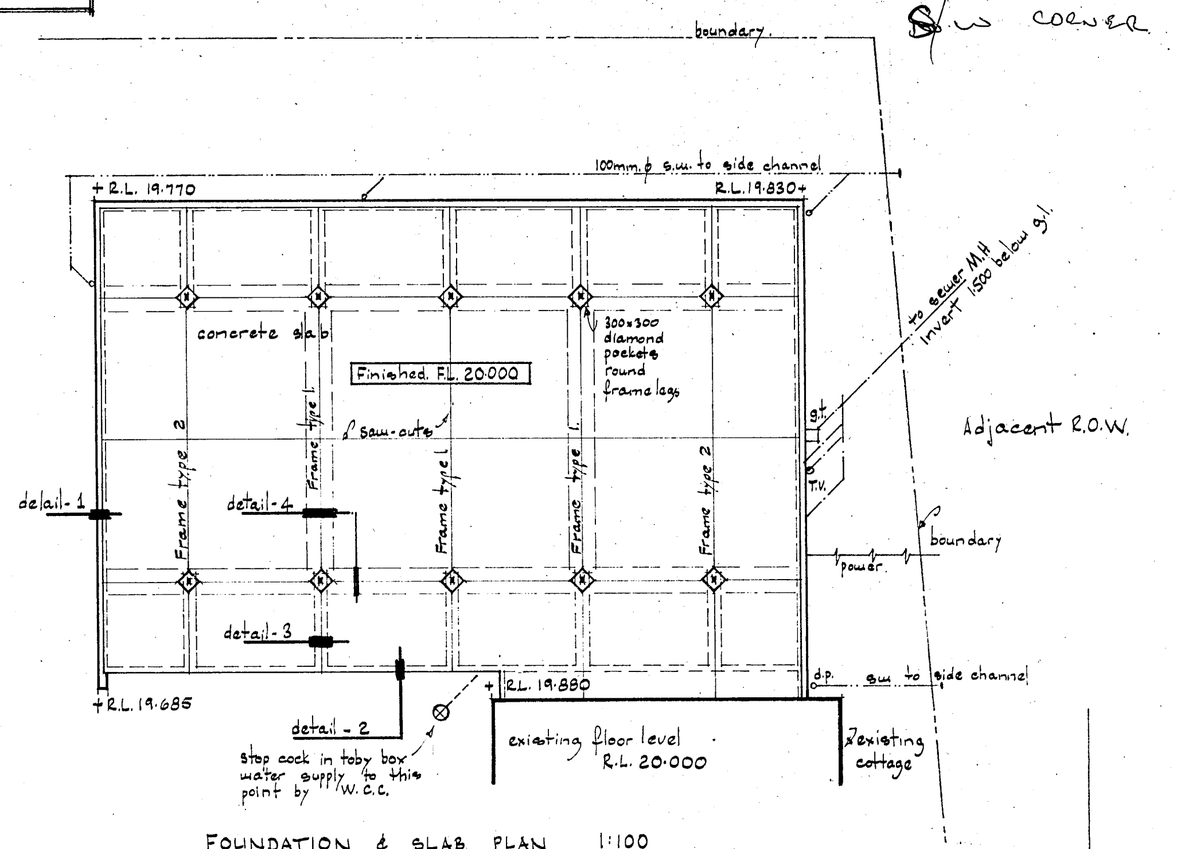


ROOF FRAMING PLAN, 1:100



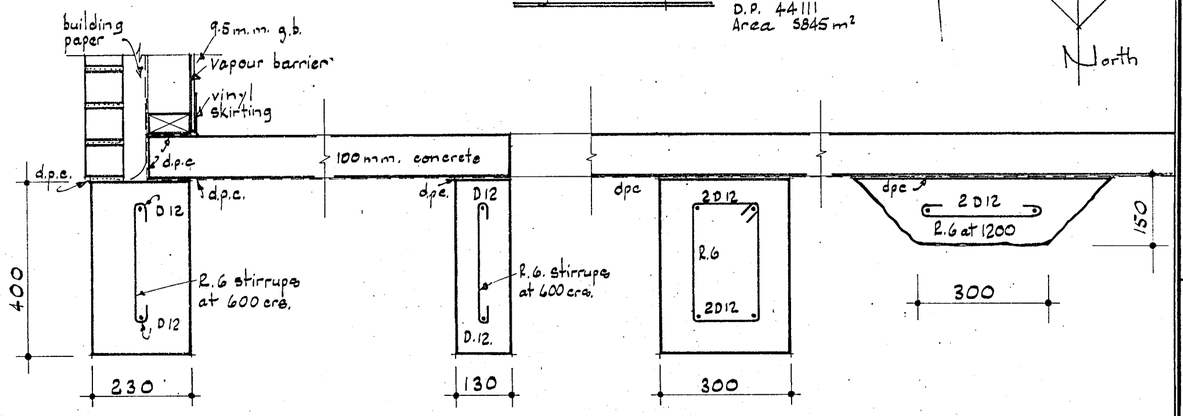
WAIMAIRI DISTRICT COUNCIL

24 HOURS NOTICE MUST BE GIVEN
Prior to pouring ANY concrete
Prior to laying ANY Floor
Prior to fixing ANY wall or ceiling lining
On completion of the Building
provision must be made to allow the building Inspector access.



FOUNDATION & SLAB PLAN 1:100
LOCATION PLAN

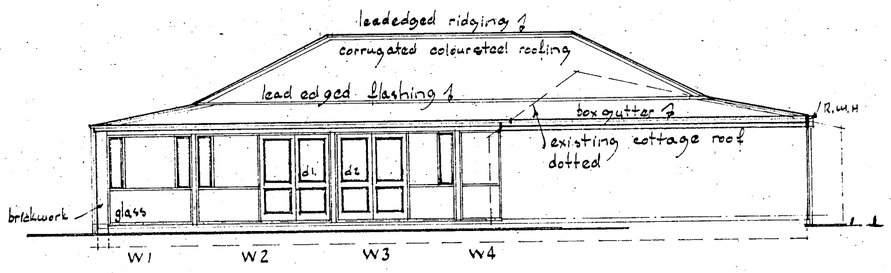
Legal Description : P.t Lot 62
D.P. 44111
Area 5845 m²



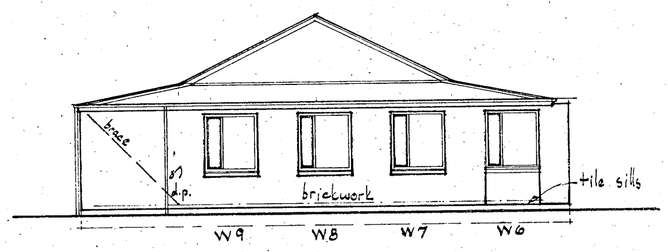
Detail 1. Detail 2. Detail 3. Detail 4.

FOUNDATION DETAILS

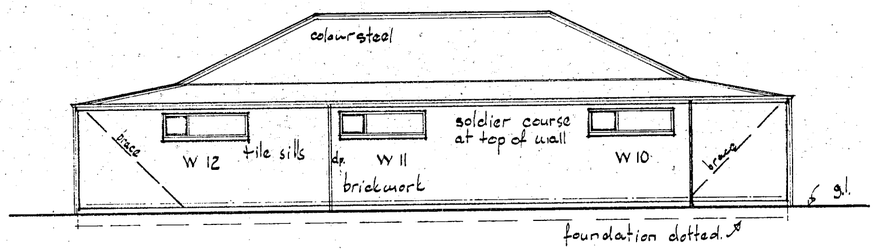
date : Aug 88	CANTERBURY POTTERS ASSOCIATION	107
scales 1:100 / 1:50 / 1:10	New Building at 395 Memorial Avenue	SHEET No. OF 6 SHEETS 2
	STRUCTURAL STEEL, FOUNDATIONS, LOCATION	



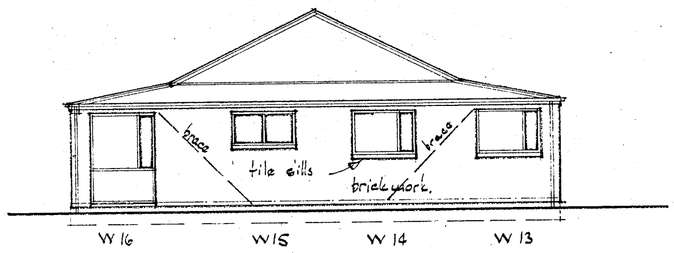
NORTH



WEST



SOUTH



EAST

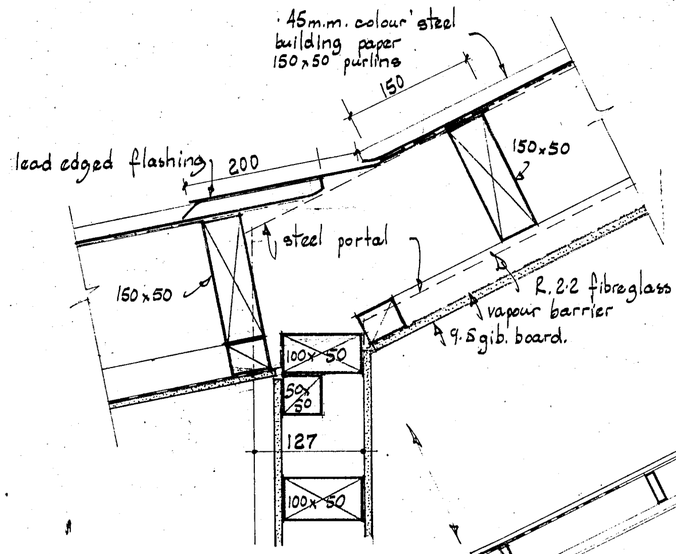
WAIMAIRI DISTRICT COUNCIL

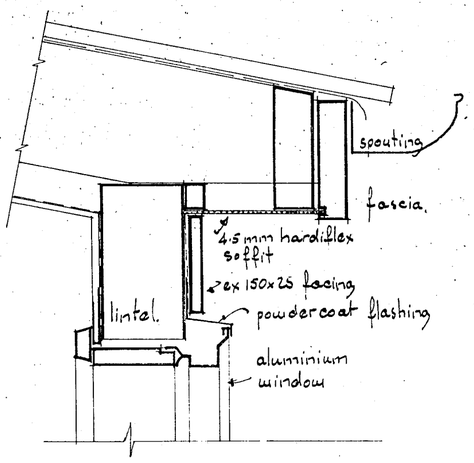
24 HOURS NOTICE MUST BE GIVEN

Prior to pouring ANY concrete
Prior to laying ANY Floor
Prior to fixing ANY wall or ceiling lining.
On completion of the Building

Provision must be made to allow the building Inspector access.

date : Aug. 88	CANTERBURY POTTERS ASSOCIATION	107
scale 1:100	New Building at 395 Memorial Avenue	SHEET No. OF 6 SHEETS 3
	ELEVATIONS & DETAILS.	





TYPICAL CROSS SECTION

WAIMAIRI DISTRICT COUNCIL

24 HOURS NOTICE MUST BE GIVEN

Prior to pouring ANY concrete
Prior to laying ANY Floor
Prior to fixing ANY wall or ceiling lining
On completion of the Building

Provision must be made to allow the building Inspector access.

date : Aug. 88	CANTERBURY POTTERS ASSOCIATION	107
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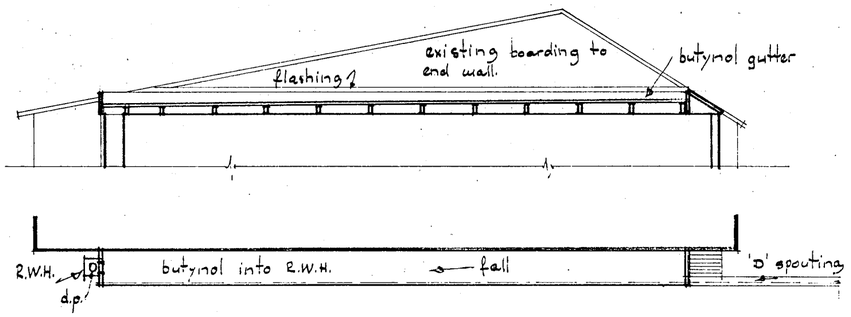
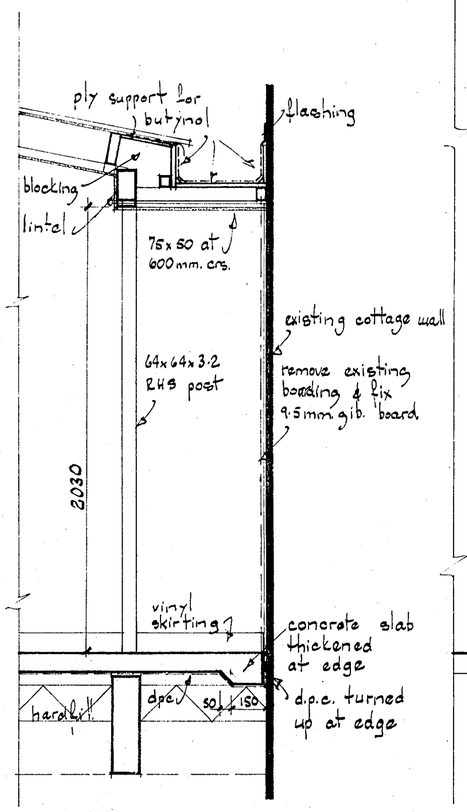
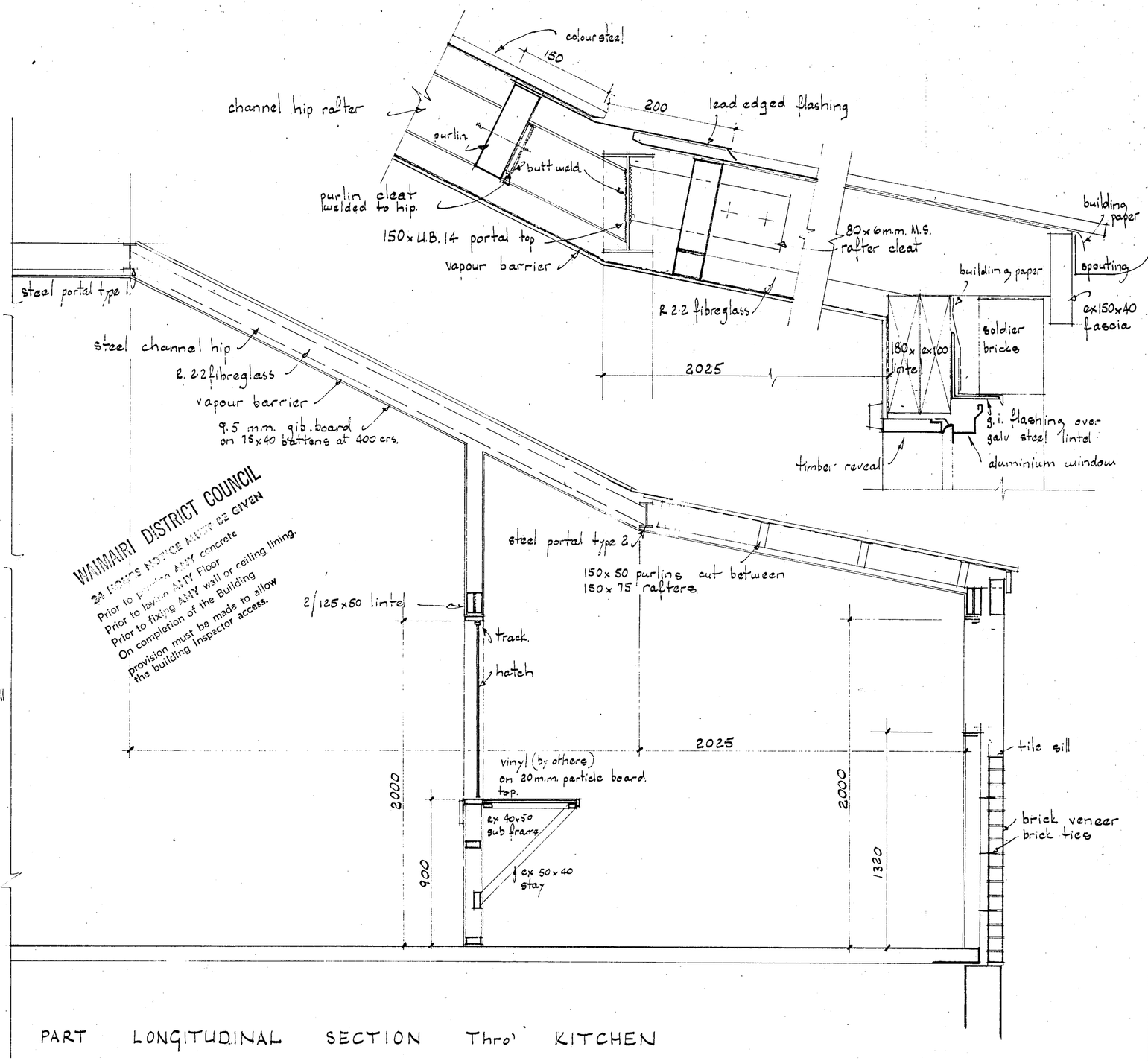
	SECTION & DETAILS	



BOX GUTTER - PLAN & SECTION



SECTION Thro' BOX GUTTER



PART LONGITUDINAL SECTION Thro' KITCHEN

WAIMARI DISTRICT COUNCIL

24 hours NOTICE MUST BE GIVEN

Prior to placing ANY concrete

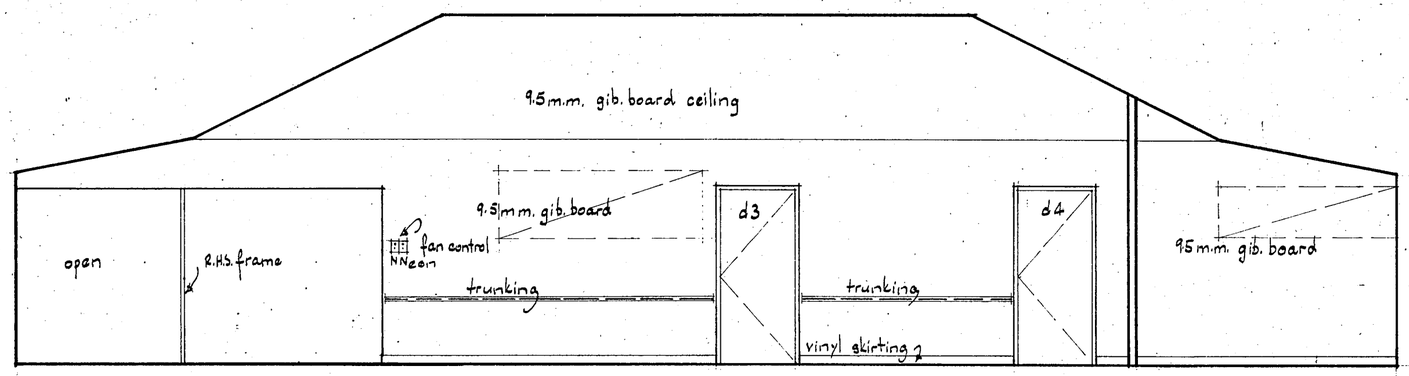
Prior to fixing ANY Floor

Prior to fixing ANY wall or ceiling lining.

On completion of the Building

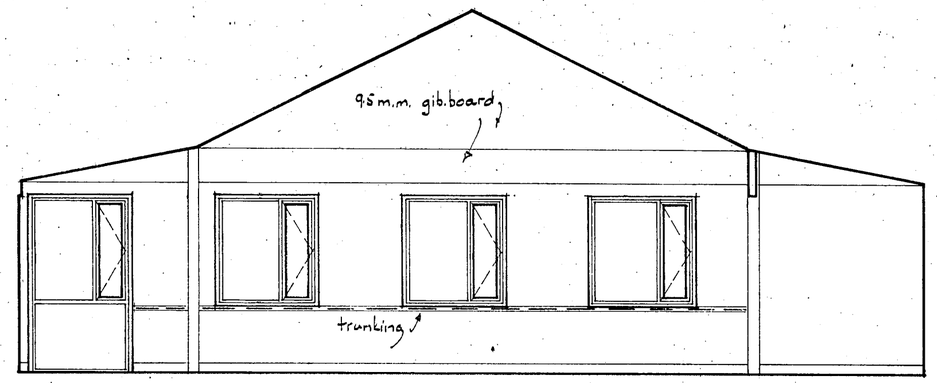
provision must be made to allow the building Inspector access.

date : Aug. 88	CANTERBURY POTTERS ASSOCIATION	107
scales 1:20 / 1:5	New Building at 395 Memorial Avenue	SHEET No. OF 6 SHEETS 5
	SECTION & DETAILS	



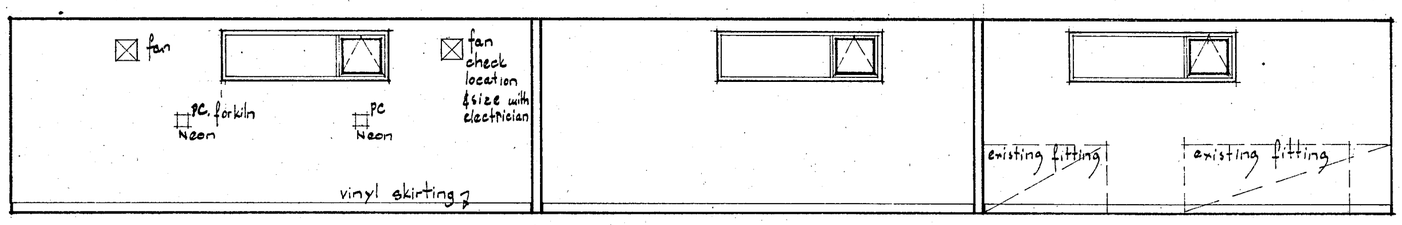
WORKSHOP - 1.

KITCHEN - 1.



WORKSHOP - 4

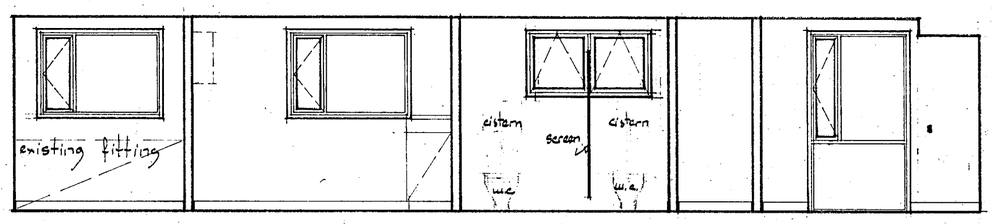
KILNS.



KILNS - 1.

STORE - 1

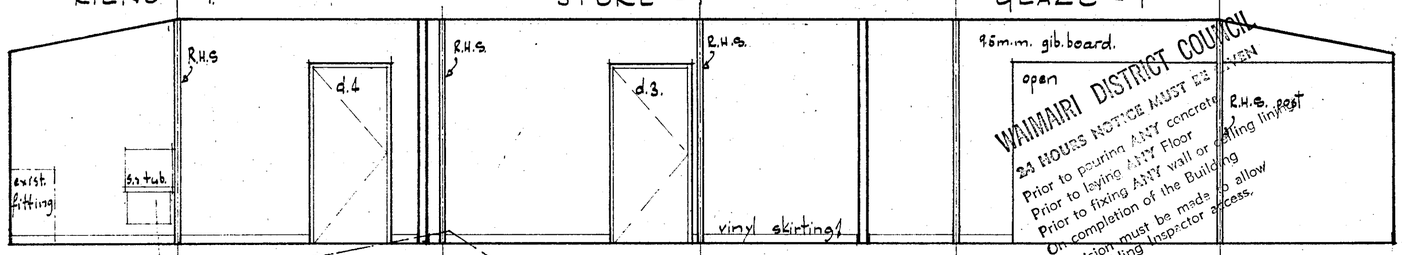
GLAZE - 1



GLAZE - 2

KITCHEN - 2

TOILETS - 2

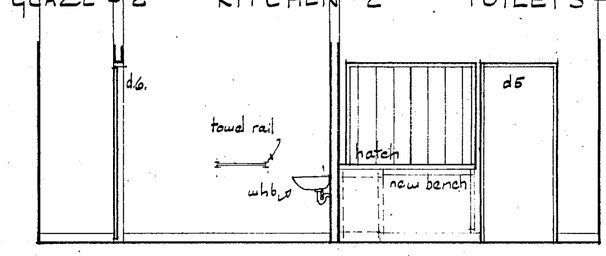


GLAZE - 3

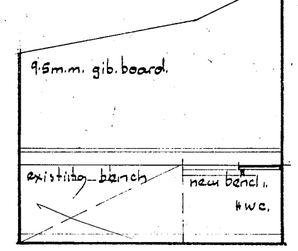
existing cottage roof dotted

STORE - 3

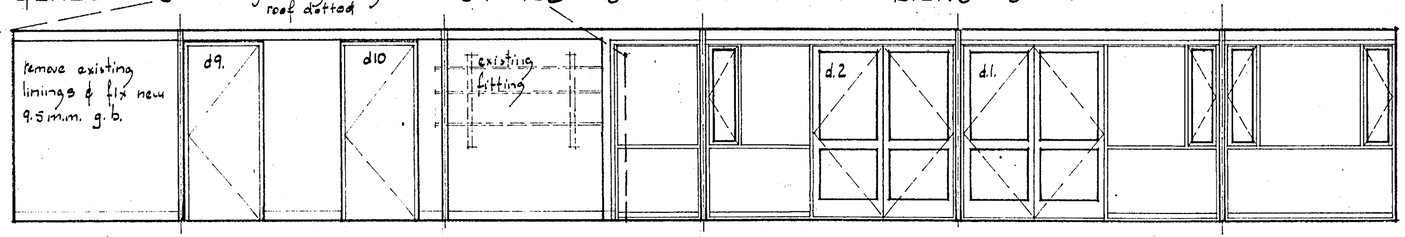
KILNS - 3



TOILETS - 4

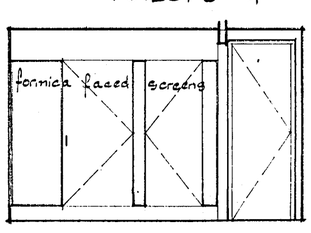


KITCHEN - 3

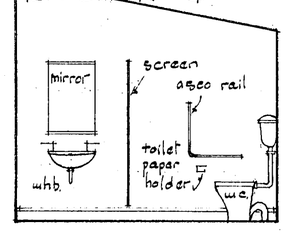


LINK / DISPLAY - 3

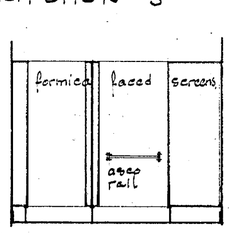
WORKSHOP - 3



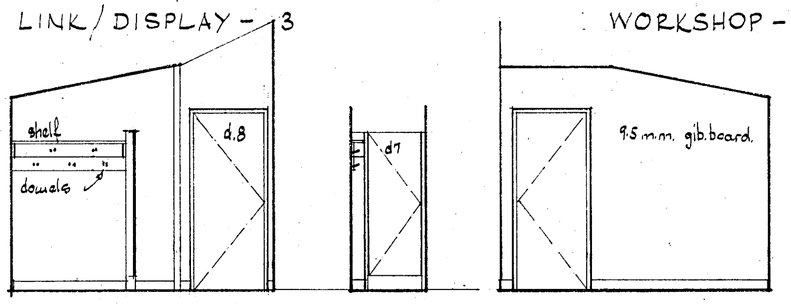
TOILET SCREENS - 2



TOILETS - 1



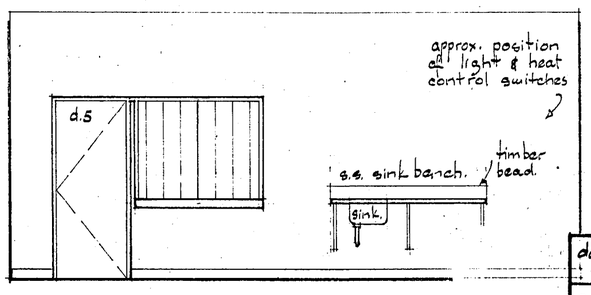
SCREENS - 4



CLEAN - 3

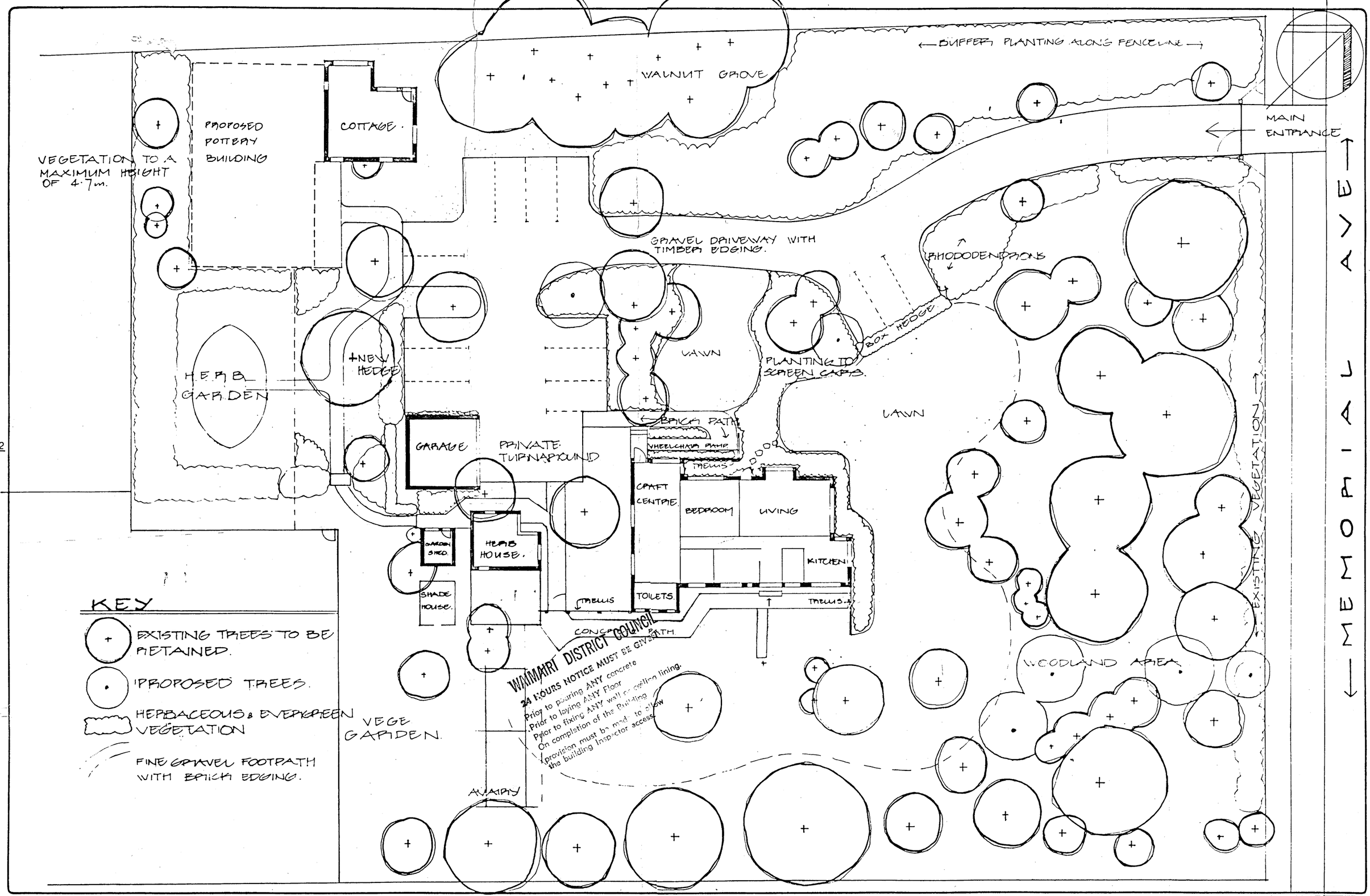
CLEAN - 4

DISPLAY - 1



WORKSHOP - 2

date : Aug. 88	CANTERBURY POTTERS ASSOCIATION	107
scale : 1:50	New Building at 395 Memorial Avenue	SHEET No. 6 OF 6 SHEETS
	INTERNAL ELEVATIONS	



A2

WAIMAIRI DISTRICT COUNCIL
A.J.W. LAMB
DISTRICT ENGINEER

DRAWING INFORMATION				SCALE
SURVEYED •	•	DATUM •		1:200
DRAWN • S.BASSETT	• Dec 87	BENCH MK. •		
TRACED •	•	LEVEL BK. • NO.	P.	
CHECKED •	•	FIELD BK. • NO.	P.	
DESIGNED • S.B.	• Dec 87	0 1 2 3 4 5 10		
DES. CHK. •	•			
APPROVED •	•			

TITLE & NUMBER

GARDEN LAYOUT for MRS HILL'S PROPERTY - MEMORIAL AVE.

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OF

Appendix C – CERA DEE Data Sheet

Detailed Engineering Evaluation Summary Data V1.11

Location

Building Name:	Avice Hill Reserve - Pottery Room				Reviewer:	Alistair Boyce
	Unit	No:	Street		CPEng No:	209680
Building Address:	395 Memorial Avenue, Burnside		PRK 0284 002		Company:	Opus International Consultants Ltd
Legal Description:					Company project number:	6-QUCC1.46
					Company phone number:	03 363 5100
	Degrees	Min	Sec			
GPS south:	43	29	57.11		Date of submission:	7/01/2013
GPS east:	172	33	27.20		Inspection Date:	20/11/2012
					Revision:	Final
Building Unique Identifier (CCC):	PRK_0284_BLDG_002 EQ2				Is there a full report with this summary?	yes

Site

Site slope:	flat	Max retaining height (m):	
Soil type:		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):	18.00

Building

No. of storeys above ground:	1	single storey = 1	Ground floor elevation (Absolute) (m):		
Ground floor split?	no		Ground floor elevation above ground (m):		
Storeys below ground	0				
Foundation type:	strip footings		if Foundation type is other, describe:	Unreinforced slab and ground beams	
Building height (m):	3.90		height from ground to level of uppermost seismic mass (for IEP only) (m):		
Floor footprint area (approx):	176				
Age of Building (years):	24		Date of design:	1976-1992	
Strengthening present?	no		If so, when (year)?		
			And what load level (%g)?		
Use (ground floor):	public		Brief strengthening description:		
Use (upper floors):	other (specify)				
Use notes (if required):	crafts room				
Importance level (to NZS1170.5):	IL2				

Gravity Structure

Gravity System:	frame system		
Roof:	timber framed	rafter type, purlin type and cladding	steel cladding
Floors:	concrete flat slab	slab thickness (mm)	400 - strip footings
Beams:	steel non-composite	beam and connector type	na
Columns:	structural steel	typical dimensions (mm x mm)	150UB
Walls:	load bearing brick	#N/A	

Lateral load resisting structure

Lateral system along:	lightweight timber framed walls	**Note: Define along and across in detailed report!**	note typical wall length (m)	4m
Ductility assumed, μ:	3.00			
Period along:	0.40	0.00	estimate or calculation?	
Total deflection (ULS) (mm):			estimate or calculation?	
maximum interstorey deflection (ULS) (mm):			estimate or calculation?	
Lateral system across:	other (note)		describe system	Steel portal frame
Ductility assumed, μ:	1.25			
Period across:	0.40	0.00	estimate or calculation?	
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	none
Wall cladding:	brick or tile	describe (note cavity if exists)	Veener
Roof Cladding:	Metal	describe	Corrugated Iron
Glazing:	aluminium frames		none
Ceilings:	plaster, fixed		
Services(list):			

Available documentation

Architectural	none	original designer name/date	
Structural	full	original designer name/date	Fallow and Wilkins
Mechanical	none	original designer name/date	
Electrical	none	original designer name/date	
Geotech report	none	original designer name/date	

Damage

Site:	Site performance:	No ground damage observed	Describe damage:	
(refer DEE Table 4-2)				
	Settlement:	none observed	notes (if applicable):	
	Differential settlement:	none observed	notes (if applicable):	
	Liquefaction:	none apparent	notes (if applicable):	
	Lateral Spread:	none apparent	notes (if applicable):	
	Differential lateral spread:	none apparent	notes (if applicable):	
	Ground cracks:	none apparent	notes (if applicable):	
	Damage to area:	none apparent	notes (if applicable):	

Building:

	Current Placard Status:	green		
Along	Damage ratio:	0%	Describe how damage ratio arrived at:	No damage
	Describe (summary):			
Across	Damage ratio:	0%	$Damage\_Ratio = \frac{(\%NBS(before) - \%NBS(after))}{\%NBS(before)}$	
	Describe (summary):			
Diaphragms	Damage?:	no	Describe:	
CSWs:	Damage?:	no	Describe:	
Pounding:	Damage?:	no	Describe:	
Non-structural:	Damage?:	no	Describe:	

Recommendations

	Level of repair/strengthening required:	none		Describe:	
	Building Consent required:	no		Describe:	
	Interim occupancy recommendations:	full occupancy		Describe:	
Along	Assessed %NBS before:	67%	##### %NBS from IEP below	If IEP not used, please detail assessment methodology:	Quantitative
	Assessed %NBS after:	67%			
Across	Assessed %NBS before:	45%	##### %NBS from IEP below		
	Assessed %NBS after:	45%			

Opus International Consultants Ltd
L7, Majestic Centre, 100 Willis St
PO Box 12 003, Wellington 6144
New Zealand

t: +64 4 471 7000
f: +64 4 471 1397
w: www.opus.co.nz