



# Code Compliance Certificate **180320**

Section 95, Building Act 2004

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## The Building

Street Address of Building: **103 Lake Ferry Road, Lake Ferry**

Legal Description of Land where Building is Located: **LOT 6 DP 70868 BLK VIII ONOKE SD**

Valuation Number: 1837017506

Building Name:

Level/Unit number: 0

Location of Building within site/block number:

Current, Lawfully Established, Use: Housing - detached

Year First Constructed: 2019

## The Owner

Name of Owner: **N Gattsche**

Mailing Address: **103 Lake Ferry Road, RD 2, Featherston**

Street Address/registered address: 103 Lake Ferry Road, RD 2, Featherston

Phone Numbers: Landline:

Mobile:

Daytime:

After Hours:

Fax Number:

Email Address: nigelgattsche01@gmail.com

Website:

First point of contact for communications with the Building Consent Authority:

N Gattsche 103 Lake Ferry Road, RD 2, Featherston 5772

## Building Work

Building Consent Number: **180320**

Description: **Transportable building shell – closed in and lined, not fitted off with services or electric fixtures.**

Issued by: **South Wairarapa District Council**

## Code Compliance

The Building Consent Authority named below is satisfied, on reasonable grounds, that —

- (a) the building work complies with the Building Consent.

Signature:

Position: Building Control Officer

On Behalf Of: **South Wairarapa District Council**

Date: 13 August 2019





# Electrical Workers Registration Board

SAFETY | COMPETENCY | COMPLIANCE

## Electrical Certificate of Compliance and Electrical Safety Certificate

Reference/Certificate ID No: **CATT846**



This form has been designed to be used by licensed electrical workers to certify that installations or Part installations under **Part 1 or Part 2 of AS/NZS 3000** are safe to be connected to the **specified** system of electrical supply.

### LOCATION AND CONTACT

Location Details **103 LAKEFERRY ROAD**

Contact Name **N CATSEHE**

Name of Electrical worker: **RICHARD BOUD**  
Organisation/company: **BOUD ELECTRICAL**

Phone: **027 2693583**

Name of person(s) supervised: **NZL**

Contact Address **103 LAKE FERRY ROAD**  
Postcode

Registration/Practising licence number: **E15407**

Email: **BoudElectrical@gmail.com**

### CoC

Type of work:

☐ Additions

☐ Alterations

☐ New work

The prescribed electrical work is:

☒ Low risk

☐ General

☐ High risk (specify):

Reference Standards:

☐ Part 1 of AS/NZS 3000

☒ Part 2 of AS/NZS 3000

☐ Additional Standards:

Description of work: (including date/s of work and type of supply system)

- **PRE WIRE ONLY.**
- **NEW "TINY" HOME BENE BUZZER ON ABOVE ADDRESS**

I certify that the completed prescribed electrical work to which this Certificate of Compliance applies has been done lawfully and safely, and the information in the certificate is correct in that the installation, or part of the installation:

Select those that apply:

☐ Has been installed in accordance with the specified certified design

☐ Has an earthing system that is correctly rated (where applicable)

☐ Contains fittings that are safe to connect to a power supply

☒ Relies on a supplier Declaration of Conformity

☐ Has been satisfactorily tested in accordance with the Electricity (Safety) Regulations 2010

☐ Is safe to connect

Electronic/Other reference:

Certifier's signature:

### Test Results

Polarity (Independent earth):

Insulation resistance:

Earth Continuity

Bonding

Fault Loop Impedance

Other (specify):

**PRE WIRE ONLY.**

Date: **2 NOV 2018**

\* Attach or reference. If it is impractical to attach a copy of a particular manufacturer's instructions, or of any certified design or supplier declaration of conformity, provide a reference to where the documents can be found, in a readily accessible format, by electronic means.

### ESC

I certify that the installation, or part of the installation, to which this Electrical Safety Certificate applies is connected to a power supply and is safe to use.

Certifier's name:

**PRE WIRE ONLY**

Registration/Practising licence number:

Certifier's signature:

Certificate Issue Date:

Connection Date:

**CUSTOMER COPY - THIS IS AN IMPORTANT DOCUMENT AND SHOULD BE RETAINED FOR A MINIMUM OF 7 YEARS**

This certificate also confirms that the electrical work complies with the building code for the purposes of Section 19(1)(e) of the Building Act 2004.



# Memorandum from licensed building practitioner: Record of building work

## Section 88, Building Act 2004

Please fill in the form as fully and correctly as possible.

If there is insufficient room on the form for requested details, please continue on another sheet and attach the additional sheet(s) to this form.

### THE BUILDING

Street address: 103 lake ferry Road

Suburb: lake ferry

Town/City: Featherston

Postcode: 5772

### THE PROJECT

Building consent number:

### THE OWNER(S)

Name(s): Nigel Gattsche

Mailing address: 103 lake ferry Rd

Suburb: lake ferry

PO Box/Private Bag:

Town/City: Featherston

Postcode: 5772

Phone number:

Email address: nigelgattsche@gmail.com



# EXTERNAL MOISTURE MANAGEMENT SYSTEMS

Work that is restricted building work	Description of restricted building work	Carried out or supervised
Tick <input checked="" type="checkbox"/>	If necessary, describe the restricted building work.	Tick <input checked="" type="checkbox"/> whether you carried out the restricted building work or supervised someone else carrying out the restricted building work.
Damp proofing <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised
Roof cladding or roof cladding system <input checked="" type="checkbox"/>	Roof install	<input checked="" type="radio"/> Carried out <input type="radio"/> Supervised
Ventilation system (for example, subfloor or cavity) <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised
Wall cladding or wall cladding system <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised
Waterproofing <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised
Other <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised



Name and contact details of the licensed building practitioner who is licensed to carry out or supervise restricted building work.

Name Peter Goldsmith

LBP number: BP127092.

Class(es) licensed in: Roofing R3

Plumbers, Gasfitters and Drainlayers registration number (if applicable)

Mailing address (if different from below)

Street address/Registered office: 7 Gallipoli place

Suburb: Paraparaumu.

Town/City: Wellington

PO Box/Private Bag

Postcode: 5032

Phone number

Mobile: 021 910 645

After hours

Fax

Email address: goldsmithroof@gmail  
.com

Website: goldsmithroofing.co.nz

## DECLARATION

I, Peter Goldsmith carried out or supervised the restricted building work recorded on this form.

Signature: [Signature]

Date: 12/05/19.





# Application for code compliance certificate 180320

Section 92, Building Act 2004

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Valuation Number: 1837017506

Project: Batch

## *The owner*

Name of owner: **N Gattsche**

Site Address: **103 Lake Ferry Road, Lake Ferry**

Mailing address: **103 Lake Ferry Road, RD 2, Featherston 5772**

Phone number: Landline:

Mobile:

Daytime:

After hours:

Fax:

Email Address: **nigelgattsche01@gmail.com**

Website:

The following evidence of ownership is attached to this application showing full name of legal owner(s) of the building (please tick):

☐ copy of certificate of title

☐ lease

☐ agreement for sale and purchase

☐ other (specify) \_\_\_\_\_

## *Agent*

Name of agent: **N Gattsche**

Mailing address: **103 Lake Ferry Road, RD 2, Featherston 5772**

Street address/registered office:

Phone number: Landline:

Mobile:

Daytime:

After hours:

Fax:

Email Address: **nigelgattsche01@gmail.com**

Website:

Relationship to owner (state details of the authorisation from the owner to make the application on the owner's behalf):

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please turn over





## Application

All building work to be carried out under the above building consent was completed on (Date) 10 MAY 19

The licensed building practitioner(s) who carried out or supervised the restricted building work is/are as follows:

Name	Licensing Class	LBP Number	Particular work carried out or supervised
NIGEL GATTSCHKE	Corp, site 2	BP121026	Building of TH.
PETER GOLDSMITH	Roofing	BP127092	metal roofing

The personnel who carried out building work other than restricted building work are as follows: [list names, addresses, telephone numbers, and (where relevant and if not provided above) licensed building practitioner numbers or Plumbers, Gasfitters, and Drainlayers Board registration numbers]

Name	Address	Phone Number	License/Registration number
NIGEL MALNFEK	MARTWOBOROUGH	0272900518	16359 - Plumber
SIMON GRENFELL	"		17699 - Gas fitter

I request that you issue a code compliance certificate for this work under section 95 of the Building Act 2004.

The code compliance certificate should be sent to:

Address 103 Lake Ferry Rd, RD2 FEATHERSTON 5772

Being Owner / Agent (Please circle which)

  
Signature of Owner / Agent

NIGEL GATTSCHKE  
Name of person signing (please print)

Date: \_\_\_\_\_

## Attachments

The following documents are attached to this application (please tick):

- ☒ Certificates from the personnel who carried out the work
- ☒ Certificates that relate to the energy work
- ☐ Evidence that specified systems are capable of performing to the performance standards set out in the building consent



## GASFITTING CERTIFICATE OF COMPLIANCE — GAS SAFETY CERTIFICATE



## Certificate of Compliance:

Client Name: NIGEL GATTSCHKE

Reference / Job #:                      ICP (if known):                     

Address of work: 103 LAKE FERRY ROAD

Suburb: RD 2 Town / City: FEATHERSTON 5772

Description of gasfitting work: (If different gasfitting work was done by different people, state who did what gasfitting.)

LPG STATION PIPework  
HOT WATER UNIT

Gas supply pressure 2.75 kPa Risk classification (tick one) ☐ Low-Risk ☒ General ☐ High-risk

Gas type (tick one) ☐ Natural gas ☒ LPG ☐ Biogas ☐ Other (specify)                     

The work has been done in accordance with a certified design: ☐ Yes ☒ No

If yes – identify the certified design including name, date and version. Also attach a copy of the certified design to this certificate.

(Or provide reference to readily accessible electronic format, eg Internet link.)

Identify:

Link:                     

The work relies on manufacturer's instructions: ☐ No ☒ Yes:

If yes – Identify the instruction manual including name, date and version. Also attach a copy of manufacturer's instructions to this certificate.

(Or provide reference to readily accessible electronic format, eg Internet link.)

Identify:

Link: 2. N/A

The work has been done in accordance with means of compliance (specify):

☒ Yes – AS/NZS 5601.1 sections 3 to 6 ☒ Yes – AS/NZS 5601.2 sections 3 to 9 ☐ No

Were any other standards or gas code of practice required for compliance?

☐ Yes (specify)                      ☒ No

Parts of the gas installation to which this certificate relates that are safe to connect to a gas supply?

☒ All ☐ Parts (specify)                     

Date(s) on which the work was done:                     

Name and registration number of anyone who carried out work under supervision:                     

By signing this document I confirm that I am satisfied that the work described in this certificate of compliance has been done lawfully and safely, and that the information on this certificate is correct.

Certifier name: SIMON GREENFELL Registration number: 17699

Certifier Signature: [Signature] Date: 1-9-2019

## Gas Safety Certificate:

By signing this document I confirm that the work described in this Gas Safety Certificate, and the installation or part installation, is connected to a gas supply and is safe to use.

Name of person authorised to certify the connection: SIMON GREENFELL

Registration number: 17699 Date of completion or connection: 1-9-2019

Certifier Signature: [Signature] Date: 1-9-2019

This Gas Safety Certificate confirms that the gasfitting work complies with the building code for the purposes of Section 13(1)(e) of the Building Act 2004.



## Form 6A

### Memorandum from licensed building practitioner: Record of building work

#### Section 88, Building Act 2004

Please fill in the form as fully and correctly as possible.

If there is insufficient room on the form for requested details, please continue on another sheet and attach the additional sheet(s) to this form.

#### THE BUILDING

Street address: 103 Lake Ferry Road

Suburb: Lake Ferry, RD2

Town/City: FEATHER STON

Postcode: 5772

#### THE PROJECT

Building consent number: 180 320

#### THE OWNER(S)

Name(s): NIGEL GATTSCHKE

Mailing address: As above

Suburb:

PO Box/Private Bag:

Town/City:

Postcode:

Phone number: 0274 472 785

Email address: nigelgattsche@12

gmail.com



## RECORD OF WORK THAT IS RESTRICTED BUILDING WORK

### PRIMARY STRUCTURE

Work that is restricted building work	Description of restricted building work	Carried out or supervised
Tick <input checked="" type="checkbox"/>	If necessary, describe the restricted building work.	Tick <input checked="" type="checkbox"/> whether you carried out the restricted building work or supervised someone else carrying out the restricted building work.
Foundations and subfloor framing <input checked="" type="checkbox"/>	Timber pile, timber sub floor	<input checked="" type="radio"/> Carried out <input type="radio"/> Supervised
Walls <input checked="" type="checkbox"/>	- 2/90 x 45 timber frame @ 400 c/s - solid wrap, cavity battens - cladding, interior lining.	<input checked="" type="radio"/> Carried out <input type="radio"/> Supervised
Roof <input checked="" type="checkbox"/>	LVL roof beams, timber purlins ply diaphragm ceiling	<input checked="" type="radio"/> Carried out <input type="radio"/> Supervised
Columns and beams <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised
Bracing <input checked="" type="checkbox"/>	- diaphragm ceiling - braced ply wrap	<input checked="" type="radio"/> Carried out <input type="radio"/> Supervised
Other <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised



EXTERNAL MOISTURE MANAGEMENT SYSTEMS		
Work that is restricted building work	Description of restricted building work	Carried out or supervised
Tick <input checked="" type="checkbox"/>	If necessary, describe the restricted building work.	Tick <input checked="" type="checkbox"/> whether you carried out the restricted building work or supervised someone else carrying out the restricted building work.
Damp proofing <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised
Roof cladding or roof cladding system <input type="checkbox"/>	By LBP roofer (see separate memo)	<input type="radio"/> Carried out <input type="radio"/> Supervised
Ventilation system (for example, subfloor or cavity) <input checked="" type="checkbox"/>	Cavity batten	<input checked="" type="radio"/> Carried out <input type="radio"/> Supervised
Wall cladding or wall cladding system <input checked="" type="checkbox"/>	- Shadowclad ply - Hardies STRIA	<input checked="" type="radio"/> Carried out <input type="radio"/> Supervised
Waterproofing <input checked="" type="checkbox"/>	- Flashings as per approved plans/specs.	<input checked="" type="radio"/> Carried out <input type="radio"/> Supervised
Other <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised



## ISSUED BY

Name and contact details of the licensed building practitioner who is licensed to carry out or supervise restricted building work.

Name: **NIGEL GATTSCHKE**

LBP number: **BP 121026**

Class(es) licensed in: **Carpentry, site 2**

Plumbers, Gasfitters and Drainlayers registration number (if applicable):

Mailing address (if different from below):

Street address/Registered office: **103 Lake Ferry Rd.**

Suburb: **Lake Ferry**

Town/City: **RD2 Featherston**

PO Box/Private Bag **—**

Postcode: **5772**

Phone number: **—**

Mobile: **0274 472 785**

After hours: **—**

Fax: **—**

Email address: **nigelgattsche@12**

Website: **onokekopuha.com**

**gmail.com**

## DECLARATION

I **NIGEL GATTSCHKE** carried out or supervised the restricted building work recorded on this form.

Signature: 

Date: **11 JUN 19.**



# CAD SERVICES AND DESIGN



Form 2A

## Memorandum from licensed building practitioner: Certificate of design work Section 30C or section 45, Building Act 2004

### The building

Street address of building:

**103 Lake Ferry Road, Lake Ferry**

### THE OWNER

Name(s): Nigel Gattsche

Mailing address: 103 Lake Ferry Road, Lake Ferry

Suburb:	PO Box/Private Bag:
Town/City:	Postcode:
Phone number:	Email address: nigelgattsche01@gmail.com

### BASIS FOR PROVIDING THIS MEMORANDUM

I am providing this memorandum in my role as the: Please tick the option that applies (✓)	
(V)	<b>sole</b> designer of all of the RBW design outlined in this memorandum – I carried out all of the RBW design myself – no other person will be providing any additional memoranda for the project
( )	<b>lead</b> designer who carried out some of the RBW design myself but also supervised other designers – this memorandum covers their RBW design work as well as mine, and no other person will be providing any additional memoranda for the project
( )	<b>lead</b> designer for all but specific elements of RBW – this memorandum only covers the RBW design work that I carried out or supervised and the other designers will provide their own memoranda relating to their specific RBW design
( )	<b>specialist</b> designer who carried out specific elements of RBW design work as outlined in this memorandum – other designers will be providing a memorandum covering the remaining RBW design work

### IDENTIFICATION OF DESIGN WORK THAT IS RESTRICTED BUILDING WORK (RBW)

I, Willem van der Laan, carried out the following design work that is restricted building work

### PRIMARY STRUCTURE: B1

Design work that is restricted building work	Description	Carried out/supervised	Reference to plans and
--	-------------	------------------------	------------------------



			<b>specifications</b>
<i>Tick (✓) if included</i> <i>Cross (X) if excluded</i>	<i>[If appropriate, provide details of the restricted building work]</i>	<i>[Specify whether you carried out this design work or supervised someone else carrying out this design work]</i>	<i>[If appropriate, specify references]</i>

### Primary structure

<b>All</b> RBW Design work relating to B1	( v )		( v ) Carried out ( ) Supervised	
Foundations and subfloor framing	( )	NZS 3604	( ) Carried out ( ) Supervised	
Walls	( v )	NZS 3604	( v ) Carried out ( ) Supervised	
Roof	( v )	COP roofing and NZS 3604	( v ) Carried out ( ) Supervised	
Columns and beams	( v )	NZS 3604	( v ) Carried out ( ) Supervised	
Bracing	( v )	GIB Ezy brace	( v ) Carried out ( ) Supervised	
Other	( )	xxxxxxxxxxxxxxxxxxx	( ) Carried out ( ) Supervised	

### EXTERNAL MOISTURE MANAGEMENT SYSTEMS: E2

<b>All</b> RBW design work relating to E2	( v )		( v ) Carried out ( ) Supervised	
Damp proofing	( v )	RAB (ply )	( v ) Carried out ( ) Supervised	
Roof cladding or roof cladding system	( v )	NZBC E2	( v ) Carried out ( ) Supervised	
Ventilation system (for example, subfloor or cavity)	( )	xxxxxxxxxxxxxxxxxxx	( ) Carried out ( ) Supervised	
Wall cladding or wall cladding system	( v )	NZBC E2	( v ) Carried out ( ) Supervised	
Waterproofing	( )	xxxxxxxxxxxxxxxxxxx	( ) Carried out ( ) Supervised	
Other	( )	xxxxxxxxxxxxxxxxxxx	( ) Carried out ( ) Supervised	

### FIRE SAFETY SYSTEMS: C1 – C6

Emergency warning systems,	( v )	Smoke alarm	( v ) Carried out	
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evacuation and fire service operation systems, suppression or control systems, or other		( ) Supervised	
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**Note:** The design of fire safety systems is only restricted building work when it involves small-to-medium apartment buildings as defined by the Building (Definition of Restricted Building Work) Order 2011.

## WAIVERS AND MODIFICATIONS

Waivers or modifications of the building code are required ( ) Yes (v) No

If Yes, provide details of the waivers or modifications below:

Clause	Waiver/modification required
[List relevant clause numbers of building code]	[Specify nature of waiver or modification of building code]

## ISSUED BY

Name: Willem van der Laan	LBP or Registration number: BP109511
The practitioner is a: (V) Design LBP ( ) Registered architect ( ) Chartered professional engineer	
Design Entity or Company (optional): CAD Services and Design	
Mailing address (if different from below): 219 Masterton Stronvar Road	
Street address / Registered office:	
Suburb: RD10	Town/City: Masterton
PO Box/Private Bag:	Postcode: 5890
Phone number: 06-370-1310	Mobile: 021-204-6155
Email address: cad.services.design@gmail.com	Website: www.cadservicesdesign.com

## DECLARATION

I, Willem van der Laan, LBP,

state that I have applied the skill and care reasonably required of a competent design professional in carrying out or supervising the Restricted Building Work (RBW) described in this form, and that based on this, I also state that the RBW:

- Complies with the building code; or
- Complies with the building code subject to any waiver or modification of the building code recorded on this form.

Signature:

Date: 10/08/2018





# Building Consent No. 180320

Section 51, Building Act 2004

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## The building

Street address of building: **103 Lake Ferry Road, Lake Ferry**

Legal description of land where building is located: **LOT 6 DP 70868 BLK VIII ONOKE SD**

Building name: **Dwelling**

Level/unit number:

Location of building within the site/block number:

Valuation Number: **1837017506**

## The owner

Name of owner: **N Gattsche**

Mailing address: **103 Lake Ferry Road**

**RD 2**

**Featherston 5772**

Street address/registered office:

Phone number: Landline:

Mobile:

Daytime:

After hours:

Email address: **nigelgattsche01@gmail.com**

First point of contact for communications with the council/building consent authority:

Name: **CAD Services and Design**

Mailing address: **219 Masterton Stronvar Road RD 10 Masterton 5890**

Phone number: Landline:

Mobile: **021 204 6155**

Daytime:

After hours: **(06) 370 1310**

Email address: **cad.services.design@gmail.com**

## Building work

The following building work is authorised by this building consent:

**Batch**

This building consent is issued under section 51 of the Building Act 2004. This building consent does not relieve the owner of the building (or proposed building) of any duty or responsibility under any other Act relating to or affecting the building (or proposed building).

This building consent also does not permit the construction, alteration, demolition, or removal of the building (or proposed building) if that construction, alteration, demolition, or removal would be in breach of any other Act.



**This building consent is subject to the following conditions:**

- a) It is a condition of this consent that agents authorized by the building consent authority for the purposes of section 90 of the Building Act 2004 are entitled, at all times during normal working hours or while building work is being done, to inspect –
  - i. land on which building work is being or is proposed to be carried out; and
  - ii. building work that has been or is being carried out on or off the building site; and
  - iii. any building

**This building consent is subject to the following advice notes:**

**Building Department Notes:**

**See attached required items list.**

**This consent involves restricted building work, the Building Consent Authority must be notified of any changes to the Licensed Building Practitioners.**

**A memorandum (record of building work) is required to be supplied to the Building Consent Authority from each Licensed Building Practitioner who carried out and supervised Restricted Building Work. These are to be submitted as part of the application for Code Compliance Certificate at the end of the project.**

**Other Council Notes:**

**Council policy is that all stormwater not used for water supply purposes shall be disposed of on-site via approved soakpits.**

**Compliance Schedule**

A compliance schedule is not required for the building.

**Attachments**

Copies of the following documents are attached to this building consent:

*Required Items List*

Signature:



Position: Building Control Team Leader

On behalf of: South Wairarapa District Council

Date: 27 September 2018





## REQUIRED ITEMS FOR BUILDING CONSENT BC 180320

### Inspections Required

The following inspections are required:

- 1 Foundation
- 1 Pre-wrap
- 2 Pre-cladding                      2 cladding types.
- 1 Preline Building
- 1 Preline Plumbing
- 1 Postline/Fire rated Lining
- 1 Drainage
- 1 Building Final
- 1 Fireplaces
- 10 Total Inspections

### Documentation Required

The following documentation is required:

Application for Code Compliance Certificate  
Drainage AsBuilt  
Gas Certificate  
Electrical Completion Certificate  
LBP memos required

### Licensed Building Practitioner Forms Required

The following Restricted Building Work must be carried out or supervised by a registered Licensed Building Practitioner (LBP) and a Record of Building Work form signed by each LBP is required at the completion of the work.

RoW - Carpentry 1  
RoW- Foundations 2 - Concrete or timber pile foundations  
RoW - Roofing 2 - Profiled Metal roof and /or wall cladding  
CoW - Design 1 - LBP

Willem van der Laan

### Advice Notes

An Electrical Certificate of Compliance is required to be submitted to council from the registered electrician for the electrical work completed on the project. This shall be supplied prior to the Code Compliance Certificate being issued.

A drainage as-built is to be supplied to council prior to the issue of the Code Compliance Certificate.

A Gas Certificate is required to be submitted to council from the registered gas fitter for the gas work completed on the project. This shall be supplied prior to the Code Compliance Certificate being issued.

It is the responsibility of the contractor to ensure that testing is completed to ensure "good ground" with a soil bearing capacity of greater than 300kPa is achieved as detailed in NZS 3604, Section 3. This shall be completed prior to any foundation boxing being installed.

#### PROPERTY BOUNDARIES:

The owner of the property and the builder are responsible for the correct siting of buildings or additions there-on, according to the District Plan and the Building Code. The owner and the builder shall ascertain the true position of survey pegs before building operations commence, or provide evidence of boundary siting when the first foundation inspection is made. Existing fences are not always on the true boundary. Certification from a surveyor may be required to avoid future legal problems.

All plumbing and drainage work to be carried out by a certifying plumber and/or drainlayer.

Solid Fuel Heater to be installed by a suitably qualified person.

This building consent will lapse, and be of no effect, if the building work to which it relates does not commence within 12 months after the date of issue of the building consent, or within any further period that the building consent authority may allow.



	Building Consent File Content		Consent Number:	180320
CCC file check ✓	Description	Date Placed	Comment & Reference	
	CCC			
	Refunds			
✓	Code Compliance Certificate	13/8/2019		
	Certificate for Public Use			
✓	Record of Work - Carpentry	17/7/2019		
	Record of Work - Brick & Block			
✓	Record of Work - Roofing	17/7/2019		
	Record of Work - External Plastering			
✓	Record of Work - Foundation	24/7/2019		
	Producer Statement			
	Producer Statement			
	Inspection Reports (recorded electronically)			
	Correspondence 1			
	Correspondence 2			
	Complaints about bca performance			
✓	Application for CCC	12/6/2019		
	Warranties			
	Drainage As Built			
✓	Energy Work Certificates - Electrical	12/8/2019		
✓	Energy Work Certificates - Gas	12/6/2019		
	Compliance schedule			
	Notice to Fix			
	Specified intended life			
	Other documentation			
	BUILDING CONSENT			
	Amendment 1: Application & Approval			
	Amendment 2: Application & Approval			
✓	Building Consent & PIM (if required)	27.09.18		
✓	Building Consent Application	14.08.18		
✓	Building Consent checklist (form 118series)	14.08.18		
	Building Consent processing checklist (form 301 series – recorded electronically)			
	Certificate of Design Work - LBP			
	Certificate of Design Work - Engineer			
	Certificate of Design Work - Architect			
	Invoice ( recorded electronically)			
	Owner builder declaration			
	Correspondence 1			
	Correspondence 2			
	Other NUO information			
	NZ historic places trust			
✓	PIM: CT/Consent Notices	31.08.18		
	MBie Notification (Warning & .....)			
✓	Plans & Specifications	14.08.18		
	Producer Statement			
	Producer Statement			
	Relocate: Condition Reports			
	Photos (recorded electronically)			
	Consultant Reports			
	Fire Design			
	Peer Review			
	Geotech			
	FEU			
	Regional Authority Consent			
	Other documentation			
*The Following TA records are held on the property file: Section 126, district court orders Complaints and responses				
*The BWoF is held I the BWoF File				



Value: \$18,000		Initials: SE
BC Number: 180320	Owner: Gattsche	

<b>Fees Payable</b>	<b>\$</b>
Building Consent	\$2829.00
BR Levy @ \$1 per 1000 Applies to all building work \$20,000 and over	
Building Levy @ \$2.01 per 1000 Applies to all building work \$20,444 and over	
Infrastructure Protection Deposit \$1,000	
CT	
Other Print consent	
Scanning & administration fee	\$77.00
<b>TOTAL</b>	\$2906.00





# RESIDENTIAL APPLICATION FOR A BUILDING CONSENT

and/or project information memorandum

Building Act 2004, section 33 or section 45

Send or deliver your application to: **The Building Department,  
South Wairarapa District Council, 19 Kitchener Street, Martinborough 5711**

For enquiries, phone 06 3069611

Please provide one copy of all attachments, **unless otherwise specified in checklist**

Type directly on this form, or download and fill in a paper copy.

Council use only:

Application #

Property ID

## PART 1 – APPLICATION (SELECT TYPE APPROPRIATELY)

If you have an existing application number relating to this building please note the number beside the application type

☐ project information memorandum

☒ building consent

☐ staged consent

☐ amendment

☐ national multi-use approval (*If yes provide copies of MultiProof certificate, plans and specifications*)

Consent/project information memorandum to be

☐ mailed ☐ collected ☒ emailed

Restricted building work

Does application involve restricted building work? ☒ yes ☐ no

If yes provide Certificate(s) of design work and Advice of licensed building practitioner(s) form(s)

Financial assistance package (FAP)

Is this a re-clad application? ☐ yes ☒ no

Is application subject to a claim under the FAP scheme? ☐ yes ☒ no If yes, FAP claim number

Cultural or heritage significance

Does the building or site have any cultural or heritage significance, or is it a marae? ☐ yes ☒ no

Is the site subject to natural or created hazards such as erosion, subsidence, flooding, slips, cut and fill or contamination?

☐ yes ☒ no If yes provide details

## The building (PROJECT LOCATION)

Building name (*if applicable*) Tiny House

Building street address 103 Lake Ferry Road, Lake Ferry

Location of building within the site (*include nearest street access*)

Legal description of land where the building is located. If a subdivision of the land is proposed provide the lot numbers and consent number

Lot(s) LOT 6 DP 70868 BLK VIII ONOKE SD

Subdivision lot No:

DP(s) LOT 6 DP 70868 BLK VIII ONOKE SD

Subdivision consent No:

Number of levels (*include below ground, ground and above ground*) Single



Level/unit number (if applicable)		
Area (in square metres)		
Existing floor area:	Proposed new floor area: 25	Resulting total floor area: 25
Current, lawfully established use of all parts of the building (include number of occupants per level and per use if more than one level)		
Batch		
Year first constructed (insert year, an approximate date is acceptable such as 1920's or 1960-1970) 2018		

**The owner (MUST BE COMPLETED FOR ALL APPLICATIONS AND ALL DETAILS MUST BE THE OWNER'S)**

Owner's name. If the owner is a company or other organisation provide the company or organisation name and a contact person's name

Nigel Gattsche

Owner's mailing address 103 Lake Ferry Road, Lake Ferry

Street address/registered office

Owner's contact details

Landline

Mobile

After hours

Fax

Email nigelgattsche01@gmail.com

Website

Proof of ownership – attach one of the following as evidence

- ☒ Copy of the land title (Computer register, Certificate of Title, CT or property title) – no more than three months old.  
☐ Lease ☐ Agreement for sale and purchase

**AGENT (only required if application is being made on behalf of the owner)**

Name of agent. If application is for a company, trust or other organisation provide a contact person's name

CAD Services and Design

Agent's mailing address 219 Masterton Stronvar road, RD10, Masterton

Street address/registered office

Agent's contact details

Landline: 06-370-1310

Mobile: 021-204-6155

After hours:

Fax:

Email: cad.services.design@gmail.com

Website:

Relationship to owner (state the details of the owner's authorisation if making this application on the owner's behalf)

Agent



First point of contact (mark boxes as appropriate and provide details of any other points of contact)			
Further information	<input checked="" type="checkbox"/> Agent	<input type="checkbox"/> Owner	<input type="checkbox"/> Other
Correspondence	<input checked="" type="checkbox"/> Agent	<input type="checkbox"/> Owner	<input type="checkbox"/> Other
Invoicing	<input type="checkbox"/> Agent	<input checked="" type="checkbox"/> Owner	<input type="checkbox"/> Other

### **Contacts** (PROVIDE ALL DETAILS WHERE RELEVANT)

Designer or Architect	Business/name CAD Services and Design	
Address 219 Masterton Stronvar road, RD10, Masterton		
Registration/qualification BP109511	Mobile 021-204-6155	Landline 06-370-1310
Email cad.services.design@gmail.com	After hours phone	Fax
Structural engineer	Business/name	
Address		
Registration/qualification	Mobile	Landline
Email	After hours phone	Fax
Fire safety designer	Business/name	
Address		
Registration/qualification	Mobile	Landline
Email	After hours phone	Fax
Head Contractor / Site Manager	Business/name Nigel Gattsche	
Address		
Registration/qualification	Mobile	Landline
Email	After hours phone	Fax
Builder	Business/name	
Address		
Registration/qualification	Mobile	Landline
Email	After hours phone	Fax
Plumber	Business/name	
Address		
Certifying Plumber/qualification	Mobile	Landline
Email	After hours phone	Fax
Drainlayer	Business/name	
Address		
Certifying Drainlayer/qualification	Mobile	Landline
Email	After hours phone	Fax




Other (Attach additional page if required)		
Role	Business/name	
Address		
Email	Registration/qualification	Landline
Mobile	After hours phone	Fax

### Application

I request that you issue a

- ☐ Project Information Memorandum  
☐ Project Information Memorandum and Building Consent  
☒ Building Consent  
 for the building work described in this application.

Signed by the owner	OR	Signed by the agent (on behalf of, or with the authority from, the owner)
Signature		Signature 
Name		Name Willem van der Laan
Date		Date 10/08/2018

### Privacy information

The information you have provided on this form is required so that your building consent application can be processed under the Building Act 2004. The Council collates statistics relating to issued building consents and has a statutory obligation to forward these regularly to Statistics New Zealand. The Council stores the information on a public register, which must be supplied (as previously determined by the Ombudsman) to whoever requests the information.

Under the Privacy Act 1993 you have the right to see and correct personal information the Council holds about you.

## PART 2 – PROJECT

### General information

Description of the building work (provide sufficient description to enable full understanding of the scope of the work).	
Batch	
Has a pre-application meeting been attended? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Number
Will the building work result in a change of use of any part of the building? (If yes, provide details of the new use)	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Intended life of the building stated in years, only if intended to be less than 50 years old ---	
List building consents previously issued for the project (if any). List who issued the consent, the date of issue and the consent number.	
NA	
Estimated value of the building work on which the building levy will be calculated (including goods and services tax) [state estimated value as defined in section 7 of the Building Act 2004].	
\$18k	

### PART 3 – SITE ISSUES AND PROJECT INFORMATION

Site issues	Applicant to complete	Reference on drawings, specifications and/or comments	Council use only
Are the finished floor, finished ground, street and associated datum levels shown on plans?	See comment	Refer Cross section sheet 6	<input type="checkbox"/> Verified
Are the distances to boundaries shown on plans?	Shown on site		
Does the proposed work cover two or more allotments?	One lot		
What is the wind zone?	Very High	EH used for design purposes	
What is the exposure zone?	Zone D		
Are there public drains on the site?	No		
Is the site subject to natural or created hazards such as erosion, subsidence, flooding, slips, cut and fill or contamination? If yes, provide details.	No		
Are the ground conditions specified?	Not Applicable		

### Project information

Select box if the matter is part of the project	Comments
Subdivision <input type="checkbox"/>	
Alterations to land contours <input type="checkbox"/>	
New or altered connection to public utilities <input type="checkbox"/>	
New or altered locations and/or external dimensions of building(s) <input checked="" type="checkbox"/>	
New or altered access for vehicles <input type="checkbox"/>	
Building work over or adjacent to any road or public place <input type="checkbox"/>	
Disposal of stormwater and wastewater <input checked="" type="checkbox"/>	
Building work over any existing drains or sewers or in close proximity to wells or water mains <input type="checkbox"/>	
Other matters known to the applicant that may require authorisation from the appropriate territorial authority <i>[specify]</i> <input type="checkbox"/>	



## PART 4 – COMPLIANCE

**Do not fill in this section if this application is only for a project information memorandum**

All documentation, including plans, specifications, calculations and producer statements, used to show building consent compliance must be formally listed as attachments in the accompanying checklist.

### ***The building work will comply with the building code as follows***

Please ensure that any details of the listed compliance elements are shown on drawings and/or specifications.

#### **B1: Structure**

Elements	Means of compliance	Reference on drawings, specifications and/or comments	For Council use only
<b>B1: Foundations</b>	<b>applicable</b>		<input type="checkbox"/> Checked
foundation size	<input type="checkbox"/> Specific engineering design <input checked="" type="checkbox"/> NZS 3604 <input type="checkbox"/> NZS 4229		
reinforcing			
foundation/footings for retaining walls			
<b>B1: Slab</b>	<b>Not applicable</b>		
layout dimensions	<input type="checkbox"/> Specific engineering design <input type="checkbox"/> NZS 3604 <input type="checkbox"/> NZS 4229		
thickness			
reinforcing			
slab thickening/point loads			
fixing/connections			
<b>B1: Timber sub-floor and floor</b>	<b>applicable</b>		
pile details including bracing	<input type="checkbox"/> Specific engineering design <input checked="" type="checkbox"/> NZS 3604		
bearers and joist details including support/blocking details			
flooring material and floor height above ground			
fixing/connection			
<b>B1: Walls</b>	<b>applicable</b>		
wall type, height, centres, member sizes and bracing	<input type="checkbox"/> Specific engineering design <input checked="" type="checkbox"/> NZS 3604 <input type="checkbox"/> NZS 4210 <input type="checkbox"/> NZS 4229 <input type="checkbox"/> NZS 4230		
window and door framing details including lintels			
fixing/connection			
<b>B1: Roof</b>			
layout/trusses including member centres sizes and bracing	<input type="checkbox"/> Specific engineering design <input checked="" type="checkbox"/> NZS 3604		
purlin/batten centres and sizes			
beams centres and sizes			
fixing/connection			

**B1: Structure**

Elements	Means of compliance	Reference on drawings, specifications and/or comments	For Council use only
<b>B1: Barrier fixings</b>	<b>Not applicable</b>		
rail, fence, baluster fixings	<input type="checkbox"/> Specific engineering design		

**B2: Durability**

Elements	Means of compliance	Reference on drawings, specifications and/or comments	For Council use only
B2: Durability	applicable		<input type="checkbox"/> Checked
concrete/masonry	<input checked="" type="checkbox"/> B2/AS1 <input type="checkbox"/> NZS 3101  <input type="checkbox"/> NZS 3404 <input type="checkbox"/> NZS 3602  <input type="checkbox"/> NZS 3604 <input type="checkbox"/> NZS 4229  <input type="checkbox"/> NZS 4230 <input type="checkbox"/> Other [specify]		
timber treatment			
metal			
subfloor and roof/skillion ventilation			
plumbing materials			

**C1-C6: Protection from fire**

Elements	Means of compliance	Reference on drawings, specifications and/or comments	For Council use only
C1-C6: Protection from fire	applicable		<input type="checkbox"/> Checked
C1: Objectives of clauses C1 to C6 (Protection from fire)	<input type="checkbox"/> C/VM2 <input type="checkbox"/> C/VM1 and C/AS1 <input type="checkbox"/> C/AS2 <input type="checkbox"/> C/AS3 <input type="checkbox"/> C/AS4 <input type="checkbox"/> C/AS5 <input type="checkbox"/> C/AS6 <input type="checkbox"/> C/AS7 <input type="checkbox"/> Other [specify]	smoke Alarm	
C2: Prevention of fire occurring			
C3: Fire affecting areas beyond the fire source			
C4: Movement to place of safety			
C5: Access and safety for fire fighting operations			
C6: Structural stability			

**D1-D2: Access**

Elements	Means of compliance	Reference on drawings, specifications and/or comments	For Council use only
D1: Access routes	applicable		<input type="checkbox"/> Checked
slip resistance	<input checked="" type="checkbox"/> D1/AS1 <input type="checkbox"/> AS/2890.1 <input type="checkbox"/> Other [specify]		
landing size			
handrail			
stair dimension including tread and riser			
ramps			



**D1-D2: Access**

Elements	Means of compliance	Reference on drawings, specifications and/or comments	For Council use only
head height clearance			
vehicle access: parking, loading spaces and driveway			
D2: Mechanical installations for access	Not applicable		
lift	<input type="checkbox"/> D2/AS1 <input type="checkbox"/> D2/AS2  <input type="checkbox"/> NZS 5279  <input type="checkbox"/> Other [specify]		
external platform/chairlift			
cable car			

**E1-E3: Moisture**

Elements	Means of compliance	Reference on drawings, specifications and/or comments	For Council use only
E1: Site drainage (surface water)	applicable		<input type="checkbox"/> Checked
secondary flow path	<input checked="" type="checkbox"/> E1/AS1 <input type="checkbox"/> E1/VM1 <input type="checkbox"/> AS/NZS 3500.3 <input type="checkbox"/> AS/NZS 3500.5 <input type="checkbox"/> Other [specify]		
stormwater disposal method: gravity controlled, storage-pumped systems to Council main, soak pit or street kerb with channel			
surface water and field drains to silt sumps			
E1: Roof water dispersal (surface water)			
internal/external gutter including rainwater head, scupper opening details	<input checked="" type="checkbox"/> E1/AS1 <input type="checkbox"/> E1/VM1 <input type="checkbox"/> AS/NZS 3500.3 <input type="checkbox"/> AS/NZS 3500.5 <input type="checkbox"/> Other [specify]		
roof and deck catchment area, pitch (roof and/or deck) including downpipe size and number			
E2: Floor (external moisture)	applicable		
floor height above ground	<input checked="" type="checkbox"/> E2/AS1 <input type="checkbox"/> Other [specify]		
damp-proof membrane			
deck threshold with door details			
E2: Decks and balconies (external moisture)	applicable		
waterproof membrane details including eaves, barges, junction with walls, barrier fixings, outlets and overflows	<input checked="" type="checkbox"/> E2/AS1 <input type="checkbox"/> Other [specify]		
balustrade detail of flashing, capping, junctions and penetration			
E2: Walls (external moisture)	applicable		

**E1-E3: Moisture**

Elements	Means of compliance	Reference on drawings, specifications and/or comments	For Council use only	
building wrap	<input checked="" type="checkbox"/> E2/AS1 <input type="checkbox"/> Other [specify]			
head, jamb and sill flashing details				
cavity or direct fix cladding system including: flashing details for external and internal corners, junctions with other materials, vertical and horizontal control joints				
cladding clearances between floor level, ground level and/or membrane deck level				
tanking/damp proof membrane to retaining wall				
<b>E2: Roof (external moisture)</b>	<b>applicable</b>			
building wrap	<input checked="" type="checkbox"/> E2/AS1 <input type="checkbox"/> Other [specify]			
type of roof: profiled metal roof, concrete, clay tile roof etc				
membrane roof				
flashing of penetrations				
flashings of junctions: eave, ridge, valley, apron and upstands				
Flashing of parapets: junctions and penetration				
skylight details and flashings				
roof spouting, downpipe, solar panel fixings				
<b>E3: Internal moisture</b>	<b>applicable</b>			
wall and floor impervious lining	<input checked="" type="checkbox"/> E3/AS1 <input type="checkbox"/> AS/NZS 3500.2 <input type="checkbox"/> Other [specify]			
wet area membrane				
bath or shower junction details				
floor overflow control for sanitary rooms such as bathroom, toilet, kitchen – only required for more than one unit				

**F1-F8: Safety of users**

Elements	Means of compliance	Reference on drawings, specifications and/or comments	For Council use only
<b>F1: Hazardous agents onsite</b>	<b>Not applicable</b>		<input type="checkbox"/> Checked
contaminated site	<input type="checkbox"/> F1/VM1 <input type="checkbox"/> Other [specify]		



## F1-F8: Safety of users

Elements	Means of compliance	Reference on drawings, specifications and/or comments	For Council use only	
<b>F2: Hazardous building materials</b>	<b>Not applicable</b>			
glass barriers, windows, doors, screens, mould, asbestos etc	<input type="checkbox"/> F2/VM1 <input type="checkbox"/> NZS 4223.3			
bathroom windows	<input type="checkbox"/> Other [specify]			
<b>F4: Safety from falling</b>	<b>applicable</b>			
minimum height for internal and external barriers and barrier opening sizes (ie no toe holds)	<input checked="" type="checkbox"/> F4/AS1 <input type="checkbox"/> FSP Act <input type="checkbox"/> Other [specify]			
minimum window sill height and window restrictors required if there is potential for fall hazard				
<b>F5: Site safety</b>	<b>applicable</b>			
fencing/hoarding/overhead protection	<input checked="" type="checkbox"/> F5/AS1 <input type="checkbox"/> Other [specify]			
traffic plan				
encroachment/Council approval				
<b>F7: Warning systems</b>	<b>applicable</b>			
smoke detectors	<input checked="" type="checkbox"/> F7/AS1 <input type="checkbox"/> Other [specify]			
other warning systems specified				
<b>F8 Signs</b>	<b>Not applicable</b>			
signs	<input type="checkbox"/> F8/VM1 <input type="checkbox"/> F8/AS1 <input type="checkbox"/> Other [specify]			
<b>F9 Restricting access to residential pools</b>	<b>Not applicable</b>			
Pool fencing	<input type="checkbox"/> F9/AS1 <input type="checkbox"/> F9/AS2 <input type="checkbox"/> Other [specify]			

## G1-G15: Services and facilities

Elements	Means of compliance	Reference on drawings, specifications and/or comments	For Council use only	
<b>G1-G3: Bathroom, laundry and kitchen</b>	<b>Applicable</b>		<input type="checkbox"/> Checked	
<b>G1: bathroom fixtures and layout</b>	<input checked="" type="checkbox"/> G1/AS1 <input type="checkbox"/> Other [specify]			
<b>G2: laundry fixtures and layout</b>	<input checked="" type="checkbox"/> G2/AS1 <input type="checkbox"/> Other [specify]			
<b>G3: kitchen fixtures and layout</b>	<input checked="" type="checkbox"/> G3/AS1 <input type="checkbox"/> Other [specify]			

## G1-G15: Services and facilities

Elements	Means of compliance	Reference on drawings, specifications and/or comments	For Council use only	
<b>G4: Ventilation</b>	<b>Applicable</b>			
natural ventilation	<input checked="" type="checkbox"/> G4/AS1 <input type="checkbox"/> G4/VM1 <input type="checkbox"/> NZS 4303 <input type="checkbox"/> AS 1668.2 <input type="checkbox"/> Other [specify]			
mechanical ventilation				
conditioned areas (living area) ventilation				
ventilation of gas-fired appliances				
<b>G6: Airborne and impact sound</b>	<b>Not applicable</b>			
sound transmission class and sound transmission insulation details (vertical and horizontal transfer) including at penetrations (pipes)	<input type="checkbox"/> G6/AS1 <input type="checkbox"/> G6/VM1 <input type="checkbox"/> Other [specify]			
<b>G7-G8: Natural and artificial light</b>	<b>Applicable</b>			
G7: natural light to habitable space (eg glazing greater 10 percent of floor area)	<input checked="" type="checkbox"/> G7/AS1 <input type="checkbox"/> G7/VM1 <input type="checkbox"/> NZS 6703 <input checked="" type="checkbox"/> G8/AS1 <input type="checkbox"/> G8/VM1 <input type="checkbox"/> Other [specify]			
G7: outside visual awareness				
G8: artificial lighting details				
<b>G9: Electricity</b>	<b>Applicable</b>			
Electricity	<input checked="" type="checkbox"/> G9/VM1 <input type="checkbox"/> G9/AS1 <input type="checkbox"/> Other [specify]			
<b>G10-G11: Piped services and gas used as an energy source</b>	<b>Applicable</b>			
G10: ventilation and airflow for gas appliances	<input checked="" type="checkbox"/> G10/AS1 <input type="checkbox"/> G11/AS1 <input type="checkbox"/> NZS 3500.4 <input type="checkbox"/> NZS 5261 <input type="checkbox"/> Other [specify]			
G10: specified gas appliances types				
G11: gas supply type				
<b>G12-G13: Water supply and foul water</b>	<b>Applicable</b>			
G12: water supplies: pipe material, type of hot water system	<input type="checkbox"/> G12/AS1 <input type="checkbox"/> G12/AS2 <input checked="" type="checkbox"/> AS/NZS 3500.1&4 <input type="checkbox"/> AS/NZS 3500.5 <input type="checkbox"/> Other [specify]			



**G1-G15: Services and facilities**

Elements	Means of compliance	Reference on drawings, specifications and/or comments	For Council use only
G13: foul water: pipe sizing, materials, venting and overflow relief gullies	<input type="checkbox"/> G13/AS1 <input type="checkbox"/> G13/AS2 <input type="checkbox"/> G13/AS3 <input checked="" type="checkbox"/> AS/NZS 3500.2 <input type="checkbox"/> AS/NZS 3500.5 <input type="checkbox"/> Other [specify]		

**H1: Energy efficiency**

Elements	Means of compliance	Reference on drawings, specifications and/or comments	For Council use only
H1: Energy efficiency	Applicable		<input type="checkbox"/> Checked
hot water heater and pipe insulation	<input checked="" type="checkbox"/> H1/AS1 <input type="checkbox"/> H1/VM1		
insulation: wall, roof, floor, glazing, etc	<input checked="" type="checkbox"/> NZS 4218 <input type="checkbox"/> NZS 4305 <input type="checkbox"/> ALF design <input type="checkbox"/> Other [specify]		

**Waivers and/or modifications**

Provide details of any waivers and/or modifications required for any sections of the New Zealand Building Code. Specify parts of the code; supporting documentation must be attached. If not applicable, state n/a

**PART 5 – COMPLIANCE SCHEDULE (INSPECTION, MAINTENANCE AND REPORTING PROCEDURES)**

Do not fill in this section if this application is only for a project information memorandum

Is a cable car installed?	<input type="checkbox"/> Yes (a compliance schedule is required, continue completing this section of the form)								For Council use only  <input type="checkbox"/> Checked
	<input checked="" type="checkbox"/> No								
The following system is existing, being altered, added to, or removed in the course of the building work	Existing	New	Altered	Added	Removed	Inspection performance standards	Maintenance performance standards	Reporting frequency	
Cable car	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/> Checked
If existing cable car, please state the Building Warrant of Fitness No.									<input type="checkbox"/> Checked



## CHECKSHEET

### Single Residential Dwelling and Accessory Building (Form 118A)

Use for single stand-alone dwellings, dwelling additions and/or alterations, relocated buildings repiles, garages, decks, sheds, retaining walls, etc

This checklist shows you the information that has to be supplied with your building consent application. Please attach **1 copy** of the following information (unless otherwise specified) with your completed Building Consent Application form.

Please tick each relevant box in the selection box as you attach the information. If the section is not relevant to your application check the Not Applicable box as appropriate. If part of a section is not relevant leave the check box blank. Please check each section carefully and complete those sections that are relevant to your project. This check sheet is to be submitted with the building consent application.

Once you have attached all the required information, please check for completeness as an incomplete application or lack of any supporting information will mean that your application cannot be accepted for processing.

### REQUESTS FOR FURTHER INFORMATION CAUSE DELAYS IN THE ISSUE OF BUILDING CONSENT.

Attached documents included for:	Select the appropriate box for the documents provided	Council use only
<b>1. General – Complete for all applications</b>		
<b>Building Consent Application Form (1 copy)</b> Completed and signed by the owner or by an agent on behalf of the owner	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Checked
<b>Restricted Building Work (RBW)</b> A design memorandum is required from 1 or more licensed building practitioners (LBP) who have carried out or supervised the design work.	<input checked="" type="checkbox"/>	
<b>Proof of ownership (1 copy)</b> One recent copy of <u>current</u> certificate/s of title (i.e. not older than 3 months) and one copy of purchase agreement (if recently purchased) or one copy of relevant portions of current lease	<input checked="" type="checkbox"/>	
<b>Locality plan (1:500) showing:</b> Physical location of the subject building in relation to streets or landmarks, north point, name of building and lot and DP number	<input checked="" type="checkbox"/>	
<b>Application fee</b> Applications will not be accepted without payment of the appropriate fees. Fees payable are set out in the published fee schedule	<input checked="" type="checkbox"/>	
<b>2 Demolition / Removal – Applicable <input type="checkbox"/> Not applicable <input checked="" type="checkbox"/></b>		
<b>COMPLETE FOR ALL PROJECTS INVOLVING DEMOLITION OF SIGNIFICANT PARTS OF BUILDINGS OR THE DEMOLITION OR REMOVAL OF WHOLE BUILDINGS.</b>  <b>Note: Where the project is <u>only</u> for the complete removal or demolition of a building you are not required to complete any further sections</b>		<input type="checkbox"/> Checked
<b>Means of barricading the site</b> Provide details of temporary barriers, gates which swing inwards or other means of restricting public access to the area	<input type="checkbox"/>	
<b>Proposed tipping location for demolition materials (address/landfill)</b>	<input type="checkbox"/>	
<b>Hazardous building materials</b>	<input type="checkbox"/>	



Provide safety plan detailing the safe handling and disposal of hazardous materials		
<b>Site management plan covering</b> management to control silt run off, noise and dust	<input type="checkbox"/>	
<b>Proposed destination for relocated building</b>	<input type="checkbox"/>	
<b>Access to and from the site including (use of kerb and crossings)</b>	<input type="checkbox"/>	
<b>Specify termination of all existing services.</b> Urban sewer sealed at council main.	<input type="checkbox"/>	
<b>3 Foundations / Floor</b> - Applicable - <input checked="" type="checkbox"/> Not applicable <input type="checkbox"/>		
<b>COMPLETE FOR ALL NEW BUILDINGS, FOR EXISTING BUILDINGS WHERE THE FOOTPRINT OF THE BUILDING WILL CHANGE OR WHERE AN ADDITIONAL STOREY IS BEING ADDED</b>		<input checked="" type="checkbox"/> Checked
<b>Site Plan (1:100) showing</b> Dimensions of all boundaries, north point, finished floor levels, ground contours (extended to boundaries) and/or levels, site area, street name and number, lot and DP number, outline of building and distances to boundaries	<input checked="" type="checkbox"/>	
<b>Foundation plan (1:100/1:50) showing:</b> dimensions of all new foundations, sub-floor, including bracing, footing details, piles and footings if a concrete slab, show basic details including reinforcing and contractions joints, , if the addition is an upper storey show details on upgrading existing foundations, joints, piles, etc, indicate ventilation to sub floor spaces.	<input checked="" type="checkbox"/>	
<b>Subfloor bracing</b> Provide subfloor bracing plan and calculations for all piled structures. Where the structure is specifically engineered, this should be included with the structural calculations  Subfloor bracing plan and calculations are required where an additional storey is to be added. Sub-floor bracing for decks projecting more than 2m from the house.	<input type="checkbox"/>	
<b>Foundation details</b> Details including reinforcing and connections	<input checked="" type="checkbox"/>	
<b>4 Construction</b> - Applicable <input checked="" type="checkbox"/> Not applicable <input type="checkbox"/>		
<b>COMPLETE FOR ALL NEW STRUCTURES OR ALTERATIONS TO EXISTING STRUCTURES</b>		<input checked="" type="checkbox"/> Checked
<b>Existing floor plan (1:100/1:50) (for additions and alterations only)</b> all levels, all designated spaces, all removals, sanitary fixtures, smoke detectors	<input type="checkbox"/>	
<b>Proposed floor plans (1:100/1:50)</b> <input type="checkbox"/> oom dimensions, location of partitions, all designated spaces, all floors (new or altered), location of sanitary fixtures, stairs, barriers, handrails, floor joists and beams, floor joist layout for each level with timber floors, smoke detectors, access into the building (including ground and floor levels)	<input checked="" type="checkbox"/>	
<b>Wall bracing plan (1:100/1:50)</b> Bracing details and calculations for wall bracing (also required for existing lower storeys where an additional storey is being added). Location, type and number of bracing elements to indicate compliance with NZS 3604 (include calculations) If the bracing was specifically designed by a structural engineer, provide calculations (required for specific design wind zones and lateral distribution of upper floor loads where lower storey bracing is provided in walls beyond the upper storey footprint).	<input checked="" type="checkbox"/>	
<b>Sections and details (1:50/1:20/1:10)</b> stairs, handrails, decks and decking, insulation systems and materials to floors, walls and roof including a calculation sheet showing the method of compliance with H1 of the Building Code. Specific engineering design required for barriers providing safety from falling on upper decks.  Framing sizes, beams, lintels, trusses including fixing and other structural items. Lintels carrying point loads, such as from girder trusses, require specific engineering design. Roof cladding, eaves, fascias, gutters, flashings to openings. Fire rated systems on all walls - closer than 1 metre to boundary. Stud heights of rooms and total height from lowest ground floor level to top of ridge. Truss layout supported by	<input checked="" type="checkbox"/>	

design certificate and design of fixing details and load path to ground. Retaining wall details e.g. type, height of retained ground, relationship to boundary, waterproof membrane and proposed drainage. truss design details.		
<b>Application for Discretion re Upgrades (if requested)</b> <b>(pursuant to section 112(2) of the Building Act 2004) including</b> Supporting information as to why the project would not proceed if the building was required to comply Description of improvements proposed related to means of escape from fire.	<input type="checkbox"/>	
<b>5 Structural</b> Applicable <input checked="" type="checkbox"/> Not applicable <input type="checkbox"/>		
<b>Structural calculations</b> If any design work required the services of a structural engineer, attach 2 copies of the calculations with this application along with structural drawings The calculations must be prefaced with information explaining the design philosophy and justification of assumptions and methodologies used in analysis	<input type="checkbox"/>	<input checked="" type="checkbox"/> Checked
<b>Producer statements</b> If this application for consent relies on any producer statements certifying compliance with the New Zealand Building Code, a copy must be attached with this application. (Note all structural producer statements are required to have accompanying calculations). A peer review of the SED may be required. Please refer to the BCA's public information for when a peer review is required. This can be found at <a href="http://www.swdc.govt.nz/node/19">http://www.swdc.govt.nz/node/19</a> If a peer review is proposed or has been completed for the SED then confirmation is required at the consent application stage that the peer reviewing engineer is a CPEng and has the correct competence to complete the peer review. A printout from the IPENZ register for CPEng engineers confirming their CPEng status and a letter from IPENZ confirming their area of expertise is required.	<input checked="" type="checkbox"/>	
<b>6 External</b> Applicable <input checked="" type="checkbox"/> Not applicable <input type="checkbox"/>		
<b>COMPLETE FOR NEW BUILDINGS OR EXISTING BUILDINGS WITH ALTERATIONS TO THE EXTERNAL SHELL</b>		<input checked="" type="checkbox"/> Checked
<b>Elevations (1:100/1:50)</b> Accurate lines from boundary to boundary on each elevation, relevant District Plan daylight control lines, the maximum height on each elevation, location of door and window openings, fixed and opening sashes, sill heights, floor levels in relation to ground levels, exterior cladding nominated to all elevations, down pipes and spouting, ventilators to sub-floor area (suspended floors only).	<input checked="" type="checkbox"/>	
<b>Risk assessment</b> <i>(Risk matrix in E2/AS1 may be used)</i> Consider exposure, design and detailing to support appropriate selection of cladding	<input checked="" type="checkbox"/>	
<b>Cladding details (1:50/1:20/1:10)</b> Provide details around all penetrations, joinery and other junctions at a level appropriate to the level of risk e.g. roof/wall, balcony/ wall, junction of different types of cladding, backflashing details for cavity systems	<input checked="" type="checkbox"/>	
<b>Product certification</b> Supply copies of product certificates relied on as compliance documents	<input checked="" type="checkbox"/>	
<b>Alternative solutions</b> If the proposal uses products or systems that are not covered in the Acceptable Solutions of clause E2 of the building code provide supporting current information including independent test results (full signed reports), case studies, expert opinion (including evidence of experience/qualification, basis for forming opinion, and statement of independence) etc to demonstrate compliance.	<input type="checkbox"/>	
<b>7 Services</b> -Applicable <input checked="" type="checkbox"/> Not applicable <input type="checkbox"/>		
<b>COMPLETE FOR ALL PROJECTS WITH NEW INSTALLATION OR ALTERATION OF PLUMBING OR DRAINAGE SERVICES</b>		<input checked="" type="checkbox"/> Checked
<b>Plumbing and Drainage plan (1:100)</b> fixtures and fittings, hotwater system(s)	<input checked="" type="checkbox"/>	



<p>If the building is more than one storey with sanitary fittings on upper floors, provide an isometric layout showing wastes, pipes and falls.</p> <p>Drainage layout with inspection bends and junctions indicated for both sewer and stormwater, any other drainage on site including council mains and retaining wall field drains.</p> <p>Ventilation of sanitary rooms.</p> <p>Calculations for sizing of downpipes, gutters and soakage pits.</p>		
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8 Specifications		
<b>COMPLETE FOR ALL APPLICATIONS</b>		<input checked="" type="checkbox"/> Checked
<b>Specification: General</b> elements of structure (size, spacing, timber treatment) finish of fixings to meet durability requirements, plumbing and drainage materials and design that installation is to comply with, wet area surfaces, ventilation systems, flooring slip resistance for access routes, glazing, type of smoke detectors (including existing smoke detectors where they will remain)	<input checked="" type="checkbox"/>	
<b>External claddings</b> For each of the following claddings provide details of the product name, manufacturer, maintenance requirements and warranties offered  Building wraps, Wall claddings, Roof claddings, Membranes (roofs and decks), Tanking, Joinery.	<input checked="" type="checkbox"/>	
<b>9 Change of use</b> -Applicable <input type="checkbox"/> Not applicable <input checked="" type="checkbox"/>		
<b>COMPLETE FOR ALL EXISTING BUILDINGS WHERE THE PROPOSAL INVOLVES FORMING A HOUSEHOLD UNIT WHERE ONE DID NOT EXIST BEFORE</b>		<input checked="" type="checkbox"/> Checked
<b>Assessment of the building for compliance with the building code</b> Section 115(a) of the Building Act 2004 requires that the work comply fully with all clauses of the building code, as near as reasonably practicable.	<input type="checkbox"/>	
<b>Reasonably practicable</b> The above assessment must relate to all building code clauses. If the proposal is for the project to meet anything less than full compliance with any clauses, your application must clearly state your reasoning, with supporting documentation, and show how you will meet the highest level of compliance that can be considered reasonably practicable.	<input type="checkbox"/>	

## Office Use

### VETTING

Accepted ☒ Refused ☐

Reason for acceptance or refusal: Required documents supplied

Signed: S. Edney

Date: 14/8/18

### BUILDING LEVEL

Level Description	Level	Building Work Description
Residential outbuildings and ancillary buildings	R1	Residential outbuildings and ancillary buildings – as defined by the Building Regulations 1992. Detached dwellings (SH) designed to a common standard (e.g. NZS 3604, NZS 4229) that are single storey and have an E2/AS1 risk matrix score less than or equal to 6.
Detached dwellings (SH or SR)	R2	Detached dwellings (SH) designed to a common standard (e.g. NZS 3604, NZS 4229) that are less than or equal to two storeys and have an E2/AS1 risk matrix score less than or equal to 12.
	R3	Detached dwellings (SH) or other dwellings (SR) that are less than or equal to three storeys but limited to vertical plane fire separation and direct egress to the outside. E2/AS1 risk matrix score of 13-20.
Commercial, Industrial and Communal	C1	Commercial, industrial and communal non residential buildings and their associated outbuildings and ancillary buildings equal to or less than two storeys and an occupancy load of equal to or less than 100 people or SR or SA residential buildings up to two storeys and with horizontal fire separation.
	C2	Commercial, industrial, communal residential and communal non residential buildings equal to or less than four storeys and an occupancy load of equal to or less than 500 people or SC or SD that are single storey.
High rise and/or specialist buildings	C3	All uses of buildings that are over four storeys high, or contain over 500 occupants or SC or SD greater than single storey.

Building Level (from above): R1

Reason for decision: Residential dwelling with risk score = 6

Date: 14/8/18

Outcome: SWDC BCA to process

### ALLOCATION

BCO ☒

P&D ☒

Other consultants ☐

Health ☐





**COMPUTER FREEHOLD REGISTER  
UNDER LAND TRANSFER ACT 1952**



  
R. W. Muir  
Registrar-General  
of Land

**Search Copy**

**Identifier** WN38A/448  
**Land Registration District** Wellington  
**Date Issued** 28 November 1990

**Prior References**

WN35D/595

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**Estate** Fee Simple  
**Area** 3032 square metres more or less  
**Legal Description** Lot 6 Deposited Plan 70868

**Proprietors**

Nigel Kevin Gattsche

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**Interests**

9577452.1 Mortgage to Southland Building Society - 25.11.2013 at 1:25 pm

Transaction Id  
Client Reference

chpublic3

Search Copy Dated 7/05/18 11:26 am, Page 2 of 2

Register Only

LAND DISTRICT WELLINGTON  
SURVEY BLK. & DIST. VIII. ONOKE  
NZMS 261 SHT R. 20 RECORD MAP No. 8.1

LOTS 2-7  
BEING SUBDIVISION OF  
LOT 1 DRG7585

TERRITORIAL AUTHORITY SOUTH WAIKAREITIA DISTRICT  
Surveyed by TSE GROUP LTD  
Scale 1:1000 Date SEPT 1990

APPROVALS  
R. Cameron  
R. Cameron  
REGISTERED PLANNING  
PLANNING TO A RESOLUTION OF THE SOUTH WAIKAREITIA DISTRICT COUNCIL PASSED ON THE 20 DAY OF SEPTEMBER 1990 APPROVING PURSUANT TO SECTION 220 OF THE LOCAL GOVERNMENT ACT 1974 THIS SURVEY PLAN AND CERTIFYING THAT THE PLAN HAD IN ACCORDANCE WITH THE REQUIREMENTS AND PROVISIONS OF THE OPERATIVE DISTRICT ORDER IN FORCE FOR THE AREA TO WHICH THE PLAN RELATES AT THE DATE OF ADOPTION OF THE SURVEY PLAN THE COMMON DEED OF THE SOUTH WAIKAREITIA DISTRICT COUNCIL WAS ATTACHED HERE TO IN THE RECORDS OF THE DISTRICT COUNCIL.

PLANNING TO SEE 308 (1) (B) (1) OF THE LOCAL GOVERNMENT ACT 1974 (PAPER) CERTIFY THAT ALL THE CONDITIONS SPECIFIED OR REFERRED TO ON THE SURVEY PLAN OF SUBDIVISION HAVE BEEN COMPLIED WITH TO THE SATISFACTION OF THE SOUTH WAIKAREITIA DISTRICT COUNCIL DATED AT WAIKAREITIA ON THIS 20 DAY OF September 1990

Total Area 70445 ha  
Comprised in ALLOT 950/595

1. REGENT DOUGLAS GAWY  
Registered Surveyor and holder of an actual practicing certificate for who may act as a registered survey pursuant to section 23 of the Survey Act 1980. I hereby certify that this plan for subdivision has been surveyed by me or under my direction, that both plan and survey are correct and have been made in accordance with the Survey Regulations 1972 by any regulations made in accordance therewith.  
Dated at Wellington this 20 day of September 1990  
Signature of Regent Douglas GAWY

Field Book 51/4 (1425) Terrace Block 1479 p. 189  
Reference Plans DRG7585, DRG7586, DRG7587, DRG7588, DRG7589, DRG7590, DRG7591, DRG7592, DRG7593, DRG7594, DRG7595, DRG7596, DRG7597, DRG7598, DRG7599, DRG7600, DRG7601, DRG7602, DRG7603, DRG7604, DRG7605, DRG7606, DRG7607, DRG7608, DRG7609, DRG7610, DRG7611, DRG7612, DRG7613, DRG7614, DRG7615, DRG7616, DRG7617, DRG7618, DRG7619, DRG7620, DRG7621, DRG7622, DRG7623, DRG7624, DRG7625, DRG7626, DRG7627, DRG7628, DRG7629, DRG7630, DRG7631, DRG7632, DRG7633, DRG7634, DRG7635, DRG7636, DRG7637, DRG7638, DRG7639, DRG7640, DRG7641, DRG7642, DRG7643, DRG7644, DRG7645, DRG7646, DRG7647, DRG7648, DRG7649, DRG7650, DRG7651, DRG7652, DRG7653, DRG7654, DRG7655, DRG7656, DRG7657, DRG7658, DRG7659, DRG7660, DRG7661, DRG7662, DRG7663, DRG7664, DRG7665, DRG7666, DRG7667, DRG7668, DRG7669, DRG7670, DRG7671, DRG7672, DRG7673, DRG7674, DRG7675, DRG7676, DRG7677, DRG7678, DRG7679, DRG7680, DRG7681, DRG7682, DRG7683, DRG7684, DRG7685, DRG7686, DRG7687, DRG7688, DRG7689, DRG7690, DRG7691, DRG7692, DRG7693, 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## Sara Edney - Building Control Officer

---

**From:** Gattsche Nigel, MAJ <NIGEL.GATTSCHE@NZDF.mil.nz>  
**Sent:** Friday, 10 August 2018 11:39 a.m.  
**To:** Sara Edney - Building Control Officer  
**Subject:** RE: UNCLASSIFIED RE: BC Application

Hi Sara,

Looking at the fees, will this project fall within the "Transportable Dwelling (Yard built)"? as this is effectively what this is.

Cheers Nigel

### Major Nigel GATTSCHE

Staff Officer Joint Operational Plans Contingencies (J5R-C)  
**HEADQUARTERS JOINT FORCES NEW ZEALAND**

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Internal: (345) 6506  
[www.nzdf.mil.nz](http://www.nzdf.mil.nz)



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NEW ZEALAND**

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**From:** Sara Edney - Building Control Officer [mailto:buildingsupport@swdc.govt.nz]  
**Sent:** Friday, 10 August 2018 11:34 a.m.  
**To:** Gattsche Nigel, MAJ <NIGEL.GATTSCHE@NZDF.mil.nz>  
**Subject:** RE: UNCLASSIFIED RE: BC Application

Thanks Nigel

### Sara Edney

Building Control Officer  
South Wairarapa District Council

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**From:** Gattsche Nigel, MAJ [mailto:NIGEL.GATTSCHE@NZDF.mil.nz]  
**Sent:** Friday, 10 August 2018 11:32 a.m.  
**To:** 'Willem van der Laan' <[cad.services.design@gmail.com](mailto:cad.services.design@gmail.com)>; Sara Edney - Building Control Officer <[buildingsupport@swdc.govt.nz](mailto:buildingsupport@swdc.govt.nz)>; Nigel Gattsche <[nigelgattsche01@gmail.com](mailto:nigelgattsche01@gmail.com)>  
**Subject:** UNCLASSIFIED RE: BC Application

Willem, Sara

Details of practitioners as below:

Builder – Nigel Gattsche ( contact details as for owner)  
LBP Site 2 – licence number LBP 121026

Plumber – Nigel Malneek  
Malneek Plumbing  
Email – [malneek\\_plumbing@yahoo.co.nz](mailto:malneek_plumbing@yahoo.co.nz)



Ph – 027 2900518  
Licence – 16359

Electrician – Richard Boyd  
Boyd Electrical  
Email – [boydelectrical@gmail.com](mailto:boydelectrical@gmail.com)  
Ph – 0272693583  
Licence – E15407

Cheers Nigel

**Nigel GATTSCHÉ**

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**From:** Willem van der Laan [<mailto:cad.services.design@gmail.com>]

**Sent:** Friday, 10 August 2018 8:22 a.m.

**To:** Sara Edney - Building Technical Support Officer <[buildingsupport@swdc.govt.nz](mailto:buildingsupport@swdc.govt.nz)>; Gattsche Nigel, MAJ <[NIGEL.GATTSCHÉ@NZDF.mil.nz](mailto:NIGEL.GATTSCHÉ@NZDF.mil.nz)>; Nigel Gattsche <[nigelgattsche01@gmail.com](mailto:nigelgattsche01@gmail.com)>

**Subject:** BC Application

Hi Sara

Please find attached the BC application plans and documents for the proposed batch in Lake Ferry.  
The client has been copied in also.

Nigel, can you please reply all to authorise me as your agent for this application (for the SWDC records)

Regards

--

***Willem van der Laan***

**CAD Services and Design**

219 Masterton Stronvar Rd, RD10, Masterton 5890, New Zealand, Ph: 06-370-1310, Mobile: 021-204-6155,  
Website: [www.cadservicesdesign.com](http://www.cadservicesdesign.com)

*Hours of business: Monday-Friday, Saturday (by appointment), Sunday (Closed).*

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## Sara Edney - Building Control Officer

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**From:** Russell Hooper- Planning Manager  
**Sent:** Tuesday, 28 August 2018 12:29 p.m.  
**To:** Honor Clark- Temp Planner  
**Subject:** FW: UNCLASSIFIED RE: 103 Lake Ferry Road, Lake Ferry

**Russell Hooper**  
Planning Manager

---

**From:** Gattsche Nigel, MAJ [<mailto:NIGEL.GATTSCHE@NZDF.mil.nz>]  
**Sent:** Friday, 10 August 2018 1:55 p.m.  
**To:** Russell Hooper- Planning Manager  
**Subject:** RE: UNCLASSIFIED RE: 103 Lake Ferry Road, Lake Ferry

Hi Russel,  
Thanks, Would appreciate it you could return all the documents  
Cheers Nigel

**Nigel GATTSCHE**  
T +64 (4) 529 6506 M: +64 (27) 4472785 (pers)

---

**From:** Russell Hooper- Planning Manager [<mailto:Russell.Hooper@swdc.govt.nz>]  
**Sent:** Friday, 10 August 2018 1:37 p.m.  
**To:** Gattsche Nigel, MAJ <[NIGEL.GATTSCHE@NZDF.mil.nz](mailto:NIGEL.GATTSCHE@NZDF.mil.nz)>  
**Cc:** Pamela Attrill - Resource Management Officer <[pamela.attrill@swdc.govt.nz](mailto:pamela.attrill@swdc.govt.nz)>  
**Subject:** RE: UNCLASSIFIED RE: 103 Lake Ferry Road, Lake Ferry

Hi Nigel,

On this basis, no resource consent is required. Note that any signs would need to comply with the District Plan.

On your instruction we will return or bin the resource consent application.

Regards,

**Russell Hooper**  
Planning Manager

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**From:** Gattsche Nigel, MAJ [<mailto:NIGEL.GATTSCHE@NZDF.mil.nz>]  
**Sent:** Friday, 10 August 2018 1:33 p.m.  
**To:** Russell Hooper- Planning Manager  
**Subject:** UNCLASSIFIED RE: 103 Lake Ferry Road, Lake Ferry

Hi Russell.

Thanks for your email. In response to your questions –

There is currently only one residence on the property.

The building g will not be plumbed or connected into services less a temporary power connection for lighting. The intent of the project is to construct a “model “ for future development. There will be no permanent signage as its purpose is not a show home per-se’.

The finished unit will be available for sale and removal.

The outcome will be a submission to government for an interim stepping stone solution for first home buyers. Any further construction work related to that outcome will be undertaken off site.

Thanks Nigel

**Nigel GATTSCHE**

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**From:** Russell Hooper- Planning Manager [<mailto:Russell.Hooper@swdc.govt.nz>]

**Sent:** Friday, 10 August 2018 1:17 p.m.

**To:** 'nigelgattsche01@gmail.com' <[nigelgattsche01@gmail.com](mailto:nigelgattsche01@gmail.com)>; Gattsche Nigel, MAJ <[NIGEL.GATTSCHE@NZDF.mil.nz](mailto:NIGEL.GATTSCHE@NZDF.mil.nz)>

**Subject:** 103 Lake Ferry Road, Lake Ferry

Hi Nigel,

You have submitted a resource consent application for the construction of a “tiny house”.

The number of dwellings allowed on the site is linked to the size of the site. At 3,000m<sup>2</sup>, three dwellings are permitted (the size of the house does not come into consideration).

So if you already have three houses you will need resource consent if this is the third, then you won't.

I'm a little unclear what the building is for is it is not to be plumbed? The application notes that it is to trial future panel systems. Is it a show home? Are any signs proposed? If it is a show home then a resource consent would be required to cover this and signs might also trigger resource consent if over 0.5m<sup>2</sup>.

Regards,

**Russell Hooper**  
**Planning Manager**



South Wairarapa District Council  
06 306 9611 x 845  
PO Box 6 Martinborough 5741  
19 Kitchener Street Martinborough 5711  
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# Mike's Design Solutions Ltd

Ph 03 2608163

Cell 027 6007072

E: [mikesims@xtra.co.nz](mailto:mikesims@xtra.co.nz)

Date: 24/8/18

Dear Willem

Re:BC 180320 Batch, N Gattsche, 103 Lake Ferry Rd, Lake Ferry

I have processed this building consent application on behalf of the South Wairarapa District Council. Below is a list of further information required to continue processing this application. The processing clock has been stopped until the questions below have been answered.

1. Page 1- please revise the notes to show Corrosion zone D?
2. Page 2- label what the right hand plan is of? Label the use of the rooms?
3. Page 3- label the external materials on the elevations? Show the FFL to FGL height? Show the cladding type to the Elev 2 wing walls? Show the log burner flue?
4. Page 4. The floor joist span doesn't comply with NZS 3604. Provide verification for the spans? The ground floor cantilevered deck is outside the scope of NZS 3604. Provide a compliance method? Show the dimension the floor joist cantilevers over the bearers? Mezzanine floor. Show what supports the Mezzanine 140 x 90 trimmer either end? Show the rating for the mezzanine stringer fixings to meet NZS 3604 (Bugle screws)? The footing note for the deck is pointing to the wrong end of the bearers? Show a double floor joist under the internal load bearing wall?
5. Page 6. External walls- delete the bottom plate fixings to concrete slab. Show how the ladder complies? Show the loft opening windows have 760 mm to the sill to comply with Safety from Falling?
6. Page 3, 6, 7 & 8. The raking window lintels and walls are outside the scope of NZS 3604. The load on these is not only downwards, but partly sideways as well. Provide specific design for the wall structure outside NZS 3604?

7. Page 8- label the wall cladding type and cavity on the details? The corrugated roof which falls in two different directions is outside the scope of E2/AS1. Show the roof pitch still meets the minimum 8 degrees, with the average of the two directions, to show the lap compliance will still comply? Show how the flue flashing will comply with the roof falling in two directions? The verandah roof framing doesn't have sufficient information to show how it complies. Provide all the missing structural compliance information for it? Show some form of blocking to stop the purlin/rafters from rolling?
8. Page 10 wall bracing. Review the whole design to show compliance? M1 is missing off the plans. The element heights in the calculations aren't correct. N1 & 2 plus B1 & 2 walls don't go right to the external top plate heights, so their bracing is outside the scope of NZS 3604.
9. Show how the cantilevered deck complies for water proofing with the external cladding?
10. Provide details for the bottom ends of the raking flashings? That is the window heads and the verandah apron.
11. The Nelson Pine project report includes designs outside NZS 3604. Provide a PS1 for the compliance of the report, or show some other means that it complies with B1 Structure?
12. Provide technical information for the Covertex 407 roof wrap to show it complies in EH wind zone?
13. Please supply a door sill detail for both cladding types?
14. Please provide installation instructions for the log burner proposed, including that it meets the Emission standards? The Spectrum test report 0393 provided, doesn't show compliance with anything. It doesn't show the fire tested, or the standard it was tested to.

Once all the information has been revised, please email the reply to the above address. The email should show the consent number and include a cover letter. We request that you provide this information within 20 working days, highlighting all changes on the drawings. If you require clarification, please feel free to call me.

Yours Faithfully

Mike Sims

National Diploma in Building Control Surveying  
(Small, Medium and Large Buildings)



# Mike's Design Solutions Ltd

Ph 03 2608163

Cell 027 6007072

E: [mikesims@xtra.co.nz](mailto:mikesims@xtra.co.nz)

Date: 24/8/18

Dear Willem

Re:BC 180320 Batch, N Gattsche, 103 Lake Ferry Rd, Lake Ferry

I have processed this building consent application on behalf of the South Wairarapa District Council. Below is a list of further information required to continue processing this application. The processing clock has been stopped until the questions below have been answered.

1. Page 1- please revise the notes to show Corrosion zone D?

Revised on sheet 1

2. Page 2- label what the right hand plan is of? Label the use of the rooms?

Revised on sheet 2 – Mezz. Floor

3. Page 3- label the external materials on the elevations? Show the FFL to FGL height? Show the cladding type to the Elev 2 wing walls? Show the log burner flue?

All added to sheet 3

4. Page 4. The floor joist span doesn't comply with NZS 3604. Provide verification for the spans? The NP Deflection report is attached to verify these are OK.(FJ2)

The ground floor cantilevered deck is outside the scope of NZS 3604. Provide a compliance method? See also the deflection report.

Show the dimension the floor joist cantilevers over the bearers?

CL of bearers below joists added to sheet 4

Mezzanine floor. Show what supports the Mezzanine 140 x 90 trimmer either end? NP Deflection report attached (BR2)

Show the rating for the mezzanine stringer fixings to meet NZS 3604 (Bugle screws)? **Revised to M12 coach screws.**

The footing note for the deck is pointing to the wrong end of the bearers? Show a double floor joist under the internal load bearing wall? **All corrected on sheet 5**

5. Page 6. External walls- delete the bottom plate fixings to concrete slab. **Deleted** Show how the ladder complies? **Detail on sheet 6 (bottom LH corner) shows the pitch of 200mm and angle of 70 degrees to comply with a step type ladder as per NZBC D1.** Show the loft opening windows have 760 mm to the sill to comply with Safety from Falling? **Loft windows are hopper windows, hinged at the bottom only. These cannot open more than 100mm.**
6. Page 3, 6, 7 & 8. The raking window lintels and walls are outside the scope of NZS 3604. The load on these is not only downwards, but partly sideways as well. Provide specific design for the wall structure outside NZS 3604?

**I agree with the part sideways loading but if I replace the top plates with 2/140x45, acting as a rafter then I would comply. At 10 and 15 degrees the sideways loading would be absolutely minimal.**

7. Page 8- label the wall cladding type and cavity on the details? **All annotated.**

The corrugated roof which falls in two different directions is outside the scope of E2/AS1. Show the roof pitch still meets the minimum 8 degrees, with the average of the two directions, to show the lap compliance will still comply? Show how the flue flashing will comply with the roof falling in two directions? **The roof has 2 slopes, 10 and 15 degrees and complies for corrugate. We have revised the lower side of the roof and allowed for a small internal gutter along that side to accommodate any sideways discharge of rainwater.**

The verandah roof framing doesn't have sufficient information to show how it complies. Provide all the missing structural compliance information for it? Show some form of blocking to stop the purlin/rafters from rolling? **I have revised the annotation to the veranda roof. The veranda beam runs horizontal, the stringer is sloping and matches the roof pitch on that side. All rafters gradually meet from the sloping stringer to the horizontal verandah beam. To keep the structure looking neat I have allowed**

for all members to be the same size (140x45). The triangle protruding out is supported on one timber post.

8. Page 10 wall bracing. Review the whole design to show compliance? M1 is missing off the plans. The element heights in the calculations aren't correct. N1 & 2 plus B1 & 2 walls don't go right to the external top plate heights, so their bracing is outside the scope of NZS 3604. **Windows had changed a bit and I failed to revise the bracing schedule along with that. Revised and attached.**
9. Show how the cantilevered deck complies for water proofing with the external cladding? Deck is not cantilevered. It does have piles underneath the wing-walls. **The structure is attached to the walls as a normal ribbon plate, spaced off the cladding by 15mm and with a epdm washer. The front member is sized as a trimmer joist.**
10. Provide details for the bottom ends of the raking flashings? That is the window heads and the verandah apron. **Branz Build article and details attached separately, Not added to window schedule.**
11. The Nelson Pine project report includes designs outside NZS 3604. Provide a PS1 for the compliance of the report, or show some other means that it complies with B1 Structure?

**NP program provides the same information as Design IT. It is not actually a PS1. NP does not automatically provide all design data. I have printed these out now and attached .**

12. Provide technical information for the Covertex 407 roof wrap to show it complies in EH wind zone?

**Data sheet attached**

13. Please supply a door sill detail for both cladding types?

**Added to sheet 7**

14. Please provide installation instructions for the log burner proposed, including that it meets the Emission standards? The Spectrum test report 0393 provided, doesn't show compliance with anything. It doesn't show the fire tested, or the standard it was tested to.

**Info attached.**

Once all the information has been revised, please email the reply to the above address. The email should show the consent number and include a cover letter. We request that you provide this information within 20 working days, highlighting all changes on the drawings. If you require clarification, please feel free to call me.



Yours Faithfully

Mike Sims

National Diploma in Building Control Surveying  
(Small, Medium and Large Buildings)

# Mike's Design Solutions Ltd

Ph 03 2608163

Cell 027 6007072

E: [mikesims@xtra.co.nz](mailto:mikesims@xtra.co.nz)

Date: 31/8/18

Dear Willem

Re:BC 180320 Batch, N Gattsche, 103 Lake Ferry Rd, Lake Ferry

I have rechecked this building consent application on behalf of the South Wairarapa District Council. Below is a list of further information required to continue processing this application. The processing clock has been stopped until the questions below have been answered.

1. Page 2- Label the use of the rooms?
2. Page 3- label all the external materials on the elevations?
3. Page 4. Show the dimension the main floor joist cantilevers over the bearers? The footing note for the deck shows 2 verandah posts now, but only one is proposed?
4. Page 4-Show compliance for the small left hand deck? The Nelson Pine BR1 show 2/190 x 45 required, but the plan shows one. For the wall cladding to comply it needs to go a minimum of 50mm past the floor level. Show how the external trimmer joist is supported at each end, and also allows the cladding to comply with E2?
5. Page 3, 6, 7 & 8. The raking window lintels and walls are outside the scope of NZS 3604. The load on these is not only downwards, but partly sideways as well. Provide specific design for the wall structure outside NZS 3604? Adding a 2/140 x 45 double top plate doesn't change the loads transferred.
6. Page 8- label the wall cladding type and cavity on the details?
7. Page 8-The corrugated roof which falls in two different directions is outside the scope of E2/AS1 and is an Alternative solution. Show the roof pitch still meets the minimum 8 degrees, with the average of the two directions, to show the lap compliance will still comply? Show how the flue flashing will comply with the roof falling in two directions?

8. Page 8-The verandah roof framing doesn't have sufficient information to show how it complies. How is the stringer fixed to the house? How is the verandah beam fixed at the house end?
9. Page 8-Show some form of blocking to stop the purlin/rafters from rolling?
8. Page 10 wall bracing. Review the whole design to show compliance? The element heights in the calculations aren't correct. N1 & 2 plus B1 & 2 walls don't go right to the external top plate heights, so their bracing is outside the scope of NZS 3604. Element A2 has a W4 in the middle of it. Provide a compliant wall bracing design?
10. Provide details for the bottom end of the raking verandah apron flashing?
11. Please show the Spiroloc meets the Emission standards?

Once all the information has been revised, please email the reply to the above address. The email should show the consent number and include a cover letter. We request that you provide this information within 20 working days, highlighting all changes on the drawings. If you require clarification, please feel free to call me.

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Date: 31/8/18

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1. Page 2- Label the use of the rooms?

The rooms have been labelled Bedsit and Mezz floor

2. Page 3- label all the external materials on the elevations?

All materials have been labelled on sheet 3

3. Page 4. Show the dimension the main floor joist cantilevers over the bearers? The footing note for the deck shows 2 verandah posts now, but only one is proposed?

Cantilever dims are 195 CL to the edge and complies. I have deleted one post ( it had recently shifted to the other side. The verandah is triangular and rests on one post only.

4. Page 4-Show compliance for the small left hand deck? The Nelson Pine BR1 show 2/190 x 45 required, but the plan shows one. For the wall cladding to comply it needs to go a minimum of 50mm past the floor level. Show how the external trimmer joist is supported at each end, and also allows the cladding to comply with E2?

Page 4 has been corrected to 2/190x45 joists. I have reconfigured the joist layout and allowed for Bowmac fixings as specified on sheet 4. The trimmer is fixed to the wall as per detail on sheet 5 top LH corner.

5. Page 3, 6, 7 & 8. The raking window lintels and walls are outside the scope of NZS 3604. The load on these is not only downwards, but partly sideways as well. Provide specific design for the wall structure outside NZS 3604? Adding a 2/140 x 45 double top plate doesn't change the loads transferred.

As discussed the lintel over the sloping windows have been calculated as a rafter. NP design sheet R1 is attached and based on a single 190x45 SG8.

6. Page 8- label the wall cladding type and cavity on the details?

All claddings have been annotated and one detail revised.

7. Page 8-The corrugated roof which falls in two different directions is outside the scope of E2/AS1 and is an Alternative solution. Show the roof pitch still meets the minimum 8 degrees, with the average of the two directions, to show the lap compliance will still comply? Show how the flue flashing will comply with the roof falling in two directions?

Sheet 4, elevation 1 shows the shallow part of the roof as 10 degrees and complies with corrugate min angle of 8 degrees.

8. Page 8-The verandah roof framing doesn't have sufficient information to show how it complies. How is the stringer fixed to the house? How is the verandah beam fixed at the house end?

The verandah beam runs horizontal, the stringer runs parallel with the roof line. The connection can be simply made via a compound angle cut and some extra solid blocking and Blue screw or Bugle head screw fixing. The rafters slope from the raking stringer to the verandah beam.

9. Page 8-Show some form of blocking to stop the purlin/rafters from rolling?

The purlins are on the flat, they cannot roll. They will be fixed to EH windzone, ie 2 Blue screws per purlin. This is only for the small verandah roof.

8. Page 10 wall bracing. Review the whole design to show compliance? The element heights in the calculations aren't correct. N1 & 2 plus B1 & 2 walls don't go right to the external top plate heights, so their bracing is outside the scope of NZS 3604. Element A2 has a W4 in the middle of it. Provide a compliant wall bracing design?

Bracing revised and ceiling diaphragm allowed for.

10. Provide details for the bottom end of the raking verandah apron flashing?

There was an incorrect detail on sheet 8 due to a late change. The flashing to the verandah will be a standard apron flashing and can have a cickout as specified to divert water away. The verandah roof is also sheltered by a 600mm overhang to the sides and actually would be in the 45 degree line of protection.

11. Please show the Spiroloc meets the Emission standards?

Heater has been deleted off the plan

Once all the information has been revised, please email the reply to the above address. The email should show the consent number and include a cover letter. We request that you provide this information within 20 working days, highlighting all changes on the drawings. If you require clarification, please feel free to call me.

Yours Faithfully

Mike Sims

National Diploma in Building Control Surveying

(Small, Medium and Large Buildings)



# Mike's Design Solutions Ltd

Ph 03 2608163

Cell 027 6007072

E: [mikesims@xtra.co.nz](mailto:mikesims@xtra.co.nz)

Date: 10/9/18

Dear Willem

Re:BC 180320 Batch, N Gattsche, 103 Lake Ferry Rd, Lake Ferry

I have rechecked this building consent application on behalf of the South Wairarapa District Council. Below is a list of further information required to continue processing this application. The processing clock has been stopped until the questions below have been answered.

1. Page 4-Show compliance for the small left hand deck? BR1 2/190 x 45 bearer does not comply with being supported by a stringer at each end (a stringer is not designed to take the point load of a beam)? Provide technical details for the Bowmac BS108 bracket, and a detail to show what it is fixed to at each end (which still allows the wing wall external cladding to comply)?
2. Page 7. R1 rafters don't comply as window lintels when the roof framing is perpendicular to the lintel. Redesign to show compliant lintel sizes for the windows/doors.
3. Page 7- show the loft opening windows have restrictor stays to limit the openings to 100mm (or some other form of compliance with F4/AS1 cl 2.1.1)?
4. Page 8-Show how the verandah stringer is fixed to the house? Show a compliant verandah beam fixed at the house end? Structural beams cannot be supported by stringers, and show how 1 Blue screw complies with NZS 3604 as a verandah beam fixings?
5. Page 8-Show some form of blocking to stop the 190 x 45 purlin/rafters from rolling?
6. Page 10 wall bracing. Element A2 has a W4 in the middle of it. Show the location of all the windows on the bracing plan to show that the elements miss the windows?
7. Provide a detail for the bottom end of the raking verandah apron flashing (that is a drawing)?

Once all the information has been revised, please email the reply to the above address. The email should show the consent number and include a cover letter. We request that you provide this information within 20 working days, highlighting all changes on the drawings. If you require clarification, please feel free to call me.

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Date: 10/9/18

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Re:BC 180320 Batch, N Gattsche, 103 Lake Ferry Rd, Lake Ferry

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1. Page 4-Show compliance for the small left hand deck? BR1 2/190 x 45 bearer does not comply with being supported by a stringer at each end (a stringer is not designed to take the point load of a beam)? Provide technical details for the Bowmac BS108 bracket, and a detail to show what it is fixed to at each end (which still allows the wing wall external cladding to comply)?

The joist layout has been revised with a further detail added to sheet 4.

2. Page 7. R1 rafters don't comply as window lintels when the roof framing is perpendicular to the lintel. Redesign to show compliant lintel sizes for the windows/doors.

Upon discussion between the engineer Mike Hewison and yourself I believe we have to OK to revert back to a 2/140x45 Lintel. Plans have been marked to reflect that.

3. Page 7- show the loft opening windows have restrictor stays to limit the openings to 100mm (or some other form of compliance with F4/AS1 cl 2.1.1)?

As stated earlier, hopper windows are hinged at the sill and cannot physically stay open unless there is some form of opening restrictor. You just cannot fall out of these but I have added a

further note to the window schedule stating the 100mm opening restrictors.

4. Page 8-Show how the verandah stringer is fixed to the house?  
Show a compliant verandah beam fixed at the house end?  
Structural beams cannot be supported by stringers, and show how 1 Blue screw complies with NZS 3604 as a verandah beam fixings?

Sheet has been revised to 2/M12 SS coach screw fixings and a detail added.

5. Page 8-Show some form of blocking to stop the 190 x 45 purlin/rafters from rolling?

Solid blocking added to sheet 8

6. Page 10 wall bracing. Element A2 has a W4 in the middle of it. Show the location of all the windows on the bracing plan to show that the elements miss the windows?

Sheet 10 has been revised

7. Provide a detail for the bottom end of the raking verandah apron flashing (that is a drawing)?

Detail added showing diverter flashing on sheet 8

Once all the information has been revised, please email the reply to the above address. The email should show the consent number and include a cover letter. We request that you provide this information within 20 working days, highlighting all changes on the drawings. If you require clarification, please feel free to call me.

Yours Faithfully

Mike Sims

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# GoGet Processing Summary Report

Consent No: 180320

Site Address: 103 Lake Ferry Road, Lake Ferry

Description: Batch

Checklist/Elements	Status	Notes	Processed By
Producer Statements (Form 302 V1.1)	N/A		Mike Sims
Processing Checklist - Residential & Commercial Buildings (Form 301C V1.18)	Pass		Mike Sims,Sara Edney
Building Act/PIM/SWDC Internal TA process.	Pass		SE
%''GYW % 'g'U'D-A 'fYei jfYX'Zcf'hY' project?	Pass	2. SWDC Internal Project Information	SE
2. Sec 36 - Has a Development Contribution Notice been attached to the PIM?	N/A		SE
3. Sec 37 - Has a Certificate pursuant to Sec 37 of the BA 2004 been attached to the PIM requiring that a Resource Consent be obtained before building work may commence?	N/A		SE
4. Sec 39 - Are there any issues associated with Historic Places Trust?	N/A		SE
5. Sec 67 - Is the building consent subject to a waiver or modification?	N/A		SE
6. Sec 72 - Is land subject to natural hazards?	N/A		SE
7. Sec 75 - Is the building constructed on 2 or more allotments?	N/A		SE
8. Sec 84 - Is any part of the work Restricted building Work?	Pass		SE
- ""'GYW%& 'g'hY'Udd'jWhcb'Zcf'Ub' alteration to an existing building?	N/A		SE
10. Sec 113 - Does the building have a specified intended life?	N/A		SE
%&'GYW%& 'l' %& 'g'hY'dfcdcgYX'k cf_'N/A change in use, extension of life or subdivision of an existing building If s, determine if the territorial authority will allow the proposal?	N/A		SE
12. Sec 118 - Is access and facilities for the disabled required?	N/A		SE
13. Earthquake Prone Building - Is the building listed on the TA register for Earthquake Prone Buildings?	N/A		SE
14. Sec 269 - Does the application involve any certified building methods or products?	N/A		SE
15. Sec 363 - Are the public to be admitted to the building on payment or otherwise?	N/A		SE
16. Fire Service Act - Is an evacuation scheme required?	N/A		SE
17. Does the building require a BWOFF?	N/A		SE
18. Is a fireplace being installed?	Pass		SE
Conflict of Interest	Pass		MPS
Technical check completed by?	Pass	3) Building and Plumbing and Drainage e) Mike Sims	MPS
Is there no conflict of interest?	Pass	No conflict. MPS	MPS

Checklist/Elements	Status	Notes	Processed By
Structural engineering or fire protection engineering peer review	N/A		MPS
Documentation	Pass		MPS
1. Has a comprehensive and relevant specification been provided?	Pass		MPS
2. Has SED been provided, where required for: Ground works, Foundations, Concrete floors, Wall framing, Lintels, Steel structures, Roof framing.	N/A		MPS
3. Has the "means of compliance" been entered correctly on the building consent application form?	Pass		MPS
4. Does the application include the use of Alternative Solution(s)?	Pass	See RFI for angle roof	MPS
Groundworks/ Siting/ Site preparation (B1, B2, C6, E1)	Pass		MPS,SE
<u>Request for Further Information:</u>			
Request:	Page 2- label what the right hand plan is of? Label the use of the rooms.		MPS
Response:	P2 RH plan labelled as Mezzanine. Still to come; label the use of the rooms. P2 labelled		MPS
<u>Request for Further Information:</u>			
Request:	Page 3- label the external materials on the elevations? Show the FFL to FGL height? Show the cladding type to the Elev 2 wing walls? Show the log burner flue?		MPS
Response:	P3 wall cladding labeled and Shadowclad shown to wing walls. Log burner flue shown. Still to come; label roofing type. P3 materials labelled		MPS
<u>Request for Further Information:</u>			
Request:	Page 4. The floor joist span doesn't comply with NZS 3604 . Provide verification for the spans? The ground floor cantilevered deck is outside the scope of NZS 3604. Provide a compliance method? Show how the deck joist are fixed to the house , with the fixing types and centres shown? Show the dimension the floor joist cantilever over the bearers? Mezzanine floor. Show what supports the Mezzanine 140 x 90 stringer either end? The footing note for the deck is pointing to the wrong end of the bearers? Show a double floor joist under the internal load bearing wall?		MPS
Response:	Nelson Pine calcs provided for joist spans. Cantilevered deck show a pile under each end now. Nelson Pine calcs provided for deck trimmer. P5 stringer deck detail fixings provided. Mezzanine trimmer shown with double stud under each end. Mezzanine stringer fixed with M12 @ 800 c/c. Double joist shown under internal wall. Still to come; Cantilever deck trimmer support and fixings at each end over pile. Deck footing notes still shows two posts. Floor joists cantilever 195mm OK for 3604. Deck footing notes correct now.		MPS
<u>Request for Further Information:</u>			
Request:	Page 6. External walls- delete the bottom plate fixings to concrete slab. Show how the ladder complies? Show what the handrail complies with? Show the loft opening windows have 760 mm t o the sill to comply with Safety from Falling?		MPS
Response:	P6 BP fixings revised for timber floor. P6 bottom left notes show the ladder complies with D1/AS1 Fig 19, 70 degrees, 100 x 30 treads @ 200mm c/c max. Windows hopper type bottom opening. Still to come; Show windows retractors P7 note added for window stays to max 100mm opening.		MPS
<u>Request for Further Information:</u>			
Request:	Page 3, 6 , 7 & 8. The raking window lintels and walls are outside this cope of NZS 3604. The load on these is not only downwards, but partly sideways as well. Provide specific design for the wall structure outside NZS 3604?		MPS
Response:	I have reviewed the wall loads and accept that they are comparable with 3604 when on a slope. The sideways load on the walls is no more than the sideways load that sloping rafters cause in a standard		MPS

Checklist/Elements	Status	Notes	Processed By
<i>sloping monopitch roof. Still to come; correct lintel sizes. P7 lintel sizes meet 3604.</i>			
<u>Request for Further Information:</u>			
Request:		Page 8- label the wall cladding type and cavity on the details? The corrugated roof which falls in two different directions is outside the scope of E2/AS1. Show the roof pitch still meets the minimum 8 degrees, with the average of the two directions, to show the lap compliance will still comply? Show how the flue flashing will comply with the roof falling in two directions? The verandah roof framing doesn't have sufficient information to show how it complies. Provide all the missing structural compliance information for it? Show some form of blocking to stop the purlin/rafters from rolling?	MPS
Response:		P8 wall cladding labelled. P3 shows the max roof pitch is 10 degrees so OK for laps. P8 has a side internal gutter which catches any water running over the crests. Log burner deleted . P8 shows more information for the verandah framing sizes. Still to come; Verandah beam and stringer fixings to house. Blocking for rolling. P8 shows verandah beam and stringer fixed to house with 2/M12 bolts at the bottom end. Blocikng shown for the rafter/purlins.	MPS
<u>Request for Further Information:</u>			
Request:		Page 10 wall bracing. Review the whole design to show compliance? M1 is missing off the plans. The element heights in the calculations aren't correct. N1 & 2 plus B1 & 2 walls don't go right to the external top plate heights, so their bracing is outside the scope of NZS 3604. Element A2 has W4 in it.	MPS
Response:		P10 revised to show a ceiling diaphragm so the part height internal walls are not required for bracing. Still to come; Element A2 has a window in the way. Element A2 moved to miss the window.	MPS
<u>Request for Further Information:</u>			
Request:		Show how the cantilevered deck complies for water proofing with the external cladding?	MPS
Response:		P5 deck detail OK.	MPS
<u>Request for Further Information:</u>			
Request:		Provide details for the bottom ends of the raking flashings? That is the window heads and the verandah apron.	MPS
Response:		BRANZ details for raking window heads. Still to come; apron bottom edge P8 shows bottom end of apron with a turn out.	MPS
<u>Request for Further Information:</u>			
Request:		The Nelson Pine project report includes designs outside NZS 3604. Provide a PS1 for the compliance of the report, or show some other means that it complies with B1 Structure?	MPS
Response:		Nelson Pine program is similar to Design IT , and is based on the structural codes.	MPS
15. Does the site plan demonstrate distances to boundaries & other buildings on the site?	Pass	10m to nearest boundary	MPS
16. Are the boundary or building separation distances in relation to spread of fire correct? If so, refer to fire safety section of checklist.	Pass		MPS
17. Have special features of land or ground conditions been considered?	Pass	SWDC to assess None identified	MPS,SE
18. Is wind zone correctly specified for the site?	Pass	Assessed by Mike Hewison to be VH under 1170, but design done to EH.	MPS
19. Will proposed excavations affect or impact on other buildings / properties?	N/A		MPS
20. Is the nominated exposure zone correct for the site?	Pass	c) Zone D See RFI for P1 notes	MPS
<u>Request for Further Information:</u>			
Request:		Page 1- please revise the notes to show Corrosion zone D?	MPS
Response:		P1 shows zone D	MPS

Checklist/Elements	Status	Notes	Processed By
21. Are floor levels & datum provided to comply with E1?	Pass	See RFI	MPS
22. Do minimum floor levels apply?	N/A	SWDC to assess	MPS,SE
Footings/Foundation (B1, B2)	Pass		MPS,SE
25. Do special features of land require consideration in regard to footings/ foundations?	Pass	SWDC to assess None identified	MPS,SE
Are footing and foundations correctly detailed for the proposed floor loads/ cladding / number of storey's and sloping ground?	Pass	P4	MPS
29. Are all pad / post footing locations detailed & correctly sized?	N/A		MPS
30. Does concrete strength specified comply?	Pass	17.5 Mpa	MPS
31. Does any aspect of the footing / foundation design require checking by a structural engineer?	N/A		MPS
32. Are masonry blockwork details provided?	N/A		MPS
34. Do retaining wall foundations require tanking?	N/A		MPS
35. Are foundation / plate fixings correctly detailed /specified?	N/A		MPS
Piles (B1, B2)	Pass		MPS
36. Does pile size and layout comply with floor load requirements?	Pass	125 X 125 piles @ 1.5m c/c	MPS
37. Are subfloor bracing calculations correct & does framing setout meet floor load demand?	Pass	6 APs OK.	MPS
38. Are pile footings size & connection details provided?	Pass	P4	MPS
39. Is timber pile grade & treatment correctly specified?	Pass	H5	MPS
40. Do pile heights comply?	Pass	FFL 600 mm	MPS
Bearers (B1, B2)	Pass		MPS
43. Are bearer spans, grade, spacing, fixings and treatment specified?	Pass	P4- 140 x 90 SG8 H3.2 bearers max span 1.5m LD 1.7m	MPS
44. Are bearer to pile and bearer to joist fixings details provided?	Pass	P4 & 5.	MPS
Floor Joists (B1, B2)	Pass		MPS
46. Do joist grade, treatment, size, span, spacing, fixings and blocking comply with floor load demand?	Pass	P4- ground floor joists- 190 x 45 LVL H1.2 @ 400 c/c. Mezzanine- 140 x 45 SG8 H1.2 joists @ 400 c/c max span 2.4m See RFI for spans	MPS
47. Are lateral support, blocking & midspan-blocking correct?	Pass		MPS
48. Have load paths been considered?	Pass		MPS
50. Do trimmer joists comply?	Pass	See RFI for mezzanine trimmer and stringer fixings	MPS
53. Are load bearing walls at right angle to joist within 200mm of bearer support?	N/A		MPS
54. Are double joists provided under load bearing walls?	Pass		MPS
55. Do cantilever joist grade, sizes & spans, connections and set back comply?	Pass	See RFI	MPS
Stringers (B1, B2)	Pass		MPS
57. Do stringer size, grade, treatment and	Pass	See RFI for mezzanine fixings	MPS



Checklist/Elements	Status	Notes	Processed By
fixings comply with floor load and durability demands?			
Flooring (B1, B2)	Pass		MPS
59. Does flooring thickness & type comply for the floor load?	Pass	20mm H3 plywood floor	MPS
60. Is distance between underside of flooring and subfloor ground levels appropriate for flooring type?	Pass		MPS
Subfloor spaces (B1, B2, G4)	Pass		MPS
61. Is subfloor ventilation sufficient?	Pass	Base boards	MPS
62. Is a damp proof ground cover to be used?	N/A		MPS
Concrete floor (B1, B2)	N/A		MPS
Wall Framing (B1, B2)	Pass		MPS
75. Do stud height, grade, size, spacing, & treatment comply?	Pass	P6 shows studs sizes. SG8 H1.2 See RFI for Nelson Design statement.	MPS
76. Is the framing setout appropriate for the cladding system?	Pass		MPS
78. Are top & bottom plate fixings / connections specified / for uplift & / or detailed?	Pass	P5 fixing schedule shows TP & BP fixings.	MPS
Bracing (B1, B2)	Pass		MPS
85. Are wall bracing elements clear of showers & baths?	Pass		MPS
86. Is wall bracing schedule calculations & distribution of elements correct / wind and earthquake zones correctly specified/spacing of bracing lines for the proposed system?	Pass	See RFI	MPS
, *U"<Ug'hY'a Jb'%'6l g'dYf'a YHf'VYYb	Pass	See RFI	MPS
, *V"<Ug'U'a Jb'%'6l g'VYYb'dfcj JXYX'ht	N/A		MPS
walls supporting dragon ties and or diaphragms?			
86c. Have separate wings and levels been separately calculated?	N/A		MPS
87. Has additional 150 x 40 ribbon top plates been provided where 6m brace lines are specified?	N/A		MPS
540. Is a ceiling diaphragm required & if so does it comply?	N/A		MPS
87a. Is a floor diaphragm required & if so does it comply?	N/A		MPS
87b. Have the bracing element fixing type, centres and hold down been shown?	Pass		MPS
Lintels & Beams (B1, B2)	Pass		MPS
88. Are the lintel & beam span, size, grade and treatment correct?	Pass	P7 shows lintel sizes to meet 3604. See RFI for raking lintels	MPS
91. Are lintel fixings specified & correct/straps for uplift?	Pass	P7	MPS
92. Do lintels support point loads?	N/A		MPS
Trussed Roof (B1, B2)	N/A		MPS
Roof Bracing (B1, B2)	Pass		MPS
106. Does roof plane and space bracing comply?	Pass	Wall bracing up to skillion roof.	MPS
Rafters (B1, B2)	Pass		MPS

Checklist/Elements	Status	Notes	Processed By
107. Do rafter spacing, spans, size, grade, treatment, and connections comply?	Pass	P8 shows 190 x 45 LVL H1.2 rafters @ 800 c/c. See RFI for Nelson pine report compliance	MPS
108. Do rafter fixings comply?	Pass	P5	MPS
Ridge Beams (B1, B2)	N/A		MPS
Ceiling Joists (B1, B2)	N/A		MPS
Valley Boards (B1, B2)	N/A		MPS
Strutting Beams (B1, B2)	N/A		MPS
Purlins (B1, B2)	N/A	Rafters are the purlins	MPS
Ceiling Battens (B1, B2)	Pass		MPS
121. Do ceiling batten spacing, span, size & grade comply? Check the support spans required for the roofing type.	Pass		MPS
Roof and Wall Claddings (B1, B2, E2)	N/A		MPS
ROOF CLADDINGS (B1, B2, E2)	Pass		MPS
125. Are projecting eaves or verges closed in?	Pass		MPS
126. Is roof underlay required, if 'yes' has it been correctly specified?	Pass	Covertex 407	MPS
<u>Request for Further Information:</u>			
Request: Provide technical information for the Covertex 407 roof wrap to show it complies in EH wind zone?			MPS
Response: <i>Provided and OK for EH</i>			MPS
128. Do roof penetrations comply?	Pass	See RFI	MPS
145. Has roofing profile been specified?	Pass		MPS
146. Does the roof pitch meet the minimum pitch for the specified profile?	Pass	See RFI for falling in two directions.	MPS
147. Have relevant flashings, stop ends & turn-downs details been provided?	Pass	P8	MPS
149. Does the purlin setout provide adequate provision for support & fixing of the roof cladding?	Pass		MPS
150. Does the specified method & setout of the fixings of the roof cladding comply?	Pass		MPS
Masonry Tiles (E2)	N/A		MPS
Pressed Metal Tiled Roofs (E2)	N/A		MPS
Profiled Metal (Roof E2)	Pass		MPS
142. Is the proposed design within profiled metal limitations?	Pass		MPS
144. Has material, material thickness and coating been specified?	Pass	0.4mm colorsteel Maxx , OK for zone D	MPS
145. Has roofing profile been specified and does the roof pitch meet the minimum pitch for the specified profile? ?	Pass	10-15 degrees	MPS
147. Have relevant flashings, stop ends and turn-downs details been provided?	Pass		MPS
151. Does the design provided allow for expansions?	N/A		MPS
152. Do the details provided for the internal, valley &/or hidden gutters comply?	N/A		MPS
Membrane Roofs (E2)	N/A		MPS
Masonry and Concrete Construction (E2)	N/A		MPS
WALL CLADDINGS - Brick Veneer (E2)	N/A		MPS
Fibre Cement Sheet Cladding (E2)	N/A		MPS

Checklist/Elements	Status	Notes	Processed By
Fibre Cement Weatherboard (E2)	Pass		MPS
191. Does the cladding require a drainage cavity system? Is the Risk matrix correctly assessed?	Pass	Rick score 6 , Stria on cavity	MPS
192. Building wrap specified appropriate and compatible with cladding.	Pass	Ecopoly barrier , OK for EH.	MPS
194. Have the construction details been provided for the cavity system?	Pass		MPS
195. Full flashing details provided for window & doors and other penetrations.	Pass	P7 windows. See RFI for door sill	MPS
<u>Request for Further Information:</u>			
Request: Please supply a door sill detail for both cladding types?			MPS
Response: P7			MPS
198. Internal and external corner details provided?	Pass	P12	MPS
198a. Soffit junction and bottom edge detail provided?	Pass	P11	MPS
199. Junctions with dis-similar materials detailed?	Pass	P12 with back flashings.	MPS
200. Has the coating system been shown?	Pass	Painted	MPS
Plywood Cladding (E2)	Pass		MPS
201. Does the cladding require a drainage cavity system? Is the Risk matrix correctly assessed?	Pass	Risk score 6. Shadow clad on cavity.	MPS
202. Is the proposed design within the limitations of E2?	Pass		MPS
203. Building wrap specified appropriate and compatible with cladding.	Pass	Ecolpy barrier	MPS
204. Has the treatment been shown?	Pass	H3 12mm Shadowclad	MPS
205. Sheet jointing details provided for vertical and horizontal situations?	Pass	See RFI12	MPS
206. Internal and external corner details provided?	Pass	P12	MPS
207. Full flashing details provided for window & door and other penetrations?	Pass	P7 shows windows See RFI for door sill	MPS
208. Soffit junction and bottom edge detail provided?	Pass	P12 shows bottom edge P8 shows top edges See RFI for labels to P8	MPS
208a. Junctions with dis-similar materials detailed?	Pass	P12	MPS
209. Has the coating system been shown?	Pass	H3 non bracing.	MPS
Profiled Metal (Wall E2)	N/A		MPS
Stucco Cladding (E2)	N/A		MPS
Timber Weatherboard Cladding (E2)	N/A		MPS
EIFS (E2)	N/A		MPS
Earth Buildings (E2)	N/A		MPS
Parapets (E2)	N/A		MPS
Enclosed decks (B1, B2, E2, F4)	N/A		MPS
Decks / Balconies / Barriers (B1, B2, E2, F4)	Pass		MPS
364. Are fixings correct and does compatibility / durability comply?	Pass		MPS
365. Does design comply?	Pass		MPS
367. Is deck more than 3m high, if so SED and calculations required?	N/A		MPS

Checklist/Elements	Status	Notes	Processed By
369. Does deck bracing comply?	N/A		MPS
370. Are the piles & bearers the correct grade, treatment, size, spacing & span?	Pass	P4	MPS
371. Do deck joist sizes, grade, treatment, span & spacing comply?	Pass	P4	MPS
371a. Are cantilevered joists flashed correctly?	Pass	See RFI	MPS
372. Does decking material comply for the joist spacing?	Pass		MPS
373. Does decking material comply for slip resistance?	Pass		MPS
374. Is the substrate specified for the balcony waterproofing membrane appropriate?	N/A		MPS
375. Is specialist information for the waterproofing membrane provided?	N/A		MPS
376. Do stringer size & connections comply?	Pass	The external trimmer joist to the small left hand deck is supported by BS108 Bowmac bracket each end fixed directly to the subfloor framing.	MPS
377. Do the thresholds specified for the deck comply?	Pass	P12	MPS
377a. Has a 12mm min air space been detailed between the deck framing and the wall cladding?	Pass	P12	MPS
Carports/Pergolas/Verandahs (B1, B2, E1)	Pass		MPS
378. Does concrete post footings specified provide adequate resistance against uplift?	Pass	P4	MPS
379. Do top & bottom connections of posts provide required kN capacity to resistance against uplift?	Pass	P5 shows bottom post detail. P8 shows top.	MPS
380. Do the verandah beam treatment, grade, size & span comply?	Pass	See RFI	MPS
381. Do the rafters, purlins; treatment, grade, size, fixings and spans comply?	Pass	P8- 140 x 45 SG8 H3.2 rafters	MPS
382. Does the roof framing fixing to the wall framing comply?	Pass	See RFI	MPS
Chimney (B1, B2)	N/A		MPS
Stairs / Landings / Handrails (Internal and External) (D1, F4)	Pass		MPS
356. Are handrails specified/detailed and correctly located?	Pass	P5 shows stair handrails	MPS
357. Has access to the main entrance of the building been provided in accordance with D1? Have access details been provided for all entry doors?	Pass		MPS
358. Are visibility & lighting levels complying?	N/A		MPS
359. Do stairs specified comply for the intended use & area to which they provide access? Does the stair tread & rise constructions comply with the stair type?	Pass	P5 shows main common stairs	MPS
360. Do spiral or curved stair winder tread & rise comply?	N/A		MPS
362. Do landings provide 400mm clearance in front of door opening onto the landing?	N/A		MPS
Sound Transfer/Multi unit dwellings (G6)	N/A		MPS
Insulation (H1, E3)	Pass		MPS



Checklist/Elements	Status	Notes	Processed By
288. Has an appropriate method been used and does it comply? Selections:	Pass	2. Calculation Method NZS 4218 (50% max window/wall area, changed to 40% in the 2009 version of the standard). 15% glazing to wall area	MPS
289. Have the construction R-value (not the product R-value) been used for the calculations.	Pass		MPS
290. Have the same product R-value used in the calculation been shown on the plans and specification?	Pass	Floor R 1.4 Expol, walls R 2.6, ceiling R 3.2, glass R 0.26	MPS
290a. Have the minimum insulation requirements for E3 been achieved?	Pass		MPS
291. Is a 25 mm separation provided between the top of the insulation and the underside of the skillion roof underlay?	Pass		MPS
292. Is subfloor insulation protection required?	N/A		MPS
Glazing (F2, G7)	Pass		MPS
294. If double glazing is specified, have support bars been shown where required for the cladding system proposed?	Pass		MPS
295. Do vertical windows in external walls have a window area of not less than 10% of the floor area of the room?	Pass		MPS
298. Is the natural light entering the building restricted by other structures or natural land features?	N/A		MPS
299. If reflective surfaces are required, then do they comply?	N/A		MPS
300. Is at least 50% of the glazed area provided for natural light clear glazed?	Pass		MPS
301. Does glazing comply with NZS 4223 Part 3 (bathroom and balustrades)?	Pass		MPS
Kitchen (G3, E3)	Pass		MPS
261. Is food prep area min. of 600 mm x 500 mm?	Pass		MPS
262. Are facilities provided for cooking?	Pass		MPS
263. Is space provided for refrigeration?	Pass		MPS
268. Have impervious, easily cleaned wall/floor finishes been specified?	Pass	Vinyl floors , painted Aqualine walls	MPS
Wet area/showers (E3)	Pass		MPS
276. If shower with level access is proposed, have adequate falls been provided to the floor drain?	N/A		MPS
277. Has a complying waterproofing membrane been specified?	N/A		MPS
278. Have complying floor & wall linings been specified (i.e. tiled, vinyl, wet wall linings, etc)	Pass	Vinyl floor, painted Aqualine walls.	MPS
280. Has the shower type been specified (tiled or proprietary cubicle)?	Pass	1 enclosed acrylic cubicle.	MPS
Ventilation (G4)	Pass		MPS
285. Are openings providing natural ventilation to occupied space 5% or more of floor area?	Pass		MPS
286. Does the mechanical ventilation to be provided for extracting moisture and other contaminants comply?	N/A		MPS

Checklist/Elements	Status	Notes	Processed By
287. Does the documentation demonstrate mechanical ventilation ducted to outside air?	N/A		MPS
Warning Systems (F7)	Pass		MPS
288. Have domestic smoke alarm(s) been indicated?	Pass	P13	MPS
Laundry G2, G4)	N/A		MPS
Solid Fuel Heaters (B2, C2, E2, F7, G12)	Pass		MPS
392. Floor plan provided demonstrating the location of the solid fuel heater?	Pass	P9 shows Spiroloc log burner. Log burner deleted now.	MPS
393. Have manufacturer specifications been provided?	Pass	See RFI	MPS
<u>Request for Further Information:</u>			
Request:	Please provide installation instructions for the log burner proposed, including that it meets the Emission standards? The Spectrum test report 0393 provided doesn't show compliance with anything. It doesn't show the fire tested , or the standard it was tested to.		MPS
Response:	<i>Testing to 2918 provided with clearances shown. Still to come; Emission standards. Log burner deleted now.</i>		MPS
394. Is the appliance 'Clean Air' approved?	Pass	See RFI	MPS
399. Has flu construction been provided?	Pass	Eco flue pages.	MPS
400. Have flu flashing details been provided?	Pass	See RFI	MPS
401. Have domestic smoke alarm(s) been indicated?	Pass		MPS
402. Plumbing specification provided demonstrating compliance with G12?	N/A		MPS
403. Temper hot water specified to personal hygiene fixtures?	N/A		MPS
Electricity (G9)	Pass		MPS
700. Is electrical work proposed?	Pass		MPS
Building Code C1-6 documents Fire Safety	Pass		MPS
412. Are fire ratings detailed & correct?	N/A		MPS
413. Has protection been provided to other household units?	N/A		MPS
414. Are separation distances appropriate?	N/A		MPS
415. If timber frame external wall detailed, has a cavity been specified between Gib and exterior cladding.	N/A		MPS
416. Have non combustible materials been specified for external cladding to timber frame fire walls?	N/A		MPS
450. Does the fire safety report show the proposed means of compliance with the building code?	N/A		MPS
451. Has the Risk Group and fire hazard category been defined?	Pass	SH	MPS
452. Has the number and distribution of occupants been defined	N/A		MPS
453. Has the means of escape been detailed; escape height, escape lengths (dead end, open, protected and safe paths), escape widths, door widths, door opening direction, single escape routes.	Pass	The whole building is 6m long. Even with the loft ladder, the path lengths will easily be less than the 25m allowed.	MPS
454. Have the number of fire cells, fire cell ratings and fire safety systems been calculated?	N/A		MPS

Checklist/Elements	Status	Notes	Processed By
455. Are complying calculations shown for the structural stability fire resistance rating?	N/A		MPS
456. Has the fire resistance rating (FRR) been shown as determined by the fire cell, structural stability and insulation requirements?	N/A		MPS
457. Has consideration been given to internal spread of fire and smoke (SFI and SDI)?	N/A		MPS
458. Have calculations and details been provided for spread and control of fire at external walls (allowable openings or unprotected wall)?	N/A		MPS
459. Is access to the building available for fire fighting vehicles?	N/A		MPS
460. Have special requirements for child care facilities been provided?	N/A		MPS
461. Are Intermediate or limited area intermediate floors proposed and do meet the requirements?	N/A		MPS
462. Has special requirements been achieved for sleeping facilities proposed over another risk group?	N/A		MPS
463. Are correct FRR reductions proposed for sprinkled fire cells?	N/A		MPS
464. Are complying non combustible claddings detailed for fire resistant walls?	N/A		MPS
Building Code D1 Access Routes	N/A		MPS
Building Code D2 Mechanical Installations for access	N/A		MPS
Building Code E1 Surface Water (see Surface water drains above)	N/A		MPS
Building Code F1 Hazardous Agents On Site	N/A		MPS
Building Code F2 Hazardous Building Materials.	N/A		MPS
Building Code F3 Hazardous Substances and Processes	N/A		MPS
Building Code F4 Safety From Falling	Pass		MPS
488. Have adequate safety barriers been provided?	Pass	P6 shows a 330mm high safety rail to the loft area. The total height at this edge is only 900mm, so any adult will be Kneeling at this point, so the height is OK. It will stop someone accidentally rolling out from a mattress. See RFI for the ladder compliance and the window sill heights.	MPS
Building Code F5 Construction and Demolition Hazards	Pass		MPS
489. Have details of protection of the public around the construction site been provided?	Pass	P1 notes for F5.	MPS
Building Code F6 Lighting for Emergency	N/A		MPS
Building Code F7 Warning Systems (incl compliance schedule systems)	N/A		MPS
Building Code F8 Signs	N/A		MPS

Checklist/Elements	Status	Notes	Processed By
Building Code G5 Interior Environment	N/A		MPS
Building Code G8 Artificial Light	Pass		MPS
499. Has information been provided to show compliance with the Lux requirement when artificial light is provided?	Pass	P13	MPS
Swimming Pools (B1, B2, F4, F9, G12, E1)	N/A		MPS
Pool & Fencing (B1, B2, F4, F9)	N/A		MPS
Pool Plumbing & Drainage (G12, E1)	N/A		MPS
Demolition (F5, G12, G13)	N/A		MPS
Plumbing and Drainage (E1, E3, F2, F7, G1, G4, G10, G11, G12, G13, H1)	Pass		MPS
430. Has a specification been provided for the sanitary plumbing and the drainage work?	Pass		MPS
431. Has appropriately licensed person been nominated to undertake the work of sanitary plumbing?	N/A	TBA	MPS
Sanitary Fixtures and appliances (G1)	Pass		MPS
432. Have adequate number and type of sanitary fixtures and sanitary appliances been provided?	Pass		MPS
Discharge pipes (waste, soil, ventilation and overflow pipes) (G13)	Pass		MPS
435. Are appropriate fixture discharge pipe sizes detailed?	Pass	P9 layout to AS 3500.2	MPS
436. Are appropriate combined discharge pipe system sizes detailed correctly?	Pass		MPS
437. Are appropriate ventilation pipe sizes detailed for kind of system?	Pass		MPS
439. Are appropriate overflows detailed, and do they comply?	N/A		MPS
442. Has schematic drawing for the pipe layout been provided?	N/A		MPS
Water Supplies (G12)	Pass		MPS
446. Is source and the location of cold water supply provided?	Pass	SWDC	MPS
447. Are the type and the location of hot water supply system provided? Selections:	Pass	c) Instantaneous Rinai VT26 Infinity.	MPS
450. Are appropriate pipe sizes detailed?	N/A		MPS
451. Is an appropriate pipe material detailed for their proposed location within the overall installation?	Pass		MPS
455. Is the domestic combined sprinkler system design details and layout drawing provided?	N/A		MPS
456. Is insulation specified?	Pass		MPS
458. Is there a cross contamination risk?	N/A		MPS
459. Have appropriate backflow prevention measures been detailed? Selections:	N/A		MPS
Foul water drains (G13)	Pass		MPS
464. Has a schematic drainage plan been provided?	Pass	P9 layout to AS 3500.2	MPS
465. Are specified pipe materials and size appropriate for the kind of discharge to be handled?	Pass		MPS



Checklist/Elements	Status	Notes	Processed By
468. Is protection for drains specified?	Pass		MPS
469. Have existing records been checked to determine capacity, loadings or locations of any pre-existing systems?	N/A		MPS
471. Is the point of outfall identified?	Pass	NUO sewer	MPS
473. Is sufficient gradient achievable to enable a gravity drain between the head and the outfall of the drain?	Pass		MPS
474. Is overflow relief provision external to the building provided?	Pass		MPS
475. Is an appropriate means of water seal retention provided for gully trap/s?	Pass		MPS
476. Does the drain incorporate provisions for inspection and maintenance access, cleaning eyes, chambers or manholes?	Pass		MPS
477. Are any interceptor traps necessary and are they appropriate for purpose?	N/A		MPS
479. Is the drain appropriately ventilated?	Pass	50 TV OK for AS 3500.2	MPS
480. Is a soil engineers report and an appropriate design included for on site disposal system?	N/A		MPS
481. Is there any history of flooding on this site or nearby sites?	N/A		MPS
483. Is a grey water system proposed?	N/A		MPS
484. Are composting facilities proposed?	N/A		MPS
485. Is a recycled water system proposed?	N/A		MPS
486. Has a permitted alternate system provided with its installation details?	N/A		MPS
487. Have requirements of NUO, EHO, and Trade Waste bylaws been satisfied?	N/A		MPS
Surface water drains (E1, G13)	Pass		MPS
488. Is the point of outfall identified? NUO sewer, onsite disposal system ?	Pass	P9 shows S/W to soak pit. Calcs and detail provided.	MPS
489. Is the site in proximity of a water course or low lying or located on a secondary flow path?	N/A		MPS
492. Is the size of drain appropriate for flow load?	Pass		MPS
493. Does the drain incorporate provisions for inspection and maintenance access rodding points, chambers or manholes. ?	N/A		MPS
494. Are any interceptor traps necessary and are they appropriate for purpose?	N/A		MPS
496. If a water storage tank is provided has the overflow outlet been directed to an appropriate outfall?	N/A		MPS
Gutters and Downpipes (E1)	Pass		MPS
497. Have rainfall calculations been provided for the roof catchment?	Pass	1/65 DP ok for 30m2 total roof area	MPS
498. Have construction details for the soakpit been provided?	Pass		MPS
Small bathroom/kitchen alterations not requiring building processing (E3, F2, F7, G4)	N/A		MPS
Gas as an energy source (G10, G11)	Pass		MPS
606. Is gas work proposed? If so, ensure an gas certificate is requested. Update Goget	Pass	Gas hot water.	MPS

Checklist/Elements	Status	Notes	Processed By
documentation and install an advice note.			
Processing checklist - Minor works - Woodburners, swimming pools and Demolition (Form 301D V1.2)	N/A		Sara Edney
Building Consent Approval (Form 301E V1.2)	Pass		Mike Sims
Building approval	Pass		MPS
Name	Pass	Mike Sims	MPS
Decision	Pass	Grant the consent	MPS
Reason for decision	Pass	Meets the building code	MPS
Date of decision.	Pass	21/9/18	MPS
Outcome	Pass	1. Update status in NCS to "From Building"	MPS
Plumbing & Drainage approval	Pass		MPS
Name	Pass	Mike Sims	MPS
Decision	Pass	Grant the consent	MPS
Reason for decision	Pass	Meets the building code	MPS
Date of decision.	Pass	21/9/18	MPS
Outcome	Pass	1. Update status in NCS to "From P&D".	MPS
Building Consent Granting	Pass		Sara Edney
Granting	Pass		SE
Name	Pass	Sara Edney	SE
Decision	Pass	Granted	SE
Reason for decision: (Selections)	Pass	a) Plans show compliance with NZBC b) All other BCO's have completed their processing c) All fees have been paid: (Selections)	SE
Date of decision.	Pass	26/9/18	SE
Outcome: (Selections)	Pass	a) Ok to grant building consent b) Status in NCS updated to show granted	SE
Building Consent Issue (Form 301A and B)	Pass		Adrian Cullen, Mary Wallace
Building Technical Support Officer (Form 301A V1.5).	Pass		MW
Is the physical PIM attached? Selections:	Pass	b) SWDC Internal PIM process completed	MW
Has everybody that should have seen the application seen the application and signed their respective parts off?	Pass		MW
Are the applicants copy and Councils copy identical?	Pass		MW
Have any amendments/variations been correctly incorporated in the final documents?	Pass		MW
Overview Goget to ensure all tasks completed correctly.	Pass		MW
Have all the checklists been fully completed?	Pass		MW
Have any consent notices on the CT been complied with?	Pass		MW
Print BC documents from NCS.	Pass		MW
Have all certificates/letters been printed Sec 36, 37, 72, and 75? (Selections)?	N/A		MW
Has Form 123 or 124 been received from the owner if in Sec 72 or 75 applies?	N/A		MW
Print Required Items Letter from Goget	Pass		MW
Ensure all plans and documents have been collated correctly and stamped.	Pass		MW
Have all fees been paid?	Pass		MW

Checklist/Elements	Status	Notes	Processed By
Check documentation screen on Goget system has been completed.	Pass		MW
Have all the LBP's details been supplied so inspections can be booked?	Pass		MW
Ready to issue Building Consent?	Pass		MW
Building Control Team Leader - Levels R2, R3, C1, C2, and C3 buildings only (Form 301B V1.7)	N/A		AC
Building Control Team Leader - All levels of buildings (Form 301B V1.7)	Pass		AC
Has the Building Admin Officers sign-off been completed on Goget?	Pass	complete	AC
Check PIM details correct?	Pass	checked and correct	AC
Sign plans & approval document	Pass	signed and dated	AC
Print to PDF "Processing Summary report" and "RFI" reports	Pass	saved to approved file	AC
Update NCS to Issued status	Pass	updated	AC

# GoGet Request for Information Report

Consent No: 180320

Type	Created	Signed Off
RFI 1	24 Aug 2018 Mike Sims	31 Aug 2018 Mike Sims
	Details: Page 1- please revise the notes to show Corrosion zone D? <i>Response: P1 shows zone D</i>	
RFI 2	24 Aug 2018 Mike Sims	10 Sep 2018 Mike Sims
	Details: Page 2- label what the right hand plan is of? Label the use of the rooms. <i>Response: P2 RH plan labelled as Mezzanine. Still to come; label the use of the rooms. P2 labelled</i>	
RFI 3	24 Aug 2018 Mike Sims	10 Sep 2018 Mike Sims
	Details: Page 3- label the external materials on the elevations? Show the FFL to FGL height? Show the cladding type to the Elev 2 wing walls? Show the log burner flue? <i>Response: P3 wall cladding labeled and Shadowclad shown to wing walls. Log burner flue shown. Still to come; label roofing type. P3 materials labelled</i>	
RFI 4	24 Aug 2018 Mike Sims	10 Sep 2018 Mike Sims
	Details: Page 4. The floor joist span doesn't comply with NZS 3604 . Provide verification for the spans? The ground floor cantilevered deck is outside the scope of NZS 3604. Provide a compliance method? Show how the deck joist are fixed to the house , with the fixing types and centres shown? Show the dimension the floor joist cantilever over the bearers? Mezzanine floor. Show what supports the Mezzanine 140 x 90 stringer either end? The footing note for the deck is pointing to the wrong end of the bearers? Show a double floor joist under the internal load bearing wall? <i>Response: Nelson Pine calcs provided for joist spans. Cantilevered deck show a pile under each end now. Nelson Pine calcs provided for deck trimmer. P5 stringer deck detail fixings provided. Mezzanine trimmer shown with double stud under each end. Mezzanine stringer fixed with M12 @ 800 c/c. Double joist shown under internal wall. Still to come; Cantilever deck trimmer support and fixings at each end over pile. Deck footing notes still shows two posts. Floor joists cantilever 195mm OK for 3604. Deck footing notes correct now.</i>	
RFI 5	24 Aug 2018 Mike Sims	21 Sep 2018 Mike Sims
	Details: Page 6. External walls- delete the bottom plate fixings to concrete slab. Show how the ladder complies? Show what the handrail complies with? Show the loft opening windows have 760 mm t o the sill to comply with Safety from Falling? <i>Response: P6 BP fixings revised for timber floor. P6 bottom left notes show the ladder complies with D1/AS1 Fig 19, 70 degrees, 100 x 30 treads @ 200mm c/c max. Windows hopper type bottom opening. Still to come; Show windows retractors P7 note added for window stays to max 100mm opening.</i>	
RFI 6	24 Aug 2018 Mike Sims	21 Sep 2018 Mike Sims
	Details: Page 3, 6 , 7 & 8. The raking window lintels and walls are outside this cope of NZS 3604. The load on these is not only downwards, but partly sideways as well. Provide specific design for the wall structure outside NZS 3604? <i>Response: I have reviewed the wall loads and accept that they are comparable with 3604 when on a slope. The sideways load on the walls is no more than the sideways load that sloping rafters cause in a standard sloping monopitch roof. Still to come; correct lintel sizes. P7 lintel sizes meet 3604.</i>	
RFI 7	24 Aug 2018 Mike Sims	21 Sep 2018 Mike Sims



Type	Created	Signed Off
	<p>Details: Page 8- label the wall cladding type and cavity on the details? The corrugated roof which falls in two different directions is outside the scope of E2/AS1. Show the roof pitch still meets the minimum 8 degrees, with the average of the two directions, to show the lap compliance will still comply? Show how the flue flashing will comply with the roof falling in two directions? The verandah roof framing doesn't have sufficient information to show how it complies. Provide all the missing structural compliance information for it? Show some form of blocking to stop the purlin/rafters from rolling?</p> <p><i>Response: P8 wall cladding labelled. P3 shows the max roof pitch is 10 degrees so OK for laps. P8 has a side internal gutter which catches any water running over the crests. Log burner deleted . P8 shows more information for the verandah framing sizes.</i></p> <p><i>Still to come; Verandah beam and stringer fixings to house. Blocking for rolling.</i></p> <p><i>P8 shows verandah beam and stringer fixed to house with 2/M12 bolts at the bottom end.</i></p> <p><i>Blockng shown for the rafter/purlins.</i></p>	
RFI 8	24 Aug 2018 Mike Sims	21 Sep 2018 Mike Sims
	<p>Details: Page 10 wall bracing. Review the whole design to show compliance? M1 is missing off the plans. The element heights in the calculations aren't correct. N1 &amp; 2 plus B1 &amp; 2 walls don't go right to the external top plate heights, so their bracing is outside the scope of NZS 3604. Element A2 has W4 in it.</p> <p><i>Response: P10 revised to show a ceiling diaphragm so the part height internal walls are not required for bracing.</i></p> <p><i>Still to come; Element A2 has a window in the way.</i></p> <p><i>Element A2 moved to miss the window.</i></p>	
RFI 9	24 Aug 2018 Mike Sims	31 Aug 2018 Mike Sims
	<p>Details: Show how the cantilevered deck complies for water proofing with the external cladding?</p> <p><i>Response: P5 deck detail OK.</i></p>	
RFI 10	24 Aug 2018 Mike Sims	21 Sep 2018 Mike Sims
	<p>Details: Provide details for the bottom ends of the raking flashings? That is the window heads and the verandah apron.</p> <p><i>Response: BRANZ details for raking window heads.</i></p> <p><i>Still to come; apron bottom edge</i></p> <p><i>P8 shows bottom end of apron with a turn out.</i></p>	
RFI 11	24 Aug 2018 Mike Sims	31 Aug 2018 Mike Sims
	<p>Details: The Nelson Pine project report includes designs outside NZS 3604. Provide a PS1 for the compliance of the report, or show some other means that it complies with B1 Structure?</p> <p><i>Response: Nelson Pine program is similar to Design IT , and is based on the structural codes.</i></p>	
RFI 12	24 Aug 2018 Mike Sims	31 Aug 2018 Mike Sims
	<p>Details: Provide technical information for the Covertex 407 roof wrap to show it complies in EH wind zone?</p> <p><i>Response: Provided and OK for EH</i></p>	
RFI 13	24 Aug 2018 Mike Sims	31 Aug 2018 Mike Sims
	<p>Details: Please supply a door sill detail for both cladding types?</p> <p><i>Response: P7</i></p>	
RFI 14	24 Aug 2018 Mike Sims	10 Sep 2018 Mike Sims
	<p>Details: Please provide installation instructions for the log burner proposed, including that it meets the Emission standards? The Spectrum test report 0393 provided doesn't show compliance with anything. It doesn't show the fire tested , or the standard it was tested to.</p> <p><i>Response: Testing to 2918 provided with clearances shown.</i></p> <p><i>Still to come; Emission standards.</i></p> <p><i>Log burner deleted now.</i></p>	

## SWDC BUILDING CONSENT

### **PIM/SWDC Internal TA process Tracking Sheet**

(Please cross out process not applicable)

BC No 180320 .....

Received: 14/08/18 .....

	Date In	Date Out	Initials
<b>Planning</b> (all consents)	14/08/18	28/8/18	HB
<b>Services</b> (excludes solid fuel heaters)			
<b>Health</b> (all commercial)			
<b>Building</b> (all consents) Complete Form 119 on Goget.	28.8.18	31.8.18	JS

# PIM CHECKLIST

Date... 28/8/18...

Building Consent ref 180320... valuation 18370 - 17506 Planner. CHB  
 103 Lake Ferry Road, ~~Lake Ferry~~ - New Dwg / Batch

➤ Zone (WCDP): Residential (Un-serviced)

➤ Planning Map Notations? (designations, etc) Y/N

➤ Listed building? Y/N

➤ Heritage Precinct? Y/N

Contact Greytown Community Heritage Trust if in Greytown. Include blurb:

This site is located within the Heritage Precinct and any works onsite may require an authority from the New Zealand Historic Places Trust under the Historic Places Act 1993. Please note this is not a Council requirement. The Trust can be contacted at the Wellington Branch on 04 801 5088 or by email on [infocentral@historic.org.nz](mailto:infocentral@historic.org.nz),

## ➤ Certificate of Title

No more than 3 months old (little bit older - but ok)

Consent Notices? (write in PIM notes)

Any covenants, easements, provided?

☒  
 Y/N  
 Y/N

## Hazards:

Wellington Regional Council fault lines?

Y/N

NES Hail site? Check Retro-lens

Y/N

New Zealand Archeological site?

Y/N

Flooding? What? \_\_\_\_\_

Y/N

## ➤ Existing BC or RC? (list)

## ➤ Any subdivision consents still in progress (e.g. 223 and 224 incomplete)?

Building department advised?

Y/N  
 Y/N/NA

## ➤ Building Standards (Wairarapa Combined District Plan)

### 4.5.2 Rural Zone Permitted Activity Standards

- (a) Maximum Building Height
- (b) Maximum height to boundary
- (c) Minimum Building Setback (excluding dwellings)
- (d) Minimum Dwelling Setback
- (e) Number of Dwellings

Check (e)-(k) standards if noise, signs, roads/access/parking/loading, plantation forestry, intensive farming and conservation management apply.



### 5.5.2 Residential Zone Permitted Activity Standards

- (a) Maximum Building Height ✓
- (b) Maximum Height to Boundary ✓
- (c) Minimum Building Setback ✓
- (d) Maximum Fence Height ✓
- (e) Number of Dwellings

If in Greytown Villas/Jellicoe Residential Character Area, check standards under 5.5.4

*Check (f)–(i) standards if noise, signs, roads/access/parking/loading, and non-residential activities apply.*

### 6.5.2 & 7.5.2 Commercial and Industrial Zone Permitted Activity Standards

- (a) Maximum Building Height
- (b) Maximum Height to Boundary
- (c) Minimum Building Setback
- (d) Maximum Fence Height
- (e) Noise Limits
- (f) Signs
- (g) Roads, Access, Parking and Loading Areas
- (h) Landscape and Screening
- (i) Activities within a Pedestrian Precinct (Commercial Zone)
- (i) Retail Activities (Industrial Zone)

➤ **Are there any District-wide Permitted Activity Standards that apply (Section 21 p.183)?**

No.

➤ **Resource Consent Required?**

Is resource consent required for the "Use" or Building Standards under either:

- a) The Permitted Activity Standards and/or;
- b) The District-wide Land Use Rules (section 21)

Y/N  
Y/N

Under what Rule(s)? .....



## SPECIFICATIONS & VARIATIONS

Job details:

.Gattsche Tiny House.

Job number:

**.1836.**

### SPECIFICATION INDEX

### JOB SCHEDULE

1	PRELIMINARY AND GENERAL	1-1
2	FOUNDATIONS	2-1
3	CARPENTER AND JOINER	3-2
4	PLUMBER	4-16
5	ROOFER	5-20
6	ELECTRICIAN	6-24
7	GLAZIER	7-28
8	FLOORCOVERING/CURTAINS	8-29

### Additional documentation

- ♦ RISK MATRIX
- ♦ BRACING CALCULATIONS
- ♦ LVL Beam certificate( Nelson Pine)
- ♦ Engineers Windzone verification
- ♦ H1 Compliance
- ♦ Stormwater Calculation
- ♦ Ecoply Barrier Specification Extract
- ♦ Hardie Stria Specification Extract
- ♦ Fibo Wall panels
- ♦ Spiroloc Heater specs



## **1 PRELIMINARY AND GENERAL**

### **1.1 CONTRACT DOCUMENTS**

The documents for this Contract comprise of:

1. This specification and job schedule
2. Drawings Numbered 1836-1 – 13

### **1.2 STANDARDS**

The N.Z.S. 3604 light timber framed buildings shall apply to all concrete and timber construction of all buildings in this contract.

### **1.3 SETTING OUT**

Refer to the site plan drawing and set out the building before commencing other work. Survey pegs are in place on the site to determine all boundaries.

### **1.4 CONTRACTORS TO BE HELD RESPONSIBLE**

Contractors employed for any section of the work will be required to conform strictly to the general requirements and discipline of the job as imposed on the General Contractor. They will be required to conform to his rulings in all matters affecting the conduct of the job. They will be required to commence their work and deliver their materials and equipment at such times as to suit the General Contractors requirements. The General Contractor shall let all Sub-Contracts to suit his programme for the work and shall hold Sub-Contractors responsible for delays caused by their failure to carry out their programme.

### **1.5 PROVISION OF UTILITY SERVICES**

Existing house facilities, toilet, phone etc. available for use.

### **1.6 MAINTENANCE**

Maintain the contract for 365 working days after full completion of the whole contract.

### **1.7 CLEANING AND COMPLETION**

The Contractor shall at all times keep the job tidy and shall at frequent intervals remove from the site all waste material, rubbish and litter.

Remove all rubbish etc, from places to be enclosed before closing up.

When all works are complete the whole of the site shall be properly cleaned of all sheds, gear, rubbish etc, and the premises left clean and tidy. All walls, floors, ceilings, paintwork, both sides of glass (including removal of splashings) shall be thoroughly cleaned and keys labelled and handed over to the owners.

### **1.8 MAKING GOOD**

The Contractor shall prepare for, attend on and make good after all trades involved in the Contract and shall leave the work complete in every respect.

### **1.9 PROTECTION OF PROPERTY**

The Contractor will be held responsible for the adequate protection of adjoining buildings, roadways, paths, drains, culverts, underground pipes or cables, fences and boundaries generally and shall make good at his own expense any damage to same caused by building operations or any operations pertaining thereto.

## **1.10 COMPLETION**

Contractors and sub contractors are to state the time for completion of contract.

## **1.11 SUB-CONTRACTORS**

The main contractor require one or more sub-contractors to be changed and a price to be adjusted accordingly.

## **1.12 HEALTH AND SAFETY POLICY**

The Contractors will provide a Health and Safety policy along with a Hazard Management System of controlling significant hazards for their employees.

Allow to comply with the strict requirements of the Occupational Safety & Health regulations to ensure the complete protection of workers, staff and members of the public.

## **1.13 OWNER TO OCCUPY**

The building will be occupied during construction period. Allow to keep services running for as long as possible. Notify owner of any disruptions to services.

## **1.14 INTENT**

The nature and spirit of these specification is to provide for the work here in enumerated and shown on the accompanying drawings to be fully completed in every detail for the purpose designed and it is hereby understood that the contractor on accepting the contract agrees to furnish everything reasonable necessary for such construction notwithstanding any minor omission in the drawings and specifications.

## **1.15 DOCUMENTATION**

### ***1.15.1 INTERPRETATIONS***

Required:	Required by the documents, or by a statutory authority.
Proprietary:	Identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
Approval:	Approval in writing.
Direction:	Direction in writing.
Provide and fix:	"Provide" or "fix" or "supply" or "fix" if used separately mean provide and fix unless explicitly stated otherwise.
Notified:	Notified in writing

### ***1.15.2 ABBREVIATIONS***

The following abbreviations are used throughout the specification sections:

AS	Australian Standard
AS/NZS	Joint Australian/New Zealand Standard
BRANZ	Building Research Association of New Zealand
BS	British Standard
ECP	Electrical Code of Practice
FTMA	Frame and Truss Manufacturers Association of New Zealand
HERA	Heavy Engineering Research Association
IEC	International Electrotechnical Commission
MPNZ	Master Painters New Zealand Association Inc
NZBC	New Zealand Building Code
	AS Acceptable solution
	VM Verification method
NZHB	New Zealand Hand Book
NZMRM	New Zealand Metal Roofing Manufacturers Inc
NZS	New Zealand Standard

NZS/AS	Joint New Zealand/Australian Standard
OSH	Department of Labour – Occupational Safety and Health
WANZ	Window Association of New Zealand Inc.

#### **1.15.3 MANUFACTURERS AND SUPPLIERS DOCUMENTS**

Refer to individual sections for a detailed list of manufacturers and suppliers documents relating to work on this project. Retain current copies of the documents listed, and other relevant manufacturers' technical literature, on site. Make this information available to all personnel and ensure they are familiar with requirements for handling, storing, preparing for, fixing and finishing products before commencing work. Provide a copy of all manufacturers' literature to the owner.

#### **1.15.4 REFERENCED DOCUMENTS**

Throughout this specification, reference is made to various New Zealand Building Code acceptable solutions (NZBC \_\_\_/AS\_) and verification methods (NZBC \_\_\_/VM\_) for criteria and/or methods used to establish compliance with the Building Act 2004.

Reference is also made to various Standards produced by Standards New Zealand (NZS, AS/NZS, NZS/AS), overseas standards (AS, BS) and to listed Acts, Regulations and various industry codes of practice and practice guides. The latest edition (including amendments and provisional editions) at the date of this specification applies unless stated otherwise.

It is the responsibility of the contractor to be familiar with the materials and expert in the techniques quoted in these publications, and to ensure that all those engaged in construction of the works to be similarly informed.

Documents cited both directly and within other cited publications are deemed to form part of this specification.

#### **1.15.5 PRECEDENCE OF REFERENCED DOCUMENTS**

This specification takes precedence in the event of it being at variance with and requiring a higher standard than, the cited documents.

Resolution of any variance must be confirmed in writing and where building consent approval is affected, the change notified to the territorial authority prior to any further work proceeding.

#### **1.15.6 DOCUMENTS REFERRED TO**

Documents referred to in this preliminaries and general section are:

Building Act 2004  
Health and Safety in Employment Act 1992  
Smoke Free Environments Act 1990

#### **1.15.7 BUILDING CONSENT COMPLIANCE**

It is an offence under the Building Act 2004 to carry out any work not in accordance with the building consent. Refer the resolution of matters concerning compliance to the owner for a direction. Where building consent approval is affected refer any change to the territorial authority.

#### **1.15.8 STATUTORY OBLIGATIONS**

Comply with all statutory obligations and regulations of regulatory bodies controlling the execution of the works.

#### **1.15.9 BUILDING CONSENT**

Obtain the original or copies of the building consent form and documents from the owner and keep on site. Liaise with the territorial authority and/or the building certifier for all notices to be given and all inspections required during construction to ensure compliance. Return the consent form and documents to the owner on completion.

#### **1.15.10 MASTER BUILD SERVICES LTD GUARANTEE**

Provide a Master Build New Home and Alterations & Additions 7 Year Guarantee Agreement including all costs in the contract price and covering completion, inspection, execution and

material defects under the terms of the guarantee offered by Master Build Services Ltd. Execute with all three signatories: owner, registered master builder and Master Build Services Ltd, before commencing the contract works.

The defects tolerances listed in Appendix A of the Master Build Services Ltd Guarantee apply only to the terms and conditions of the Master Build Service Ltd Guarantee and do not form part of the General Conditions of Contract applying to this project.

**1.15.11 REGISTERED CERTIFIED BUILDER GUARANTEE**

Provide a Registered Certified Builder 5 year Home Owner Guarantee. Complete the guarantee application. Before commencing the contract works, execute with the signatures of the owner and the registered certified builder and forward to CBA Insurance Services Ltd along with the fee payable.

**1.16 WARRANTIES**

Provide executed warranties in favour of the owner in respect of, but not limited to, materials, elements, service, application, installation and finishing called for in that specified section of work. The terms and conditions of the warranty in no case negate the minimum remedies available under common law as if no warranty had been offered.

Failure to provide the warranty does not reduce liability under the terms of the warranty called for in that specified section of work.

- Conform to the warranty agreement form included in this specification.
- Commence all warranties from the date of practical completion of the contract works.
- Maintain their effectiveness for the times stated.
- Deliver executed warranties to the owner at practical completion.

**1.16.1 WEATHERTIGHTNESS AND WATERTIGHTNESS WARRANTY**

Provide a warranty for a minimum period of 2 years, covering the weathertightness of the complete building envelope and the watertightness of all liquid supply and disposal systems and fittings. This general warranty is in addition to any specific warranties required.

**1.16.2 TRADE WARRANTIES**

Where specific trade warranties are offered covering materials and/or execution of proprietary products or complete installations, provide copies of all such warranties to the owner.

**1.16.3 FORM OF WARRANTY**

Conform with the form of warranty agreement included in this specification. Commence all warranties from the date of practical completion. Maintain their effectiveness for the times stated.

**1.17 SERVICES PLANS**

Prepare services plans setting out the actual positions as constructed of all sewer, stormwater, sanitary plumbing, piped and ducted services, electrical and mechanical services. Except where specified otherwise, as-built plans may be marked up on copies of relevant project drawings. Provide 1 set of services plans to the owner. Provide services plans required by the building consent to the territorial authority.



## **2 FOUNDATIONS**

### **2.1 GENERAL**

Refer to 3101 CONCRETE for poured concrete footings, foundations, foundation walls and floor slabs.

Refer to 3301 CONCRETE MASONRY for concrete block foundation walls.

#### **2.1.1 *DOCUMENTS***

Documents referred to in this section are:

NZS 3109	Concrete construction
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber framed buildings
NZS 3605	Timber piles and poles for use in buildings
NZS 3631	New Zealand national timber grading rules

### **2.2 PRODUCTS**

#### **2.2.1 *SQUARE TIMBER PILES***

Corsican pine or radiata pine, treated H5 to NZS 3602, table 1A, and complying with NZS 3605 for cross-section, length, straightness, strength and branding. All to NZS 3604 for footing and type.

#### **2.2.2 *TIMBER SUB-FLOOR FRAMING***

Species, grade, moisture content in service and level of treatment as set out in NZS 3602. Grading to NZS 3631 and treated to NZS 3602, table 1C.

#### **2.2.3 *NAILS***

Steel, stainless steel and galvanised steel of pattern to NZS 3604, table 6.8 and section 4 Durability.

#### **2.2.4 *BOLTS AND SCREWS***

Steel, stainless steel and galvanised steel to NZS 3604.

#### **2.2.5 *NAIL PLATES***

Stainless steel and galvanised steel toothed or nailed steel plates to the plate manufacturer's design for the particular locations shown on the drawings.

#### **2.2.6 *CONCRETE***

For piles and footings ordinary grade 17.5 MPa to NZS 3109, section 6 and NZS 3604, section 6.4.5.

### **2.3 EXECUTION**

#### **2.3.1 *FOUNDATIONS GENERALLY***

Comply with NZS 3602 and NZS 3604 except as varied by this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

#### **2.3.2 *INSTALL SQUARE TIMBER PILES***

Prepare for, place and secure as detailed on the drawings.

### **2.3.3 SUB-FLOOR FRAMING**

Frame up off foundation walls and piles, all fabricated, fastened and braced to NZS 3604, section 6.

## **2.4 CONCRETE**

## **2.5 GENERAL**

### **2.5.1 DOCUMENTS**

Documents referred to in this section are:

AS 1366	Rigid cellular plastics for thermal insulation Part 3 Rigid cellular polystyrene – Moulded (RC/PS – M)
NZS 3101	Concrete structures standard Part 1 The design of concrete structures
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3604	Timber framed buildings
AS/NZS 4671	Steel reinforcing materials

## **2.6 PRODUCTS**

### **2.6.1 NORMAL CONCRETE**

Normal concrete 17.5 MPa grade, maximum aggregate size 19 mm ready-mixed to NZS 3104. Provide delivery dockets listing mix and despatch details.

## **3 CARPENTER AND JOINER**

## **3.1 GENERAL**

### **3.1.1 DOCUMENTS**

Documents referred to in this section are:

AS/NZS 1748	Mechanically stress-graded timber
AS/NZS 1860	Particleboard flooring, 1860.1: Specifications
AS/NZS 2269	Plywood - Structural
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber framed buildings
NZS 3606	Manufacturer of glue-laminated timber
NZS 3631	New Zealand national timber grading rules
NZS 3640	Chemical preservation of round and sawn timber
AS/NZS 2918	Domestic solid fuel burning appliances - Installation
BRANZ	Bulletin 519: Fasteners selection
BRANZ	Bulletin 525: Preventing moisture problems in timber framed skillion roofs

## **3.2 PRODUCTS**

### **3.2.1 BUILDING WRAPS AND UNDERLAYS**

Generally WALL CLADDING - Ecoply Barrier and ROOFING – [Thermakraft Covertex 407](#).

### **3.2.2 TIMBER FRAMING, TREATED**

Species, grade and in service moisture content to NZS 3602 and treatment to NZS 3640. Either mechanically stress graded to AS/NZS 1748, or visual grading to NZS 3631.

### **3.2.3 LAMINATED TIMBER**

Radiata pine laminations to NZS 3606, table 1; treated as required by NZS 3602, to the requirements of NZS 3640, with special attention to Appendix B "Specification advisory notes". Supply weather resistant sealed.

### **3.2.4 PLYWOOD**

Structural plywood to AS/NZS 2269 for bracing, bracketing, sarking and floors.

### **3.2.5 SOFTWOOD SPACED BOARDING FOR EXTERIOR DECKS**

Selected radiata pine, treated to H3.2 CCA to NZS 3640, clause 6.3.1, Round, part round, or sawn timber. Dressed four sides and with arrises removed.

Moisture content prior to laying ~.

### **3.2.6 NAILS**

Steel, stainless steel and galvanised steel of pattern to suit the location and to BRANZ Bulletin 519 "Selection and use of fasteners".

### **3.2.7 BOLTS AND SCREWS**

Steel, stainless steel and galvanised steel of pattern to suit the location and to BRANZ Bulletin 519 "Selection and use of fasteners".

### **3.2.8 NAIL PLATES**

Stainless steel and/or galvanised steel toothed or nailed plates to the plate manufacturer's design for the particular locations as shown on the drawings.

### **3.2.9 CONNECTORS**

Galvanised steel connectors and structural brackets to the connector manufacturer's design for particular locations shown on drawings.

## **3.3 EXECUTION**

### **3.3.1 ATTENDANCE**

Provide and fix blocks, nogs, openings and other items as required by other trades.

### **3.3.2 MOISTURE CONTENT**

Maximum allowable equilibrium moisture content (EMC) for non air-conditioned or centrally heated buildings for framing to which linings are attached.

- Framing at erection: 24% maximum
- Framing at enclosure: 20% maximum
- Framing at lining: 16% maximum
- Timber strip flooring 10% at time of laying

### **3.3.3 EXECUTION GENERALLY**

To NZS 3603 and NZS 3604 except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

### **3.3.4 DIMENSIONS**

All timber sizes are nominal sizes.

### **3.3.5 SET-OUT**

Set out framing in accordance with the requirements of NZS 3604 and as required to support sheet linings and claddings.

### **3.3.6 FRAMING SUB-FLOOR**

Frame up off foundation walls and piles, all fabricated, fastened and braced to NZS 3604, section 6.10, Framed subfloor walls.

### **3.3.7 FRAMING FLOORS**

Framed and fastened to NZS 3604, section 7, Floors.

### **3.3.8 FRAMING WALLS**

Frame to required loading and bracing complete with lintels, sills and nogs, all fabricated and fastened to NZS 3604, section 8, Walls.

### **3.3.9 FRAMING ROOFS**

Frame to required loading and bracing complete with valley boards, ridge boards and purlins. Design and fit roof trusses complete with anchorage. All fabricated and fastened to NZS 3604, section 9, Posts and 10, Roof framing.

### **3.3.10 INSTALLING WALL WRAPS, UNDERLAYS AND SHEET INSULATION PRODUCTS**

Refer to WALL CLADDING and 4701 THERMAL INSULATION for the installation of wall wraps, underlays and sheet insulation.

### **3.3.11 LAYING PLYWOOD SARKING AND FLOORING**

Lay and countersink screw fix to the plywood manufacturer's requirements and to NZS 3604, section 7.2.3, Wood-based sheet flooring.

### **3.3.12 LAYING TIMBER SPACED BOARDING FOR EXTERIOR DECKS**

Confirm whether the grooved side of the boards are face up or face down. Avoid excessively short or long lengths, drill for all fixings, stagger end joints and space boards a maximum of 2 mm apart in general conditions, or maximum 3 mm apart if boards are likely to swell after fixing. Fix using annular grooved galvanised jolt head nails, heads driven flush with the board surface.

### **3.3.13 INSTALL PROPRIETARY FIREPLACE**

Prepare for the installation as detailed and as required by the manufacturer. Install strictly in accordance with AS/NZS 2918 and the manufacturer's stated and detailed requirements.

## **3.4 TIMBER TYPE AND TREATMENT**

### **3.4.1 SUB-FLOOR FRAMING**

<u>Member</u>	<u>Timber species and grade</u>	<u>Treatment</u>
Bearers:	Radiata pine structural grades	H3.2

### **3.4.2 FLOOR FRAMING**

<u>Member</u>	<u>Timber species and grade</u>	<u>Treatment</u>
Mid floor joists:	Nelson Pine LVL 11	H1.2
Boundary joists:	Radiata pine structural grades	H3.2

### **3.4.3 EXTERIOR WALL FRAMING**

<u>Member</u>	<u>Timber species and grade</u>	<u>Treatment</u>
Exterior walls:	Radiata pine structural grades	H1.2
Enclosed decks and balconies:	Radiata pine structural grades	H3.2

### **3.4.4 ROOF FRAMING**

<u>Member</u>	<u>Timber species and grade</u>	<u>Treatment</u>
Rafters:	Nelson Pine LVL 11	H1.2
Purlins/noggings:	Radiata pine structural grades	H1.2

### **3.4.5 EXTERIOR EXPOSED TIMBERS**

<u>Member</u>	<u>Timber species and grade</u>	<u>Treatment</u>
Posts:	Radiata pine structural grades	H3.2
Joists:	Radiata pine structural grades	H3.2
Softwood decking:	Radiata pine structural grades	H3.2

Exterior stairs and steps: Radiata pine structural grades H3.2

#### **3.4.6 EXTERIOR FINISHING TIMBERS**

<u>Member</u>	<u>Timber species and grade</u>	<u>Treatment</u>
Shadowclad:	Radiata pine dressing grade	H3.1
Fascia/barge/cover boards:	Radiata pine dressing grade	H3.1
Exterior trim:	Radiata pine dressing grade	H3.1

#### **3.4.7 INTERIOR FRAMING**

<u>Member</u>	<u>Timber species and grade</u>	<u>Treatment</u>
Non structural walls:	Radiata pine structural grades	H1.2
Structural and braced walls:	Radiata pine structural grades	H1.2

### **3.5 VARIATIONS**

#### **3.5.1 FRAMING – SIZE AND SPACING**

Allow to provide and install all framing necessary to complete the work and include for the following.

Studs	90 x 45 at 400 crs and 2/90x45 at 400 ctrs (above 2.7m) in all loadbearing and outside walls. 90 x 45 at 600 crs elsewhere.
Dwangs and Plates	90x45 at 800 max crs 2/90 x 45 plates top plates and single bottom.
Floor Joists	190 x 45 LVL at 400 crs and 190x45 H3.2 deck and boundary joists. 140x45 H1.2 at 400 ctrs for Mezz floor.
Beams	As detailed and over windows to NZS 3604.
Roof framing	Frame up new roof with 190x45 LVL H1.2 at 800 ctrs
Ceiling framing	Generally all 70x35 timber battens at 600 ctrs
Purlins/noggings	90 x 45 at 800 crs max.

### **3.6 INSULATION**

#### **3.6.1 DOCUMENTS**

Documents referred to in this section are:

NZBC H1/AS1	Energy efficiency, 2.0 Building thermal envelope
NZS 4218	Energy efficiency – Small building envelope

#### **Products**

#### **3.6.2 WIRE NETTING**

Galvanised hexagon wire netting, 42 mm mesh, 1 mm diameter steel wire.

#### **3.6.3 BUILDING WRAPS AND UNDERLAYS (ROOF)**

Breather type, waterproof.

#### **3.6.4 GLASS FIBRE THERMAL INSULATING PADS**

Glass fibres bonded with a thermosetting resin to form a rectangular insulating pad.

#### **3.6.5 CELLULAR PLASTIC RIGID BOARD (EPS)**

Expanded polystyrene foam board manufactured from fire retardant grade resin.

#### **3.6.6 NAILS, NETTING AND PAPER**

Galvanised steel clouts, 25 mm gauge

#### **3.6.7 NAILS, SUB-SHEATHING**

Galvanised 30 mm x 2.5 mm flat head nails to the board manufacturer's requirements.



## **3.7 EXECUTION**

### **3.7.1 STORAGE**

Accept materials undamaged and dry and store in a location that protects them from the weather and damage. Avoid distortion, stretching, puncturing and damage to edges of sheet materials. Do not use damaged sheets.

### **3.7.2 HANDLING**

Wear protective clothing as necessary and when handling, avoid delamination or distortion of the rectangular form. Maintain full thickness unless compression is an installation system requirement.

### **3.7.3 INSPECTION**

Before starting installation of blankets and pads, check that the location and framing are free from moisture, that the cavities are not interconnected and that mesh, building papers and vapour barriers are in place.

### **3.7.4 INSTALL INSULATION**

Lay, install, fit and fix to NZBC H1/AS1: 2.0 and to the insulation manufacturer's requirements. Install in housing to NZS 4218.

### **3.7.5 WIRE NETTING TO SUBSTRATE**

Lay at right angles across the rafters/roof joists. Pull tight and temporarily fix. Tie edges of netting together with galvanised wire clips.

### **3.7.6 LAY WIRE NETTING**

Lay at right angles across the purlins with enough slack to allow insulation to retain its nominal thickness between. Tie edges of netting together with galvanised wire clips.

### **3.7.7 LAY ROOF UNDERLAY**

Pre-cut underlay to required lengths. Lay horizontally starting at the gutter line with succeeding sheets in true alignment and lapping 150 mm. Carefully scribe around and fit neatly to all penetrations. Keep dry and clean until covered in.

### **3.7.8 INSTALL WALL RAB**

Fix to outside face of substrate in true alignment. Fix to the manufacturer's requirements. Scribe neatly around penetrations and openings to leave no gaps.

### **3.7.9 FIT GLASS FIBRE THERMAL INSULATING PADS**

Friction fit insulating pads in place to completely fill the whole of the cavities. Carefully scribe cut insulating pads slightly oversize to maintain friction fit to each other, to smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulating pads over the whole of the installation. Do not cover vents and leave a 150 mm gap around recessed light fittings and metal flues.

### **3.7.10 FIT CELLULAR PLASTIC RIGID BOARD (EPS)**

Friction fit EPS board after roof and wall claddings have been installed. Cut oversize lengthways for a tight compression fit between framing. Leave no gaps between, and maintain full thickness of the insulating segments over the whole of the installation. Do not cover vents. Leave a 150 mm clear gap around recessed light fittings and metal flues. In windy locations secure floor insulation with proprietary support brackets.

### **3.7.11 CLEAN UP**

Clean up as the work proceeds, so no spare offcuts or any other matter or item remain behind claddings or linings.

### **3.7.12 CHECK VAPOUR BARRIERS**

Ensure these form one homogeneous sheet vapour barrier and remain as such throughout the ensuing construction process.

### **3.7.13 LEAVE**

Leave work to the standard required by following procedures.

### **3.7.14 REMOVE**

Remove debris, unused materials and elements from the site.

## **3.8 EXTERIOR LININGS**

### **3.8.1 DOCUMENTS**

Documents referred to in this section are:

NZBC E2/AS1	External moisture 9.0 Wall claddings 9.1 General 9.3 Stucco 9.4 Timber weatherboards 9.5 Fibre cement weatherboards 9.6 Profiled metal 9.7 Fibre cement sheet 9.8 Plywood sheet
AS/NZS 1491	Finger jointed structural timber
AS/NZS 2269	Plywood - Structural
AS/NZS 2908	Cellulose-cement products, 2908.2 Flat sheets
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber framed buildings
NZS 3617	Profiles of weatherboards fascia boards and flooring
NZS 3631	New Zealand national timber grading rules
BRANZ Bulletin 304:	Flashing design
BRANZ Bulletin 448:	Domestic flashing installation
BRANZ Bulletin 407:	Walls on exposed sites
BRANZ Bulletin 441:	Sealed joints in external claddings - 2. Sealants

### **3.8.2 PERFORMANCE**

Accept responsibility for the weathertight performance of the completed cladding system, including all penetrations.

#### **Products**

### **3.8.3 EXTERIOR CAVITY WALL BATTENS**

Radiata pine battens, minimum 20 mm thickness, width and height to match timber framing studs. To NZS 3602, table 1, reference 1D.10.

### **3.8.4 EXTERIOR CAVITY VERMIN-PROOFING**

Perforated uPVC, aluminium or stainless steel trays with upstands. Upstand one side 10 mm and the other 75 mm. Length and width to suit cavity.

### **3.8.5 STRUCTURAL PLYWOOD**

Structural plywood to AS/NZS 2269.

### **3.8.6 PLYWOOD CLADDING**

Rotary cut radiata pine veneer ply sheet to AS/NZS 2269 treated H3.

### **3.8.7 FIBRE-CEMENT WEATHERBOARD**

Cellulose cement autoclaved sheets to NZS/AS 2908.2.

### **3.8.8 FIBRE-CEMENT SOFFIT LINING**

Cellulose cement autoclaved sheets to AS/NZS 2908.2.

### **3.8.9 TIMBER FASCIAS AND BARGE BOARDS**

Dressing grade to NZS 3631 and treated to NZS 3602, table 2, reference 2A.3. Finger jointed timber to AS/NZS 1491.

### **3.8.10 PVC JOINTERS**

To suit sheet thickness.

### **3.8.11 NAILS, SCREWS AND FASTENINGS**

Metal, size and pattern, to cladding manufacturer's requirements and complying with the relevant aspects of NZS 3604, section 4: Durability.

### **3.8.12 FLASHINGS**

Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the window frame materials and fixings and cladding materials and fixings.

#### **Execution**

### **3.8.13 MOISTURE CONTENT**

Maximum allowable moisture content in accordance with NZS 3602 for:

	<u>ECM</u>
- Framing	20% at closing in
- Weatherboards	14% at time of fixing
- Exterior joinery and trim	14%

### **3.8.14 EXECUTION METHODS AND PRACTICES**

To NZS 3604 except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

### **3.8.15 FIX WRAPS AND UNDERLAYS**

Fix to framing, with laps and fixing to the cladding manufacturer's requirements.

### **3.8.16 PENETRATIONS**

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the cladding. Required preparatory work includes the following:

- wall cladding underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames and other penetrations
- claddings neatly finished off to all sides of openings
- installation of flashings (those required to be installed prior to installation of penetrating elements).

### **3.8.17 INSTALL DRAINED CAVITY**

20 mm minimum thickness ventilated and drained cavity to NZBC E2/AS1: 9.0 Wall claddings, where required. Fix vertical cavity battens to wall framing studs. The battens are fixed by the cladding fixings which will penetrate the wall framing studs over the building wrap. Seal the top of the cavity and install vermin-proofing at base.

Do not use horizontal cavity battens. Use cavity spacers where fixing is required between cavity battens.

### **3.8.18 INSTALL PLYWOOD**

Install to the plywood manufacturer's requirements. Refer to the plywood manufacturer's literature for fixing details, NZS 3604 for fixings durability requirements and to BRANZ Bulletin 407 Walls on exposed sites for specific provisions.

### **3.8.19 INSTALL PLYWOOD CLADDING**

Install to the cladding manufacturer's requirements. Refer to the cladding manufacturer's literature for fixing details, NZS 3604 for fixings durability requirements and to BRANZ Bulletin 407 Walls on exposed sites for specific provisions.

### **3.8.20 PRIME OR SEAL**

Prime or seal all front and back faces, edges and end grain before fixing weatherboards and exterior trim, to the finish and quality specified in 6701 PAINTING AND PAPERHANGING.

### **3.8.21 INSTALL FIBRE CEMENT SHEET CLADDING**

Install to detail and to the cladding manufacturer's requirements. Refer to the cladding manufacturer's literature for fixing details, NZS 3604 for fixings durability requirements and to BRANZ Bulletin 407 Walls on exposed sites for specific provisions.

### **3.8.22 INSTALL COVERS AND FLASHINGS**

Install and fix as detailed and to the manufacturer's details and to comply with NZBC E2/AS1: 4.0 Flashings, 5.0 Roof/wall junctions and 6.0 Parapets.

### **3.8.23 INSTALL FIBRE CEMENT SOFFITS**

Cut sheets dry and scribe fit to fully support all edges and joints. Nail and drill for and insert fasteners to the sheet manufacturer's requirements. Fit complete with jointers and capping moulds. Refer to the cladding manufacturer's literature for fixing details, NZS 3604 for fixings durability requirements and to BRANZ Bulletin 407 Walls on exposed sites for specific provisions.

### **3.8.24 INSTALL EXTERIOR TIMBER FINISHINGS**

Install timber fascias, barge boards, facings, beads, trim and enclosures level, true to line and face, with all end grain sealed and joints mitred.

### **3.8.25 INSTALL FLASHINGS**

Install flashings, covers and soakers as detailed on the drawings and to BRANZ Bulletins 304 Flashing design and 448 Domestic flashing installation.

### **3.8.26 USE OF SEALANTS**

Selection and use of sealants to follow BRANZ Bulletin 441 Sealed joints in external claddings - 2. Sealants.

### **3.8.27 COMPLETE**

Ensure the work is complete with all flashings, finishings and trim properly installed so the cladding system is completely weathertight.

### **3.8.28 REPLACE**

Replace damaged or marked elements. Remove unused materials from the site.

## **3.9 VARIATIONS – EXTERIOR LININGS**

Underlay	Cover all framed exterior walls with Ecoply Barrier and Thermakraft Covertex 407 for roofing
Cladding	Generally Shadow clad and Hardies Stria
Soffits	Generally 4.5mm Hardies soffit.
Insulation	To all new outside walls fit R2.6 and to new ceiling areas provide and fit R3.2 Batts. Allow also for underfloor insulation under new sections of floor, Expol 60mm

## **3.10 INTERIOR LININGS**

### **3.10.1 DOCUMENTS REFERRED TO**

Documents referred to in this section are:

AS 1397	Steel sheet and strip - hot-dipped, zinc-coated, or aluminium/zinc- coated
AS/NZS 2588	Gypsum plasterboard
AS/NZS 2589	Gypsum linings in residential and light commercial construction – Application and finishing 2589.1 Gypsum plasterboard
NZS 3604	Timber framed buildings
ASTM C630/C630M-96a	Water-resistant gypsum backing board

BRANZ technical paper P21: A wall bracing test and evaluation procedure

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

### **3.10.2 QUALIFICATIONS**

Plasterboard fixers and stoppers to be experienced competent workers, familiar with materials and techniques specified. Submit evidence of experience on request.

## **Performance**

### **3.10.3 INSPECTIONS AND ACCEPTANCE**

Allow for inspection of the finished surface of the installed plasterboard:

- before applying sealer and
- before applying finish coatings or decorative papers,

so that after assessment of the type and/or angle of illumination and its effect on the completed decorative treatment, group approval and acceptance of the surface can be given.

### **3.10.4 BRACING REQUIREMENTS**

Provide braced wall systems using bracing rated plasterboard sheet to meet the requirements of NZS 3604 when tested in accordance with BRANZ technical Paper P21: "A wall bracing test and evaluation procedure."

## **Products**

## **Components**

### **3.10.5 CEILING BATTENS, TIMBER**

Species, in service moisture content and treatment as set out in NZS 3602 and grading to NZS 3631.

### **3.10.6 NAILS, TIMBER FRAME**

10 mm plasterboard:	30 mm x 2.5 mm galvanised drywall clouts
13 mm plasterboard:	40 mm x 2.5 mm galvanised drywall clouts
2 x 10 mm plasterboard:	30 mm x 2.5 mm galvanised drywall clouts (inner layer)
	40 mm x 2.5 mm galvanised drywall clouts (outer layer)
10 mm + 13 mm plasterboard:	40 mm x 2.5 mm galvanised drywall clouts (inner layer)
	50 mm x 2.5 mm galvanised drywall clouts (outer layer)
2 x 13 mm plasterboard:	50 mm x 2.5 mm galvanised drywall clouts (inner layer)
	60 mm x 2.5 mm galvanised drywall clouts (outer layer)

Nails for fire rated and sound rated systems as required by the sheet manufacturer's approved specification.

Nails for perimeter nailing for bracing systems complete with 15 mm galvanised steel washers as required by the sheet manufacturer's approved specification.

## **3.11 EXECUTION**

## **Conditions**

### **3.11.1 HANDLE AND STORE**

Handle and store sheets and accessories in dry conditions stored indoors out of direct sunlight in neat flat stacks clear of the floor with no sagging and avoiding damage to ends, edges and surfaces. Reject damaged material.



### **3.11.2 SUBSTRATE**

Do not commence work until the substrate is plumb, level and to the standard required by the sheet manufacturer's requirements.

### **3.11.3 MOISTURE CONTENT**

Maximum allowable moisture content in accordance with NZS 3602 for:

Framing at lining: 16% for plasterboard linings

### **3.11.4 PROTECT**

Protect surfaces, cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage.

#### **Application - fixing**

### **3.11.5 INSTALL CEILING BATTENS**

Install in accordance with the batten manufacturer's requirements.

### **3.11.6 LINE CEILINGS AND WALLS**

Line ceilings and walls with the various sheets and fix to the sheet manufacturer's details and requirements.

#### **Application - bracing systems**

### **3.11.7 LINE BRACING WALLS**

Line walls with ply sheet to form panels or systems, nail fixed to the sheet manufacturer's details. Do not fix bracing sheets until steel bracing and/or straps are in place.

#### **Application - wet area systems**

### **3.11.8 LINE WET AREA WALLS**

Line walls strictly in accordance with the sheet manufacturer's requirements.  
Sheets must be sealed and top coated.

#### **Completion**

### **3.11.9 REPLACE**

Replace damaged sheets or elements.

### **3.11.10 CLEAN DOWN**

Clean down completed surfaces to remove irregularities and finally sand down with fine paper to the sheet manufacturer's requirements, to leave completely smooth and clean to the standard required for following trades.

### **3.11.11 REMOVE**

Remove debris, unused materials and elements from the site.  
Provide and line with the following.

## **3.12 VARIATIONS – INTERIOR LININGS**

Bracing	Brace extensions as per calculations with as indicated.
Ceilings	12mm grooved ply new ceilings .
Bathroom Walls	Selected Fibo wetwall linings
Other Walls	To all other new walls line with standard 10mm ply. All to manufacturer's instructions.

## **3.13 ALUMINIUM WINDOWS & DOORS**

### **3.13.1 RELATED SECTIONS**

Refer to 4601 GLAZING for glazing.

### **3.13.2 DOCUMENTS**

Documents referred to in this section are:

NZS 3604 Timber framed buildings  
AS 3715 Metal finishing - Thermoset powder coatings for architectural applications  
NZS 4223.3 Glazing in buildings – Human impact safety requirements  
WANZ Aluminium Window Handbook  
WANZ Specification for powder coatings on architectural aluminium products  
WANZ Installation code for aluminium joinery products  
BRANZ Bulletin 349: Finishes for aluminium

### **3.13.3 WARRANTIES**

Warrant this work under normal environmental and use conditions against failure of materials and execution

Warranty period: 2 years

### **3.13.4 CERTIFICATION**

Provide a certificate from a laboratory accredited by International Accreditation of New Zealand that the windows and doors offered comply with the performance requirements of NZS 4211.

### **3.13.5 QUALIFICATIONS**

Fabrication by a member of WANZ.

### **3.13.6 PERFORMANCE**

The structural and weather-tight performance of the completed window installation, the glazing and infill panels is the responsibility of the window manufacturer.

## **3.14 PRODUCTS**

### **3.14.1 WINDOW AND DOOR SECTIONS**

Form all aluminium members from extruded sections. Folded sections are restricted to flashings and concealed members only.

### **3.14.2 FLASHINGS GENERALLY**

Material, grade and colour of head flashings to match the window frames. Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.

#### **Components - for cavity systems**

Flashing device to close the cavity above the window or door unit to direct water that occasionally penetrates the wall cladding into the cavity spaces adjacent to the window.

Extruded aluminium support bar with built in drainage and ventilation to NZBC E2, to provide continuous support to the window unit.

#### **Components**

### **3.14.3 FABRICATION SEALANT**

To the window manufacturer's requirements.

### **3.14.4 GLAZING TAPE AND GASKETS**

To the window manufacturer's requirements.

### **3.14.5 FIXINGS**

Ensure all fixings and bracketing are compatible with aluminium. Do not use electroplated zinc fasteners or brass fastenings.

#### **Finishes**

### **3.14.6 ORGANIC POWDER COATING FINISH**

To AS 3715 and WANZ Specification for powder coatings on architectural aluminium products. All finished surfaces to show uniformity of gloss and colour (to match approved sample) free of all coating defects.

## **3.15 EXECUTION**

### **3.15.1 CONFIRM**

Confirm all framing openings on site for dimension, plumb and straightness prior to fabrication or ordering of aluminium joinery.

### **3.15.2 EXECUTION GENERALLY**

Execute all fabrication and installation work in accordance with the requirements of NZS 4211, WANZ Aluminium window handbook and WANZ Installation code for aluminium joinery products.

### **3.15.3 HANDLING**

Avoid distortion of elements during transit, handling and storage. Prevent pre-finished surfaces from rubbing together. Prevent contact with mud, plaster and cement. Do not deliver to site any elements which cannot be immediately unloaded into suitable conditions of storage.

### **3.15.4 CORROSION PROTECTION**

Seal or suitably coat cut ends and holes drilled in aluminium before the frames are installed. Before fixing, apply bituminous coatings, slips or underlays between dissimilar metals in contact, or aluminium in contact with concrete.

### **3.15.5 CONFIRM PREPARATION OF WALL OPENINGS**

Confirm that wall openings have been prepared ready for the installation of all window and door frames. Do not proceed with the window and door installation until required preparatory work has been completed.

Required preparatory work includes the following:

- wall cladding underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames
- claddings neatly finished off to all sides of openings
- interior linings neatly trimmed ready for installation of jamb liners and completion of air seals to all sides of openings
- installation of flashings (those which are required to be installed prior to frames).

### **3.15.6 FIX FRAMES**

Fix frames rigidly in place without distortion, to the window manufacturer's and WANZ Aluminium window handbook requirements, plumb, true to line and face, weathertight and with all openings operating freely.

### **3.15.7 DRAINAGE**

Provide anti-condensation channels to all sills. Sills to sashes and fixed lights to incorporate positive drainage to the exterior.

## **Flashings and air seals**

### **3.15.8 INSTALL FLASHINGS**

Install flashings to heads, jambs and sills of frames as supplied and required by the window manufacturer and as detailed on the drawings. Finish head flashings to match window finish.

Place all flashings so that the head flashing weathers the jamb flashings, which in turn weathers over the upstand of the sill flashing. Ensure that sill flashings drain to the outside air.

Except where window/door frames are recessed, ensure that head flashings over-sail jamb facings by 15 mm at each end.

#### **3.15.9 COMPLETE AIR SEAL**

Form an air-tight seal by means of proprietary expanding foam, compressible foam strips, or sealants used with backing rods, applied deep within the reveal to completely fill the gap between joinery and structural framing. Ensure that in combination with the internal linings a complete air seal is created.

### **Completion items**

#### **3.15.10 SEAL FRAMES ON SITE**

Seal frames to each other and to adjoining structure and finishes, all as required by the window manufacturer and to make the installation weathertight. Do not seal the junction between the sill member and the cladding or sill flashing which must remain open.

#### **3.15.11 PROTECTIVE COVERINGS**

Retain protective coverings and coatings and keep in place during the fixing process. Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades. Remove protection on completion.

#### **3.15.12 SAFETY**

Indicate the presence of transparent glasses for the remainder of the contract period, with whiting, tape or signs compatible with the glass type. Indicators other than whiting must not be applied to the glass surface. Masking tape must not be used for this purpose.

#### **3.15.13 MANIFESTATIONS**

To NZS 4223, part 3, 303.1.

#### **3.15.14 TRADE CLEAN**

Clean off or remove safety indicators at completion of the building.

#### **3.15.15 CLEAN FRAMES**

On completion clean down both sides of window and door frames using the methods required by the window and door manufacturer.

#### **3.15.16 CONFIRM**

Confirm the proper operation of hardware and operating systems on completion of the installation and again at completion of the contract works.

### **3.16 INTERIOR TIMBER DOORS**

#### **3.16.1 RELATED SECTIONS**

Refer to 4601 GLAZING for glazing (if applicable)

#### **3.16.2 DOCUMENTS**

Documents referred to in this section are:

NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber framed buildings
NZS 3610	Profiles of mouldings and joinery

### **PRODUCTS**

#### **3.16.3 TIMBER**

To NZS 3602.

**3.16.4 PROFILES, FACINGS, SCRIBERS AND ARCHITRAVES**

Traditional profiles to NZS 3610. Proprietary profiles and special profiles as detailed. Pencil radius corners of profiled schedules for paint finish.

**3.16.5 INTERIOR DOORS, TIMBER**

Solid/hollow core doors as scheduled complete with matching 6 mm clashing strip to both sides and to the exposed edge of cavity slider doors.

**3.16.6 DOOR HINGES**

Size and gauge to carry door. 3 hinges per door.

**EXECUTION**

**3.16.7 SITE MEASURE**

Confirm framed openings on site for dimension, plumb and straightness prior to fabrication or ordering of timber joinery. Confirm lintel head and sill deflection for sliding or bifold door systems is within the manufacturer's specified tolerances. Provide not less than 10 mm unless otherwise required.

**3.16.8 EXECUTION GENERALLY**

Manufacture to the methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

**3.16.9 FACTORY FIT HARDWARE**

Factory fit the following where specified: -  
- Hinges

**3.16.10 FACTORY FINISHING**

Before delivery to site: -  
- Brace square and provide protection to assemblies during delivery to site.  
Where factory glazed, indicate the presence of transparent glasses with whiting, tape or signs compatible with the glass type.

**Internal doors**

**3.16.11 INTERNAL JOINERY FRAMES**

Fabricate as detailed. Wedge and rigidly fix in place without distortion, plumb, and true to line and face. Pre drill for fixings through frame. Countersink and plug frames scheduled for clear finish.

**3.16.12 INTERNAL DOOR FRAMES, SOLID REBATED**

Fabricate as detailed. Hang doors to operate freely on hinges, sliding, or bi-fold gear and to the door manufacturer's requirements. Pre drill for fixings through frame. Countersink and plug frames scheduled for clear finish. Fit hardware.

**3.16.13 INTERNAL DOOR LINERS**

Heads and jambs finished minimum 18 mm, with 10 mm planted door stops. Width to match width of lined walls. Hang doors on hinges, sliding, or sliding-folding gear to the door manufacturer's requirements and to operate freely. Countersink and plug frames scheduled for clear finish. Fit hardware.

**Completion**

**3.16.14 CHECK**

Check and adjust operation of all sashes, doors, hardware and furniture.

**3.16.15 TEMPORARY PROTECTION**

On completion remove any temporary protection and leave ready for following work.

**3.17 JOINERY**



### **3.17.1 DOCUMENTS**

Documents referred to in this section are:

NZBC D1/AS1	Access routes, 4.0 Stairways
AS/NZS 1859	Reconstituted wood based panels, 1859.2: Dry processed fibreboard
AS/NZS 1860	Particleboard flooring, 1860.1: Specifications
NZS 3602	Timber and wood-based products for use in building

Copies of the above literature are available by phoning ~.

### **3.18 VARIATIONS - JOINERY**

Generally all joinery to be complete with "Scott Commercial" or equal slides to all drawers and 'Blum, Hettich' or equal spring loaded hinges to all cupboards.

#### **3.18.1 KITCHENETTE**

Arranged for separately by owner.

#### **3.18.2 STORES:**

##### **3.18.2.1 NEXT TO STAIRS STORE**

Provide and fit 5 No. 400 deep shelves – 16mm customwood. All cleated off walls and with centre support.

### **3.19 VARIATIONS - SUNDRY**

#### **3.19.1 STEPS / LANDING / PORCH**

Include for 100 x 25 H3 Pine decking over H3.2 joists at 400 crs., bearers, and allow for 150 x 25 baseboards all round. All on 125 x 125 treated piles.

#### **3.19.2 FOUNDATION ACCESS**

1 No. framed ledged and braced 600 x 600 door.

#### **3.19.3 STEPS**

Include for two timber steps to landing from exterior doors.

#### **3.19.4 FIREPLACE / CHIMNEY**

Modify roof / ceiling framing to suit installation of new woodburner. No timbers should be left near flue as per manufacturers instructions.

## **4 PLUMBER**

### **HOT & COLD WATER SYSTEM**

#### **4.1 GENERAL**

##### **4.1.1 DOCUMENTS**

Documents referred to in this section are:

NZBC G12/AS1	Water supplies
AS/NZS 2642	Polybutylene pipe fittings
	2642.2: Polybutylene (PB) pipe for hot and cold water applications
	2642.3: Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications

NZS 3501	Specification for copper tubes for water, gas and sanitation
NZS 4602	Low pressure copper thermal storage electric water heaters
NZS 4606	Storage water heaters 4606.3: Specific requirements for water heaters with composite shells
NZS 4607	Installation of thermal storage electric water heaters: valve-vented systems
NZS 4617	Tempering (3-port mixing) valves
DIN 8077	Polypropylene (PP) Pipe dimensions
DIN 8078	Polypropylene (PP) Pipes Types 1, 2 & 3, General Quality Requirements and Testing.

Plumbers, Gasfitters and Drainlayers Act 2006

#### **4.1.2 QUALIFICATIONS**

Plumbers to be experienced competent craftsman plumbers, or registered plumbers working under the direction of a craftsman plumber, familiar with the materials and techniques specified.

### **4.2 PRODUCTS**

#### **4.2.1 POLYBUTYLENE WATER PIPE**

Polybutylene tubing to AS/NZS 2642.2 and AS/NZS 2642.3 complete with fittings and accessories brand-matched.

#### **4.2.2 EXPOSED PIPES**

Chrome plated copper pipe with chrome plated brass nuts and fittings.

Faucet hoses covered with stainless steel braid and fitted with stainless steel nuts.

White polyethylene composite pipe with white nuts and accessories.

Selected pipework finish to include escutcheon plates and bends and elbows protruding from walls or fittings.

#### **4.2.3 TEMPERING VALVE**

Tempering valve to NZS 4617 to NZBC G12/AS1: Water supplies.

#### **4.2.4 GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE**

Continuous flow unit with an integral gas burner and flue.

### **4.3 EXECUTION**

#### **4.3.1 ELECTROLYTIC ACTION**

Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

#### **4.3.2 EXECUTION GENERALLY**

Generally carry out the whole of this work and tests to NZS 3500.

#### **4.3.3 POLYBUTYLENE/POLYETHYLENE WATER SUPPLY**

Size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Run pipes complete with all fittings, support and fixing, and jointed to the pipe manufacturer's specifications, all to NZBC G12/AS1. Conceal pipework and pressure test before the wall linings are fixed.

#### **4.3.4 OUTLET LOCATIONS**

Ensure wall outlets for exposed pipes are level and centred on the fixture to ensure the neat installation of exposed pipework.

#### **4.3.5 INSTALLING HOT WATER PIPE INSULATION**

Insulate all hot water pipes in accordance with the insulation manufacturer's instructions. Cut insulation sections tight between timber framing and tight between the webs of steel studs.

Where hair felt is used, wrap around pipes in two layers in opposite directions and secure with galvanised steel wire ties.

**4.3.6 INSTALL GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE**

Install where shown complete with all the necessary fittings to the cylinder manufacturer's requirements and in accordance with NZBC G12/AS1: 6.10. Complete the flue installation in accordance with the heater manufacturer's details and requirements.

**4.3.7 PENETRATIONS**

Provide and fit collars and escutcheon plates to match the pipework at all penetrations through constructions.

**4.3.8 INSTALL TAPS AND FAUCETS**

Install taps and faucets in accordance with the tap manufacturer's requirements. Flush out on completion. Check that washers or ceramic discs are operating correctly.

**4.3.9 LEAVE**

Leave water services in proper working order. Pressure test to ensure no leakage and leave in proper working order.

**4.3.10 CLEAN**

Clean tapware and fittings. Remove unused materials from the site.

**SANITARY PLUMBING**

**4.4 GENERAL**

**4.4.1 DOCUMENTS**

Documents referred to in this section are:

NZBC G1/AS1	Personal hygiene 2.0 Fixture construction and installation 3.0 Location of sanitary fixtures
NZBC G13/AS1	Foul water - sanitary plumbing
AS/NZS 1260	PVC pipes and fittings for drain, waste and vent applications
AS/NZS 3500	Plumbing and drainage Part 2: Sanitary plumbing and drainage
NZS 7641	Unplasticised PVC waste and ventilating pipe, fittings and accessories, 32 mm, 40 mm and 50 mm

Plumbers, Gasfitters and Drainlayers Act 2006

**4.4.2 QUALIFICATIONS**

Carry out work by or under the direct supervision of a person registered under the Plumbers, Gasfitters and Drainlayers Act 2006.

**4.5 PRODUCTS**

**4.5.1 UPVC WASTE, SOIL AND VENT PIPES**

UPVC pipe to NZS 7641 and AS/NZS 1260 complete with fittings brand-matched to the pipe manufacturer's requirements.

**4.5.2 EXPOSED PIPES AND TRAPS**

Chrome plate on copper pipes and associated copper and brass fittings.  
White polybutylene or PVC, including all associated fittings.

**4.5.3 SEALANT, SANITARY FIXTURES**

For between sanitary fixtures and accessories and adjacent floor or wall surfaces.

1-part, silicone, containing mildew resistant agents.  
Colour: White

## **4.6 EXECUTION**

### **4.6.1 EXECUTION GENERALLY**

Carry out this work and complete all tests to AS/NZS 3500 Part 2  
Carry out this work and complete all tests to NZBC G1/AS1: 2.0, 3.0 and G13/AS1.

### **4.6.2 ELECTROLYTIC ACTION**

Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

### **4.6.3 INSTALL SANITARY FIXTURES**

Fit and install sanitary fixtures and associated screens, elements and hardware, plumb, true to line and rigid, to the fixture manufacturer's requirements. Supply standard chrome plated brass wastes and plastic plugs on chrome plated chains with all basins, tubs and baths.

### **4.6.4 INSTALL TRAPS, WASTE AND VENT PIPES**

Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to AS/NZS 3500 Part 2/NZBC G13/AS1. Discharge wastes into the drainage system stack, soil pipe, or gully trap as shown. Bird proof mesh to all roof vents and vermin proof mesh to all untrapped waste pipes.

### **4.6.5 PENETRATIONS**

At penetrations through constructions provide and fit collars and escutcheon plates to match pipework.

### **4.6.6 INSTALL SANITARY ACCESSORIES**

Install sanitary accessories as selected.

### **4.6.7 TEST**

Test soil and waste disposal systems to ensure no leakage exists and leave in proper working order.

### **4.6.8 CLEAN UP**

Remove labels and clean fittings. Remove unused materials from the site.

## **4.7 VARIATIONS**

### **4.7.1 WASTES, TRAPS AND VENTS**

From all fittings indicated allow to install wastes to run to new and existing gully traps or connect into existing sewer line. Trap all wastes and vent all fittings all in accordance with the New Zealand Building Code. All work to be carried out by an experienced and licensed Plumber / Drainlayer. All bends to wastes to be swept to avoid blockage. At junctions of wastes to main stack sweep bends and offset connections to prevent wastes flowing between fittings. Allow for all wastes including the following:

Sink	65mm diam. (1 Off)
Shower	65 mm diam. (1 Off)
Vanity Basins	65 mm diam. (1 Off)
WC's	100 mm diam. (1 Off)

Vent all wastes as per the New Zealand Building Code.

### **4.7.2 PLUMBING AND DRAINAGE**

#### **NOTE:**

This unit will not be plumbed in. All connections as detailed will be terminated and capped under the FJ's.

Proposed location for Rinnai Infinity unit as shown but not installed.

Stormwater will be connected to soakpit - refer stormwater calculation for soakpit capacity.

#### **4.7.3 TAPS**

Provide and fit NZ compliant taps to all fittings indicated including the following: (Verify with owner.)

Tub	Reused.
Basins	2 sets of taps.
Bath	1 set of bath taps.
Shower	1 Mixer and slide rail type rose. (2 sets)
Outside Taps	3 Off.

#### **4.7.4 FITTINGS**

Provide and install the following: (Verify with owner.)

Shower	'Engelfield 900 x 900.
Vanities	To owners choice
Toilets	To owners choice

#### **4.7.5 FLASHINGS**

Include for 0.55 alum flashings to heads jambs and sills of all windows and doors. Fit all to good trade practice and to suit existing linings. (Alternative of Malthoid is acceptable).

#### **4.7.6 WOODBURNER**

Allow to install new freestanding woodburner as indicated all to manufacturers instructions. Flash to roof as necessary.

## **5 ROOFER**

### **5.1 GENERAL**

#### **5.1.1 DOCUMENTS**

Documents referred to in this section are:

NZBC E2/AS1	External moisture
	4.0 Flashings
	5.0 Roof/wall junctions
	6.0 Parapets
	8.0 Roof claddings
	8.1 General
	8.4 Profiled metal
AS 1397	Steel sheet and strip - hot-dipped, zinc-coated, or aluminium/zinc-coated
NZS 3403	Specification for hot-dipped galvanised corrugated steel sheet for building purposes
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber framed buildings

NZ Metal Roofing Manufacturers Inc: NZ metal roofing & wall  
cladding code of practice

#### **5.1.2 QUALIFICATIONS**

Carry out roofing work using experienced, competent roofers familiar with the materials and techniques specified.



### **5.1.3 WIND AND EARTHQUAKE LOADINGS**

Use fixings and methods capable of sustaining the loads appropriate to the area as set out in NZS 3604, section 5.

### **5.1.4 CO-ORDINATE**

Co-ordinate to ensure substrate and preparatory work is complete and other work programmed in the order required for access and completion of the roof.

### **5.1.5 PERFORMANCE**

Accept responsibility for the weather-tight performance of the completed roofing system, including all penetrations through the roof and junctions with walls and parapets.

## **5.2 PRODUCTS**

### **5.2.1 PROFILED METAL ROOFING**

Steel sheet galvanised to NZS 3403, aluminium/zinc coated to AS 1397. Finish as specified. Accessories, cappings, flashings and fixings to match and to the roofing manufacturer's requirements.

### **5.2.2 WIRE NETTING**

Galvanised hexagonal 75 mm mesh from 1 mm galvanised steel wire.

### **5.2.3 UNDERLAY**

Breather type, waterproof, self supporting, "Thermokraft" or equivalent.

### **5.2.4 NAILS, SCREWS AND FASTENINGS**

Metal, size and pattern, to roofing manufacturer's requirements and complying with the relevant aspects of NZS 3604, section 4: Durability.

## **5.3 EXECUTION**

### **5.3.1 STORAGE**

Stack roofing and accessories on clean, level areas of the site and protect from damage and from weather until ready to fix in place. Avoid overloading roof structure when roofing materials are placed on the roof area prior to installation.

### **5.3.2 SET-OUT**

Set out the planned layout before fixing commences, to ensure true lines and the correct relationship to module, grid and roof features.

### **5.3.3 LAY ROOF UNDERLAY**

Lay and Fix roofing underlay in single fashion with 150mm lap at the edges and ends of the sheets. Thermakraft Covertek 405 can be laid horizontal or vertical. Use with proprietary wire netting on roofs under 8 degrees or as specified.

### **5.3.4 LAY ROOFING, GENERALLY**

Take care to avoid damaging pre-finished roofing both during and after fixing. Wear only soft-soled shoes on the finished surface.

### **5.3.5 CUT PROFILED METAL ROOFING**

Cut profiled metal roofing only with tools recommended by the roofing manufacturer. Fold ends and seal cut edges to the roofing manufacturer's requirements.

### **5.3.6 INSTALL PROFILED METAL ROOFING**

Install profiled metal roofing and fix complete with all matching accessories, flashed to all roof features and penetrations; and in accordance with the requirements in the NZ Metal Roofing Manufacturers Inc: NZ metal roofing and wall cladding code of practice.

### **5.3.7 FIXINGS**

Refer to the roofing manufacturer's literature for fixing details and to NZS 3604 for fixings durability requirements.

### **5.3.8 INSTALL COVERS AND FLASHINGS**

Install and fix as detailed and to the roofing manufacturer's details and to comply with NZBC E2/AS1: 4.0 Flashings, 5.0 Roof/wall junctions and 6.0 Parapets.

### **5.3.9 PENETRATIONS**

Flash and overflash all penetrations through the roof.

### **5.3.10 PENETRATIONS AND JUNCTIONS**

Check that adjoining walls and parapets are prepared ready for the installation of the roofing. Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof. Required work includes the following:

- underlay turned up at wall and parapet lines
- underlay finished and dressed off to all openings, ready for the installation of skylights and other penetrations
- roofing installation neatly finished to all sides of openings and to all wall and parapet junctions
- installation of flashings (those required to be installed prior to installation of penetrating elements and/or wall linings).

### **5.3.11 USE OF SEALANTS**

Select and use sealants only as recommended by the roofing manufacturer.

### **5.3.12 COMPLETE**

Ensure the work is complete with all flashings, undercloaks, valleys, ridges and hips properly installed so the finished roof is completely weathertight.

### **5.3.13 REMOVE FILINGS**

Remove metal filings from roofing surfaces at least daily.

### **5.3.14 CLEAR**

Clear trade rubbish and unused materials from the roof and surrounds regularly during the work and at completion. Sweep down the completed roof and flush out spoutings, gutters and rainwater pipes, ensuring that metal filings, metal scraps and loose fixings are removed.

### **5.3.15 REPLACE**

Replace damaged or marked elements. Remove unused materials from the site.

## **RAINWATER SYSTEMS**

## **5.4 GENERAL**

### **5.4.1 DOCUMENTS**

Documents referred to in this section are: -

AS 1397	Steel sheet and strip - hot-dipped, zinc-coated or aluminium/zinc-coated
BRANZ	Bulletin 304: Flashing design.
BRANZ	Bulletin 448: Domestic flashing installation.

### **5.4.2 QUALIFICATIONS**

Workers to be either competent craftsman plumbers, or registered plumbers working under the direction of a craftsman plumber, or roofers, familiar with the materials and techniques specified.

## **5.5 PRODUCTS**

uPVC

#### **5.5.1 UPVC SPOUTING**

Profile, jointing, brackets and fittings brand matched and complete to the spouting manufacturer's specifications.

#### **5.5.2 UPVC DOWNPIPES**

Tubes, stand-off brackets and fittings brand matched and complete to the manufacturers specifications.

#### **General**

#### **5.5.3 RAINWATER HEADS, DROPPERS, OVERFLOWS**

Fabricate and install as detailed.

#### **5.5.4 FLASHINGS GENERALLY**

0.55 mm sheet steel galvanised to AS 1397, aluminium/zinc coated to AS 1397, 1.8 mm (20 kg/m<sup>2</sup>) copperised pure lead, 0.5 mm half hard copper sheet, or proprietary rubberised perforated aluminium strip, all to location, compatibility and design requirements of BRANZ Bulletin 304 Flashing design.

#### **5.5.5 DOMES**

Wire mesh in round form with legs to clip inside the outlet opening to the downpipe.

### **5.6 EXECUTION**

#### **5.6.1 ELECTROLYTIC ACTION**

Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

Check compatibility of metals used for rainwater goods, against the materials used for roofing and flashings. Notify any incompatibility to the owner and obtain written approval for amendments to selections.

#### **5.6.2 LIAISON**

Ensure liaison with associated installations to confirm material selections are compatible and required flashing work is completed.

#### **5.6.3 INSTALLATION GENERALLY**

Install and fix spouting and downpipes to the manufacturers requirements. Install system to properly drain water from the roof area and so that water will not enter the building under overflow conditions.

#### **uPVC**

#### **5.6.4 FIT UPVC SPOUTING**

Fit brackets at maximum 500 mm centres and fix with galvanised screw. Set to fall to outlets. Ensure solvent welded or rubber ring jointed spouting sections are complete with all fittings to the spouting manufacturer's requirements. Allow for expansion.

#### **5.6.5 FIT UPVC DOWNPIPES**

Fit stand-off brackets or clips at maximum 1 metre centres and fix with round head galvanised screws. Set pipes plumb and clear of the wall. Solvent weld joints. Discharge into stormwater drain.

#### **General**

#### **5.6.6 FLASHINGS**

Scribe fit, fold, lap, seam, or run solder as required by the metal, to flash all roof penetrations, roofing and exterior joinery to prevent weather penetration. Except at expansion joints, allow for 2 rows of rivets to overlapping sheet joints. Install and fix flashings and flashing joints to

the criteria stated in BRANZ Bulletins 304 Flashing design and 448 Domestic flashing installation.

#### **5.6.7 LEAVE**

Leave rainwater services in proper working order and all flashing work completed to keep the building weathertight.

#### **5.6.8 CLEAN UP**

Wash out gutter daily and on completion to remove swarf. Take away from the site unused materials and elements.

## **6 ELECTRICIAN**

### **6.1 GENERAL**

#### **6.1.1 DOCUMENTS**

Documents referred to in this section are:

NZBC F6/AS1	Lighting for emergency
NZBC F7/AS1	Warning systems, 3.1 Domestic smoke alarms
NZBC F8/AS1	Signs
AS/NZS 2293	Emergency evacuation lighting for buildings
AS/NZS 3000	Electrical regulations - Buildings, structures and premises
AS/NZS 3008	Electrical installations - Selection of cables 3008.1.2: Typical New Zealand installation conditions
AS 3786	Smoke alarms
NZS 6401	PVC-insulated cables for electric power and lighting
Electricity Regulations 1997	
New Zealand electrical codes of practice (ECP)	

#### **6.1.2 COMPLY**

Comply with the Electricity Regulations 1997, AS/NZS 3000, AS/NZS 3008.1.2 and the New Zealand electrical codes of practice for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

#### **6.1.3 QUALIFICATIONS**

Carry out work by or under the direct supervision of a holder of a practising certificate under the Electricity Regulations 1997.

#### **6.1.4 CERTIFICATE OF COMPLIANCE**

Supply a certificate of compliance to the owner, as required by the Electricity Regulations 1997, and in particular, clauses 16, 34 and 35. Allow the network utility operator to view before the meter installation, listed work inspection, polarity check and livening of supply.

### **6.2 PRODUCTS**

#### **6.2.1 CABLES**

Tough plastic sheathed copper conductors to NZS 6401, stranded above 1.0 mm<sup>2</sup>, and to AS/NZS 3008.1.2. Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the connected load, or produce an excessive voltage drop.

Lighting circuits:	Domestic: 1.0 mm <sup>2</sup> on 10 amp MCBs
Lighting circuits:	Commercial: 1.5 mm <sup>2</sup> on 16 amp MCBs
Power circuits:	1.5 mm <sup>2</sup> on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction
	2.5 mm <sup>2</sup> on 16 amp MCBs for domestic insulated construction, or filled cavity
	2.5 mm <sup>2</sup> on 20 amp MCBs for unenclosed or unfilled cavity construction
	2.5 mm <sup>2</sup> on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Range circuits:	Single phase: 6 mm <sup>2</sup> on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions may be above 35°C.

### **6.2.2 DISTRIBUTION BOARD**

Proprietary manufactured, zinc plated powder coated, or heavy duty plastic, fire resistant enclosed construction, complete with neutral and earth busbars, MCBs, 30 mA RCDs and 60 amp main switch, complete with 20% spare capacity to AS/NZS 3000. Include 2 spare MCBs labelled as "spare". All protective devices: 6kA MCBs of the appropriate rating.

### **6.2.3 MINIATURE CIRCUIT BREAKERS**

Miniature moulded case circuit breakers

### **6.2.4 WALL BOXES**

Standard size in plastic, with 2 or more gang size in metal, all screw fixed.

### **6.2.5 SWITCH UNITS**

Sixteen amp minimum rated, 230 volt polycarbonate flushplate units. Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units, locator units and 2 way units.

### **6.2.6 SWITCHED SOCKET UNITS**

Ten amp, 230 volt polycarbonate flushplate 3 pin flat NZS combination switch units, single or multi gang as detailed.

### **6.2.7 SMOKE ALARMS**

To AS 3786

### **6.2.8 CEILING ROSES**

White plastic mounting base with screwed cover. Terminal type.

### **6.2.9 LIGHT FITTINGS**

Fluorescent and High Intensity Discharge fittings with low loss control gear and power factor corrected to 0.90 minimum. Control gear suitable for dimming if this is required. All fittings complete with lamps; Incandescent GLS lamps pearl, coiled-coil 240v rated, bayonet cap; Fluorescent triphosphor 2700K; ELV 12v dichroic reflector with cover glass unless detailed otherwise.

### **6.2.10 SELECTIONS**

Confirm selections of all outlet fittings and hardware with the owner in writing before ordering.

## **6.3 EXECUTION**

### **6.4.1 MAIN SUPPLY**

Lay underground mains to the network utility operator's requirements. Excavate trench, install cable and marker tape and backfill.

### **6.4.2 DISTRIBUTION BOARD**

Fit to board manufacturer's requirements where detailed. Recess into wall and ensure fire containment properties of the enclosure is maintained.



#### **6.4.3 CIRCUIT PROTECTION**

Install MCBs to protect each final sub circuit sized for circuit maximum loading.

#### **6.4.4 EARTH LEAKAGE PROTECTION**

RCD protection to AS/NZS 3000

##### Domestic

Install RCD protection at the switchboard of final sub circuits controlling socket outlets except for:

- Fixed cooking equipment
- Lighting

#### **6.4.5 SET-OUT**

Unless specifically detailed, the position of outlets and equipment shown on drawings is indicative of requirements. Study documents and site conditions to ensure no conflict with other services or features will arise. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.

#### **6.4.6 CABLING**

Install with a maximum of 10 light outlet units or 6 double or single switched socket units on any circuit. Minimum 2 lighting circuits per installation. Separate circuits for all electric heating appliances. All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground.

#### **6.4.7 WALL BOXES**

Flush mounted in cavity construction.

#### **6.4.8 SWITCH AND SOCKET UNITS**

Fit all single and double switch units and socket at the following heights (to the centre of the unit) unless shown otherwise on the drawings.

Switch Units:	1000 mm
Socket Units:	150 mm above work benches
	400 mm elsewhere

Mount switches vertically and socket units horizontally. Label all switch units that control electrical equipment by colour filled engraving on the switch plate.

#### **6.4.9 LIGHT FITTINGS**

Install light fittings in locations and at heights detailed, and in accordance with the fitting manufacturer's requirements.

#### **6.4.10 EARTH BONDS**

Bond together and to earth all plumbing fittings not adequately isolated, to the Electricity Regulations 1997 and to the fitting manufacturer's requirements.

#### **6.4.11 SMOKE ALARMS**

Install smoke alarms to NZBC F7/AS1 and to the alarm manufacturer's requirements, fitted neatly and without damage to the surrounding finish.

#### **6.4.12 ELECTRIC POWERED FITTINGS AND EQUIPMENT**

Install and wire fittings and equipment to individual fittings and equipment manufacturer's requirements. Refer to the drawings for required layouts and locations for equipment.

#### **6.4.13 BATHROOM ELECTRICAL FIXTURES**

Install electrical fixtures specified in other parts of this specification. Connect the following bathroom and toilet electrical items: -

- Extract fans: Install to manufacturers requirements.

#### **6.4.14 MAIN EARTH**

Provide a plastic toby box or UPVC tube to contain and protect the earth pin. Fix the connecting earth wiring closely and securely against wall surfaces.

#### **6.4.15 LABELLING**

Complete all labelling in clear machine printed permanent manner. Include label under each controller, switch and circuit breaker on distribution boards. Include a warning notice if light dimmers are used in the installation. List the rating of each circuit.

#### **6.4.16 COMPLETION**

Leave work operating correctly, with equipment clean and all lamps operational.

### **6.5 PERMIT**

The contractor is to obtain wiring permit to carry out the work, perform all necessary tests, remedy all defects and forward the permit completion notice to Electricity authority.

### **6.6 MATERIALS AND WORKMANSHIP**

All materials and workmanship shall, as a minimum requirement, comply with the Electrical Wiring Regulation 1976 as amended and up dated and Regulations referred to in MASTERSPEC acceptable practice notes in the handbook including all amendments in force and any special requirements of the Supply Authority.

Unless otherwise stated materials shall be new and shall comply with the relevant New Zealand Standard Specification. All work shall be carried out by registered electricians and apprentices at the rate of not more than one apprentice to one registered tradesman. Workmanship shall be in accordance with best trade practice and such as to leave a thoroughly efficient, robust and tidy installation. All work to be to ECP3 as update.

### **6.7 COMPLETION**

Complete in accordance with the details and general intent of the specification and drawings to provide all necessary connections to enable the whole installation to be left in full working order. Allow for making all tests prescribed by the Electrical Wiring Regulations and as referred to in MASTERSPEC. Leave the job free from all debris resulting directly or indirectly from the electrical installation.

### **6.8 SWITCHBOARD**

Allow to modify existing switchboard to suit new circuits.

### **6.9 LOAD BALANCING**

The Contractor is to ensure that the electrical load across each phase of the total installation is balanced as evenly as possible.

### **6.10 LABELS**

Provide labels for each bank of fuses/MCB's, identifying the fuses/MCB's by number. Provide a clear plastic holder and type descriptive schedule of fuse ways. Switch board and sub board cabinets are to be labelled with machine engraved on plastic and screw fixed.

### **6.11 SWITCHES**

Shall be PDL 600 series or HPM XL or equal throughout.

Indication layout is indicted on drawings. Discuss exact locations on site with Architect.

### **6.12 SOCKET OUTLETS**

Shall be PDL 600 or HPM XL or equal series as described under 'Switches: above.

## **6.13 VARIATIONS - ELECTRICAL**

### **6.13.1 ELECTRICAL POWER CONNECTON**

This unit will be supplied with power from a caravan connection.

## **7 GLAZIER**

### **7.1 GENERAL**

#### **7.1.1 DOCUMENTS**

Documents referred to in this section are:

NZBC B1/AS1	Structure, 7.0 Glazing
NZBC F2/AS1	Hazardous building materials, 1.0 Glazing
NZBC F4/AS1	Safety from falling, 1.0 Barriers in buildings
AS/NZS 2208	Safety glazing materials in building
NZS 3604	Timber framed buildings
NZS 4223	Glazing in buildings Part 1: The selection and installation of glass in buildings Part 3: Human impact safety requirements Part 4: Dead, wind and snow loading
AS/NZS 4666	Insulating glass units
AS/NZS 4667	Quality requirements for cut-to-size and processed glass

### **7.2 PRODUCTS**

#### **7.2.1 GLASS**

Processed glass to AS/NZS 4667, thickness to NZS 4223 parts 1, 3 and 4 unless otherwise specified:

- Clear float glass: Clear annealed transparent float glass
- Patterned glass: Translucent, annealed, rolled glass with a decorative pattern on one surface.
- Wired glass: With 13 mm square welded, treated steel wire mesh in the centre.
- Laminated glass: Grade A safety glazing material to AS/NZS 2208 with PVB or CIP resin interlayer.
- Toughened glass: Grade A safety glazing material to AS/NZS 2208.
- Tinted float glass: Body tinted float glass

Special glass, thickness to NZS 4223 parts 1, 3 and 4 unless otherwise specified: -

- Solar float glass: Coated glass and low-E glass made from float glass
- Insulating glass units (IGU's): To AS/NZS 4666 and IGU Manufacturer's Association (IGUMA) requirements.

#### **Components, aluminium glazing**

#### **7.2.2 GLAZING TAPE AND GASKETS**

Single/double sided pressure sensitive self-adhesive low/medium/high density foam tapes/butyl tapes selected to suit the glazing detail to window manufacturers' requirements.

#### **7.2.3 SETTING BLOCKS**

Santoprene/Neoprene, 80-90 Shore A hardness, set at quarter points or to detail, to support the weight of glass panes.

### **7.3 EXECUTION**

#### **7.3.1 GLAZING GENERALLY**

To NZS 4223, part 1, and for human impact safety glazing to NZS 4223, part 3.  
To AS/NZS 4666 for IGU's.

#### **Finishing**

#### **7.3.2 SAFETY**

After glazing indicate the presence of transparent glasses, with whiting, tape or signs compatible with the glass type.

#### **7.3.3 MANIFESTATIONS**

To comply with NZS 4223, part 3, 303.1.

#### **7.3.4 TRADE CLEAN**

Clean off or remove safety indicators at completion of the building.

### **7.4 VARIATIONS**

Confer with supplier of windows and doors and supply all glass, glaze and fit as he may require as follows.

#### **7.4.1 WINDOWS & DOORS**

Bondlite to new glazed doors.  
6.0mm Clear to panes over 1.5 sq. metres.  
4.0mm Clear elsewhere.

## **8 FLOORCOVERING/CURTAINS**

### **VINYL SURFACING**

### **8.1 GENERAL**

#### **8.1.1 DOCUMENTS**

Documents referred to in this section are:

AS/NZS 1859	Reconstituted wood-based panels 1859.2: Dry processed fibreboard 1859.4 Hardboard
NZS/AS 1884	Floor coverings - resilient sheet and tiles - laying and maintenance practices.

BRANZ Bulletin 330: Thin flooring materials - 2 preparation and laying

#### **8.1.2 QUALIFICATIONS**

Carry out work using competent, experienced layers, familiar with the materials and techniques specified.

### **8.2 PRODUCTS**

#### **Floors**

### **8.2.1 VINYL SHEET AND TILES**

High vinyl content homogeneous monolayer flexible PVC sheet/tile flooring.

## **8.3 EXECUTION**

### **Preparing substrate**

#### **8.3.1 NEW TIMBER OR PARTICLE BOARD**

Clear substrate of debris, clean off surface contamination and carry out surface repairs using a proprietary levelling compound. Carefully feather out at perimeters of repaired areas. Grind smooth, then vacuum to remove all dust.

Check for moisture content and do not commence final sanding or laying until readings for the whole area show a moisture content of: -

- 8 -12% for air conditioned buildings
- 10 -14% for intermittently heated buildings
- 12 -16% for unheated buildings

### **General**

#### **8.3.2 STORAGE**

Maintain rolls of sheet, packages of tiles and accessories undamaged and dry. Store rolls upright with other material on level surfaces in non-traffic, non-work areas that are enclosed, clean and dry.

#### **8.3.3 HANDLING**

Avoid distortion, stretching, marking and damage to edges while shifting, unrolling and handling sheet, tiles and accessories. Inspect for any faulty material. Do not use faulty or damaged material.

#### **8.3.4 BEFORE COMMENCING WORK**

Ensure that the building is enclosed, wet work complete, doors hung and lockable, finishes and trim complete, and good lighting available, before starting work.

#### **8.3.5 INSPECT**

Inspect the substrate to ensure it is of the standard required for work in this section.

#### **8.3.6 LAYING**

Carry out the whole of the work to NZS/AS 1884, BRANZ Bulletin 330 "Thin flooring materials - 2 preparation and laying" and to the flooring manufacturer's requirements.

#### **8.3.7 LAYOUT**

Before beginning the installation confirm the proposed layout of material, location of seams and other visual considerations of the finished work.

### **Vinyl floor laying**

#### **8.3.8 PREPARATION**

Check that each colour supplied is from the same batch. Follow the vinyl manufacturer's requirements for conditioning of rolls and the working temperatures and conditions before, during and after laying. Protect work from solar heat gain and switch off under-floor heating during and for 48 hours either side, of the work period.

#### **8.3.9 ADHESIVE APPLICATION**

Apply approved adhesive as required by the vinyl manufacturer and without trowel marks after setting. Follow requirements for open time, taking note of substrate porosity, ambient temperature and relative humidity. Remove excess adhesive as the work proceeds using required techniques.



**8.3.10 LAYING VINYL SHEET**

Roll out, cut, leave to condition and install sheet vinyl to the vinyl manufacturer's requirements. Ensure there are no air bubbles or twisting, that the seams are kept clear of adhesive, and immediately the sheet is adhered roll with a 68 kg roller.

**8.3.11 CROSS JOINS**

Plan and allow cuts to avoid cross joins. Obtain written approval of the owner before proceeding if cross joins are unavoidable. Cross joins are not acceptable in wet areas.

**8.3.12 MITRES**

Perform butterfly method to internal and external mitres. Thermo-weld mitres.

**8.3.13 CLEAN**

Leave vinyl flooring surfaces free of adhesive, dirt and debris. Vacuum off, damp mop with a low foam neutral detergent, with a pH level of 7 to 8. Allow to dry and finally buff with a rotary machine using suitable pads at 300 rpm. Polymer polishes to be used only where approved by the vinyl manufacturer and accepted by the owner.



COVERTEK 407



## SYNTHETIC ROOF UNDERLAY

*Premium Roof Underlay*

**Covertex 407** is a fire retardant, absorbent and breathable synthetic self-supporting roof and wall underlay constructed using a microporous water resistant film sandwiched between two layers of spun-bonded polyolefin. Designed as a means of managing condensation, water vapour transfer and water ingress in roof and wall applications.

### ADVANTAGES

#### Roof

- » Suitable with masonry tile roof cladding.
- » Suitable with metal tile and profiled metal roof cladding.
- » Roof pitches 10° or greater Covertex 407 may be run vertically or horizontally without support.\*
- » Roof pitches below 10° Covertex 407 may be run horizontally without support.
- » Must be supported\* if run vertically below 10°. Minimum roof pitch 3°.
- » Will provide temporary weather protection during construction (roofs 7 days), same day coverage recommended.
- » May be installed in rain.
- » May be run to any length,
- » Suitable for use under dark coloured roofs.
- » Has a 150mm lap line printed on each edge.
- » Can be used on roofs up to and including NZS 3604 Extra High wind zones.

#### General

- » Is fire retardant\*
- » Unaffected by LOSP treated timber.
- » Recyclable with no VOC's.
- » Tear resistant and strong.

\* Refer technical specifications



**BRANZ Appraised**  
Appraisal No.651 [2009]



For additional details and latest specifications [www.thermakraft.co.nz](http://www.thermakraft.co.nz) or scan QR code.

# Thermakraft Covertex 407

Fire Retardant | Breathable | Absorbent | Non Woven | Underlay

## INSTALLATION PROCEDURES

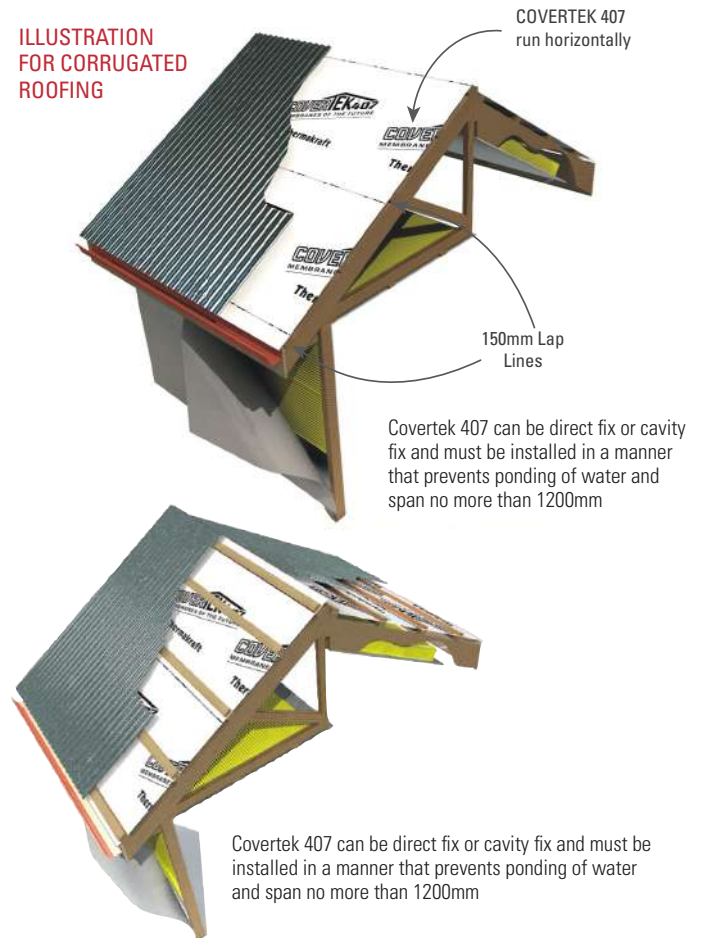
### LONG-RUN METAL ROOFING / VERTICAL OR HORIZONTAL INSTALLATION METHOD

1. Fix using stainless steel 8-12mm staples or 20mm flat head clouts, or appropriate proprietary fastenings.
2. Between 3° and 10° pitched roofs, Thermakraft recommends supporting Covertex 407 on Thermakraft Safety Mesh 300mm x 150m, or hexagonal netting 50mm or 75mm, and or, Thermastrap 201. Fix horizontally at 300mm centres.
3. If required to achieve a lap seal (refer to NZ Metal Roofing Code of Practice 4.3.8 and 4.3.9), use Thermakraft White General Purpose Tape
4. Covertex 407 may be unwound to the full length from the gutter to the ridge. However, when ridge ventilation is required Covertex 407 must be terminated at the ridge purlin to allow a free passage of air.
5. Flue penetrations must have a minimum distance of 50mm from Covertex 407 (refer to NZ Metal Roof and Wall Cladding Code of Practice 4.3.8).
6. Covertex 407 must be free of tears and punctures, fit tightly and be lap taped around all penetrations (except flue penetrations), to provide drainage for any condensation, or surface water from leaks.

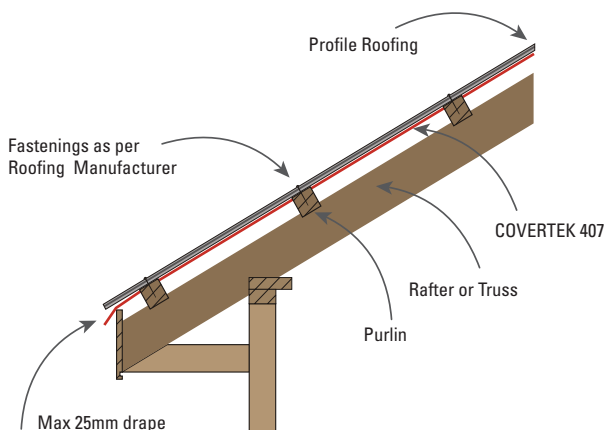
NOTE: Do not use Aluband on penetrations where Polybutene water pipes have been installed. Refer Pipe Manufacturers for instructions on sealing penetrations.

NOTE: Commercial Buildings may require the use of Thermakraft Safety Mesh under Covertex 407. Covertex 407 can be installed above the battens or purlins for profiled metal roof claddings and otherwise in accordance with NZBC E2/AS1.

### ILLUSTRATION FOR CORRUGATED ROOFING



### LONG-RUN METAL ROOFING Wooden Construction



### LONG-RUN METAL ROOFING Steel Construction



# Thermakraft Covertex 407

Fire Retardant | Breathable | Absorbent | Non Woven | Underlay

## INSTALLATION PROCEDURES

### HORIZONTAL FIX

1. Covertex 407 upper sheet lapped over lower sheets (shiplap) to ensure water is shed to the outer face.

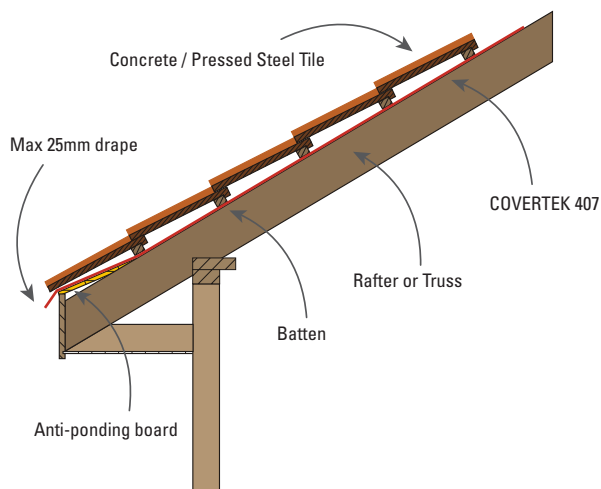
NOTE: Covertex 407 can move downwards. To prevent this it must be "Captured" by the fastenings at each purlin.  
Horizontal fix must not be used on purlin distance greater than 1100mm to allow for 150mm laps.

### CONCRETE / METAL TILE ROOFING

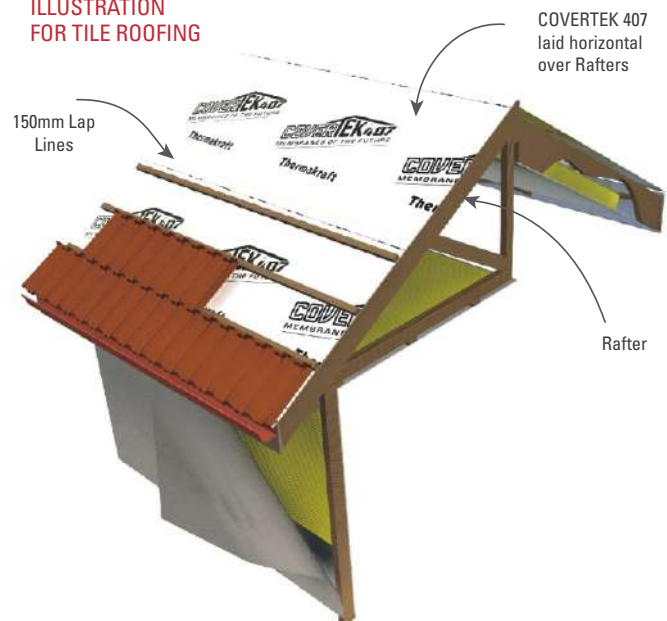
1. Covertex 407 must be laid over rafters prior to fixing the tile battens. The maximum span between rafters for Covertex 407 is 1200mm. Masonry tile roofs with pitches less than 17° must have antiponding boards in accordance with E2/AS1 Paragraph 8.2.5.
2. Installed Covertex 407 may be laid over the top of the antiponding boards and draped into the gutter by no more than 25mm. Antiponding boards must be treated in accordance with NZS 3604.

NOTE: Where overlap occurs under Tile Battens, minimum overlap may be reduced to 75mm.

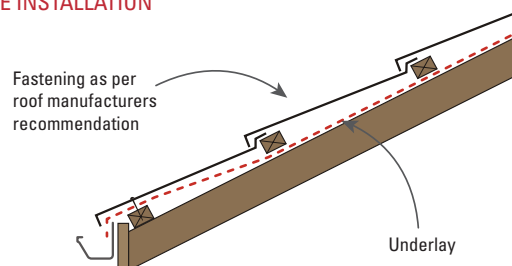
### CONCRETE / METAL TILE ROOFING



### ILLUSTRATION FOR TILE ROOFING



### METAL TILE INSTALLATION



# Thermakraft Covertex 407

Fire Retardant | Breathable | Absorbent | Non Woven | Underlay

## TECHNICAL SPECIFICATION

Can be used as an underlay on timber and steel framed buildings within the following scope:

- » The scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; with regards to building height and floor plan area and,
- » With masonry tile roof cladding; and
- » With metal tile and profiled metal roof cladding; and,
- » Situated in NZS3604 Wind Zones up to, and including Extra High (ROOF ONLY).
- » Roof pitches 10° or greater Covertex 407 may be run vertically or horizontally without support. At very low pitches support is recommended. \*
- » Roof pitches below 10° Covertex 407 may be run horizontally without support, if run vertically it must be supported. \* Minimum roof pitch 3°.
- » Refer BRANZ Appraisal No 651 (2009) for full details.

### Flammability Index

Thermakraft Covertex 407 Underlay has an AS 1530 Part 2 Flammability Index of not greater than 5 and therefore meets the requirements of NZBC Acceptable Solutions C/AS2 to C/AS6, Paragraph 4.17.8 b), for the surface finish requirements of suspended flexible fabric used as an underlay to exterior cladding that is exposed to view in occupied spaces. It may therefore be used with no restrictions in all buildings.

### Durability

Meets the Performance Requirements of NZBC Clauses B2, Durability (B2.3.1 (a) 50 years, B2.3.1 (b) 15 years and B2.3.2), C3 Fire affecting areas beyond the fire source C3.4(c), E2 External Moisture, and F2 Hazardous Building Materials F2.3.1C providing;

- » It is not damaged.
- » Is installed in accordance with instructions.
- » Is not left exposed for more than 7 days (roof) same day coverage recommended.
- » Is installed by or under guidance of Licensed Building Practitioners.
- » Is compatible with cladding system used.

**Table 1: NZBC E2/AS1 underlay requirements**

NZBC E2/AS1 TABLE 23 (NZS2295) WALL UNDERLAY PROPERTIES	PROPERTY PERFORMANCE REQUIREMENTS	PROPERTY PERFORMANCE
Absorbency	≥ 150gsm	Pass
Vapour Resistance	≤ 7 MN.s/g	Pass
pH of Extract	≥ 5.5 and ≤ 8	Pass
Water Resistance	≥ 100mm	Pass
Air Resistance	≥ 0.1 MN.s/m <sup>3</sup>	407 can be used as an air barrier

**Roll Dimensions**

WIDTH (MM)	LENGTH (M)	M <sup>2</sup>
1250	20	25
1250	40	50
2550*	40	100

\*Made to to order.

M<sup>2</sup> is the roll size for actual coverage, allow for laps and joins.

\*The NZMRN CoP v2.2 (an alternative solution) advises 8° as the minimum pitch for self-support underlays. Thermakraft products are suitable for installation within this guidance.

### Control of Condensation

In climatic regions where condensation risks are high, such as cold or high humidity areas, care needs to be taken in specifying the correct design and installation to prevent moisture build-up in the roof cavities.

Factors which adversely affect the condensation risk in roofing systems include;

- » Humid, and/or cold climatic regions.
- » Warm/Skillion roof construction.
- » Low roof cavity air volume and restricted air movement.
- » Omitting Vapour Control Layers.
- » Ceiling penetrations and entry of warm air into roof cavities.
- » Occupancy activities which have high moisture loading on conditioned spaces.
- » Low pitched roof.
- » Bulk insulation.
- » Building structures ability to naturally dry construction moisture.

Skillion and Warm Roof Construction are particularly sensitive to moisture accumulation and the design and installation of roof construction needs to take into account the higher condensation risks. Refer MRM Code of Practice for details.



For additional details and latest specifications [www.thermakraft.co.nz](http://www.thermakraft.co.nz)



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## INTELLIGENT MEMBRANES FOR THE BUILDING INDUSTRY

The recommendations contained in Thermakraft's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to any conditions contained in the Warranty. All product dimensions and performance claims are subject to any variation caused by normal manufacturing process and tolerances. Furthermore, as the successful performance of the relevant system depends on numerous factors outside the control of Thermakraft (for example quality of workmanship and design), Thermakraft shall not be liable for the recommendations in that literature and the performance of the Product, including its suitability for any purpose or ability to satisfy the relevant provisions of the Building Code, regulations and standards. Literature subject to change without notification. Latest documentation can be found on the website.



## I.0 ECOPLY® BARRIER

Ecoply® Barrier provides a weathertight rigid air barrier system for drained and vented cavity systems outside the building frame, effectively replacing traditional building wrap in the cavity while providing structural bracing, and forming a strong secondary line of defence against moisture penetration into the building envelope.

Ecoply Barrier is suitable for use in both residential and commercial buildings and consists of a 7mm thick H3.2 CCA (Copper Chrome Arsenate) water borne treated structural plywood panel which is coated on the face and edges using a polyester powder coating process for increased sheet durability and protection from moisture penetration.

Ecoply Barrier meets the New Zealand Building Code (NZBC) requirements for rigid underlays as outlined in section 9.1.4, the performance requirements of Table 23 of NZBC Clause E2 External Moisture, Acceptable Solution (E2/AS1), and has been tested for wind speeds exceeding Extra High wind zone as defined in Standards New Zealand 3604 Timber Framed Buildings (NZS 3604). Testing has been completed to provide solutions for buildings outside the scope of NZS 3604. For details on this, please contact CHH Woodproducts for further information.

Ecoply Barrier is BRANZ appraised for use as a rigid sheathing and temporary weather-protecting sheathing on timber framed buildings.

Ecoply Barrier must be competently installed in accordance with good building practices and sound design principles to satisfy the requirements of the Building Act 2004, the New Zealand Building Code (NZBC), and applicable New Zealand Standards. This is the responsibility of building owners and the design professionals and builders that they engage.

This document contains information, limitations, and cautions regarding the properties, handling, installation, usage, and the maintenance of Ecoply Barrier. However, to the maximum extent permitted by law, Carter Holt Harvey Woodproducts New Zealand (CHH Woodproducts) assumes no legal liability to you in relation to such information.

Ecoply Barrier panels are engineered to allow the wall system to breathe and dry out, while also preventing the intrusion of exterior moisture. Once the full system has been installed, the system provides a lasting protective barrier.

### What is a Rigid Air Barrier?

A rigid air barrier is a barrier against air pressure and water infiltration from the outside to the interior of the building. A rigid air barrier acts as a secondary line of defence against water penetrating into the wall system – the primary defence being the exterior wall cladding.

### Definition of an Air Barrier:

- Impermeable to airflow — the system must be continuous (no holes, openings or penetrations) and resistant to air pressure differentials.
- Continuous over the entire building enclosure.
- Able to withstand the forces that may act on them during and after construction.

Ecoply Barrier is a full sheathing system developed to prevent unwanted air movement and replace traditional building wrap.



**BRANZ Appraised**  
Appraisal No.827 [2014]

*The information contained in this document is current as at September 2017. It is your responsibility to ensure you have the most up to date information available. The information contained in this publication relates specifically to Ecoply® Barrier manufactured by Carter Holt Harvey Woodproducts New Zealand and must not be used with any other plywood manufacturer's products no matter how similar they may appear. Alternative plywood products can differ in a number of ways which may not be immediately obvious and substituting them for Ecoply Barrier structural plywood products or Ecoply Barrier Tapes is not appropriate, and could in extreme cases lead to premature failure and/or buildings which do not meet the requirements of the New Zealand Building Code (NZBC).*

## 2.0 ECOPLY® BRAND

Ecopy® Barrier panels are manufactured in New Zealand by CHH Woodproducts under a third party audited quality control programme to monitor compliance with AS/NZS 2269 – Plywood Structural.



## 3.0 TECHNICAL INFORMATION & CAD DETAILS

Technical data sheets and CAD drawings referenced in this guide are available for download from [www.chhwoodproducts.co.nz](http://www.chhwoodproducts.co.nz).

Ecopy Barrier (Rigid Air Barrier) is compliant with NZBC Clause B2.3.1 (a), for not less than 50 years, when used where the cladding durability requirement or serviceable life is not less than 50 years, e.g. structural bracing, and compliant with NZBC Clause B2.3.1 (b), for 15 years where the cladding durability requirement is 15 years when used as a temporary sheathing.

When specifying or installing Ecopy Barrier visit [www.chhwoodproducts.co.nz](http://www.chhwoodproducts.co.nz) or call 0800 326 759 to ensure you have current specification material and any relevant technical notes.

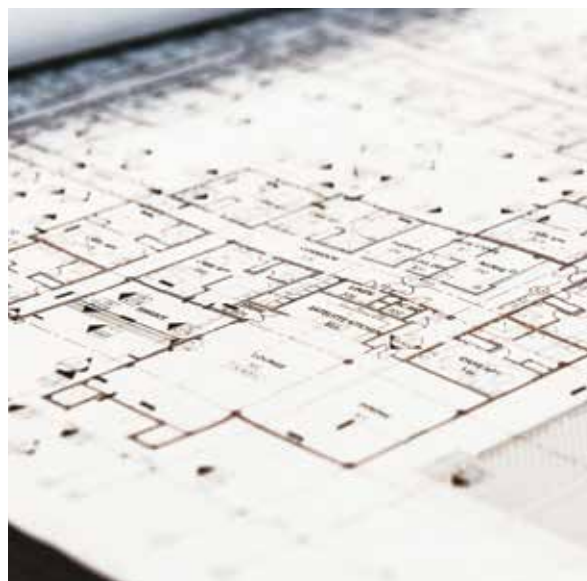
## 4.0 ECOPLY® BARRIER ADVANTAGES

### 4.1 ARCHITECTS / DESIGNERS

Modern construction practices are moving toward providing greater energy efficiency and an airtight building envelope. These principles of high performance building are common in nearly all current green building standards and construction codes. Proper sealing between wall assembly components prevents unwanted air movement in and out of conditioned air spaces.

#### Advantages:

- Ecopy Barrier can form an integral part of a weathertight system including two of the four 'Ds' of weathertightness; drying and drainage.
- A rigid air barrier provides a more robust cavity and prevents the insulation bulging, which would increase the chance of moisture bridging from the cladding to the framing line.
- Provides both structural support and protection from moisture. Structural bracing is achieved when installed in accordance with the Ecopy Barrier bracing specifications. Bracing benefits may result in cost savings by reducing internal lining bracing elements (Refer to section 7.6 on bracing).
- BRANZ appraised system, fully tested and code compliant rigid air barrier system.
- Manufactured from sustainable plantation pine and available FSC certified (SCS-COC-001316) upon request.
- Low formaldehyde emission level (E0).



**BRANZ Appraised**  
Appraisal No.827 [2014]

## 4.2 BUILDERS

Ecoply® Barrier lets you say goodbye to flexible wall underlays forever. Builders no longer have to worry about installing traditional housewrap or building paper on a windy day or having to return for re-work due to rips, tears or wrap that has blown off the home. Ecoply Barrier can typically save up to 2-4\* weeks off the total house build time\*, by allowing a faster building close in, for an earlier interior start and a quicker overall build time.

Ecoply Barrier installs quickly with two easy steps – fasten the panels and tape the seams. Once completed, the system provides moisture protection both during and after construction.



### Advantages:

- Immediate close-in of structure, allowing interior and exterior work to be completed in parallel.
- Reduced builder liability; strong secondary line of defence and solid material for sealing penetrations.
- Schedule your subcontractors sooner.
- No call backs for rips, tears or wrap that has blown off.
- Easy to work light material, simple and easy to install.
- Up to 180 day exposure during construction cycle. No hold-ups while the cladding has to be installed i.e. brick layers etc.

## 4.3 HOMEOWNERS

An airtight building envelope means less airflow into and out of the home. Since conditioned air is expensive air, homeowners can take comfort in knowing that Ecoply Barrier will provide a strong secondary line of defence against the elements.

### Advantages:

- Get possession faster; builders building with Ecoply Barrier can typically reduce up to 2-4\* weeks off a typical house build\*.
- Structurally rigid home.



\* Timeframes and efficiencies are indicative only. Construction production gains will differ with respect to individual builder's abilities and other contributing circumstances outside the control of CHH Woodproducts.

## 5.0 ECOPLY® BARRIER COMPONENTS

Table 1: Product Range

Description	Weight (kg/m²)	Thickness	Width	Length
<b>Ecoply® Barrier</b> – structural plywood with factory applied proprietary coating to sheet surface and edges	Approx 4.0	7mm	1197mm	2440mm 2745mm
<b>Sill Tape</b> – one piece stretchable sill tape for window and door sills	-	2 Rolls per Box	150mm, 200mm	20m per roll
<b>Frame Sealing Tape</b> – for a permanent seal of all Ecoply® Barrier openings (Use in conjunction with Sill Tape)	-	2 Rolls per Box	150mm	30m per roll
		1 Roll per Box	200mm	
<b>Sealing Tape</b> – for a permanent seal of all Ecoply Barrier vertical joints	-	10 Rolls per Box	60mm	30m per roll

### COMPONENTS NOT SUPPLIED BY CHH WOODPRODUCTS:

- PVC Horizontal Flashing: use Ecoply® Horizontal Jointer (Product Code RDZF7) supplied by E2 Flashing Solutions.
- Bracing Hold-Down Connectors: GIB HandiBrac® hold-down brackets manufactured by MiTek® complete with mechanical fastener with a minimum 15kN uplift capacity for concrete floors and 150mm x 12mm galvanised coach screw for timber floors.
- Fasteners.

### 5.1 TAPES

The Ecoply Barrier – Sill Tape, Frame Sealing Tape and Sealing Tape transform our sheathing plywood panels into a seamless protective barrier for your construction project. All tapes are proven to deliver an airtight and watertight seal. The Ecoply Barrier 'rigid air barrier system' tapes save you time and money on the job; and you can leave the site with confidence it will perform.



Table 2: Tapes

Technical Data	Sealing Tape	Sill Tape	Frame Sealing Tape
Description	For a permanent seal of Ecoply Barrier vertical joints	One piece stretchable sill tape, for use on all window / door frame sills	For a permanent seal of all Ecoply Barrier openings (Except window / door frame sill)
Carrier Paper	Special fleece made from PP	Butyl rubber with PE film	Special fleece made from PP
Width / Length	60mm x 30m	150mm x 20m 200mm x 20m	150mm x 30m (box of 2) 200mm x 30m (box of 1)
Release Paper	Siliconized Paper	Siliconized Foil (Split 90mm / 60mm) (Split 140mm / 60mm)	Siliconized Paper (Split 90mm / 60mm) (Split 140mm / 60mm)
Temperature Resistance	Long Term -40°C to +90°C	Long Term -40°C to +90°C	Long Term -40°C to +90°C
Processing Temperature	From -10°C	From -10°C	From -10°C
Colour	Grey	Black	Grey

Storage: All sealing tapes must be stored in clean dry conditions and not in an area with direct sunlight.

### 5.2 COATING - PANELS

The film formulation provides resistance to the effects of exposure to weathering including sun and moisture, typically experienced during the construction and normal service life of cavity substrate systems. The factory applied powder coat film is specifically formulated for use on Ecoply Barrier plywood panels.

- The film, formed by the powder coating process, helps resist moisture penetration.
- The edges of Ecoply Barrier sheets are coated and sealed.

- High film build (60–80 microns), delivers a smoother and more durable sheet surface allowing easier moisture drainage in cavity construction applications.
- Sealer coating contains low Volatile Organic Compounds (VOC).
- The beige coloured sealer coating can be exposed to the external environment for up to 180 days prior to cladding installation.

## 6.0 DESIGN CONSIDERATIONS

### Responsibility

Design responsibility lies with the building owner and the professionals that they engage. The Specifier for the project must ensure that the products and details in the specification are appropriate for the intended application and that additional detailing is provided for specific design or any areas that fall outside the scope and specifications of this literature.

### Preservative Treatment

Ecoply® Barrier is treated in accordance with AS/NZS 1604.3 with H3.2 CCA (Copper Chrome Arsenate) water borne treatment. H3.2 CCA treated plywood in accordance with AS/NZS 1604.3 is described as suitable for: "outside above ground applications" and periodic moderate wetting.

### Cut Sheets

Ecoply Barrier is envelope preservative treated. If a sheet end is cut, place the cut end to the top. Always have a sealed sheet end at the bottom to minimise potential moisture ingress into the panel. All other cuts and penetrations must be covered by Ecoply Barrier Sealing Tape and installed in accordance with the Ecoply Barrier literature. When installed as per the above requirements, cut edges and penetrations are not required to be retreated with a brush on preservative treatment however, if desired, CHH Woodproducts recommends the use of Holdfast® Metalex® Concentrated Timber Preservative Green (Holdfast® Metalex® Green).

### Dimensional Sheet Change

Detailing and construction using Ecoply Barrier must allow for natural movement in line with normal cycles of moisture change occurring in the environment. The total expansion both along and across a 2440 x 1197mm panel can be in the order of 1.5mm to 3mm depending on the environment. Detailing and construction practice should take the potential for natural movement into consideration. Ecoply Barrier sheets may exhibit slight sheet bowing across the sheet resulting from the preservative treatment and surface coating processes. This is to be expected and will not affect the product's structural performance or weathertightness when installed as per the specifications.

### Formaldehyde

Formaldehyde occurs naturally in the environment and is emitted by processes such as combustion, decay and naturally by all timber species. Ecoply Barrier meets the lowest formaldehyde emission classification (E0 – less than 0.5mg/ litre).

### Wind Loadings

Ecoply Barrier meets the NZBC requirements for rigid underlays as outlined in section 9.1.4, the performance requirements of Table 23 of E2/ AS1, and has been tested for wind speed exceeding Extra High wind zone as defined in NZS 3604. Testing has been completed to assist in providing solutions for buildings outside the scope of NZS 3604. Contact CHH Woodproducts for further information.

### Sustainability

Ecoply Barrier is manufactured from radiata pine, a plantation grown medium density softwood. It is grown on tree farms which are tended and harvested to provide wood for plywood manufacture. The crop is managed on a sustainable basis to yield millable trees. Ecoply Barrier is available Forestry Stewardship Council (SCS-COC-001316) certified upon request.

### Health & Safety

Ecoply Barrier should be handled in accordance with the Safety Data Sheet (SDS) for H3.2 CCA treated Ecoply Barrier. Always wear safety glasses or non-fogging goggles when working with Ecoply Barrier. If wood dust exposure is not controlled when machining (sawing, drilling etc.) a P1 or P2 replaceable filter or disposable face piece respirator should be worn. Wear comfortable work gloves to avoid skin irritation and the risk of splinters. Wash hands with mild soap and water after handling panels.

### Storage & Handling

Ecoply Barrier panels and tapes must be stored and handled with care to maintain good condition prior to installation:

- The storage area must be protected from sun, rain and wind that would otherwise bring about rapid changes in temperature and humidity.
- Support for the sheets must be provided at both ends and middle to avoid distortion. Ensure bearers in packs above are aligned over bearers below to avoid inducing curves in sheets.
- The stack must be kept dry and clear of ground contact, and placed so that it will not be exposed to mechanical damage.
- The sheets must be stacked flat, NOT on edge.

### Maintenance

Ecoply Barrier will not normally require maintenance. However, if damage occurs to the cladding or lining protecting the Ecoply Barrier or to the Ecoply Barrier itself, repairs or replacement should be carried out to ensure the integrity of the rigid air barrier. Small perforations in the panels can be covered by the Frame Sealing Tape or Sealing Tape (200mm, 150mm or 60mm Width, Grey Colour).



## 7.0 INSTALLATION

### 7.1 INSTALLATION

#### Step 1 Framing:

Install the Ecoply® Barrier sheathing panels positioned with the water resistant powder coat film facing outwards. The panels must be installed with the long side of each panel orientated vertically to the framing members.

All Ecoply Barrier sheet edges must be fully supported by being fastened to framing:

- Studs must not exceed 600mm centres.
- Nogs must be provided at 1350mm centres maximum.
- The minimum framing width for fixing Ecoply Barrier is 45mm at sheet joints.
- Framing must be kept as dry as possible at all times.
- Do NOT glue to frame.

All timber framing sizes and set outs must comply with NZS 3604 (or be specifically designed to NZS 3603:1993 – Timber Structures Standard), with stud and nog centres and timber widths required by this specification. Use kiln dried framing such as Laserframe® in accordance with timber framing manufacturers specification and treated in accordance with NZBC Clause B2 Durability, Acceptable Solution (E2/AS1) or Standards New Zealand 3602:2003 Timber and Wood based products for use in building (NZS 3602).

#### Step 2 Fastener Durability:

Fasten the panels to the framing members. It is of particular importance in coastal areas, areas subject to salt spray and other corrosive environments that the correct fastener is verified prior to installation.

Fasteners shall be a minimum of hot dip galvanised for all B and C zones excluding sea spray zone D where stainless steel fasteners are required. Where stainless steel is required, annular grooved nails must be used.

#### Step 3 Fasteners:

Fastener heads should be flush with the panel surface. It is not required to tape over over-driven fasteners unless the fastener head completely penetrates the thickness of the face veneer.

Cladding fasteners must be increased in length by a minimum of 7mm to achieve the required fastener pull out loadings. (Ecoply Barrier is 7mm thicker than building wrap).

**Table 3: Fastener Type**

Fixing Type	Minimum Nail Length
<b>Hand Driven</b>	50 x 2.8mm nails (flat head or round head), hot dipped galvanised or better
<b>Power Driven</b> – Paslode Pneumatic Cladding Coil Nailer	Paslode Impulse 50 x 2.8mm hot dipped galvanised or better, ring round head drive B20557

NOTE: Please refer to Step 2 Fastener Durability.

#### Step 4 Sheet Layout:

When using Ecoply Barrier, flexible wall underlay is not required. Ecoply Barrier has been BRANZ appraised and tested to demonstrate product performance against the requirements of Table 23 of Clause E2 / AS1 of NZBC. The sheets are jointed keeping an expansion gap of 2-3mm maximum between the plywood panels. Each plywood panel is 1197mm in width to allow for standard 400mm or 600mm stud spacing.

- All sheet edges must be supported by the framing.
- Use fastener pattern unless otherwise specified (refer to the bracing specifications in the Ecoply Specification and Installation Guide).
  - 150mm centres at sheet edges
  - 300mm centres within sheet body up to and including 'Very High' wind zone or;
  - 150mm centres within sheet body in 'Extra High' wind zone
- Sheets must overhang the bottom plate by a minimum of 25mm over timber and concrete foundations (Refer to BAR005: Overhang Clearances For Concrete Slab or Masonry) with a maximum overhang of 40mm.
- For brick cladding rebates, in addition to the 25 – 40mm sheet overhang, 40mm clearance must exist between the face of the Ecoply Barrier sheet and the brick cladding in accordance with E2/AS1 Section 9.2.6 Cavities (Refer to BAR005A: Brick Rebate Overhang Clearance).
- For cantilevered floor joists, sheets must overhang a minimum of 25mm, with claddings to extend a minimum of 50mm below the lowest part of the timber framing in accordance with E2/AS1 Table 18 (Refer BAR005B: Timber Floor Overhang Clearance For Cantilevered Joists).
- For timber sub-floor systems, sheets must overhang the bearer a minimum of 25mm, with claddings to extend a minimum of 50mm below the lowest part of the timber framing in accordance with E2/AS1 Table 18 (Refer BAR005C: Overhang Clearance for Timber Sub-Floors).

#### Ground Clearances:

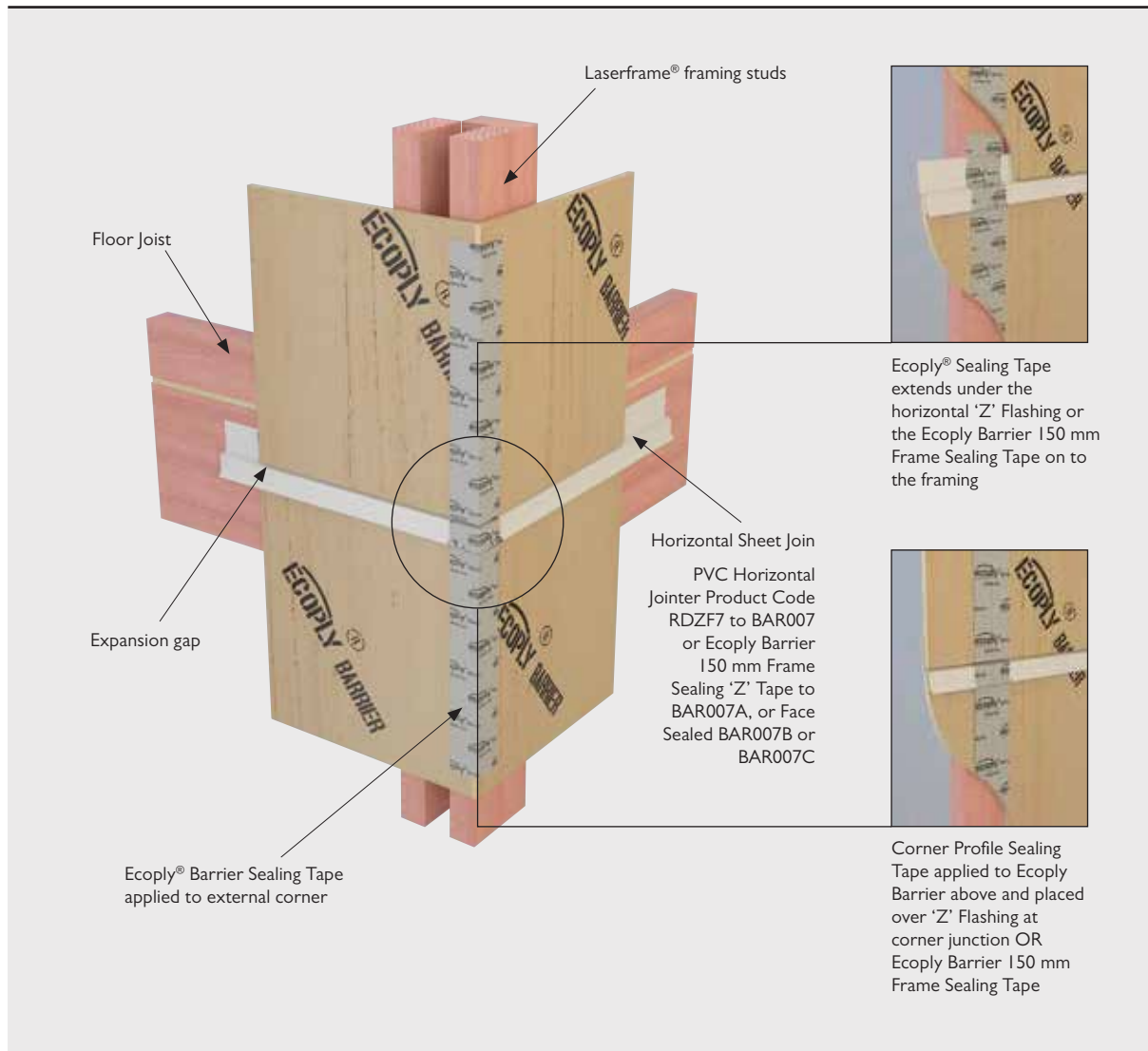
Minimum ground clearances must be maintained for the cladding being installed in accordance with Clause E2/AS1 – Figure 65 and Table 18, and with NZS 3604 for timber floors. The adjacent ground must slope away from the building in accordance with NZBC requirements. Ecoply Barrier must not be installed where product will remain in contact with non-draining water, damp, or soil.

### Corner Junctions to Horizontal Joints

- Corners must be sealed with Ecoply® Barrier Sealing Tape (60mm Grey Colour).

- PVC Horizontal Z Flashings must be butted together, 60mm Ecoply Barrier Sealing Tape must overlap the PVC butt joint entirely over the face and up stand of the PVC Flashing to form a weathertight joint where horizontal Flashings meet.
- Horizontal joints may also be completed using Ecoply Barrier Frame Sealing Tapes.

### BAR010: External Corner to Horizontal Joint



## 7.4 INSTALLATION - FRAME SEALING TAPE

Apply Ecoply® Barrier Frame Sealing Tape to the vertical trimmer stud and lintel of the window or door opening. The exposed timber framing must be covered with the Ecoply Barrier Frame Sealing Tape (150mm / 200mm Grey Colour). The tape is sealed over the face of the Ecoply Barrier panel.

Take special care to remove any wrinkles or voids at corner junctions, Ecoply Barrier Frame Sealing Tape requires pressure for a secure seal.



### Vertical Jamb Detail:

- Cut the Ecoply Barrier Frame Sealing Tape 100mm longer than the vertical opening size.
- Ensure that the trimmer stud is free of sawdust and dirt prior to taping.
- Apply the Frame Sealing Tape to cover the entire trimmers' opening. The tape should extend a minimum of 100mm around the corner at the head of the window framing, and over-lap the Sill Tape on the trimmer stud by a minimum of 50mm.
- Carefully slit the tape from the corner to get a smooth adhesion to the plywood sheathing panel. Bend the Ecoply Barrier Frame Sealing Tape to mould into the corners providing a tight seal.
- Cut and apply a small 100mm strip to reinforce the corner using Ecoply Barrier 150mm Frame Sealing Tape.

### Horizontal Head Detail:

- Once both trimmer studs are installed, cut the Frame Sealing Tape for the horizontal head trimmer and Flashing to suit. Make sure to over-lap the existing tape from the trimmer by at least 50mm (Do not extend tape past the corner).
- Specific installation requirements pertaining to window and door systems should be sought from the joinery manufacturer.

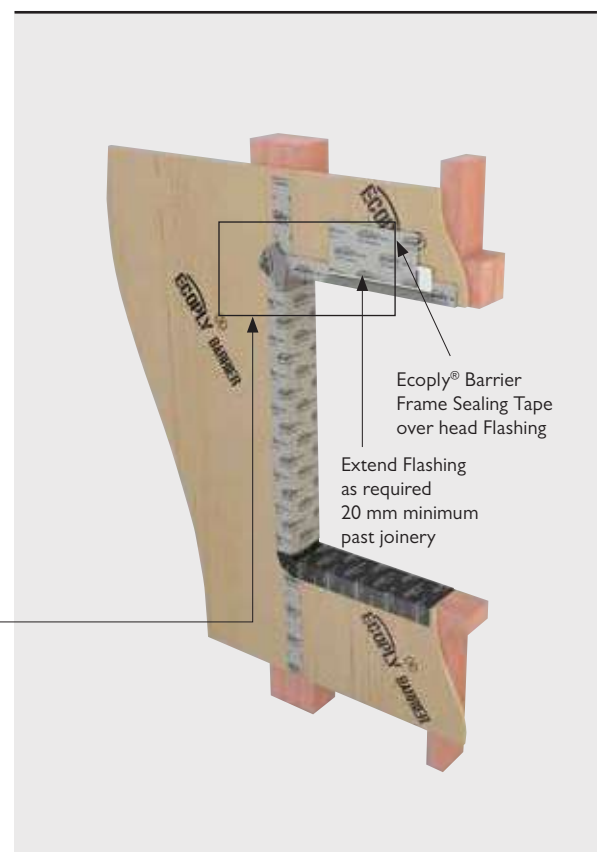
NOTE: Door frames are to be treated similarly to window openings.



### BAR013: Window Penetration Sill Tape Installation



### BAR014: Window Penetration Frame Sealing Tape Installation with Head Flashing



## 7.5 SERVICE PENETRATIONS

- Service penetrations must be sealed using a flexible Flashing tape. Ecoply® Barrier Sill Tape (150mm or 200mm Black Colour) is recommended for this purpose. (Refer to BAR011: Penetration and Services).
- A minimum cover of 100mm over the sheet surrounding the penetration is required.
- Use Ecoply Barrier Frame Sealing Tape to bandage around the pipe (25mm minimum width).

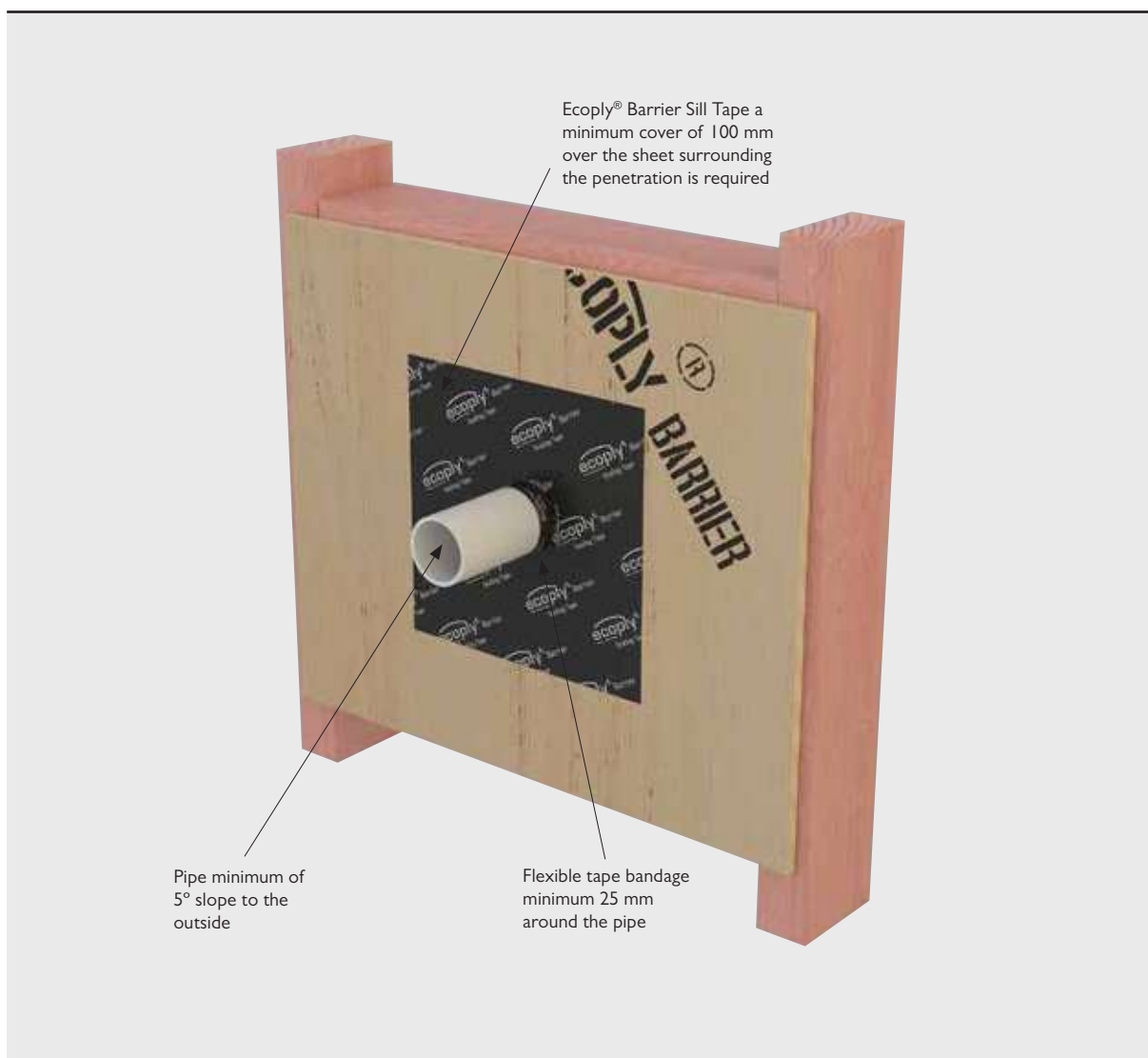


### Service Penetrations in Bracing Elements

Small openings (e.g. power outlets) of 90 x 90mm or less may be placed no closer than 90mm to the edge of the braced element, or waste pipe outlets of maximum 150mm diameter placed at no closer than 150mm to the edge of the braced element.

Maximum one penetration per bracing panel.

### BAR011: Penetration & Services



## 7.6 STRUCTURAL BRACING

Ecoply Barrier is designed to comply with the New Zealand Building Code (NZBC).

### Structure

NZS 3604 Timber Framed Buildings is listed as an Acceptable Solution under Clause 3.0 Timber in Acceptable Solution B1/AS1 Structure. CHH Woodproducts have developed a range of wall bracing elements tested using P2I testing methods referenced in NZS 3604.

Demand may be calculated by following section 5, Bracing Design of NZS 3604 or using the GIB EzyBrace® software, downloadable from [www.gib.co.nz](http://www.gib.co.nz).

EPB bracing systems properties can be easily loaded into the EzyBrace software by way of a software patch downloadable from [www.chhwoodproducts.co.nz](http://www.chhwoodproducts.co.nz) together with loading instructions.

### Specific Design

Ecoply® Barrier structural plywood panels are manufactured to AS/NZS 2269, and is suitable for design and use in earthquake and wind bracing systems constructed in accordance with NZS 3603 and AS/NZS 1170.

Structural plywood to AS/NZS 2269 is the only sheet brace material with properties defined in a published New Zealand timber design code, NZS 3603 Timber Structures, and so can be designed in compliance with Verification Method B1/VM1 under Clause 6.0 Timber for use in buildings over three storeys in height.

### Timber Floors

When carrying out a bracing design for buildings with timber floor structures, the maximum bracing rating that can be accounted for when summing up the bracing units is 120BUs/m. This does not exclude the installation of bracing elements that are rated higher than 120BUs/m, however the extra bracing capacity can not be accounted for in the bracing design.

Specific design of floor and sub-floor framing is required for elements rated higher than 120BUs/m.

### Durability

Ecoply Barrier plywood panels are manufactured to meet the requirements of NZS 3602 Timber and Wood based products for use in Buildings. If the product is used, handled and installed in accordance with CHH Woodproducts product literature it will meet the durability requirements of the NZBC.

### Adjustments for Wall Height

Adjustment of bracing capacity of walls of different heights and walls with sloping top plates shall be obtained by the following method:

(a) For wall bracing elements of heights other than 2.4m, the bracing rating determined by test or from table below should be multiplied by  $2.4 \div$  element height in metres, except that elements less than 2.4m high shall be rated as if they are 2.4m high.

(b) Walls of varying heights, should have their bracing capacity adjusted in accordance with section 5 of NZS 3604 using the average height.

(c) Wall heights < 1.5m are to be subject to Specific Engineer Design (SED).

### Joining Panels for Walls Higher than Maximum Sheet Length

Ecoply Barrier bracing panels must be fixed from top plate to bottom plate. For wall heights over 2.44m, Ecoply Barrier is available in 2.745m sheet lengths. Alternatively, a part sheet can be installed above a full sheet, in accordance with section 7.2 Installation - Sheet Joins (Three Options for Horizontal Sheet Joins) on a single row of common nogs with each sheet/ part sheet independently nailed off as per the nail spacing in the Ecoply Barrier bracing specifications (e.g. 2.4m x 1.2m sheet with a 0.3 m x 1.2 m part sheet above it to give a 2.7m x 1.2m bracing element).

**Table 4: Summary P2I Ratings for 2.4m High Ecoply® Barrier Wall Elements**

Specification No.	Minimum Wall Length	Lining Requirements	Hold-Down	BUs/m Wind	BUs/m Earthquake
EPB1	0.4m	Ecoply® Barrier one side	Yes GIB HandiBrac®	80	95
	0.6m			95	105
	1.2m			120	135
EP2	0.6m	Ecoply Barrier or Ecoply each side	Yes GIB HandiBrac®	105	115
EPBS	0.4m	Ecoply Barrier one side	No additional fastening <sup>1</sup>	60	60
	0.6m			60	65
	1.2m			65	70
	2.4m			80	90
EPBG	0.4m	Ecoply Barrier one side and 10mm GIB® Standard plasterboard other side	Yes GIB HandiBrac®	100	115
	1.2m			150	150

<sup>1</sup> As per NZS 3604: 2011. No specific additional fastening required.



## 7.7 ECOPLY® BARRIER BRACING SPECIFICATION – EPBI

**Table 5: Sided Structural Plywood Brace**

Specification No.	Minimum Wall Length	Lining Requirements	Hold-Down	BUs/m Wind	BUs/m Earthquake
EPBI	0.4m	Ecoply® Barrier one side	Yes GIB HandiBrac®	80	95
	0.6m			95	105
	1.2m			120	135

### Framing

Wall framing must comply with:

- NZBC B1 - Structure: AS1 Clause 3 Timber (NZS 3604).
- NZBC B2 - Durability: AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height are as determined by the NZS 3604 stud and top plate tables for load bearing and non load bearing walls. Kiln dried verified structural grade timber must be used. Machine stress graded timber of minimum SG8, such as Laserframe®, is recommended.

### Bottom Plate Fixing

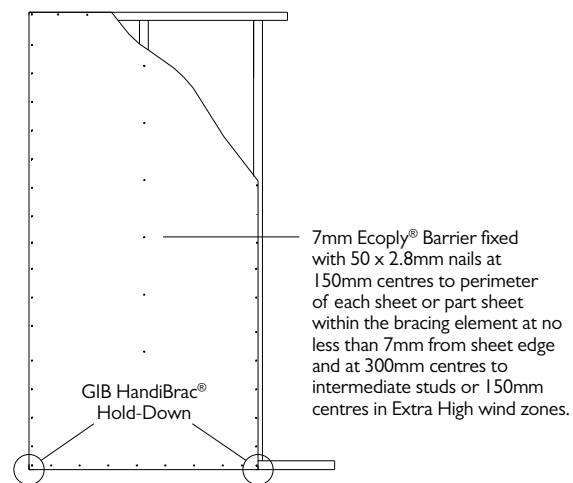
Use GIB HandiBrac® hold-down connections at each end of the bracing element. Refer to manufacturer installation instructions supplied with the connectors for correct installation instructions and bolt types to be used for either concrete or timber floors. Within the length of the bracing element, bottom plates are fixed in accordance with the requirements of NZS 3604.

### Lining

One layer of 7mm Ecoply® Barrier vertically fixed directly to framing. If part sheets are used, ensure nailing at required centres is carried out around the perimeter of each sheet or part sheet. A 2-3mm expansion gap should be left between sheets.

### Fastening Centres

Fasteners are placed at 150mm centres around the perimeter of each sheet and 300mm centres to intermediate studs or 150mm centres in Extra High wind zones. Where more than one sheet forms the brace element each sheet must be nailed off independently.



### Fastening Ecoply® Barrier Panels

#### Fasteners

Fasten with 50 x 2.8mm galvanised or stainless steel flat head nails direct fix. Place fasteners no less than 7mm from sheet edges. Screws cannot be used. Power driven nails are suitable. Do not overdrive, nails must be full round head.

In certain circumstances stainless steel fasteners may be required. Refer to section 7.1 in the Ecoply Barrier Specification and Installation Guide for these circumstances and further fastener selection advice. Where stainless steel nails are required, annular grooved nails must be used.

Ecoply® Bracing Systems are designed to meet the requirements of the New Zealand Building Code and have been tested and analysed using the P21 method referenced in NZS 3604:2011 listed as an acceptable solution B1/AS1 Structure. Testing was carried out using Ecoply Barrier manufactured by CHH Woodproducts and SG8 timber framing and GIB® products manufactured by Winstone Wallboards Ltd. Substituting materials may compromise performance of the system. GIB® and GIB HandiBrac® are registered trade marks of Fletcher Building Holdings Ltd.

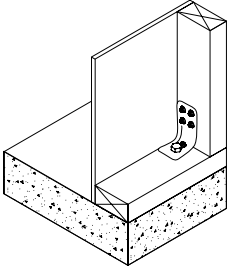
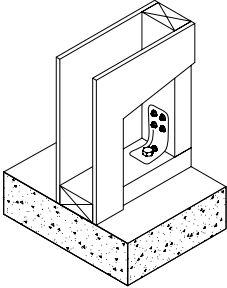
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## 7.11 GIB HANDIBRAC® - RECOMMENDED INSTALLATION METHOD

Developed in conjunction with MiTek®, the GIB HandiBrac® has been tested for use as a hold-down in all EPB bracing elements.

- The GIB HandiBrac® registered design provides for quick and easy installation.
- The GIB HandiBrac® provides a flush surface for the wall linings because it is fitted inside the framing. There is no need to check in the framing as recommended with conventional straps.
- The GIB HandiBrac® is suitable for both new and retrofit construction.
- The design also allows for installation and inspection at any stage prior to fitting internal linings.

### Concrete Floor

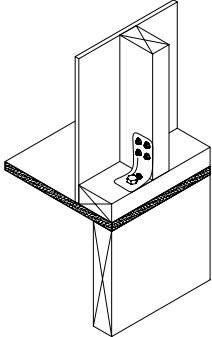
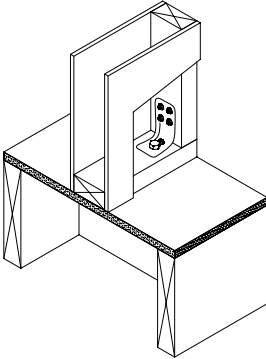
External Walls	Internal Walls
	
Position GIB HandiBrac® as close as practicable to the internal edge of the bottom plate.	Position GIB HandiBrac® at the stud/ plate junction.

#### Hold-down Fastener Requirements

A mechanical fastening with a minimum characteristic uplift capacity of 15kN or screw bolt supplied with the bracket.
---

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### Timber Floor

External Walls	Internal Walls
	
Position GIB HandiBrac® in the centre of the perimeter joist or bearer.	Position GIB HandiBrac® in the centre of the floor joist or full depth solid block.

#### Hold-down Fastener Requirements

M12 x 150mm galvanised coach screw or screw bolt supplied with the bracket.
---

## 7.12 TOP PLATE HOLD-DOWN CONNECTIONS

Additional nailing of the Ecoply® Barrier to the top and bottom plates in accordance with the details shown in Figure 1 and described below will provide sufficient top plate hold-down capacity to comply with a Type B fixing or 4.7kN uplift capacity as listed in Table 8.18, NZS 3604.

### Fastening

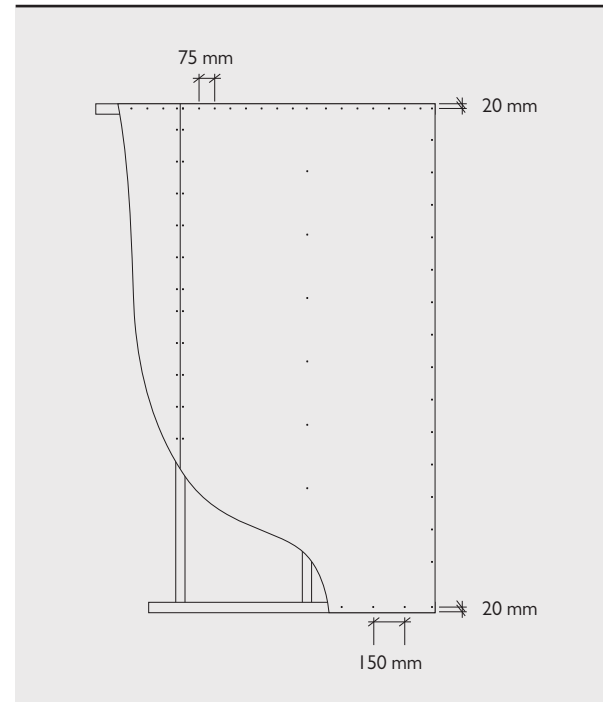
Nails must be 50mm x 2.8mm flat head hot dip galvanised or stainless steel as described in the Ecoply Barrier Specification and Installation Guide for Fastener Durability (Section 7.1).

Nailing to the top plate is at 75mm centres and 20mm from the sheet edge.

The remainder of the sheet perimeter is fastened at 150mm centres no less than 7mm from the sheet edge and 300mm at intermediate studs (or 150mm centres for Extra High wind zones) as with standard nailing for Ecoply Barrier.

Standard nailing of the Ecoply Barrier to the top plate in accordance with the Ecoply Barrier literature will provide a top plate hold-down capacity that exceeds a Type A fixing or 0.7kN uplift capacity as listed in Table 8.18, NZS 3604.

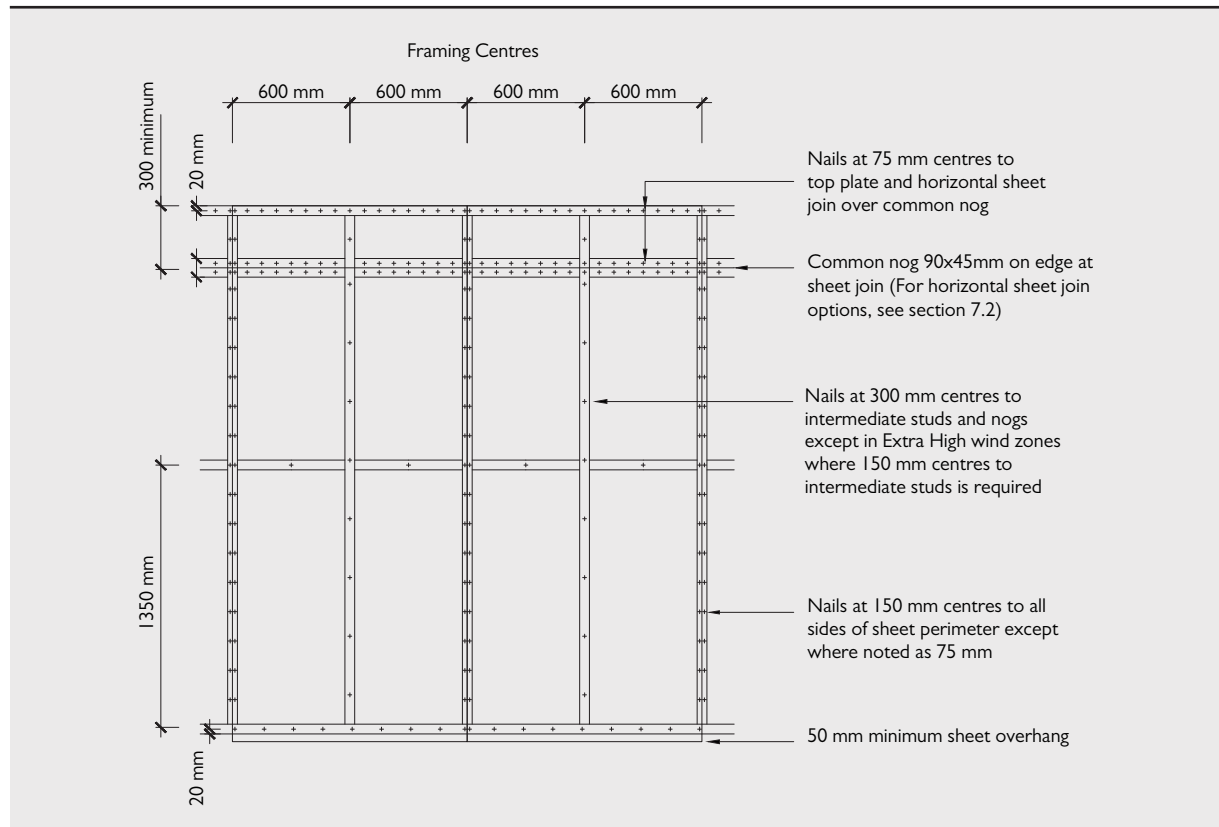
**Figure 1: Top Plate Hold-Downs Connections using Ecoply® Barrier**



### Horizontal Sheet Joints and Top Plate Hold-Down

Where horizontal sheet jointing is required and top plate hold-down connections are completed using Ecoply Barrier, nailing to the noggin at 75mm centres and 20mm from the sheet edge is also required at the sheet joints. Refer Figure 1B Top Plate Hold-Downs and Horizontal Sheet Joints.

**Figure 1B: Top Plate Hold-Downs and Horizontal Sheet Joints**



## 7.13 BRACING LENGTHS

### Length of Ecoply® Barrier Bracing Elements (EPB1, EPBG and EP2).

Ecoply® Barrier bracing elements can be used when the overall bracing element length is >400mm.

The length and capacity of an EPB1, EPBG or an EP2 type element is not only determined by the plywood, but also the placement of the GIB HandiBrac® hold-down fixing. The GIB HandiBrac® must be installed to a continuous stud at the perimeter of the bracing element, refer to Figure 1C: Framing/Handibrac installation, 1D: Bracing Panel Installation, 1E: Bracing Panel Installation – long and 1F: Bracing Panel Installation at Lintel.

Note: If used for Bracing purposes GIB HandiBrac® should not form part of lintel tie down solution.

### Bracing Panel and Hold-down Location at Lintels and 90° Wall Junctions such as Garage Door Openings.

Ecoply Barrier bracing panels can be installed up to lintels and 90° wall junctions such as garage door openings where

the element length is > 400mm. See Figure 1E: Bracing Panel Installation at Lintel for bracing element length, and correct GIB Handibrac® location.

Note: Designers need to be aware of the framing requirements and not try to specify bracing elements based on length only. Framing requirements may mean bracing lengths are not practically achievable as designed and tested and developed due to framing layout.

When lintels share jamb studs with bracing elements, alternate hold-down will be required (the GIB HandiBrac® forming part of the bracing solution must not form part of the lintel hold-down).

### Length of EPBS Elements

The length of the EPBS element (requiring standard NZS 3604:2011 bottom plate connections) can be taken as full frame length measure from the outside of the end stud to the opening face as illustrated in Figure 1G: EPBS Bracing panel Installation – Long. The length of the bracing element shall be >400mm.

Figure 1C: Framing/HandiBrac Installation

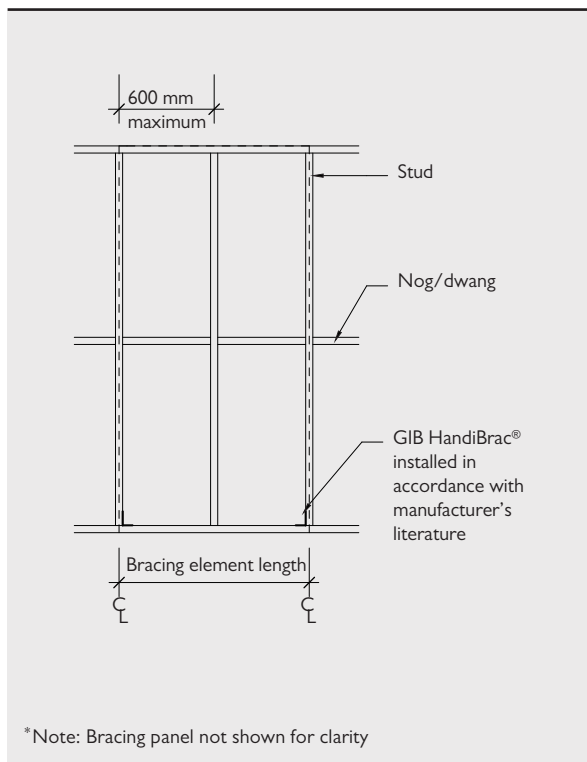


Figure 1D: Bracing Panel Installation

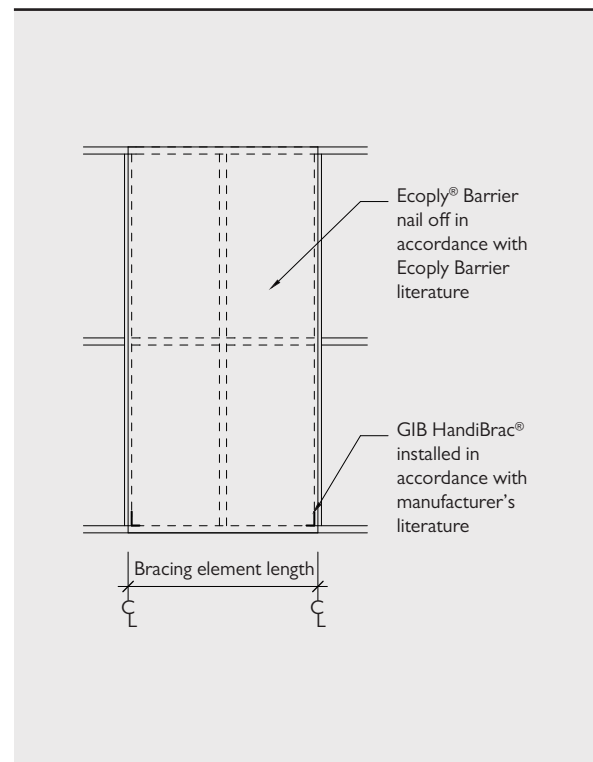


Figure 1E: Bracing Panel Installation - Long

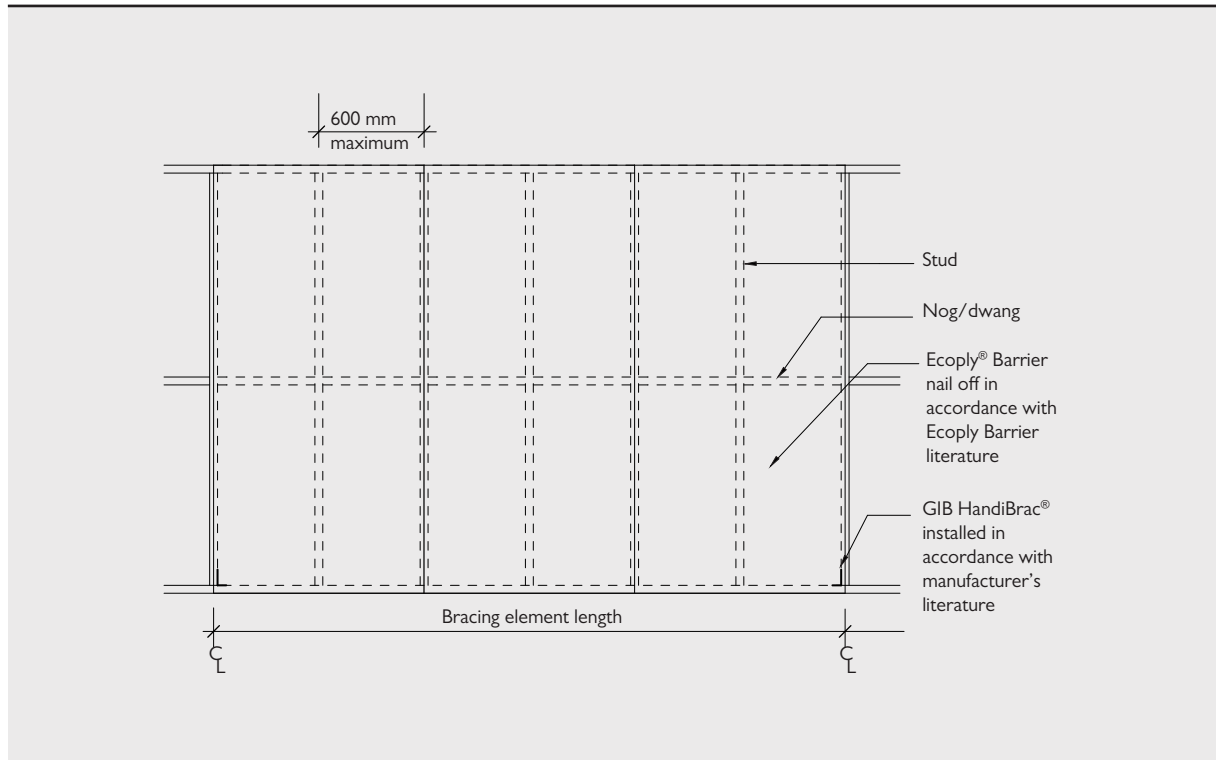


Figure 1F: Bracing Panel Installation at Lintel

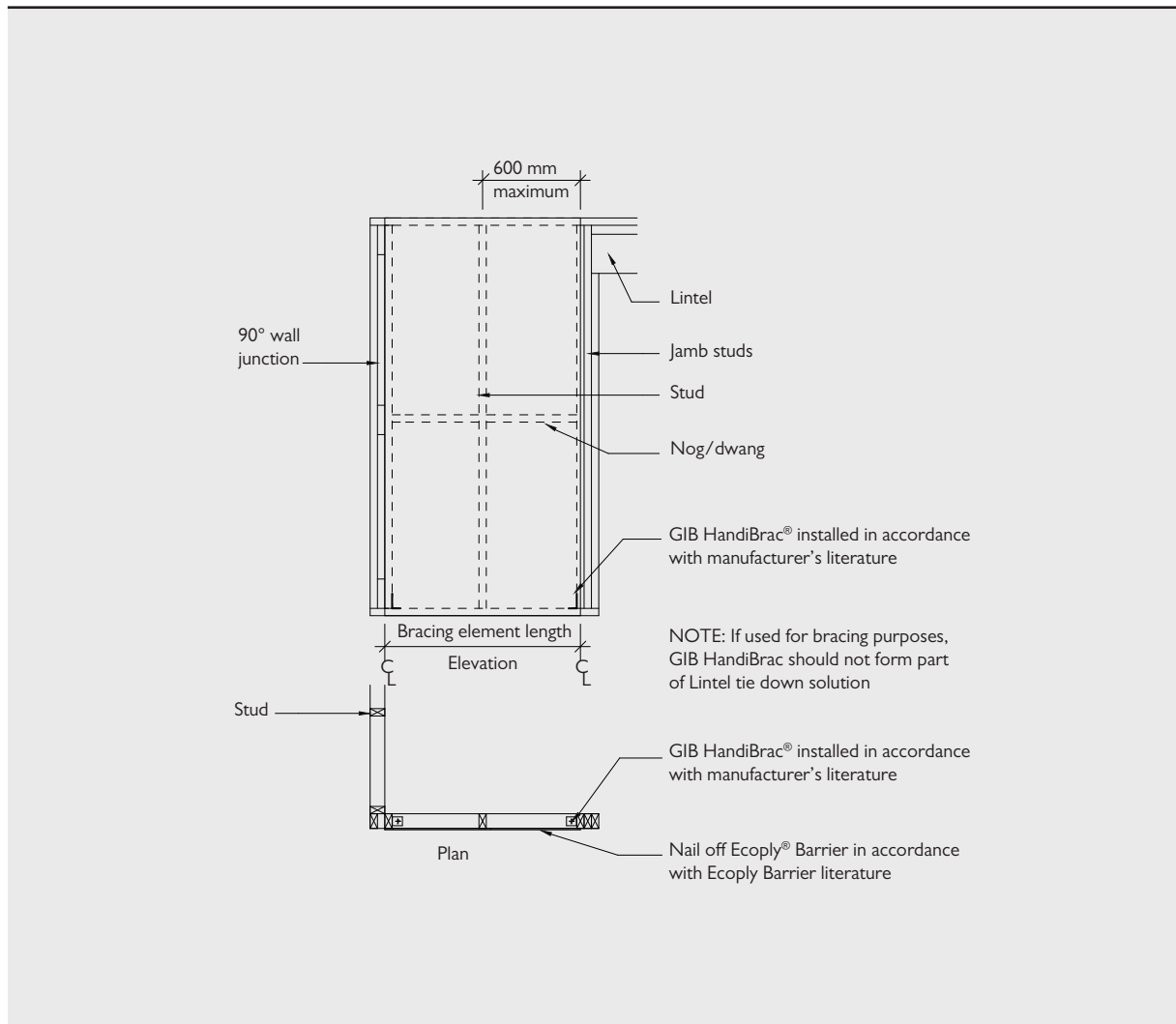
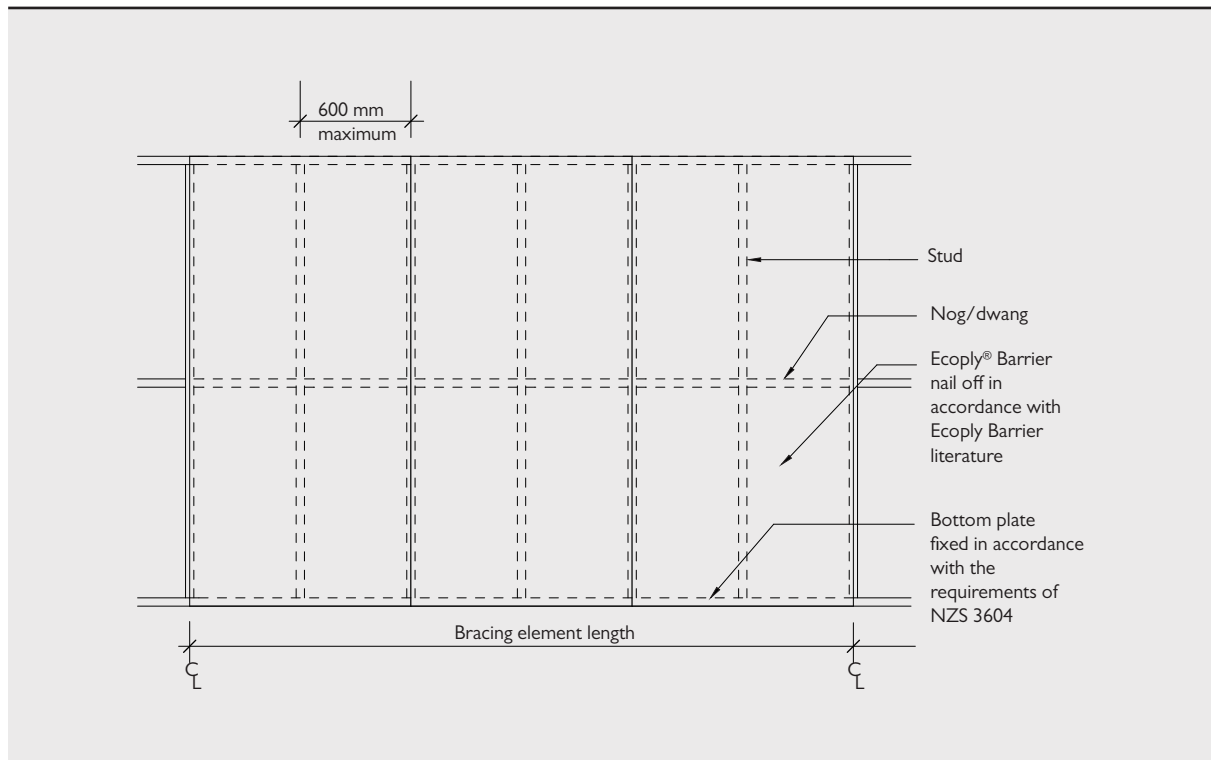


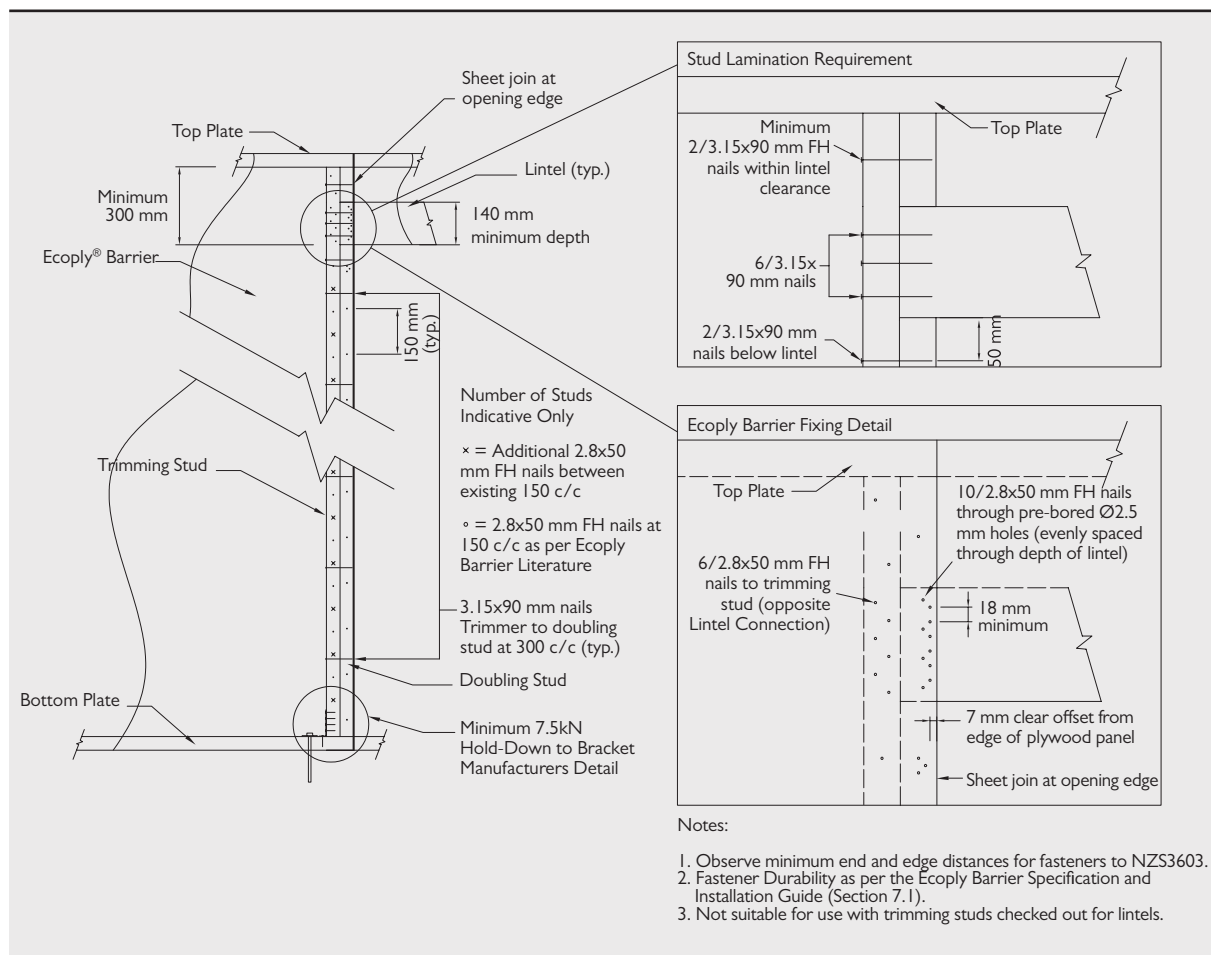


Figure 1G: EPBS Bracing Panel Installation



## 7.14 LINTEL TIE DOWN CONNECTION

Figure 2: Lintel Connection Detail (For Uplifts Not Exceeding 7.5kN) as Detailed in Clause 8.6.1.8 of NZS 3604



# 1 Application and scope

## 1.1 APPLICATION

Stria® Cladding installed as per this specification gives a panelised plastered masonry appearance on building facades. Stria Cladding can be fixed to either timber or lightweight steel-framed external walls. A wide range of colours can be used varying from light to dark. Stria Cladding is available in 405mm wide x 4200mm lengths and is 14mm thick.

### If you are a specifier

Or other responsible party for a project ensure that the information in this document is appropriate for the application you are planning and that you undertake specific design and detailing for areas which fall outside the scope of these specifications.

### If you are an installer

Ensure that you follow the design, moisture management and associated figures and material selection provided by the designer and this James Hardie Technical Specification. All the details provided in this document must be read in conjunction with the project specification.

### Make sure your information is up to date

When specifying or installing James Hardie products, ensure that you have the current manual. Additional installation information, warranties and warnings are available at [www.jameshardie.co.nz](http://www.jameshardie.co.nz) or Ask James Hardie™ on 0800 808 868.

## 1.2 SCOPE

This specification covers the installation of Stria Cladding on buildings that fall within the scope limitation of NZS 3604 and E2/AS1 of the New Zealand Building Code (NZBC).

This specification also covers the installation of Stria Cladding on projects, which are subject to specific engineering design (SED) up to a wind pressure of 2.5kPa (ULS).

This technical specification is intended for use by architects, designers and specifiers who may be involved with the specification of Stria Cladding and its installation. This document must be read in conjunction with the project specific drawings and specifications. The specifier or other responsible party for the project must ensure that the information and details in this specification is appropriate for the intended application and that you undertake specific engineering design and detailing for areas, which fall outside the scope of these specifications.

Note: Refer to Stria Cladding Timber Cavity Batten technical specification when fixing to timber cavity battens.

## 1.3 DETAILS

Various typical Stria Cladding construction details are provided in the Details section of this document. These details are available in CAD, ArchiCAD, MOD and pdf file format and can be downloaded from our website at [www.jameshardie.co.nz](http://www.jameshardie.co.nz).

All dimensions shown are in millimetres unless noted otherwise.

## 1.4 SPECIFIC DESIGN

For use of the Stria Cladding on specific design projects, the designer, architect or engineer must ensure that all clauses of NZBC have been considered and a specific design has been undertaken for the areas which fall outside the scope of this literature.

# 2 Design

## 2.1 COMPLIANCE

Stria Cladding installed in accordance with this specification has been tested as per E2/VM1 and complies with External Moisture - E2 Clause of NZBC. The cladding has also been tested and complies with the requirements of Structure - B1, Durability - B2, Energy Efficiency - H1 and Hazardous Building Material - F2 Clauses of NZBC.

## 2.2 RESPONSIBILITY

The specifier or other party responsible for the project must ensure that the information and details in this specification are appropriate for the intended application and that additional detailing is performed for specific design or any areas that fall outside the scope of this technical specification. For applications outside the scope of this literature and details, which are not provided herein, the architect, designer or engineer must undertake specific design and it should be ensured that the intent of their design meets the requirements of the NZBC.

All New Zealand Standards referenced in this manual are current editions and must be complied with.

James Hardie conducts stringent quality checks to ensure that any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure that the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

## 2.3 SITE AND FOUNDATION

The site on which the building is situated must comply with E1/AS1 Surface Water Clause of NZBC.

Foundations design must comply with relevant regulations, standards and meet the requirements of NZBC.

The grade of adjacent finished ground must slope away from the building to avoid any possibility of water accumulation.

## 2.4 CLEARANCES

The clearance between the bottom edge and paved/unpaved ground of cladding must comply with section 9.1.3 of E2/AS1. The finished floor level must also comply with these requirements. These clearances must be maintained throughout the life of the building.

Stria Cladding must overhang the bottom plate by a minimum of 50mm as required by E2/AS1.

Stria Cladding must maintain a minimum clearance of 100mm from paved ground, and 175mm from unpaved ground. On the roofs and decks, the minimum clearance must be 50mm.

Do not install external cladding such that it may remain in contact with water or ground. Refer Figures 3 and 4.

## 2.5 MOISTURE MANAGEMENT

It is the responsibility of the specifier to identify moisture related risks associated with any particular building design.

Wall construction design must effectively manage moisture, considering both interior and exterior environments of the building, particularly in buildings that have a higher risk of wind driven rain penetration. The buildings should also be ventilated sufficiently to control moisture accumulation due to condensation especially in artificially cooled/heated buildings.

Walls shall include those provisions as required by External Moisture Clause E2/AS1 of NZBC. In addition, all wall openings, penetrations, junctions, connections, window sills, heads and jambs must incorporate appropriate flashings for waterproofing. The other materials, components and installation methods used to manage moisture in external walls, must comply with the requirements of relevant standards and the NZBC. For further guidance on designing for weather tightness, refer to BRANZ Ltd. and the Department of Building and Housing updates on the following websites respectively, [www.branz.co.nz](http://www.branz.co.nz) and [www.dbh.govt.nz](http://www.dbh.govt.nz).

In addition, the following issues must also be considered:

- Sealant must be installed where detailed in this literature.
- Where the walls are higher than two storeys, it is necessary to provide a horizontal flashing at the second floor level to drain the cavity.
- The installation of smoke chimneys, pipe penetrations and other fixtures etc. must not track moisture into the wall or restrict the drainage of moisture to the exterior.

## 2.6 STRUCTURE

### 2.6.1 Timber Framing

Timber-framed buildings must either be designed in accordance with NZS 3604 (Timber Framed Buildings) or as per specific engineering design. For a building requiring a specific engineering design, the framing stiffness must be equivalent to or more than the stiffness requirements of NZS 3604.

For specific design projects, the timber framing must be designed in accordance with NZS 3603 and AS/NZS 1170.

### 2.6.2 Steel Framing

Steel-framed buildings must comply with the requirements of AS/NZS 3404 'Steel Structures Standard' or specific engineering design requirements. Also refer to NASH steel framed buildings guidance document published by 'National Association of Steel Housing' (NASH).

### 2.6.3 Wind Pressures

Stria Cladding is suitable for use in all New Zealand wind zones up to and including EH as defined in NZS 3604.

Stria Cladding can be used for specific design projects up to wind pressures of 2.5kPa uls.

## 2.7 FIRE RATED WALLS

A fire rating of up to 60 minutes can be achieved when using RAB® Board in lieu of a building underlay and installing Stria Cladding as per this specification. Refer to James Hardie Fire and Acoustic Design Manual for further guidance on achieving fire ratings.

## 2.8 STRUCTURAL BRACING

Stria Cladding installed as per this specification cannot achieve any structural bracing. Bracing can be achieved by using RAB Board installed direct to framing instead of a building underlay or by using Villaboard® Lining bracing system on the internal face.

## 2.9 ENERGY EFFICIENCY

External walls constructed using Stria Cladding and bulk insulation, where the area of glazing is 30% or less of the total wall area, constructed as per this technical specification complies with the insulation requirements for walls in NZBC Acceptable Solution H1/AS1 (Energy Efficiency Clause H1), Replacement Table 1. To meet thermal insulation requirements for the construction, the bulk insulation as specified in Table 1 must be used. This insulation may be substituted with insulations having higher R-values. The thermal insulation of a wall changes when the size or spacing of timber framing is increased or decreased. The calculation used in Table 1 is based on a timber framing size 90 x 45mm and using an internal lining material such as James Hardie Villaboard Lining or a 10mm plasterboard.

Table 1

Insulation capability		
Climate Zone*	R-Value Requirement*	Cavity Insulation Infill Requirement
1 and 2	1.9 m <sup>2</sup> °C/W	#R2.0
3	2.0 m <sup>2</sup> °C/W	#R2.2
<p>Total construction R-Value depends on the insulation material used and the framing ratio. The insulation material R-Values specified in this table are for studs spaced at 600mm c/c and nogs spaced at 800mm c/c.</p> <p># To achieve higher R-Values of construction the wall insulation material must be replaced with an insulation material having higher R-Values to suit the requirements.</p> <p>For further guidance on insulation requirement refer to the current edition of 'House Insulation Guide' published by BRANZ.</p>		

# 3 Framing

## 3.1 GENERAL

Stria Cladding can be fixed either to a timber-frame or steel-frame. For fixing into steel frame Ask James Hardie on 0800 808 868 for specific requirements.

- Studs must be provided at 600mm centres maximum.
- Nogs must be provided at 800mm centres maximum.

*Note: For fixing Stria Cladding, fastener spacing is provided in Section 6.*

## 3.2 TIMBER FRAMING

### 3.2.1 Dimensions

A 45 x 90mm minimum framing size is required.

### 3.2.2 Structural Grade

Minimum timber grade must be in accordance with timber grades specified in NZS 3604.

### 3.2.3 Durability

The external framing timber must be treated to a minimum H1.2 treatment. Higher treatment levels may be used but check for the compatibility of treatment chemicals with other materials. Refer to NZBC Acceptable Solution B2/AS1 Durability for further information about the durability requirements.

For timber treatment and allowable moisture content information refer to NZS 3602 (Timber and Wood-Based Products for use in Buildings) and NZS 3640 (Chemical Preservation of Round Sawn Timber) for minimum timber treatment selection and treatment requirements. Also refer to framing manufacturer's literature for further guidance on timber selection. Framing must be protected from moisture at sites in accordance with the framing manufacturer recommendations.

*Note: Refer to NZS 3602 for information about the allowable moisture content in timber framing.*

### 3.2.4 Frame Construction

Use of timber framing must be in accordance with NZS 3604 and the framing manufacturer's specifications. The framing must be rigid and not rely on the cladding for stability. Timber framing sizes and its set-out must comply with NZS 3604 and as specified in this technical specification.

The following framing is required:

- When studs are spaced at 600mm centres maximum, the nogs / dwangs must be provided at 800mm centres maximum
- When studs are spaced at 400mm centres then the nogs / dwangs may be provided at 1200mm centres
- An extra stud is required in internal corners
- For specific design projects exposed to wind speeds higher than 50m/sec, the stud spacing must be closed to 400mm c/c.

## 3.3 STEEL FRAMING

### 3.3.1 Dimensions and Gauge

A 38mm minimum wide stud can be used to install Stria Cladding. The thickness of steel frame must be in the range 0.55 to 1.6mm BMT (Base Metal Thickness). Considering the ease of installation, the recommended minimum BMT is 0.75mm.

### 3.3.2 Durability

The steel framing must have the appropriate level of coating to prevent corrosion and comply with durability requirements of NZBC.

### 3.3.3 Frame Construction

Steel framing must comply either with NASH 3405 or with the specific engineering design for the project. Stud and batten spacing must not be more than what has been specified in this specification. Refer to framing manufacturer's specifications or NASH 3405 for further guidance on steel frame.

## 3.4 SPECIAL FRAMING REQUIREMENTS

The following are special framing requirements for both timber and steel framing:

- Double studs are required at internal corners, refer Figure 13.
- Extra packers maybe required at external corners.

## 3.5 TOLERANCES

In order to achieve the required performance and an acceptable wall finish, it is imperative that framing is straight and true. Framing tolerances shall comply with Table 2.1 of NZS 3604 and the manufacturer's specifications. All framing shall be made flush.

# 4 Preparation

## 4.1 BUILDING UNDERLAY / HOMERAB PRECLAD LINING

Building underlay / HomeRAB® PreClad™ Lining must be provided as per the requirements of External Moisture Clause E2 of NZBC. The building underlay selected for use must comply with Table 23 of E2/AS1.

The building underlay must be fixed in accordance with section 9.1.7 E2/AS1 and underlay manufacturer's recommendations.

Walls which are not lined on the inside face e.g. garage walls or gable ends must include a rigid sheathing or an air barrier behind the cladding which complies with Table 23 of E2/AS1. James Hardie HomeRAB PreClad Lining complies with these requirements and is suitable for use in this situation. It must be installed in accordance with James Hardie Rigid Air Barriers installation manual.

# 5 Batten installation

## 4.2 RAB BOARD

General building underlay or HomeRAB PreClad Lining is suitable for use up to very high wind speed zone (50m/sec).

For specific design projects where the wind pressure is higher than 1.5kPa, or when an EH windzone, James Hardie RAB Board must be used instead of building underlay. RAB Board is suitable to withstand wind pressures up to 4.5kPa.

To achieve the temporary weathertightness using James Hardie rigid air barriers, windows/doors can be temporarily installed. Refer to James Hardie Rigid Air Barriers installation manual for information regarding its installation.

## 4.3 CAVITY CLOSURE / VENT STRIP

The James Hardie Stria Aluminium Cavity Closure or uPVC cavity vent strip must be installed at the bottom of all walls constructed using the drained and ventilated cavity construction method. It is important that the openings in the cavity closure/vent strip are kept clear and unobstructed to allow free drainage and ventilation of cavities. James Hardie cavity closure / vent strip has an opening area of 1000mm<sup>2</sup>/m length.

## 4.4 FLASHINGS

All wall openings, penetrations, intersections, connections, window sills, heads and jambs must be flashed prior to Stria Cladding installation. Refer to moisture management requirements in Clause 2.5. The building underlay/rigid air barrier must be appropriately incorporated with penetration and junction flashings using flashing tapes. Materials must be lapped in such a way that water tracks down to the exterior on the face of building underlay or rigid air barrier. James Hardie will assume no responsibility for water infiltration within the wall due to poor installation of flashings or building underlay.

The selected flashing materials must comply with the durability requirements of NZBC. For information refer to Table 20 of E2/AS1.

When using James Hardie rigid air barriers the entire framing around openings must be sealed with a flashing tape. The tape must be finished over the face of the rigid air barrier. Refer to James Hardie Rigid Air Barriers installation manual for further information.

## 4.5 JUNCTIONS AND PENETRATIONS

Refer to Clause 2.5 of this specification for moisture management requirements. All windows and doors must be detailed as per the requirements of this specification. James Hardie has developed the window details for Stria Cladding which meet the requirements of E2 External Moisture, an approved document of the NZBC. Refer to Figures 14 to 16.

## 5.1 CLD STRUCTURAL CAVITY BATTENS

The CLD Structural Cavity Batten is suitable to have Stria Cladding fixed into them. The battens are 2450mm long, 70mm wide and 19mm thick. The battens are fully sealed on all faces. Refer to the details for information about installation.

## 5.2 CLD STRUCTURAL CAVITY BATTEN FIXING

CLD Structural Cavity Batten must be fixed to the studs over building underlay or RAB Board. The battens are run continuously over the studs but they must have a gap at the floor joist level to allow for structural shrinkage and deflection in joists. Refer Figure 22.

The CLD Structural Cavity Batten can also be butt jointed over the studs within the floor height. The batten ends must be cut between 20°-45° and be installed to deflect the moisture to exterior. The ends must be sealed and butted using an adhesive sealant in the joint, Refer Figure 16.

The minimum framing width required to fix CLD Structural Cavity Batten is 45mm, refer Figure 8. All site cut ends of CLD Structural Cavity Battens must be sealed on site with Dulux Acraprime 501/1 sealer or Resene Quick Dry before installation. Refer to Table 2 for CLD Structural Cavity Batten spacing and fixing size and fixing centres.

The designer must ensure that the CLD Structural Cavity Battens are not used in situations where design wind pressures are above 2.5kPa(uls).

CLD Structural Cavity Battens must not be used to a length smaller than 300mm.

## 5.3 BATTEN FASTENERS

CLD Structural Cavity Batten must be fixed to the studs with fasteners as per Table 2. The fasteners must be driven at a minimum distance of 50mm from the batten ends.

Table 2

Fixing Type	Wind Pressure (kPa)	CLD Structural Cavity Batten Spacing Max. (mm)	Fixing Centres (mm)
65 x 2.8m RounDrive ring shank nail to timber frame	Up to 1.5	600 or 400 as per framing spacing	250
	1.5 to 2.5	400mm	200

When using a rigid air barrier the batten fixing must be increased by minimum thickness of rigid air barrier.

For fixing into steel frame of thickness between 0.55 – 0.75mm BMT, use 10g x 40mm self embedding wing tek steel screw at fixing centres specified in Table 2. A thermal break is also required to be installed over the steel frame before installing the



underlay/RAB Board. Refer to BRANZ or DBH website for further guidance on thermal break requirements. Ensure a minimum 15mm penetration of screw into steel frame.

For fastener durability information, refer to Clause 6.3 of this document.

CLD Structural Cavity Battens less than 400mm in length must have fixings at maximum 150mm centres.

## 5.4 INTERMEDIATE SUPPORT

Where studs are at 600mm centres an intermediate means of restraining the building underlay and insulation from bulging into the cavity shall be installed. An acceptable method to achieve this is using a:

- 75mm galvanised mesh
- polypropylene tape at 300mm centres fixed horizontally and drawn taut

No intermediate supports are required when:

- studs are spaced at maximum 400mm centres
- James Hardie Rigid Air Barriers instead of building underlay are used

# 6 Stria Cladding installation

## 6.1 GENERAL

Stria Cladding and CLD Structural Cavity Battens must be kept under cover whilst in storage or at sites and they must be dry at the time of their installation. All site cut panel edges must be sealed with Dulux Acraprime 501/1, Resene Quick Dry or similar sealer compatible with the finish coat before installation.

Stria Cladding must be fully supported and fixed into CLD Structural Cavity Battens. Ensure that cladding is hard against the battens to avoid drumminess.

To achieve best aesthetic results it is recommended to position vertical jointer by the corner of openings or coinciding with the centre line of openings.

This technical specification only covers the horizontal installation of Stria Cladding. Refer to James Hardie for vertical installation supplement of Stria Cladding.

## 6.2 FASTENING METHOD

### 6.2.1 T-Head Nails With Adhesive

The combination of stainless steel straight T-head nails and an adhesive sealant provides a fast and efficient panel installation method. Use minimum of three nails per stud for each panel. Refer to Figure 10. Use Paslode 30 x 1.6mm C Series Stainless Steel Brad Nails only.

Apply a 6mm thick continuous bead of Bostik 'Seal n Flex 1' or Sika 'Sikaflex 11FC' adhesive sealant to the face of the CLD Structural Cavity Batten prior to fixing Stria Cladding. Only apply adhesive sealant to the CLD Structural Cavity Battens to suit each panel as the Stria Cladding is installed on the wall. See Figure 9 for details.

It is a good practice to set the brad nail gun to fire 2-3mm proud of the panel surface keeping a consistent pressure on the panel while fixing. Let the adhesive sealant go off for approximately 2 hours whilst continuing work on the next section of wall. Come back later and hammer the nails flush with cladding surface.

The edge distance required for fixing T-head brad nails is 12mm. Refer to Figure 6 or Figure 8.

### 6.2.2 Window/door opening

Use aluminium window jamb flashing on window/door jambs. Stria Cladding must be installed prior to the final installation of windows/doors. Refer to Figures 17 to 23 for further information.

## 6.3 FASTENER DURABILITY

Fasteners used to fix CLD Structural Cavity Batten must meet the minimum durability requirements of the NZBC. NZS 3604 specifies the requirements for fixing material to be used in relation to exposure conditions and are summarised in Table 3.

Fasteners must be fully compatible with all other materials that they are to be in contact with to ensure the durability and integrity of assembly.

For steel framing ensure that the fasteners used are compatible with steel framing.

Contact fastener manufacturers for more information.

Table 3

Exposure conditions and nail selection prescribed by NZS 3604		
Nail material		
Zone D	Zone C outside sea spray zone and Zone B and geothermal hot spots	Bracing - all zones
Grade 316 Stainless	Hot-dipped galvanised or 316 stainless	Grade 316 Stainless

*(Zone C areas where local knowledge dictates that increased durability is required, appropriate selection shall be made).*

*Microclimate conditions as detailed in NZS 3604, paragraph 4.2.4 require SED.*

*Also refer to the NZBC Acceptable Solution 'E2/AS1' Table 20 and 22 for information regarding the selection of suitable fixing materials and their compatibility with other materials.*

# 7 Joints

## 7.1 VERTICAL JOINT

Stria Cladding can be jointed using a vertical joint flashing. Refer to Figure 6.

The second option is to form a butt joint by allowing a 3mm gap between the two panels with an adhesive sealant applied to the edge of the panel prior to butting with the next panel, it is recommended that the joints are formed in a straight line. Refer to Figure 8.

## 7.2 HORIZONTAL JOINT

Stria Cladding panels are horizontally ship lapped over the panel below as per Figure 10. There is a minimum 25mm lap between the two panels. Ensure that Stria Cladding panels are securely interlocked before nailing. Stria Cladding can run continuous over floor joists without any horizontal joint when using a LVL timber floor joists. Refer to Figure 25.

When an engineered joist is not used, a movement joint must be formed at floor joist, refer to Figure 26.

## 7.3 DRAINAGE JOINT

After every two floors a horizontal drainage joint flashing is required, refer to Figure 26.

## 7.4 INTERNAL CORNER JOINT

An internal corner flashing is to be used to form an internal corner joint, refer to Figure 14.

Alternatively, the panels can also be mitre joined to form an internal corner, refer to Figure 15.

## 7.5 EXTERNAL CORNER JOINT

An external box corner flashing is used to fix the external corners, refer to Figure 11 and 13.

Alternatively, the panels can be mitre joined to form an external corner, refer to Figure 12.

Where panels are fixed with brad nails, the nail heads must be finished flush with panel surface. The nail heads can be skimmed over with an exterior grade two part builders fill, if required. The skimmed area must be primed prior to painting.

James Hardie recommends a minimum of two coats of exterior grade acrylic paint. Follow the paint manufacturer's recommendations to prepare the surface and to adequately cover and conceal the panel fixings.

## 8.2 FLEXIBLE SEALANT

Sealant used must comply with the relevant requirements of NZBC. Application and use of sealants must comply with the manufacturer's instructions. Check with the sealant manufacturer prior to coating over sealant. Some sealant manufacturers do not recommend coating over their product.

# 9 Storage and handling

Stria Cladding must be laid flat on a smooth level surface. Edges and corners must be protected from chipping.

To ensure optimum performance, store panels under cover and keep dry prior to fixing. If the panels become wet, allow them to dry thoroughly before fixing.

Do not carry panels or CLD Structural Cavity Battens on the flat, carry in the vertical position to avoid excessive bending.

# 8 Finishes

## 8.1 PAINTING

Painting of Stria Cladding is mandatory to meet the durability requirements of NZBC and 15 year James Hardie product warranty. Stria Cladding must be dry and free of any dust or grime before painting. The panels must be painted within 90 days of their installation. There is no restriction on the LRV of paint to be applied on the Stria Cladding.

Stria Cladding is pre-primed and is suitable for site applied acrylic paints.

In order to seal cut edges or sanded patches, Dulux Primacryl, Resene Quick Dry or a similar product should be applied. The primer should be compatible with the paint to be used.

# Product Warranty

**Stria®**  
CLADDING

## July 2014

James Hardie New Zealand ("James Hardie") warrants for a period of 15 years from the date of purchase that the Stria® Cladding and CLD® Structural Cavity Batten (the "Product"), will be free from defects due to defective factory workmanship or materials and, subject to compliance with the conditions below, will be resistant to cracking, rotting, fire and damage from termite attacks to the extent set out in James Hardie's relevant published literature current at the time of installation. James Hardie warrants for a period of 15 years from the date of purchase that the accessories supplied by James Hardie will be free from defects due to defective factory workmanship or materials.

Nothing in this document shall exclude or modify any legal rights a customer may have under the Consumer Guarantees Act or otherwise which cannot be excluded or modified at law.

## CONDITIONS OF WARRANTY:

The warranty is strictly subject to the following conditions:

- a) James Hardie will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation;
- b) this warranty is not transferable;
- c) the Product must be installed and maintained strictly in accordance with the relevant James Hardie literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature. Further, all other products, including coating and jointing systems, applied to or used in conjunction with the Product must be applied or installed and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice;
- d) the project must be designed and constructed in strict compliance with all relevant provisions of the current New Zealand Building Code ("NZBC"), regulations and standards;
- e) the claimant's sole remedy for breach of warranty is (at James Hardie's option) that James Hardie will either supply replacement product, rectify the affected product or pay for the cost of the replacement or rectification of the affected product;
- f) James Hardie will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing James Hardie will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product, normal wear and tear, growth of mould, mildew, fungi, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces);
- g) all warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law;
- h) if meeting a claim under this warranty involves re-coating of Products, there may be slight colour differences between the original and replacement Products due to the effects of weathering and variations in materials over time.

Disclaimer: The recommendations in James Hardie's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to conditions (c), (d), (f) and (g) above. James Hardie has tested the performance of the Stria® Cladding and CLD® Structural Cavity Batten when installed in accordance with the Stria® Cladding and CLD® Structural Cavity Batten technical specification, in accordance with the standards and verification methods required by the NZBC and those test results demonstrate the product complies with the performance criteria established by the NZBC. However, as the successful performance of the relevant system depends on numerous factors outside the control of James Hardie (e.g. quality of workmanship and design) James Hardie shall not be liable for the recommendations made in its literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the NZBC, regulations and standards, as it is the responsibility of the building designer to ensure that the details and recommendations provided in the relevant James Hardie installation manual are suitable for the intended project and that specific design is conducted where appropriate.

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# NEW ZEALAND INSTALLATION INSTRUCTIONS

With 2-piece internal corner profile or standard internal corner profile.  
Wallpanel with Aqualock



In the wet zone, all profiles, cut surfaces, joints and drip noses, **MUST** be cleaned and have sealant applied. Fibo-Wipes is only to be used on laminate surfaces.

Fibo Seal is recommended as a sealant.



The panels can be mounted on existing walls or on a levelled timber frame with a centre to centre distance of 600 mm and horizontal battens at 800 mm centres. **NB!** When attaching heavy items such as washbasins, there must be additional studding. **NB!** Acclimatisation – the panels **MUST** be stored flat at room temperature for 3 days prior to being used (longer if they have been kept in cold storage.)



Where there is a requirement/need for a solid wall behind the panel, a minimum 12-15mm x 18mm plywood or rough panels should be used. Using a solid wall is an ideal solution for the installation of our 300mm effect panels.



The panels are fastened plumb at the top. Allow at least 5mm distance up to the ceiling. The inner corner profile is attached to the stud using screws through the pre-drilled holes. Remember to countersink the screws.



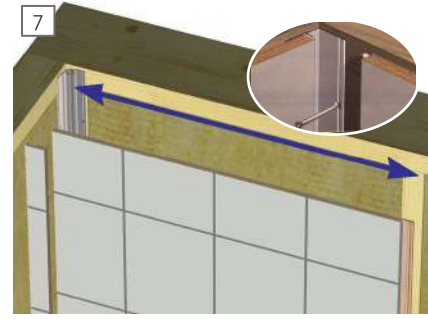
Start the installation as shown in the drawing. Adjust the length of the panels to meet the ceiling. Set the internal corner profile onto the panel, then fit both panel and corner profile place, into the corner. **NB: The panels replace water vapour resistant foil on outer walls.**



Start the installation above the door. Profile comes predrilled. Corner profile fixed into the back of the panel with a special screws as shown (included in the package of profile). In the shower area all edges lubricated with Fibo Seal or other MS Polymer sealant.



The inner corner profile fixed to the upright in pre-finished countersunk holes. Fit the next panel in width and height, apply sealant on the edges and slide the panel into the corner.



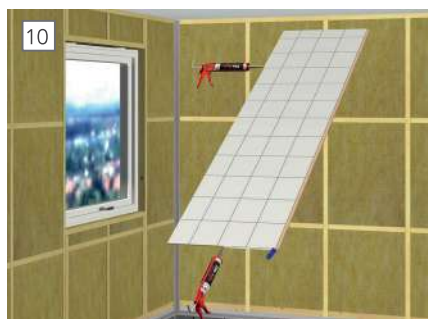
Measure the top and bottom of the first panel, (remember to measure into the profile and to the first studs). Cut the panel and test fit without sealant. **NB: The panel MUST be plumb/level.** Clean cut surfaces, joint edge and under drip nose.



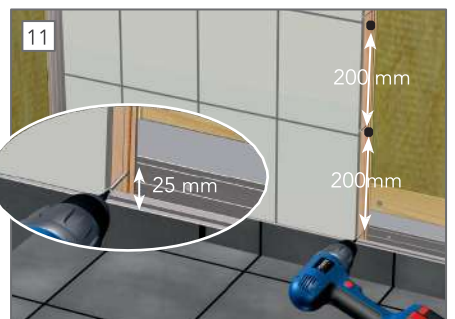
Apply sealant (MS Polymer) in the corner (preferably using masking tape for the best possible result). Clean with Fibo clean, Fibo fug and Fibo Wipes or alternative cleaners.



Finished



Apply approved sealant on the cut surfaces as shown in the drawing.



The panel is screwed to the stud as shown in the drawing.



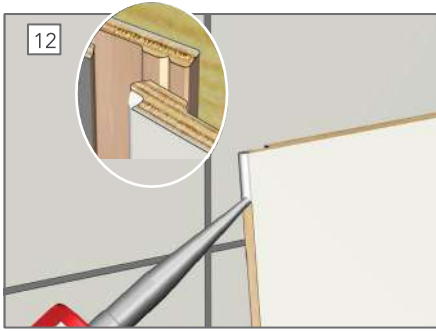
Beyond Tiles Ltd, 165 The Strand, Parnell, Auckland

[www.beyondtiles.co.nz](http://www.beyondtiles.co.nz) | [info@beyondtiles.co.nz](mailto:info@beyondtiles.co.nz)

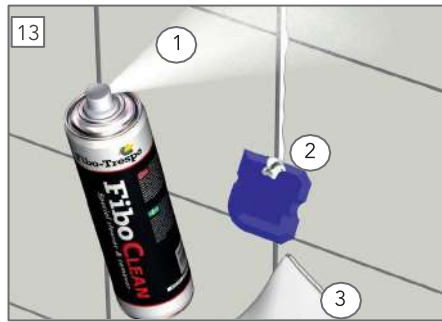


# NEW ZEALAND INSTALLATION INSTRUCTIONS

With 2-piece internal corner profile or standard internal corner profile.  
Wallpanel with Aqualock



Clean the joint edge and apply sealant on the joint edge and cut surface, prior to clicking it into place.

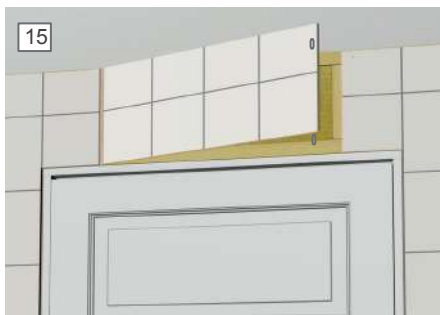


NB There should be so much sealant in the joint that the sealant oozes out along the length of the entire joint:

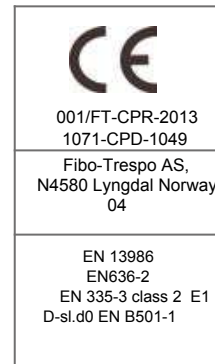
1. Spray Fibo clean on the excess sealant
2. Remove the Fibo Fug
3. Wipe away any visible sealant residue with Fibo Wipes



For pipe penetrations, drill out a hole 5 mm larger in diameter than the pipe. Cut surfaces must be cleaned. Use approved pipe penetrations such as Uponor M6 or Sanipex.



The final panel is folded at one side so that the joint will be neat and is fastened with staples, concealed by ceiling cornices and door architraves.



## ACCESSORIES



As the panels may have sharp edges, the use of gloves during assembly is recommended.

As a filler/sealant we recommend Fibo seal.

Fibo seal is approved by the norwegian building research institute (nbi) and in accordance with etag 022

## TOOLS



base profile



internal corner profile



external corner profile



Beyond Tiles Ltd, 165 The Strand, Parnell, Auckland

[www.beyondtiles.co.nz](http://www.beyondtiles.co.nz) | [info@beyondtiles.co.nz](mailto:info@beyondtiles.co.nz)



## Technical datasheet

Product: Fibo Wallpanels

Standard size: 10,2x620x2400mm with Aqualock

**Certified according to ISO 9001**

Name	<b>Fibo AS</b>
Address	Industriveien 2, 4580 Lyngdal, Norway
Phone /	+47 38 13 71 00 / +47 38 13 70 51
WEB adr	<a href="http://www.fibosystem.com">http://www.fibosystem.com</a>
Mail	<a href="mailto:ordre@fibosystem.com">ordre@fibosystem.com</a>
Contact	Elise Almås, Product Manager

### Area for use, fitting and installation

Area of use	Fibo is an interior panel for wet and dry rooms both in domestic and public areas. The panel is designed to be used in bathroom and showers and other areas with excessive water exposure.
Fitting	Panels can be fitted directly onto a concrete wall, over tiles or, if necessary, onto a timber framework. Refer to Fibo fitting instructions.
Installation	Corrosion free screw and glue
Selant	<b>Approved selant according to ETAG 022-approvals:</b> Fibo Seal-Fugger Seal All- CT1- Casco Aquaseal - Optiform Baderomspanel fugemasse – Soudaseal 215LM

### PRODUCT DESCRIPTION

Format	10,2 x 620 x 2400 with Aqualoc joining on the two long sides.
Construction	The Fibo panels consist of a plywood core covered with a decorative high-pressure laminate (HPL) on the front face and a backing laminate (HPL) on the reverse side. The long edges are delivered with Aqualock "click lock" tongue and groove system for concealed fixing with a 45 degree chamfered short edge.
Brilliance; Test Method according	High gloss (HG) 105-110 Gloss (G) 70 -80 Silk (S) 10-18
Finishes	Product finishes for individual colours are available as indicated on the Colour Collection pages: Silk S, Gloss G, High Gloss HG, Slate SL
HPL laminate test method according to EN 438-1 and 2	The High pressure Laminate is a surface material to be bonded to different kinds of substrates. High Pressure Laminates have a very good wear resistance as well as resistance to most chemicals. Produced after EN 438 norm Impact Resistance Good, Wear Resistance (IP) Good Scratch resistance (Abrasion) > 150, Heat resistance: Max 180°C/356°F Water absorption Good Swelling < 3% Light resistance 6-8
The core	This is a specially developed 7-layer 9mm birch plywood. The plywood cores are FSC Certified
Tolerances EN 324-1	Length +/-2,0mm With +/-0,5mm Thickness +/-0,4mm Difference from level +/-0,3mm Banana 0,8mm Curving Convex 1,0mm, Curving Concave 3,0mm Joint opening Dry room 0,5mm Dry room 0,7mm
Cleaning/maintenance	Household solvents, disinfectants and detergents do not affect the durable surface. Abrasive cleaners should not be used.
Fire resistance EN	D-s1.d0
CE marking	1071-CPD-1049 – 04 – EN 13986 – EN 63-2 – EN 335-3 class 2 Formaldehyd: E1

### REMARK

Storage	Panels should be stored inside, flat under cover. The decorative surfaces should be facing each other.
Packing	2 panels per pack. Packet in perforated shrink wrap. Weight per pack 23 kg. Per pallet: Legato/ Adagio collection: 30 packs/60 panels : Weight pallet 690kg Fortissimo Crescendo collection 15 packs/30 panels: Weight pallet 345 kg
Approvals	EN.438-norm, NBI 2289(Norway), SITAC 0409/2 (Sweden), MK 7.32/1462 (Denmark), VTT C-2753-08 (Finland), ETAG 022

**Changed: 09.12.2016**

**Replaces: 31.03.2016**

# Certificate of Conformity

This is to Certify **FIBO Wall Panel System**

## Product Description

FIBO Wall Panels have a decorative, high-pressure laminate surface, bonded to high-quality WBP (marine) plywood with a balancer laminate on the reverse. FIBO Wall Panels are supplied in 600 x 240 sheets. FIBO Wall Panels have an "Aqualock" edge lap jointing system.

Other components of the system are sealant (FIBO SEAL) and jointers (Aluminium and PVC).

## Complies with the Building Code of New Zealand:

B1 Structure – B1.3.1, B1.3.2, B1.3.3 (a), (j), B1.3.4 (a)

B2 Durability – B2.3.1 (c), B2.3.2 (a)

C3 Fire Affecting Areas Beyond the Fire Source – C3.4 (a)

E3 Internal Moisture – E3.3.4, E3.3.5, E3.3.6

F2 Hazardous Building Materials – F2.3.1

## Subject to the following conditions and limitations:

1. Sealant used for joints and cuts ends must be FIBO Seal.
2. FIBO Wall Panels are not suitable for use in saunas.



**CODEMARK™**

## Product Use and Scope

FIBO Walls Panels are a waterproof wall panel intended for use in wet areas, bathrooms, sanitary rooms, kitchens and laundries. FIBO Wall Panels are a waterproof wall panel intended for use in wet areas, bathrooms, sanitary rooms, kitchens and laundries. FIBO Wall Panels may be used as an internal lining;

- In all locations in household units, ancillary buildings, and outbuildings.
- All locations in other buildings except:
  - Sleeping areas where care or detention is provided,
  - In exits ways,
  - All occupied spaces in importance level 4 buildings,
  - Crowd and sleeping uses where care or detention is provided (unless sprinklered).

## Certificate Holder

Beyond Tiles Limited  
84 Carlton Crescent  
Auckland, 2018  
Ph: 021 945 000  
Email: [info@beyondtiles.co.nz](mailto:info@beyondtiles.co.nz)  
Web: [www.beyondtiles.co.nz](http://www.beyondtiles.co.nz)



**JAS-ANZ**



[www.jas-anz.org/register](http://www.jas-anz.org/register)

## CodeMark Certification Body

AsureQuality, 11 Hull Road  
Mt Maunganui  
New Zealand  
Tel. 0508 00 11 22  
[www.asurequality.com](http://www.asurequality.com)

John McKay, Chief Executive Officer, AsureQuality Limited

**Date of Issue**

10<sup>th</sup> March 2018

**Certificate Number**

**AQ-100318-CMNZ**

Beyond Tiles Limited will notify AsureQuality Ltd in accordance with Regulation 15 of the Building (Product Certification Regulations 2008)

"This certificate is issued by an independent certification body accredited by the product certification accreditation body appointed by the Chief Executive of the Ministry of Business, Innovation and Employment (MBIE) under the Building Act 2004.

The MBIE does not in any way warrant, guarantee, or represent that the building method or product the subject of this certificate conforms with the New Zealand Building Code, nor accept any liability arising out of the use of the building method or product.

The MBIE disclaims, to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages, and costs arising as a result of the use of the building method(s) or product(s) referred to in this certificate.

This certificate may only be reproduced in its entirety."

<b>BUILDING ENVELOPE RISK MATRIX</b>	
<b>Job Details</b>	<b>Job Number</b>
<b>Gattsche Tiny House</b>	<b>1836</b>

<b>Wall (Elevation) 1</b>					
Risk Factor	Low	Medium	High	Very High	Total
Wind Zone	0	0	1	2	2
Number of Storeys	0	1	2	4	0
Roof/Wall Intersections	0	1	3	5	3
Eaves Width (incl. Gutter)	0	1	2	5	1
Envelope Complexity	0	1	3	6	0
Deck Design	0	2	4	6	0
<b>Total Risk</b>					<b>6</b>

<b>Wall (Elevation) 2</b>					
Risk Factor	Low	Medium	High	Very High	Total
Wind Zone	0	0	1	2	2
Number of Storeys	0	1	2	4	0
Roof/Wall Intersections	0	1	3	5	0
Eaves Width (incl. Gutter)	0	1	2	5	1
Envelope Complexity	0	1	3	6	0
Deck Design	0	2	4	6	0
<b>Total Risk</b>					<b>3</b>

<b>Wall (Elevation) 3</b>					
Risk Factor	Low	Medium	High	Very High	Total
Wind Zone	0	0	1	2	2
Number of Storeys	0	1	2	4	0
Roof/Wall Intersections	0	1	3	5	0
Eaves Width (incl. Gutter)	0	1	2	5	0
Envelope Complexity	0	1	3	6	0
Deck Design	0	2	4	6	0
<b>Total Risk</b>					<b>2</b>

<b>Wall (Elevation) 4</b>					
Risk Factor	Low	Medium	High	Very High	Total
Wind Zone	0	0	1	2	2
Number of Storeys	0	1	2	4	0
Roof/Wall Intersections	0	1	3	5	3
Eaves Width (incl. Gutter)	0	1	2	5	1
Envelope Complexity	0	1	3	6	0
Deck Design	0	2	4	6	0
<b>Total Risk</b>					<b>6</b>

<b>Risk score</b>	<b>Direct fixed to framing</b>	<b>Over 20mm drained cavity</b>
0-6	<ul style="list-style-type: none"> <li>a Timber weather boards - all types.</li> <li>b Fibre cement weatherboards.</li> <li>c Vertical profiled metal (ref fig38, E2/AS1) corrugated &amp; symm. Trapezoidal only</li> <li>d Fibre cement sheet (except stucco over)</li> <li>e Plywood sheet</li> <li>f EIFS</li> </ul>	<ul style="list-style-type: none"> <li>a Masonry veneer (40mm cavity min.)</li> <li>b Stucco</li> <li>c Horizontal profiled metal (ref fig38, E2/AS1) corrugated &amp; symm. Trapezoidal only</li> </ul>
7-12	<ul style="list-style-type: none"> <li>a Bevelback weatherboards</li> <li>b Vertical board and batten</li> <li>c Vertical profiled metal (ref fig38, E2/AS1) corrugated only</li> </ul>	<ul style="list-style-type: none"> <li>a Masonry veneer (40mm cavity min.)</li> <li>b Stucco</li> <li>c Horizontal profiled metal</li> <li>d Rusticated weatherboards</li> <li>e Fibre cement weatherboards</li> <li>f Fibre cement sheets</li> <li>g Plywood sheets</li> <li>h EIFS</li> </ul>
13-20	<ul style="list-style-type: none"> <li>a Vertical profiled metal (ref fig38, E2/AS1) corrugate only</li> </ul>	<ul style="list-style-type: none"> <li>a Masonry veneer (40mm cavity min.)</li> <li>b Stucco</li> <li>c Horizontal profiled metal</li> <li>d Rusticated weatherboards</li> <li>e Fibre cement weatherboards</li> <li>f Fibre cement sheets</li> <li>g Plywood sheets</li> <li>h EIFS</li> <li>i Bevelback weatherboards</li> </ul>

## Demand Calculation Sheet

### Job Details

Name: Gattsche Tiney House  
 Street and Number: 103 Lake Ferry road  
 Lot and DP Number: LOT 6 DP 70868 BLK VIII ONOKE SD  
 City/Town/District: Lake Ferry  
 Designer: Willem van der Laan  
 Company: CAD Services and Design  
 Date: Wednesday, 1 August 2018

**SWDC**  
**Building Consent Document**

### Building Specification

Number of Storeys	1
Floor Loading	2 kPa
Foundation Type	Subfloor
Subfloor Cladding Weight	Light
	<b>Single</b>
Cladding Weight	Light
Roof Weight	Light
Room in Roof Space	37.5 to 50%
Roof Pitch (degrees)	15
Roof Height above Eaves (m)	1.5
Building Height to Apex (m)	4.6
Ground to Lower Floor (m)	0.6
Average Stud Height (m)	2.4
Building Length (m)	6
Building Width (m)	4
Building Plan Area (m²)	25

### Building Location

**Wind Zone = Extra High**

**Earthquake Zone 3**

Soil Type D & E (Deep to Very Soft)  
 Annual Prob. of Exceedance: 1 in 500 ( Default)

### Bracing Units required for Wind

	Along	Across
<b>Single Level</b>	<b>275</b>	<b>350</b>
<b>Subfloor Level</b>	<b>704</b>	<b>772</b>

### Bracing Units required for Earthquake

	Along & Across
<b>Single Level</b>	<b>370</b>
<b>Subfloor Level</b>	<b>448</b>





Single Level Along Resistance Sheet

Job Name: Gattsche Tiney House

Timber Floor Limit of 120 BUs/m Applied

SWDC  
Building Consent Document

									Wind	EQ
									Demand	
									275	370
									Achieved	
Line	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BUs)	EQ (BUs)	457 166%	464 125%
a	1	1.20		2.1	EPB1-1.2	EPB1	144	144		
	2	1.20		3.4	EPB1-1.2	EPB1	102	102		
									246 OK	246 OK
c	1	1.20		2.4	EPB1-1.2	EPB1	144	144		
	2	1.00		3.4	EPB1-0.6	EPB1	67	74		
									211 OK	218 OK



Single Level Across Resistance Sheet

Job Name: Gattsche Tiney House

Timber Floor Limit of 120 BUs/m Applied

SWDC  
Building Consent Document

Wind	EQ
Demand	
350	370
Achieved	
358	374
102%	101%
240 OK	240 OK
118 OK	134 OK

Line	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BUs)	EQ (BUs)		
m	1	2.00		2.4	EPB1-1.2	EPB1	240	240		
									240 OK	240 OK
o	1	0.60		3.4	EPB1-0.6	EPB1	40	44		
	2	0.80		3.6	EPB1-0.4	EPB1	43	51		
	3	0.60		3.9	EPB1-0.6	EPB1	35	39		
									118 OK	134 OK



Subfloor Level Along Resistance Sheet

Job Name: Gattsche Tiney House

SWDC  
Building Consent Document

Wind	EQ
Demand	
704	448
Achieved	
960	720
136%	161%

Line	Element	Length (m)	Angle (degrees)		Type	Supplier	Wind (BUs)	EQ (BUs)		
A	1	3.00			Anchor Pile	NZS3604	480	360		
									480 OK	360 OK
B	1	3.00			Anchor Pile	NZS3604	480	360		
									480 OK	360 OK



Subfloor Level Across Resistance Sheet

Job Name: Gattsche Tiney House

SWDC  
Building Consent Document

Wind	EQ
Demand	
772	448
Achieved	
960	720
124%	161%

Line	Element	Length (m)	Angle (degrees)		Type	Supplier	Wind (BUs)	EQ (BUs)		
M	1	2.00			Anchor Pile	NZS3604	320	240		
									320 OK	240 OK
N	1	2.00			Anchor Pile	NZS3604	320	240		
									320 OK	240 OK
O	1	2.00			Anchor Pile	NZS3604	320	240		
									320 OK	240 OK



**Job Number:** 1836  
**Job Description:** Gattsche Tiny House  
**Run by:** Willem van der Laan  
**Licence:** Professional Designer  
**Company:** CAD Services and Design  
**Phone:** 06-370-1310

## Project Report

This project consists of the following design items:

DJ1(Floor joist External decking) - 190x45 Pine SG08 H3.2 Treated

Deck Joist: Single 900 mm span, Spacing 450 mm, Flooring PR Decking (25), no ceiling, Floor Live 2.0 kPa, & permanent live load 0.8 kPa, EHigh wind load.

BR1(Deck Trimmer) - 2/190x45 Pine SG08 H3.2 Treated

Floor Bearer: Single 3900 mm span, Joists at 450 mm, FLW 250 mm, Flooring PR Decking (25), no ceiling, Floor Live 2.0 kPa, & permanent live load 0.8 kPa, EHigh wind load.

FJ2 - no section size available

BR2(Main Bearers) - 2/140x45 Pine SG08 H3.2 Treated

Floor Bearer: Continuous 1500/1500/1500/1500 mm spans, Joists at 400 mm, FLW 2000 mm, Flooring Particle Board (30), no ceiling, Floor Live 1.5 kPa, & permanent live load 0.6 kPa, EHigh wind load.

BR3(Mezzanine Trimmer) - 2/140x45 Pine SG08 H1.2 Treated

Floor Bearer: Single 1900 mm span, Joists at 400 mm, FLW 1200 mm, Flooring Particle Board (30), Ceiling 10mm P'Board (12), Floor Live 2.0 kPa, & permanent live load 0.8 kPa, EHigh wind load.

FJ1(Mezz floor joist) - 140x45 Pine SG08 H1.2 Treated (See full member report for specific notes.)

Floor Joist: Single 2400 mm span, Spacing 400 mm, Flooring Particle Board (30), Ceiling 10mm P'Board (12), Floor Live 2.0 kPa, & permanent live load 0.8 kPa, EHigh wind load.

LF1 - Grouped Element - Wall Frame

LF1>TP1 - 45x90 Pine SG08 H1.2 Treated

Top Plate: Studs at 300 mm loaded at 450 mm with direct tie-down FLW 2000 mm, RLW 0 mm, Pitch 20 deg, max trench 3mm in depth, Flooring Particle Board (30), Ceiling 10mm P'Board (12), Floor Live 1.5 kPa, & permanent live load 0.6 kPa, EHigh wind load.

LF1>BP1 - 45x90 Pine SG08 H1.2 Treated

Bottom Plate: Joists at 300 mm, studs at 300 mm, FLW 2000 mm, RLW 0 mm, Pitch 20 deg, max trench 3 mm in depth, Flooring Particle Board (30), Ceiling 10mm P'Board (12), Floor Live 1.5 kPa, & permanent live load 0.6 kPa, EHigh wind load.

LF1>ST1(Timber studs up to 3300) - 2/90x45 Pine SG08 H1.2 Treated

Common Stud: lower storey, 3210 mm height, FLW 2000 mm, RLW 0 mm, Pitch 20 deg, No notches or cuts permitted, Flooring Particle Board (30), Ceiling 10mm P'Board (12), Floor Live 1.5 kPa, & permanent live load 0.6 kPa, EHigh wind load.

R4 - 190x45 Pine SG08 H1.2 Treated

Rafter: Single 4000 mm span, LCant 600 mm, RCant 600 mm, Spacing 800 mm, Pitch 15 deg, Roofing Sheet (20), Ceiling 10mm P'Board (12), EHigh wind load.

**Where a specific manufacturer's products have been specified in this project report, any substitution of other products could void this certification.**

### **CERTIFICATION:**

I hereby certify that I have carried out these designs correctly, and that the input data for each design is correct. The above nominated sections have only been designed for the loading and dimensional data stated above as having been used to generate this report.

I consider that I have adequate experience and training to calculate and input the required data for this design in the NelsonPine Design Software. I am also familiar with the following codes, and the requirements of these codes and their application to the project I am designing:

AS/NZS 1170	Part 0: Structural design actions - General Principles 2002
	Part 1: Structural design actions - Permanent, imposed and other actions 2002
	Part 2: Structural design actions - Wind actions - 2011
	Part 3: Structural design actions - Wind actions - 2003
NZS 3604	Timber Framed Buildings - 2011
NZS 3603	Timber Structures Standard - 1993 with Amendment 4



**EXCLUSION OF LIABILITY:**

Nelson Pine Industries Ltd gives no warranties in relation to the use of the above mentioned section design and neither CAD Services and Design will accept any liability for loss or damage, either direct or consequential, arising from the use of the above nominated section in an application not consistent with the input data used to generate this report or that requires additional data beyond the scope of the NelsonPine Design Software.

Checked and certified by:

  
.....

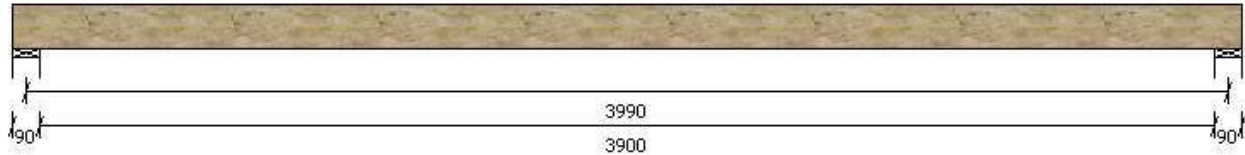
CAD Services and Design

Dated: 01/08/2018  
.....



Job Number: 1836  
 Job Description: Gattsche Tiny House  
 Run by: Willem van der Laan  
 Licence: Professional Designer  
 Company: CAD Services and Design  
 Phone: 06-370-1310

## Deflection Report



Full blocking is not shown, but may be required at supports.

**Section BR1, Floor Bearer Design, Deck Trimmer**  
**Use 2/190x45 Pine SG08 H3.2 Treated**  
**Min. end bearing length = 45mm**

Where a specific manufacturer's product has been specified on this report, any substitution of another product could void this certification.

### DIMENSIONAL DETAILS:

Span type is Single Span for a design length of 3990 mm  
 Theoretical spans are calculated as centrelines of supports, using the entered support widths and distances between supports.  
 Supported floor joist spacing is 450mm, and floor load width is 250mm

### DESIGN DETAILS:

Flooring material of PR Decking (25)  
 Floor strength live load of 2 kPa  
 Floor deflection live load of 2 kPa  
 Wind Classification for this project is EHigh

No ceiling load under the floor  
 Permanent Live Load of 0.8 kPa  
 Concentrated Live Load of 1.8 kN  
 Design ultimate wind pressure is 1.815 kPa  
 Design serviceability wind pressure is 1.270kPa

Snow Load Classification for this project is NoSnow (Snow load not required)

### TIMBER DESIGN DETAILS (2/190x45 Pine SG08 H3.2 Treated)

k1 factors in accordance with NZS 3603-1993  
 Durability Class = 4  
 Creep Factor (k2) = 2  
 Creep Factor (k2) = 1 for tension members  
 k3 bearing factor for internal supports as per NZS 3603-1993  
 k4/k6 and k5 factors in accordance with NZS 3603-1993  
 Capacity Factor = 0.80

Minimum Treatment Level H3.2  
 Minimum Allowed k2 = 1  
 EMC (average moisture content) = 15%

k24 Size Factor if applicable built into section property data  
 For full loading data, see the engineering report

**Allowable Deflections:**

Load Case Type	Span Ratio	Fixed value mm
Full Permanent Load	L/300	12
Functional Permanent	L/300	12
Floor Live Load	L/400	9
Long Term Snow Load	L/300	20
Short Term Snow Load	L/300	20
Long Term Roof Load	n/a	n/a
Short Term Roof Load	L/250	20
Wind Uplift	L/150	n/a
Sensory Wind Load	n/a	n/a
Wind Downward	L/150	n/a
Dynamic Floor Load	n/a	2

**Member Actions – Serviceability Properties:**

Member Number	Load Combination Name	Combin j2	Bending Deflection	Check Deflection	Upper Limit
1	7:G + 0.4Qf	2.0	-6.7	6.7	12.0
	8:G + 0.7Qf	1.0	-4.8	4.8	12.0
	9:0.7Qf	1.0	-3.4	3.4	9.0
	10:1Qfconc on M1	1.0	-6.9	6.9	9.0

**Load Case Symbols – Legend:**

Load combinations are made up of one or more load cases, where the loads are combined together to simulate the actual situation for the member or structure. These load values, for Limit State Design, may also be multiplied by a factor to increase, or decrease, the effect of the individual load case in the combination. The following symbols are used in this report to represent particular load groups or types of loads:

G	Dead Load or any permanent load applied for the entire structure life
Qfperm	Permanent component of Floor Live Load, or Long Term Gamma factor x Live Load (refer AS1170.1)
Qf	Floor Live Load - Distributed
Qfconc	Floor Live Load - Concentrated - main spans
Qfcant	Floor Live Load - Concentrated - balcony line load
Qr	Roof Live Load - Distributed
Qrconc	Roof Live Load - Concentrated
Sn	Snow Load
Wu	Wind Uplift
Sn	Wind Downdrag
Sn	Wind Horizontal - or Lateral wind load, eg for wall studs, wind beams, etc
Dyn	Dynamic Load applied for 'floor bounce' - concentrated

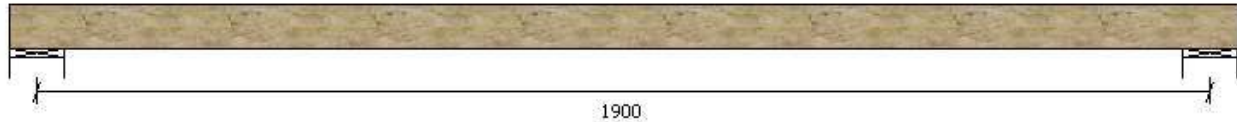
**Maximum Performance Statistics – Timber Code Report**

Design Action	Design Value	Control Value	Pass/Fail	Stress Ratio %	Location	Load Combination
Moment (kN.m)	3.048	7.221	Pass	42.2	Member 1, Centre	4:1.2G + 1.5Qfconc on M1
Shear (kN)	2.773	41.261	Pass	6.7	Member 1, Left end	5:1.2G + 1.5Qfconc on M1 for left shear
Reaction Bearing (kN)	2.832	57.672	Pass	4.9	Member 1, Left end	5:1.2G + 1.5Qfconc on M1 for left shear
Deflection - variable (mm)	6.9	10.0	Pass	69.3	Member 1, Centre	10:1Qfconc on M1
Deflection - fixed value (mm)	6.9	9.0	Pass	76.8	Member 1, Centre	10:1Qfconc on M1
Support Crushing (kN)	2.832	34.800	Pass	8.1	Support 1	5:1.2G + 1.5Qfconc on M1 for left shear



Job Number: 1836  
 Job Description: Gattsche Tiny House  
 Run by: Willem van der Laan  
 Licence: Professional Designer  
 Company: CAD Services and Design  
 Phone: 06-370-1310

## Deflection Report



Full blocking is not shown, but may be required at supports.

**Section BR3, Floor Bearer Design, Mezzanine Trimmer**  
**Use 2/140x45 Pine SG08 H1.2 Treated**  
**Min. end bearing length = 45mm**

Where a specific manufacturer's product has been specified on this report, any substitution of another product could void this certification.

### DIMENSIONAL DETAILS:

Span type is Single Span for a design length of 1900 mm  
 Theoretical spans are those entered as centreline distances between supports.  
 Supported floor joist spacing is 400mm, and floor load width is 1200mm

### DESIGN DETAILS:

Flooring material of Particle Board (30)	Ceiling material of 10mm P'Board (12)
Loads are increase by 25% to account for continuous supported overlying members	
Floor strength live load of 2 kPa	Permanent Live Load of 0.8 kPa
Floor deflection live load of 2 kPa	Concentrated Live Load of 1.8 kN
Wind Classification for this project is EHigh	Design ultimate wind pressure is 1.815 kPa
	Design serviceability wind pressure is 1.270kPa
Snow Load Classification for this project is NoSnow (Snow load not required)	

### TIMBER DESIGN DETAILS (2/140x45 Pine SG08 H1.2 Treated)

k1 factors in accordance with NZS 3603-1993	
Durability Class = 4	Minimum Treatment Level H1.2
Creep Factor (k2) = 2	Minimum Allowed k2 = 1
Creep Factor (k2) = 1 for tension members	EMC (average moisture content) = 15%
k3 bearing factor for internal supports as per NZS 3603-1993	
k4/k6 and k5 factors in accordance with NZS 3603-1993	k24 Size Factor if applicable built into section property data
Capacity Factor = 0.80	For full loading data, see the engineering report

**Allowable Deflections:**

Load Case Type	Span Ratio	Fixed value mm
Full Permanent Load	L/300	12
Functional Permanent	L/300	12
Floor Live Load	L/400	9
Long Term Snow Load	L/300	20
Short Term Snow Load	L/300	20
Long Term Roof Load	n/a	n/a
Short Term Roof Load	L/250	20
Wind Uplift	L/150	n/a
Sensory Wind Load	n/a	n/a
Wind Downward	L/150	n/a
Dynamic Floor Load	n/a	2

**Member Actions – Serviceability Properties:**

Member Number	Load Combination Name	Combin j2	Bending Deflection	Check Deflection	Upper Limit
1	7:G + 0.4Qf	2.0	-4.7	4.7	6.3
	8:G + 0.7Qf	1.0	-3.5	3.5	6.3
	9:0.7Qf	1.0	-2.6	2.6	4.8
	10:1Qfconc on M1	1.0	-1.9	1.9	4.8

**Load Case Symbols – Legend:**

Load combinations are made up of one or more load cases, where the loads are combined together to simulate the actual situation for the member or structure. These load values, for Limit State Design, may also be multiplied by a factor to increase, or decrease, the effect of the individual load case in the combination. The following symbols are used in this report to represent particular load groups or types of loads:

G	Dead Load or any permanent load applied for the entire structure life
Qfperm	Permanent component of Floor Live Load, or Long Term Gamma factor x Live Load (refer AS1170.1)
Qf	Floor Live Load - Distributed
Qfconc	Floor Live Load - Concentrated - main spans
Qfcant	Floor Live Load - Concentrated - balcony line load
Qr	Roof Live Load - Distributed
Qrconc	Roof Live Load - Concentrated
Sn	Snow Load
Wu	Wind Uplift
Sn	Wind Downdrag
Sn	Wind Horizontal - or Lateral wind load, eg for wall studs, wind beams, etc
Dyn	Dynamic Load applied for 'floor bounce' - concentrated

**Maximum Performance Statistics – Timber Code Report**

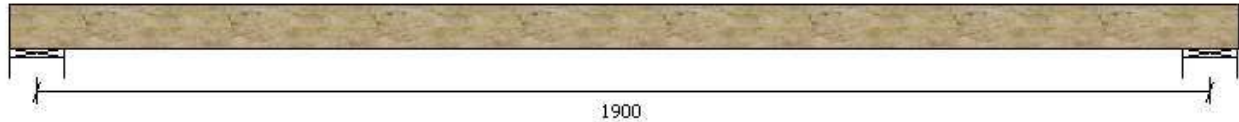
Design Action	Design Value	Control Value	Pass/Fail	Stress Ratio %	Location	Load Combination
Moment (kN.m)	2.424	3.136	Pass	77.3	Member 1, Centre	3:1.2G + 1.5Qf
Shear (kN)	3.733	24.322	Pass	15.3	Member 1, Left end	3:1.2G + 1.5Qf
Reaction Bearing (kN)	5.102	46.138	Pass	11.1	Member 1, Left end	3:1.2G + 1.5Qf
Deflection - variable (mm)	4.7	6.3	Pass	74.8	Member 1, Centre	7:G + 0.4Qf
Deflection - fixed value (mm)	4.7	12.0	Pass	39.5	Member 1, Centre	7:G + 0.4Qf
Support Crushing (kN)	5.102	27.840	Pass	18.3	Support 1	3:1.2G + 1.5Qf





Job Number: 1836  
 Job Description: Gattsche Tiny House  
 Run by: Willem van der Laan  
 Licence: Professional Designer  
 Company: CAD Services and Design  
 Phone: 06-370-1310

## Deflection Report



Full blocking is not shown, but may be required at supports.

**Section BR3, Floor Bearer Design, Mezzanine Trimmer**  
**Use 2/140x45 Pine SG08 H1.2 Treated**  
**Min. end bearing length = 45mm**

Where a specific manufacturer's product has been specified on this report, any substitution of another product could void this certification.

### DIMENSIONAL DETAILS:

Span type is Single Span for a design length of 1900 mm  
 Theoretical spans are those entered as centreline distances between supports.  
 Supported floor joist spacing is 400mm, and floor load width is 1200mm

### DESIGN DETAILS:

Flooring material of Particle Board (30)	Ceiling material of 10mm P'Board (12)
Loads are increase by 25% to account for continuous supported overlying members	
Floor strength live load of 2 kPa	Permanent Live Load of 0.8 kPa
Floor deflection live load of 2 kPa	Concentrated Live Load of 1.8 kN
Wind Classification for this project is EHigh	Design ultimate wind pressure is 1.815 kPa
	Design serviceability wind pressure is 1.270kPa
Snow Load Classification for this project is NoSnow (Snow load not required)	

### TIMBER DESIGN DETAILS (2/140x45 Pine SG08 H1.2 Treated)

k1 factors in accordance with NZS 3603-1993	Minimum Treatment Level H1.2
Durability Class = 4	Minimum Allowed k2 = 1
Creep Factor (k2) = 2	EMC (average moisture content) = 15%
Creep Factor (k2) = 1 for tension members	
k3 bearing factor for internal supports as per NZS 3603-1993	k24 Size Factor if applicable built into section property data
k4/k6 and k5 factors in accordance with NZS 3603-1993	For full loading data, see the engineering report
Capacity Factor = 0.80	

**Allowable Deflections:**

Load Case Type	Span Ratio	Fixed value mm
Full Permanent Load	L/300	12
Functional Permanent	L/300	12
Floor Live Load	L/400	9
Long Term Snow Load	L/300	20
Short Term Snow Load	L/300	20
Long Term Roof Load	n/a	n/a
Short Term Roof Load	L/250	20
Wind Uplift	L/150	n/a
Sensory Wind Load	n/a	n/a
Wind Downward	L/150	n/a
Dynamic Floor Load	n/a	2

**Member Actions – Serviceability Properties:**

Member Number	Load Combination Name	Combin j2	Bending Deflection	Check Deflection	Upper Limit
1	7:G + 0.4Qf	2.0	-4.7	4.7	6.3
	8:G + 0.7Qf	1.0	-3.5	3.5	6.3
	9:0.7Qf	1.0	-2.6	2.6	4.8
	10:1Qfconc on M1	1.0	-1.9	1.9	4.8

**Load Case Symbols – Legend:**

Load combinations are made up of one or more load cases, where the loads are combined together to simulate the actual situation for the member or structure. These load values, for Limit State Design, may also be multiplied by a factor to increase, or decrease, the effect of the individual load case in the combination. The following symbols are used in this report to represent particular load groups or types of loads:

G	Dead Load or any permanent load applied for the entire structure life
Qfperm	Permanent component of Floor Live Load, or Long Term Gamma factor x Live Load (refer AS1170.1)
Qf	Floor Live Load - Distributed
Qfconc	Floor Live Load - Concentrated - main spans
Qfcant	Floor Live Load - Concentrated - balcony line load
Qr	Roof Live Load - Distributed
Qrconc	Roof Live Load - Concentrated
Sn	Snow Load
Wu	Wind Uplift
Sn	Wind Downdrag
Sn	Wind Horizontal - or Lateral wind load, eg for wall studs, wind beams, etc
Dyn	Dynamic Load applied for 'floor bounce' - concentrated

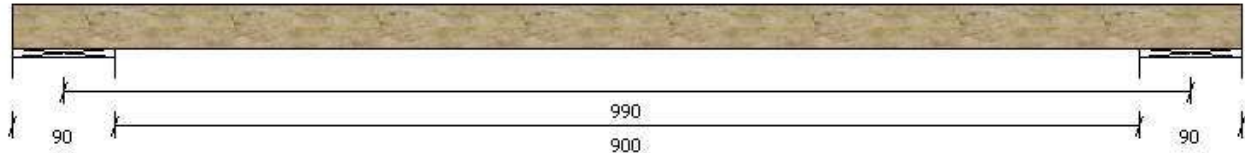
**Maximum Performance Statistics – Timber Code Report**

Design Action	Design Value	Control Value	Pass/Fail	Stress Ratio %	Location	Load Combination
Moment (kN.m)	2.424	3.136	Pass	77.3	Member 1, Centre	3:1.2G + 1.5Qf
Shear (kN)	3.733	24.322	Pass	15.3	Member 1, Left end	3:1.2G + 1.5Qf
Reaction Bearing (kN)	5.102	46.138	Pass	11.1	Member 1, Left end	3:1.2G + 1.5Qf
Deflection - variable (mm)	4.7	6.3	Pass	74.8	Member 1, Centre	7:G + 0.4Qf
Deflection - fixed value (mm)	4.7	12.0	Pass	39.5	Member 1, Centre	7:G + 0.4Qf
Support Crushing (kN)	5.102	27.840	Pass	18.3	Support 1	3:1.2G + 1.5Qf



Job Number: 1836  
 Job Description: Gattsche Tiny House  
 Run by: Willem van der Laan  
 Licence: Professional Designer  
 Company: CAD Services and Design  
 Phone: 06-370-1310

## Deflection Report



Full blocking is not shown, but may be required at supports.

### Section D11, Deck Joist Design, Floor joist External decking

Use 190x45 Pine SG08 H3.2 Treated

Min. end bearing length = 30mm

Where a specific manufacturer's product has been specified on this report, any substitution of another product could void this certification.

#### DIMENSIONAL DETAILS:

Span type is Single Span for a design length of 990 mm

Theoretical spans are calculated as centrelines of supports, using the entered support widths and distances between supports.

Deck Joist spacing is 450mm centres

#### DESIGN DETAILS:

Flooring material of PR Decking (25)

Floor strength live load of 2 kPa

Floor deflection live load of 2 kPa

Wind Classification for this project is EHigh

No ceiling load under the floor

Permanent Live Load of 0.8 kPa

Concentrated Live Load of 1.8 kN

Design ultimate wind pressure is 1.815 kPa

Design serviceability wind pressure is 1.270kPa

Snow Load Classification for this project is NoSnow (Snow load not required)

#### TIMBER DESIGN DETAILS (190x45 Pine SG08 H3.2 Treated)

k1 factors in accordance with NZS 3603-1993

Durability Class = 4

Creep Factor (k2) = 2

Creep Factor (k2) = 2 for tension members

k3 bearing factor for internal supports as per NZS 3603-1993

k4/k6 and k5 factors in accordance with NZS 3603-1993

Capacity Factor = 0.80

Minimum Treatment Level H3.2

Minimum Allowed k2 = 1

EMC (average moisture content) = 15%

k24 Size Factor if applicable built into section property data

For full loading data, see the engineering report

**Allowable Deflections:**

Load Case Type	Span Ratio	Fixed value mm
Full Permanent Load	L/300	15
Functional Permanent	L/300	15
Floor Live Load	L/400	9
Long Term Snow Load	L/300	20
Short Term Snow Load	L/300	20
Long Term Roof Load	n/a	n/a
Short Term Roof Load	L/250	20
Wind Uplift	L/150	n/a
Sensory Wind Load	n/a	n/a
Wind Downward	L/150	n/a
Dynamic Floor Load	n/a	2

**Member Actions – Serviceability Properties:**

Member Number	Load Combination Name	Combin j2	Bending Deflection	Check Deflection	Upper Limit
1	7:G + 0.4Qf	2.0	-0.1	0.1	3.3
	8:G + 0.7Qf	1.0	0.0	0.0	3.3
	9:0.7Qf	1.0	0.0	0.0	2.5
	10:1Qfconc on M1	1.0	-0.2	0.2	2.5
	11:Q(1kN) on M1	1.0	-0.1	0.1	2.0

**Load Case Symbols – Legend:**

Load combinations are made up of one or more load cases, where the loads are combined together to simulate the actual situation for the member or structure. These load values, for Limit State Design, may also be multiplied by a factor to increase, or decrease, the effect of the individual load case in the combination. The following symbols are used in this report to represent particular load groups or types of loads:

G	Dead Load or any permanent load applied for the entire structure life
Qfperm	Permanent component or Floor Live Load, or Long Term Gamma factor x Live Load (refer AS1170.1)
Qf	Floor Live Load - Distributed
Qfconc	Floor Live Load - Concentrated - main spans
Qfcan	Floor Live Load - Concentrated - balcony line load
Qr	Roof Live Load - Distributed
Qrconc	Roof Live Load - Concentrated
Sn	Snow Load
Wu	Wind Uplift
Sn	Wind Downdrag
Sn	Wind Horizontal - or Lateral wind load, eg for wall studs, wind beams, etc
Dyn	Dynamic Load applied for 'floor bounce' - concentrated

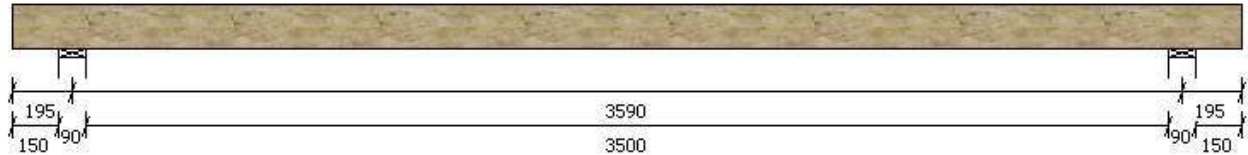
**Maximum Performance Statistics – Timber Code Report**

Design Action	Design Value	Control Value	Pass/Fail	Stress Ratio %	Location	Load Combination
Moment (kN.m)	0.675	3.132	Pass	21.5	Member 1, Centre	4:1.2G + 1.5Qfconc on M1
Shear (kN)	1.830	17.895	Pass	10.2	Member 1, Left end	5:1.2G + 1.5Qfconc on M1 for left shear
Reaction Bearing (kN)	1.891	28.836	Pass	6.6	Member 1, Left end	5:1.2G + 1.5Qfconc on M1 for left shear
Deflection - variable (mm)	0.2	2.5	Pass	7.0	Member 1, Centre	10:1Qfconc on M1
Deflection - fixed value (mm)	0.1	2.0	Pass	4.8	Member 1, Centre	11:Q(1kN) on M1
Support Crushing (kN)	1.891	21.591	Pass	8.8	Support 1	5:1.2G + 1.5Qfconc on M1 for left shear



Job Number: 1836  
 Job Description: Gattsche Tiny House  
 Run by: Willem van der Laan  
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 Phone: 06-370-1310

## Deflection Report



Full blocking is not shown, but may be required at supports.

### Section FJ2, Floor Joist Design, GF floor joist- Internal

Use 190x45 LVL 11 from Nelson Pine H1.2 Treated

Note: Dynamic deflection has exceeded 1.5mm in span 2.

Min. end bearing length = 30mm, min. intermediate bearing length = 45mm

Where a specific manufacturer's product has been specified on this report, any substitution of another product could void this certification.

### DIMENSIONAL DETAILS:

Span type is Single Span with Cantilevers both ends for a design length of 3980 mm

Left Cantilever of 150mm, Single span of 3500mm, and Right Cantilever of 150mm

Theoretical spans are calculated as centrelines of supports, using the entered support widths and distances between supports.

Floor Joist spacing is 400mm centres

### DESIGN DETAILS:

Flooring material of Particle Board (30)

Floor strength live load of 1.5 kPa

Floor deflection live load of 1.5 kPa

Wind Classification for this project is EHigh

Snow Load Classification for this project is NoSnow (Snow load not required)

No ceiling load under the floor

Permanent Live Load of 0.6 kPa

Concentrated Live Load of 1.8 kN

Design ultimate wind pressure is 1.815 kPa

Design serviceability wind pressure is 1.270kPa

### TIMBER DESIGN DETAILS (190x45 LVL 11 - NelsonPine H1.2 Treated)

k1 factors in accordance with NZS 3603-1993

Durability Class = 4

Creep Factor (k2) = 2

Creep Factor (k2) = 1 for tension members

k3 bearing factor for internal supports as per NZS 3603-1993

k4/k6 and k5 factors in accordance with NZS 3603-1993

Capacity Factor = 0.95

Minimum Treatment Level H1.2

Minimum Allowed k2 = 1

EMC (average moisture content) = 15%

k24 Size Factor if applicable built into section property data

For full loading data, see the engineering report



**Allowable Deflections:**

Load Case Type	Span Ratio	Fixed value mm	Cantilever Ratio	Cantilever Fixed value mm
Full Permanent Load	L/300	15	L/250	6
Functional Permanent	L/300	15	L/200	5
Floor Live Load	L/400	9	L/250	6
Long Term Snow Load	L/300	20	L/250	5
Short Term Snow Load	L/300	20	L/250	5
Long Term Roof Load	n/a	n/a	n/a	n/a
Short Term Roof Load	L/250	20	L/120	n/a
Wind Uplift	L/150	n/a	L/75	n/a
Sensory Wind Load	n/a	n/a	n/a	n/a
Wind Downward	L/150	n/a	n/a	n/a
Dynamic Floor Load	n/a	2	n/a	2

**Member Actions – Serviceability Properties:**

Member Number	Load Combination Name	Combin j2	Bending Deflection	Check Deflection	Upper Limit
1	15:G + 0.4Qf	2.0	1.1	1.1	6.0
	16:G + 0.7Qf	1.0	0.8	0.8	5.0
	17:Qf	1.0	0.8	0.8	6.0
	18:1Qfcant on M1	1.0	-0.1	0.1	4.0
	19:1Qfconc on M2	1.0	0.5	0.5	6.0
	20:1Qfcant on M3	1.0	-0.1	0.1	4.0
	21:Qf on M1 Only	1.0	0.0	0.0	4.0
	22:Qf on M2 Only	1.0	0.8	0.8	6.0
	23:Qf on M3 Only	1.0	0.0	0.0	4.0
	24:Qf on odds	1.0	0.0	0.0	4.0
	25:Qf on M1+2	1.0	0.8	0.8	6.0
	26:Qf on M2+3	1.0	0.8	0.8	6.0
	27:Q(1kN) on M2	1.0	0.3	0.3	2.0
2	15:G + 0.4Qf	2.0	-6.1	6.1	12.0
	16:G + 0.7Qf	1.0	-4.4	4.4	12.0
	17:Qf	1.0	-4.5	4.5	9.0
	18:1Qfcant on M1	1.0	0.5	0.5	9.0
	19:1Qfconc on M2	1.0	-3.2	3.2	9.0
	20:1Qfcant on M3	1.0	0.5	0.5	9.0
	21:Qf on M1 Only	1.0	0.0	0.0	9.0
	22:Qf on M2 Only	1.0	-4.6	4.6	9.0
	23:Qf on M3 Only	1.0	0.0	0.0	9.0
	24:Qf on odds	1.0	0.1	0.1	9.0
	25:Qf on M1+2	1.0	-4.6	4.6	9.0
	26:Qf on M2+3	1.0	-4.5	4.5	9.0
	27:Q(1kN) on M2	1.0	-1.8	1.8	2.0
3	15:G + 0.4Qf	2.0	1.1	1.1	6.0
	16:G + 0.7Qf	1.0	0.8	0.8	5.0
	17:Qf	1.0	0.8	0.8	6.0
	18:1Qfcant on M1	1.0	-0.1	0.1	4.0
	19:1Qfconc on M2	1.0	0.5	0.5	6.0
	20:1Qfcant on M3	1.0	-0.1	0.1	4.0
	21:Qf on M1 Only	1.0	0.0	0.0	4.0
	22:Qf on M2 Only	1.0	0.8	0.8	6.0
	23:Qf on M3 Only	1.0	0.0	0.0	4.0
	24:Qf on odds	1.0	0.0	0.0	4.0
	25:Qf on M1+2	1.0	0.8	0.8	6.0
	26:Qf on M2+3	1.0	0.8	0.8	6.0
	27:Q(1kN) on M2	1.0	0.3	0.3	2.0

**Load Case Symbols - Legend:**

Load combinations are made up of one or more load cases, where the loads are combined together to simulate the actual situation for the member or structure. These load values, for Limit State Design, may also be multiplied by a factor to increase, or decrease, the effect of the individual load case in the combination. The following symbols are used in this report to represent particular load groups or types of loads:

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Qf	Floor Live Load - Distributed
Qfconc	Floor Live Load - Concentrated - main spans
Qfcant	Floor Live Load - Concentrated - balcony line load
Qr	Roof Live Load - Distributed
Qrconc	Roof Live Load - Concentrated
Sn	Snow Load
Wu	Wind Uplift
Sn	Wind Downdrag
Sn	Wind Horizontal - or Lateral wind load, eg for wall studs, wind beams, etc
Dyn	Dynamic Load applied for 'floor bounce' - concentrated

**Maximum Performance Statistics - Timber Code Report**

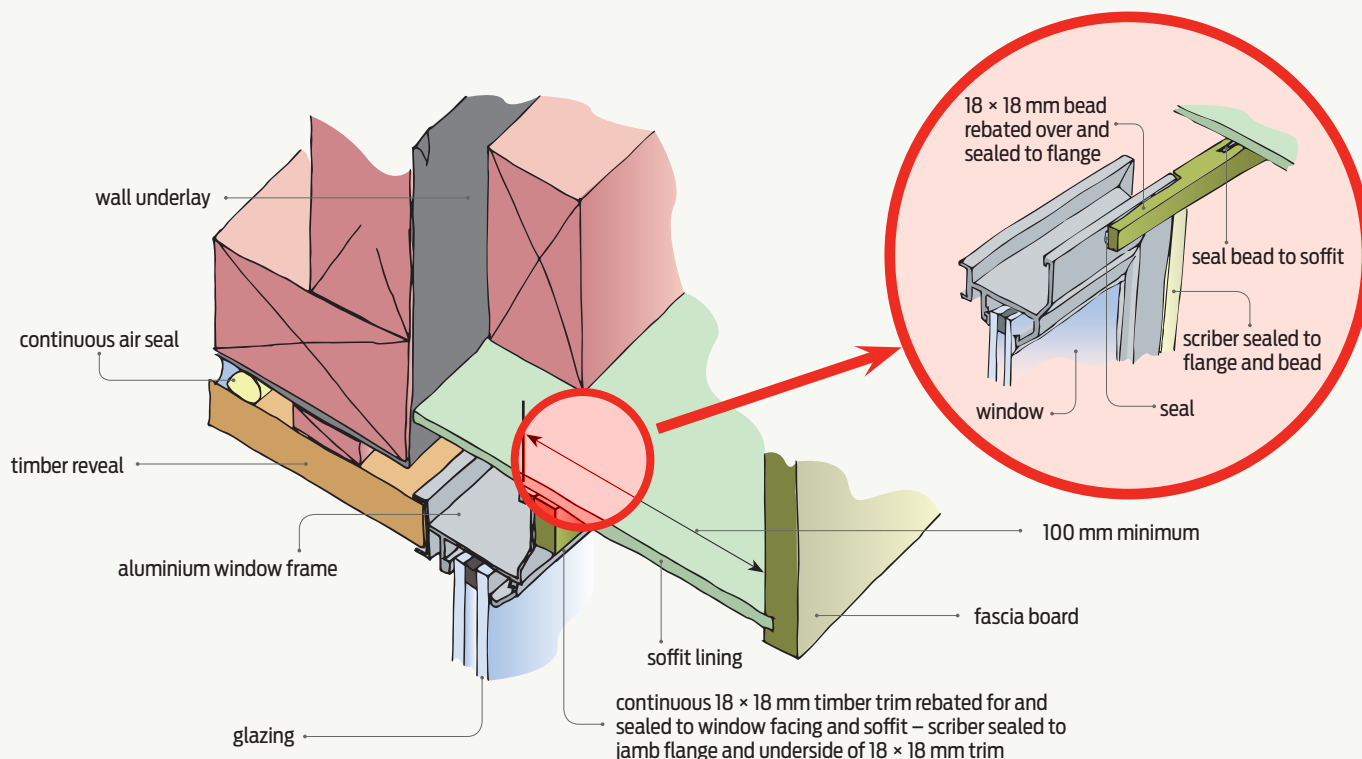
Design Action	Design Value	Control Value	Pass/ Fail	Stress Ratio %	Location	Load Combination
Moment (kN.m)	1.751	6.966	Pass	25.1	Member 2, Centre	10:1.2G + 1.5Qf on M2 + 0.9G on rest
Shear (kN)	2.756	27.075	Pass	10.2	Member 1, Left end	4:1.2G + 1.5Qfcant on M1
Reaction Bearing (kN)	3.168	42.169	Pass	7.5	Member 2, Left end	4:1.2G + 1.5Qfcant on M1
Deflection - variable (mm)	4.6	9.0	Pass	51.1	Member 2, Centre	22:Qf on M2 Only
Deflection - fixed value (mm)	1.8	2.0	Pass	90.1	Member 2, Centre	27:Q(1kN) on M2
Support Crushing (kN)	3.168	21.591	Pass	14.7	Support 1	4:1.2G + 1.5Qfcant on M1



BY ALIDE ELKINK,  
FREELANCE TECHNICAL  
WRITER, WELLINGTON

# Raking window head detail

Raked windows make an interesting feature with a sloped rather than horizontal window head that may follow the roofline. Careful design and installation is needed so they are weathertight, particularly at the low end of the rake.



**Figure 1**

**Raked window head directly under soffit (based on traditional soffit installation).**

A window head detail based on BRANZ's soffit details in *Build 158* will be published in *Build 163*.

**RAKED WINDOWS** are often found where high-level glazing follows the roofline. The sloping head means that it may have rainwater flowing along as well as across the head flashing. Water accumulating at the low end of the rake makes this area of a raking window particularly vulnerable to water entry.

## Always an alternative method

Acceptable Solution E2/AS1 to New Zealand Building Code clause E2 *External moisture* only applies to aluminium windows (with flanges that

overlap the cladding) with a horizontal head.

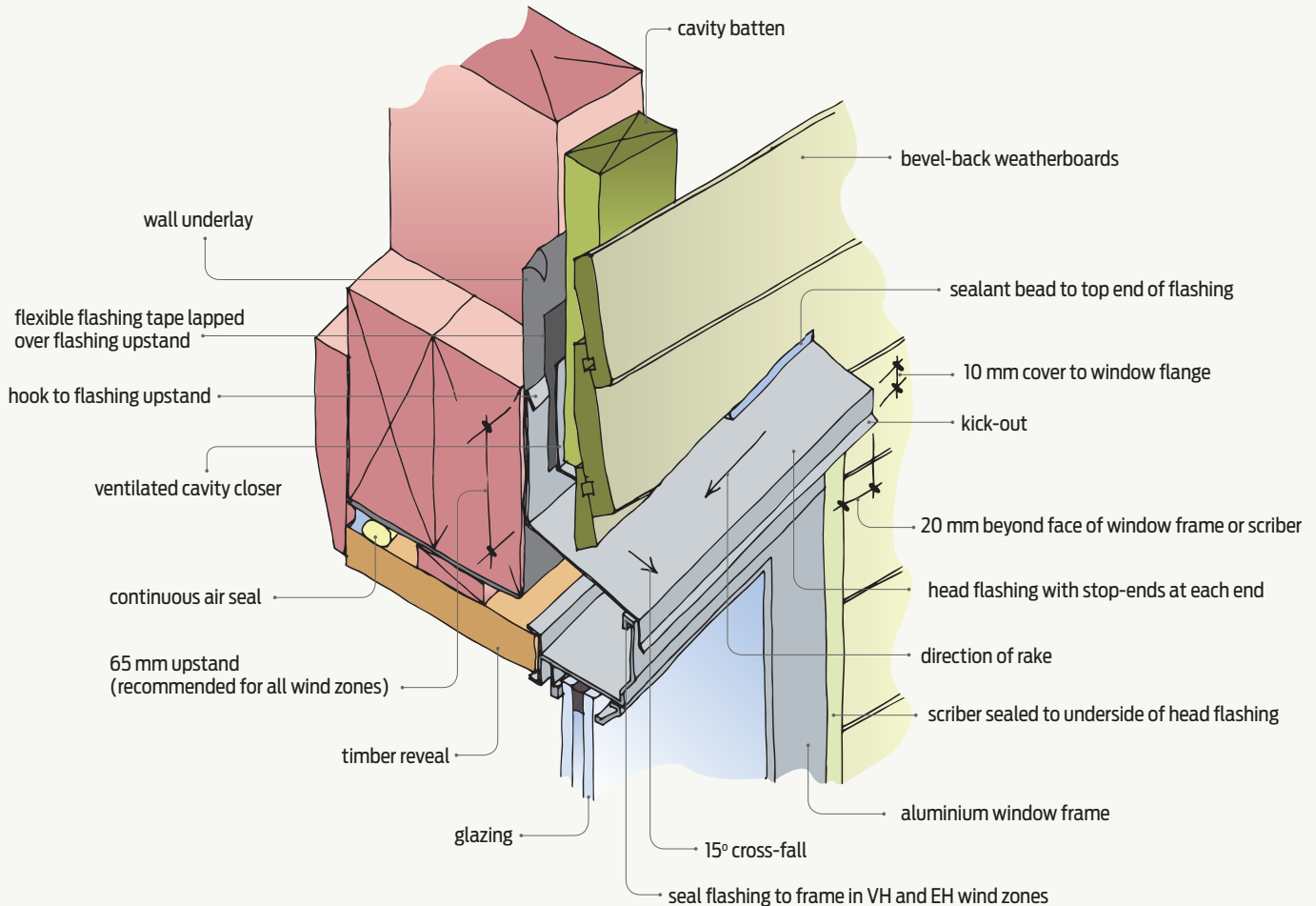
No solution is provided in E2/AS1 for the installation of any raked windows. For a building consent application, the raked window head detail must be designed and submitted as an alternative method.

However, some of the requirements of E2/AS1 may be applied to a raked window head detail (see Figures 1 and 2). For example, E2/AS1 allows a window directly under a horizontal soffit to be installed without a head flashing. Figure 1 shows this applied to raked windows.

## Applicable E2/AS1 requirements

E2/AS1 window head flashings must deflect water to the outside of the wall cladding and:

- have a 15° minimum cross-fall
- have a minimum upstand behind the cladding above of:
  - 40 mm (35 mm minimum cladding cover plus 5 mm gap for drainage and ventilation) in low (L), medium (M), high (H) and very high (VH) wind zones
  - 65 mm (60 mm minimum cladding cover plus 5 mm gap) in extra high (EH) wind zones



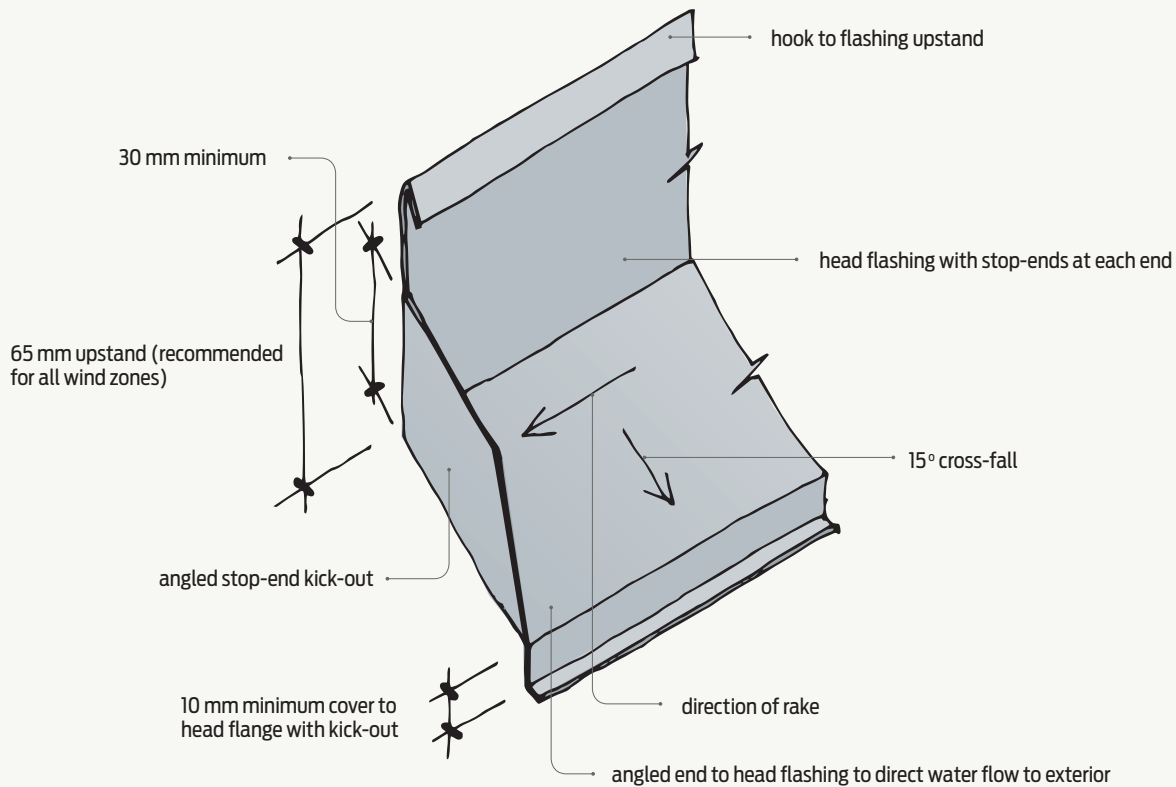
**Figure 2** Raked flashed window head – preferred option.

- have:
  - in L, M, H and VH wind zones, either a hem or hook or a 25 mm increase in the upstand beyond the requirement of E2/AS1 Table 7
  - in EH wind zones, a hem or hook and a 25 mm increase in the upstand beyond the requirement of E2/AS1 Table 7
- be sealed to the face of the wall underlay with flexible flashing tape or be overlapped by an extra layer of wall underlay from above
- provide 10 mm minimum cover to the face of the window flange, and the exposed bottom

- edge of a head flashing must be folded out to form a bird's beak or kick-out
  - extend at least 20 mm beyond the face of the window frame or the scribe or rustic plug where horizontal weatherboards are installed (see Figure 2)
  - have sealant installed between the underside of the head flashing and the top of the window flange in VH and EH wind zones.
- For direct-fixed cladding, E2/AS1 requires a 50 mm length of sealant at each end of the flashing between the cladding and flashing. For

raked windows, install the sealant at the top end of the flashing only to allow the stop-end to discharge water.

Where a drained and vented cavity is installed, a horizontal flashing must have a 10 mm stop-end at each end that finishes at the inside face of the cladding. Raked windows require a 10 mm stop-end at the top and a kickout at the bottom (see Figure 3). The stop-ends **must not** pass through the cladding. The base of the drainage cavity above the window head must be closed off by a ventilated cavity closer. ➤



**Figure 3** Head flashing shaped to deflect water.

### **Pointers when detailing a raked window head**

The key elements to the detailing of a raked aluminium head (Figure 2) that overlaps the cladding are:

- getting water off the flashing at the bottom of the rake
- stopping water getting in at the top of the rake.

Key elements of Acceptable Solution E2/AS1 that can be applied to the raked flashing installation are the interaction of the flashing upstands (suggested increase in height), cladding cover and cover to the window flange.

### **Option 1 – Head as apron flashing**

The preferred option is to consider the raked head flashing as an apron flashing with a stop-end kick-out (see Figure 3) at the bottom of the rake. This will discharge water to the outside for both cavity and direct-fixed claddings (having a cavity is preferred). A flashing stop-end as detailed in E2/AS1 is designed to prevent water being driven past the end of the flashing into a cavity. When applied to a raked window, it has two flaws:

- It does not deflect water to the outside face of the cladding as it terminates at the back face of the cladding.

- It is not of sufficient size to deflect the amount of water that may be present.

Key requirements include:

- sealing any cut in the cladding to allow the installation of the kick-out flashing
- sealing the top of the scribe to the underside of the head flashing.

### **Option 2 – Timber bead**

A second option where the top of the window fits directly under a flat sheet soffit (see Figure 1) is to protect the junction at the raked head with a timber bead that is sealed to both the window flange and the soffit. ➡



**BRANZ NZS 4218:2009 CALCULATION METHOD TOOL**

**PROJECT SUMMARY**

<b>Project name</b>	Gattsche tiny House
<b>Address</b>	103 Lake Ferry Road, Lake Ferry
<b>Designer</b>	CAD Services and Design
<b>Address</b>	219 Masterton Stronvar road, RD10 Masterton
<b>Phone</b>	06-370-1310
<b>Date</b>	8/08/2018
<b>Reference number</b>	1836

<b>Climate zone</b>	2: Rest of North Island not in zones 1 or 3						
<b>Wall construction type</b>	1: Any wall type						
<b>If mixed wall types</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td>0 Percentage of wall area solid timber construction</td> </tr> <tr> <td></td> <td>0 Percentage of wall area high thermal mass construction</td> </tr> <tr> <td></td> <td>100 Percentage of wall area "Any wall type"</td> </tr> </table>		0 Percentage of wall area solid timber construction		0 Percentage of wall area high thermal mass construction		100 Percentage of wall area "Any wall type"
	0 Percentage of wall area solid timber construction						
	0 Percentage of wall area high thermal mass construction						
	100 Percentage of wall area "Any wall type"						
<b>If solid timber wall</b>	1: External 75 mm thick solid timber and timber framed internal walls						

**Summary of calculation method heat loss**

Element	Area (m <sup>2</sup> )	Proposed building heat loss (W/°C)	Reference building heat loss (W/°C)
Roofs/ceilings	25.0	7.8	8.6
Walls	58.0	26.1	30.5
Floors	25.0	17.9	19.2
Vertical glazing	10.5	40.4	79.0
Skylights	0.0	0.0	-
Doors	0.0	0.0	-
Total		92.1	137.4 W/°C

**Glazing percentage:** 15%

**Glazing <40%:** Yes

**Minimum R-values OK:** Yes

**Issues to check:**

**PASS/FAIL**

**PASS**

## BRANZ NZS 4218:2009 CALCULATION METHOD TOOL

### BUILDING ELEMENTS

**Roofs/ceilings:** Skylights are not included here. Enter them in the skylights table below.

Roof/ceiling element	Description	Area (m <sup>2</sup> )	Construction R-value	Heat loss
1	Roof	25	3.2	7.8
2				
3				
4				
5				

Total area 25 m<sup>2</sup>

Total roofs/ceilings heat loss  W/°C

**Skylights:** Skylights are at an angle of 60° or less to the horizontal. If the skylight R-value is not known, use a value of 0.15.

Skylight	Description	Area (m <sup>2</sup> )	Construction R-value	Heat loss
1				
2				
3				
4				
5				
	From Skylight Schedule	0		0.0

Total area 0 m<sup>2</sup>

Total skylight heat loss  W/°C

**Walls:** Doors are not included here. Enter them in the door table.

Wall element	Description	Area (m <sup>2</sup> )	Construction R-value	Heat loss
1	Walls Shadowclad	38	2.22	17.1
2	Walls Stria	20	2.23	9.0
3				
4				
5				
6				

Total area 58 m<sup>2</sup>

Total wall heat loss  W/°C

**Floors:** Only include the ground or exterior floors. Intermediate floors not exposed to the exterior are excluded.

Floor element	Description	Area (m <sup>2</sup> )	Construction R-value	Heat loss
1	Floor	25	1.4	17.9
2				
3				
4				
5				

Total area 25 m<sup>2</sup>

Floor heat loss  W/°C

**Vertical glazing:** Vertical glazing only (steeper than 60°), including glazing in doors. Skylights are on the Skylight table.

If the glazing R-value is not known, use a value of 0.15

Glazing element	Description	Area (m <sup>2</sup> )	Construction R-value	Heat loss
1	Total glazing	10.5	0.26	40.4
2				
3				
4				
5				
6				
7				
8				
9				
10				
	From Glazing Schedule	0		0.0

Total area 10.5 m<sup>2</sup>

Total vertical glazing heat loss  W/°C

**Doors:** Only the non-glazed area of doors is included. The glazed area of doors must be entered in the Glazing table.

The heat loss of doors is automatically set to 0 if the total door area is ≤ 6m<sup>2</sup> or 6% of the total wall area.

If the R-value of a door is not entered a default value of R 0.18 is automatically used.

Door element	Description	Area (m <sup>2</sup> )	Construction R-value	Heat loss
1				0.0
2				0.0
3				0.0
4				0.0
5				
	From Door Schedule	0		0.0

Total area 0

Total door heat loss  W/°C



## Construction R-value Calculator

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to [designnavigator@gmail.com](mailto:designnavigator@gmail.com) with a description and a detail drawing (pdf) of it or use the new [Design Navigator message board](#)

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel .

Floors ☒

Walls ☐

Roofs ☐

Floor

**1.78**

m<sup>2</sup>°C/W

Type: Floor: Suspended Floor (no Lining) ▼  
 Suspended Floor (no Lining) view detail

internal surface 0.09

Flooring :

Plywood 21mm ▼

*R-value: 0.15*

Timber Frame & Cavity :

190+ mm joists @ 400mm ▼

*Floor Frame Area: 11.3%*

*Cavity Area: 88.7%*

Framing :  
*R-value: 1.56*

Expol Underfloor R-1.4 Wooden Floor 1.4

Insulation value of the subfloor space

Suspended floor area [m<sup>2</sup>]:

25

Perimeter length [m]:

20

Perimeter height [m]:

0.6

Perimeter type:

Continuous perimeter wall (sheltered) ▼

Print Page

Current NZS4218:2009 Schedule Method minimum R-value Targets (non-solid contruction)

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31

Australian Building Code Targets

	All Zones except NSW	NSW
Roof	R-4.1	R-6.3
Wall	R-2.9	R-3.8



## Construction R-value Calculator

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to [designnavigator@gmail.com](mailto:designnavigator@gmail.com) with a description and a detail drawing (pdf) of it or use the new [Design Navigator message board](#)

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel .

Floors ☐

Walls ☐

Roofs ☒

Roof

**3.20**

m<sup>2</sup>C/W

Type: Roof: Timber framed skillion Roof ▼

Timber framed skillion Roof view detail

external surface 0.03

Roofing :

Corrugate iron with building paper

▼

*R-value: 0.01*

Timber Frame & Cavity :

190mm rafters or joists @ 900mm, blocking @ 900mm

▼

*Roof Frame Area: 9.8%*

Framing :

*R-value: 1.56*

Thermal Break :

none

*R-value: 0.00*

*Cavity Area: 90.2%*

still Airgap :

10-30mm airgap (non-reflective)

*R-value: 0.13*

Earthwool glasswool Skillion Ceiling 430mm

3.2

Roof Lining :

Plywood 9mm

▼

*R-value: 0.07*

internal surface 0.09

*Non-IC-rated recessed downlights*

Ceiling Area  
[m<sup>2</sup>]:

Number of  
downlights:

Clearance from lamp holder side  
[m]:

Print Page

Current NZS4218:2009 Schedule Method minimum R-value Targets (non-solid construction)

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31

Australian Building Code Targets

	All Zones except NSW	NSW
Roof	R-4.1	R-6.3



## Construction R-value Calculator

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

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If your construction is not listed, please send an e-mail to [designnavigator@gmail.com](mailto:designnavigator@gmail.com) with a description and a detail drawing (pdf) of it or use the new [Design Navigator message board](#).

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

Floors ☐

Walls ☒

Roofs ☐

Walls Shadowclad

**2.22** m<sup>2</sup>C/W

Type: Wall: Timber Frame with vented Cavity ▼

Timber Frame with vented Cavity view detail

external surface 0.03

Cladding :

Plywood 12mm

▼

*R-value: 0.09*

Air Barrier :

Plywood 9mm

▼

*R-value: 0.07*

Timber Frame & Cavity :

90mm, studs @ 400mm, dwangs @ 800mm

▼

*Wall Frame Area: 17.9%*  
 15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08

*Cavity Area: 82.1%*  
 15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08

Framing :  
*R-value: 0.75*

Earthwool glasswool Wall Acoustic 430mm

2.6

still Airgap: none ▼

*R-value: 0.00*

Wall Lining :

Plywood 9mm

▼

*R-value: 0.07*

internal surface 0.09

Print Page

Current NZS4218:2009 Schedule Method minimum R-value Targets (non-solid construction) [i](#):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31

Australian Building Code Targets [i](#):

	All Zones except NSW	NSW
Roof	R-4.1	R-6.3
Wall	R-2.9	R-3.8







## Construction R-value Calculator

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to [designnavigator@gmail.com](mailto:designnavigator@gmail.com) with a description and a detail drawing (pdf) of it or use the new [Design Navigator message board](#).

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

Floors ☐

Walls ☒

Roofs ☐

Walls STRIA

2.23

m<sup>2</sup>°C/W

Type: Wall: Timber Frame with vented Cavity ▼

Timber Frame with vented Cavity view detail

external surface 0.03

Cladding :

James Hardie Stria Cladding 14mm

▼

*R-value: 0.10*

Air Barrier :

Plywood 9mm

▼

*R-value: 0.07*

Timber Frame & Cavity :

90mm, studs @ 400mm, dwangs @ 800mm

▼

*Wall Frame Area: 17.9%*

*Cavity Area: 82.1%*

15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08

15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08

Framing :  
*R-value: 0.75*

Earthwool glasswool Wall Acoustic 430mm 2.6

still Airgap: none

▼  
*R-value: 0.00*

Wall Lining :

Plywood 9mm

▼

*R-value: 0.07*

internal surface 0.09

Print Page

Current NZS4218:2009 Schedule Method minimum R-value Targets (non-solid construction) [i](#):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31

Australian Building Code Targets [i](#):

	All Zones except NSW	NSW
Roof	R-4.1	R-6.3
Wall	R-2.9	R-3.8





**Job Name** Gattsche Tiny House  
**Site address** 103 Lake Ferry road, Lake Ferry

**Job Number** 1836

**Downpipe & soakage pit design in accordance with Clause E1 NZBC**  
From Table 5

**Table 5: Downpipe Sizes for Given Roof Pitch and Area**  
Paragraph 4.2.1

Downpipe size (mm) (minimum internal sizes)	Roof pitch			
	0-25°	25-35°	35-45°	45-55°
Plan area of roof served by the downpipe (m²)				
63 mm diameter	60	50	40	35
74 mm diameter	85	70	60	50
100 mm diameter	155	130	110	90
150 mm diameter	350	290	250	200
65 x 50 rectangular	60	50	40	35
100 x 50 rectangular	100	80	70	60
75 x 75 rectangular	110	90	80	65
100 x 75 rectangular	150	120	105	90

**Downpipe size/roof pitch/max. roof area**

	Roof Area m²	Roof pitch	Pipe dia. mm²	Pipe discharge capacity m²	No. of DP required
Roof area 1	41.0	15	60	60	1
Roof area 2					
Roof area 3					
Roof area 4					

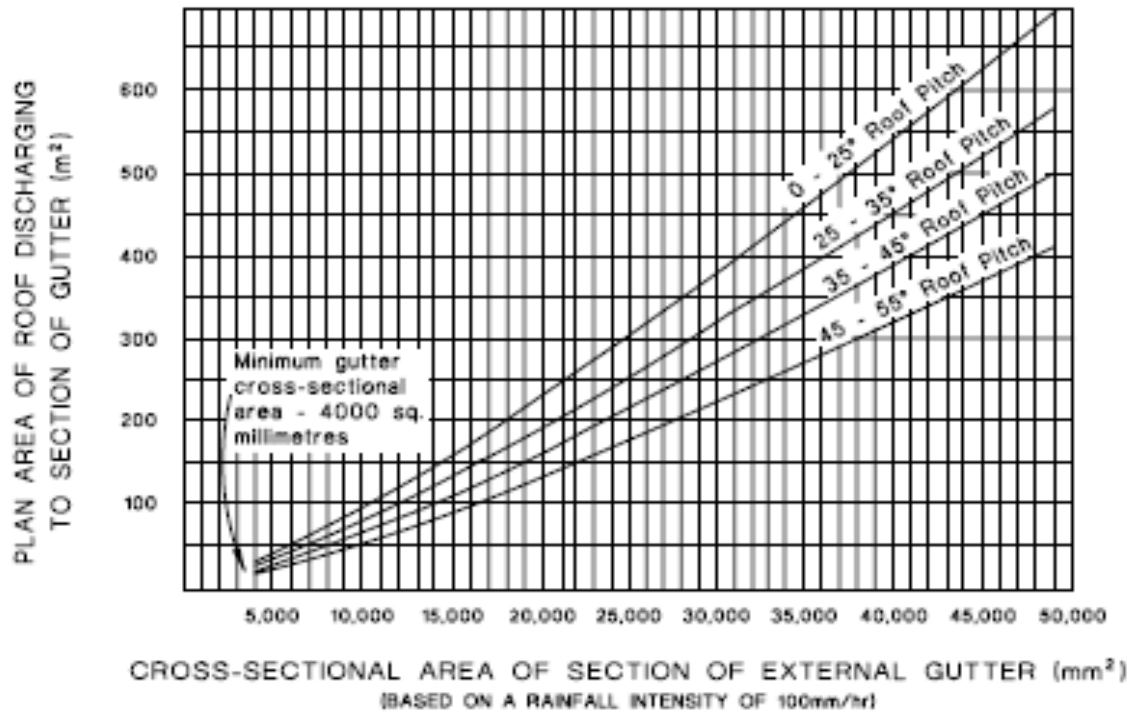
**Total Roof Area** 41.0

**Gutter size/roof pitch/max roof area**

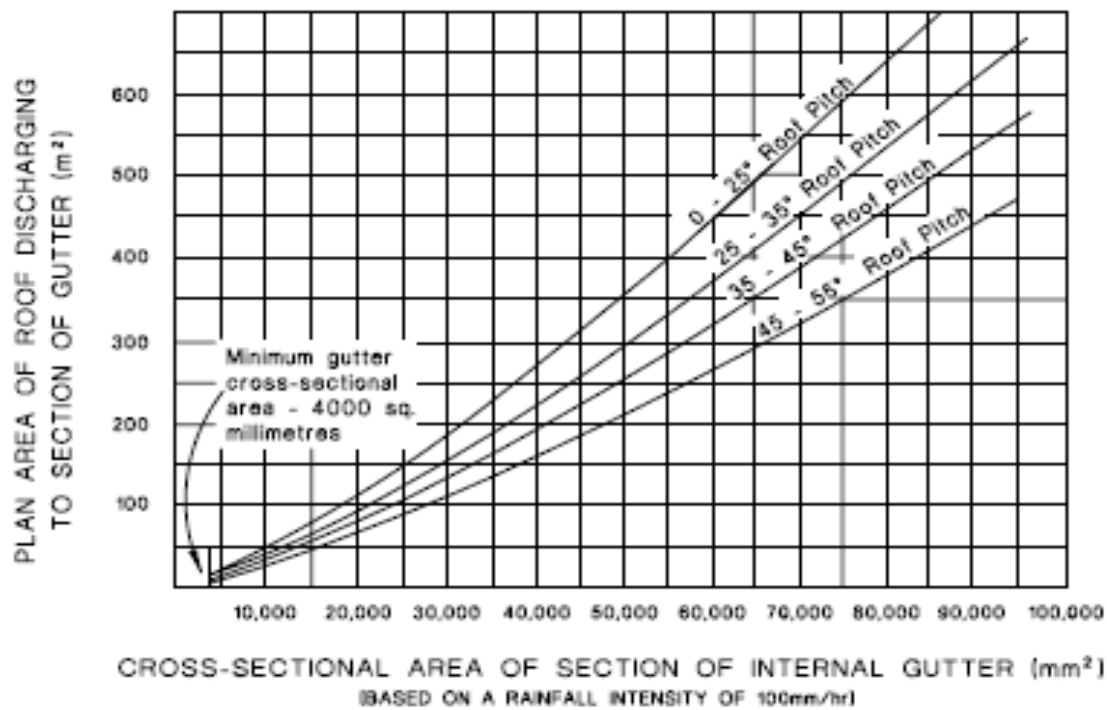
from figs. 15 and 16 - check for gutter size to find required DP's

	Roof Area m²	No of DP's	Roof area /DP	CSA req'd from fig 15 & 16	CSA of gutter from manufacturer	Check
Roof area 1	41.0	1	41.0	4000	5100	OK
Roof area 2						Not OK
Roof area 3						Not OK
Roof area 4						Not OK
Gutter type						Stormcloud

**Figure 15:** Cross-sectional Area of External Gutter  
Paragraphs 5.1.2 and 5.1.3



**Figure 16:** Cross-sectional Area of Internal Gutter  
Paragraphs 5.1.2 and 5.1.3



Soakage Pit Design - 10year storm return period

Rainfall Intensity from HIRDS v3

Run off Coefficient

Area

<https://hirds.niwa.govt.nz/>

I = 27.1 mm/hr

C = 0.9

A = 41.0 m<sup>2</sup>

Roof Run-off

Rc=10.C.I.A 1.0 m<sup>3</sup>/Hr

V-soak

Plan area of soak hole

Asp 2.0 m<sup>2</sup>

Soakage rate

Sr 100.0 mm/hr

Amount soakage / hr

V soak= Asp Sr/1000 0.2

Vstore = RC less Vsoak

0.8 m<sup>3</sup>

Volume of soakpit for 1hr storage=Vstore / 0.38 (bolder type)

2.11 m<sup>3</sup>

Min Volume Soakpit= 2.1 m<sup>3</sup>

Table 1: Run-off Coefficients Paragraphs 2.0.1, 2.1.1, 2.1.3	
Description of surface	C
<b>Natural surface types</b>	
Bare impermeable clay with no interception channels or run-off control	0.70
Bare uncultivated soil of medium soakage	0.60
Heavy clay soil types:	
– pasture and grass cover	0.40
– bush and scrub cover	0.35
– cultivated	0.30
Medium soakage soil types:	
– pasture and scrub cover	0.30
– bush and scrub cover	0.25
– cultivated	0.20
High soakage gravel, sandy and volcanic soil types:	
– pasture and scrub cover	0.20
– bush and scrub cover	0.15
– cultivated	0.10
Parks, playgrounds and reserves:	
– mainly grassed	0.30
– predominantly bush	0.25
Gardens, lawns, etc.	0.25
<b>Developed surface types</b>	
Fully roofed and/or sealed developments	0.90
Steel and non-absorbent roof surfaces	0.90
Asphalt and concrete paved surfaces	0.85
Near flat and slightly absorbent roof surfaces	0.80
Stone, brick and precast concrete paving panels	
– with sealed joints	0.80
– with open joints	0.60
Unsealed roads	0.50
Railway and unsealed yards and similar surfaces	0.35
<b>Land use types</b>	
Industrial, commercial, shopping areas and town house developments	0.65
Residential areas in which the impervious area is less than 36% of gross area	0.45
Residential areas in which impervious area is 36% to 50% of gross area	0.55
Note: Where the Impervious area exceeds 50% of gross area, use method of Paragraph 2.1.2.	

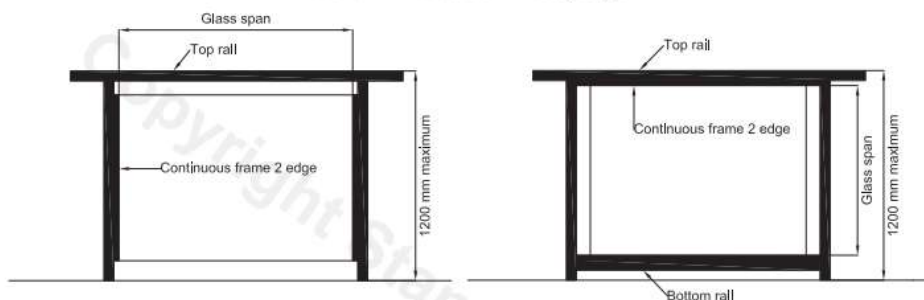
#### Assumed known soakage rates (Sr)

Loose gravels	400
Clay	100
Silty gravels	250

#### Gutter type and manufacturer CSA

125 box gutter	Metalcraft	8435
175 box gutter	Metalcraft	19250
300 box gutter	Metalcraft	27000
Highline	Metalcraft	7550
Squareline	Metalcraft	6090
Colonial quad	Metalcraft	5550
Half round	Metalcraft	5650
Quarter round	Metalcraft	4880
Classic	Marley	6700
Stormcloud	Marley	5100
FL2	Marley	4800
Typhoon	Marley	6100
Magnum	Marley	14300

Table 10 – Infill balustrade – two-edge support



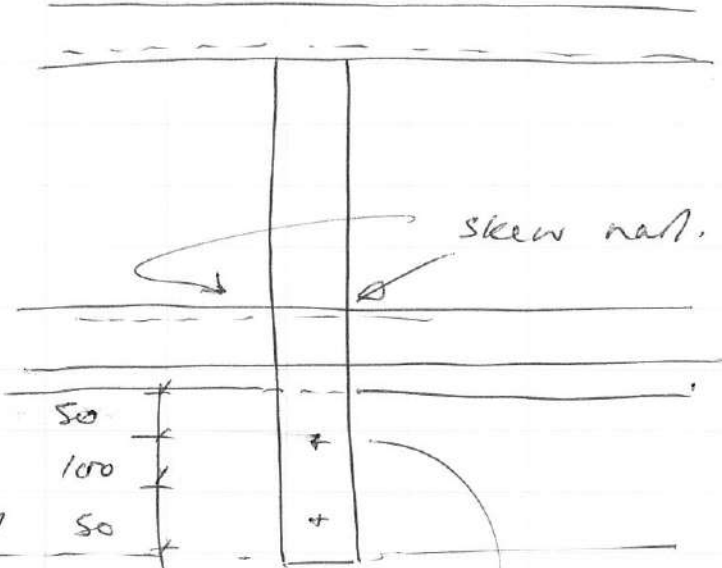
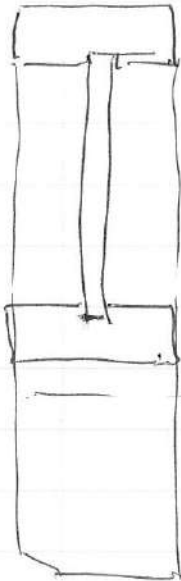
Occupancy type (AS/NZS 1170.1)	Design load (SLS)		Wind pressure		Maximum glass span (mm)										
					Laminated safety glass		Toughened safety glass					Toughened laminated safety glass			
	Concentrated kN	Uniform kPa	ULS kPa	SLS kPa	10	12	6	8	10	12	15	8	10	12	16
A	0.25	0.5	—	—	750	1590	1380	1870	2220	2540	3000	1850	2200	2530	3140
A (other) & C3	0.5	1.0	2.1	1.5	—	—	—	1100	1650	1930	2250	1030	1600	1900	2380
B, E	0.5	1.0	2.1	1.5	—	—	—	1100	1650	1930	2250	1030	1600	1900	2380
C1/C2, C5, and D	1.5	1.5	2.1	1.5	—	—	—	—	—	450	1230	—	—	430	1550

NOTE –

- (1) The glass pane is supported by posts, rails, and continuous frame on two opposite edges.
- (2) A load supporting top rail and bottom rail is used to support the infill.
- (3) The balustrade height is not greater than 1200 mm or specific design is required.
- (4) Glass spans have been calculated for short and medium-term live loads using the minimum glass thickness and the most severe load case as follows:
  - (a) Uniform load is applied over whole area of glass;
  - (b) Concentrated load is applied to the edge of glass panel at mid-span.
- (5) Deflection of glass is limited to span/60 up to a maximum of 30 mm excluding frame deflection.
- (6) Glass thicknesses are nominal and for toughened laminated glass they exclude the interlayer.
- (7) Specific design is required for wind pressures exceeding those listed in the table.
- (8) Glass thickness for proprietary balustrade systems may be determined by specific design.

**BC180320A**  
**Amended**  
**Plans Approved**  
**24/07/2019**

1 x 14g-100 high screw or 100 x 4# nail.



Assumed dimensions.

mm

1-14-100 high  
screw.

(Assumes edge member  
adequately fixed)

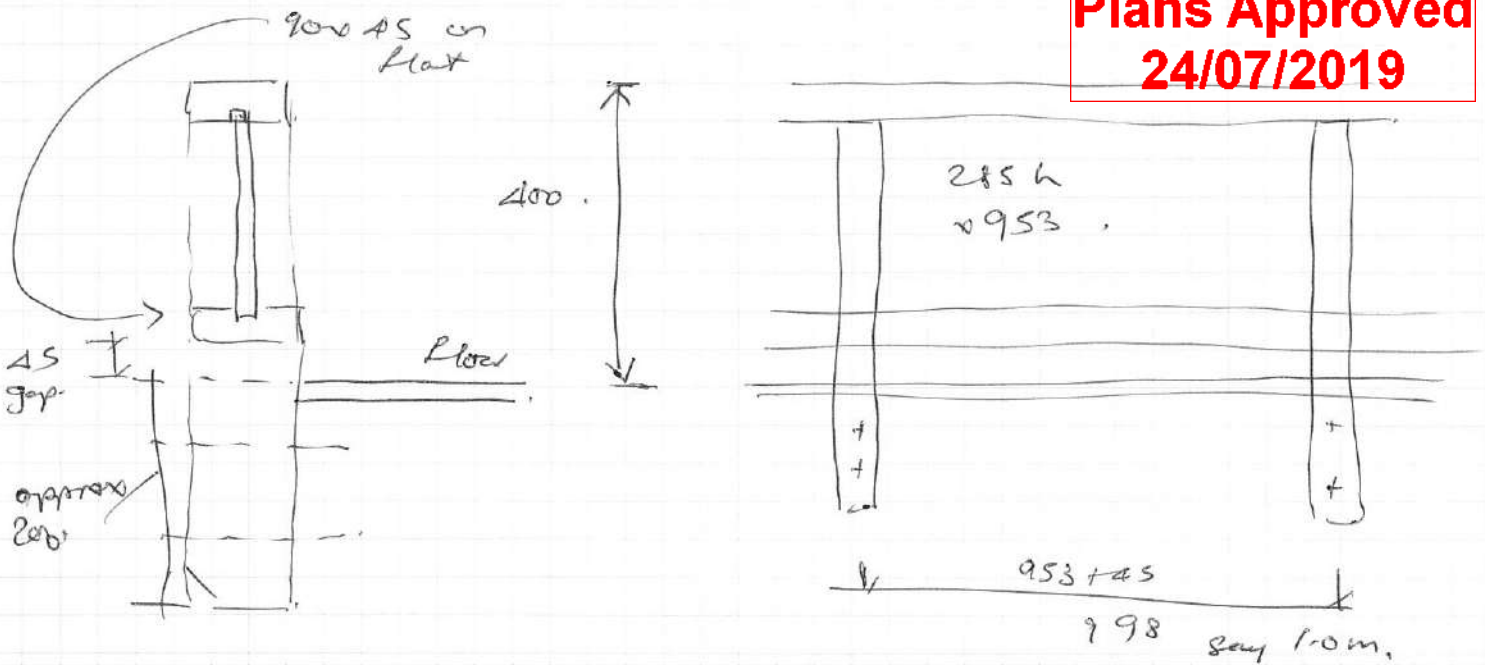
**BC180320A**  
**Amended**  
**Plans Approved**  
**24/07/2019**



Proposed sleeping area has a form of low level guardrail preventing roll over falls from a mezzanine floor sleeping platform.

Panels are made of glass fitted into a timber frame - glass sits in a small groove. Required to check timber member lateral capacity including fixing of short posts.

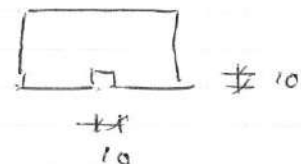
Typical Detail:



**BC180320A**  
**Amended**  
**Plans Approved**  
**24/07/2019**

Glass panel: 280 high x 953 mm long.

Glass fits into 10mm deep groove.



Use Table 3.3, NZS 4701 for barrier loads.

Top Edge:

Horizontal.  $0.35 \text{ kN/m}$

Vertical  $0.35 \text{ kN/m}$

Inwards / outwards or downwards  $0.6 \text{ kN}$ .

Infill:

Horizontal  $0.5 \text{ kPa}$ .

Any direction  $0.25 \text{ kN}$ .

**BC180320A**  
**Amended**  
**Plans Approved**  
**24/07/2019**

Panel Size  $\therefore 0.35 \times 1.0 = 0.35 \text{ m}^2$

$$0.35 \text{ m}^2 \times 0.5 = 0.18 \text{ kPa} < 0.25 \text{ kN/m}^2$$

$$0.35 \text{ kN/m} \times 1 \text{ m} = 0.35 \text{ kN} < 0.6 \text{ kN/m}$$

Top support - c/s but say simply supported.  
 (worst case - conservative).

$$M^* = \frac{PL}{4} = \frac{0.6 \text{ kN} \times 1.0 \text{ m}}{4} = 0.15 \text{ kN}\cdot\text{m}$$

45

$$Z = \frac{bd^2}{6} = \frac{45 \times 90^2}{6} = 0.61 \times 10^5 \text{ mm}^3$$

$\phi M_u = \phi K_1 K_2 K_3 K_4 K_5 K_6 Z$

$$= 0.8 \times 0.9 \times 1 \times 1 \times 1 \times 1 \times 1 \times 0.61 \times 10^5$$

short term load.

$$= 0.62 \text{ kN}\cdot\text{m}$$

$$> 0.15 \text{ kN}\cdot\text{m} \quad \checkmark$$

$$\frac{d}{b} = \frac{90}{45} = 2$$

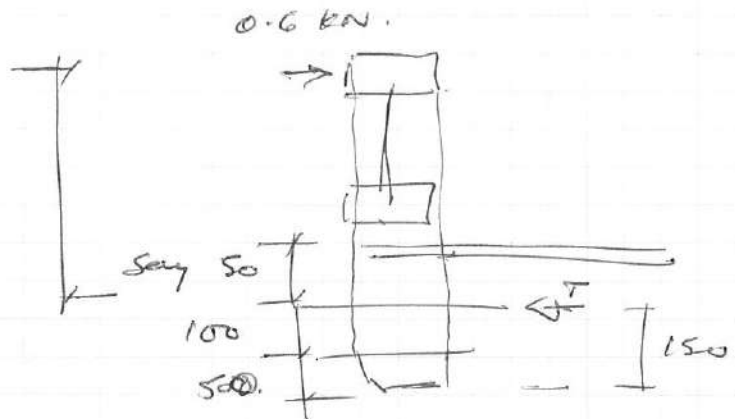
$$\frac{l}{b} = \frac{1000}{45} = 22$$

$$\rightarrow K_8 = 1.0$$

Assume  $0.6 \text{ kN}$  at post.

very middle of top rail.

$$\begin{array}{r} 400 \\ - 22.5 \\ + 50 \\ \hline 427.5 \text{ mm} \end{array}$$



$$\rightarrow M^* = 0.428 \times 0.6$$

$$= 0.26 \text{ kN-m} < 0.62 \text{ kN-m} \checkmark$$

$$0.15T = 0.26$$

$$\rightarrow T = \frac{0.26}{0.15} = 1.7 \text{ kN}$$

**BC180320A**  
**Amended**  
**Plans Approved**  
**24/07/2019**

1 - lag v 100 buple perens ok.

also - skew nuts - ok! 100 x 4 φ.

Also, check down

→ 2 members, but in weak direction.

$$M^* = \frac{0.6}{2} \times \frac{1.0}{4} = 0.075 \text{ kN-m}$$



$$b = 90$$

$$d = 45$$

$$\frac{bd^3}{6} = \frac{90 \times 45^3}{6} = 0.30 \times 10^5 \text{ mm}^3$$

$$\phi M: \phi K_1 K_2 K_3 K_4 K_5 K_6 \geq$$

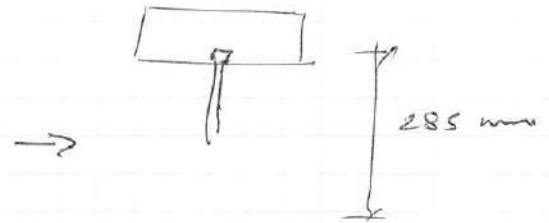
$$= 0.8 \times 0.9 \times 1 \times 1 \times 1 \times 1 \times 1 \times 0.3 \times 10^5$$

$$= 0.31 \text{ kN-m} \geq 0.075 \text{ kN-m} \checkmark$$

Now check shear on timber groove from glass.

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0.5 kPa,  
or 0.25 kN.

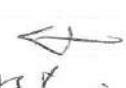


0.5 kPa:  $V = \frac{0.285}{2} \times 0.5$

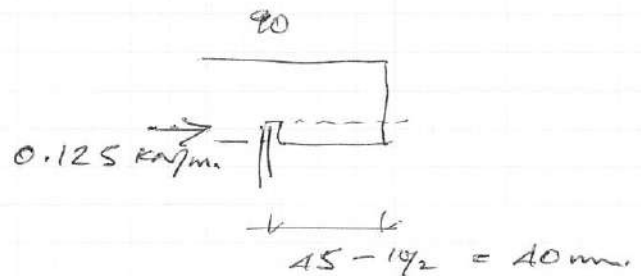
$= 0.071 \text{ kN/m} \times 1 \text{ m}$

$= 0.071 \text{ kN}$

over 1 m.

0.25 kN.  $\rightarrow \frac{0.25}{2} = 0.125 \text{ kN over 1 m.}$  

$\rightarrow \text{lateral load} = 0.125 \text{ kN/m.}$



— Shear Stress

$= \frac{0.125}{0.04} \text{ kN/m}^2$   
 $= 3.13 \text{ kN/m}^2 \text{ (kPa)}$

$\phi = 0.8$

$f_s = 3.8 \text{ MPa}$

$0.8 \times 3.8 = 3.04 \text{ MPa} > 3.13 \text{ kPa}$

✓



4/8/2018.

103 Lake Ferry Rd, Lake Ferry.

matt.

Proposed tiny house on this site.

3 buildings on lot.

Adjacent to road.

Assess wind speed.

- 1) General Map. shows SED but with note that seems excessive.

Proposed new subdivision on immediate NW boundary - not classified.  
Treat with extreme care

- 2) NZS 3604. → Zone / Region A.

not in lee zone.

Open terrain slightly better than this.

Exposed although from W could be sheltered.

TI.

→ (H)

- 3) NZS 1170:2.

1170:2 → R 2 50 yr

→ W 4500 u 425 S.

45 m/s

$$V_z = V_R M_d (M_{zref} M_s M_t)$$

in lee zone Factor = 1.25

TC 2-S.

$$\rightarrow M_{zref} = 0.87$$

$$\rightarrow V_z = 45 \times 1 \times 0.87 \times 1 \times 1.25$$

$$= 48.9 \text{ m/s}$$

→  $V_H$  Table. NZS 3604.→ adopt  $V_H$ .

check sensitivity of the surrounding area.

$$K \quad K = 3$$

$$\rightarrow V_z = 45 \times 1 \times 0.91 \times 1 \times 1.25$$

$$= 51.2 \text{ m/s,}$$

it is which  
 17.13

Table 5.2  $\rightarrow$  EH.

VH up to 50 m/s

EH up to 55 m/s.

- use VH as a minimum for this building on its nominated location on this site.



# SWDC Building Consent Document

Gattsche House- Tiny House  
103 Lake Ferry Road, Lake Ferry  
LOT 6 DP 70868 BLK VIII ONOKE SD

Drawn  
WPL

Date:  
1/08/2018

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CHECK ALL  
MEASUREMENTS  
ON SITE

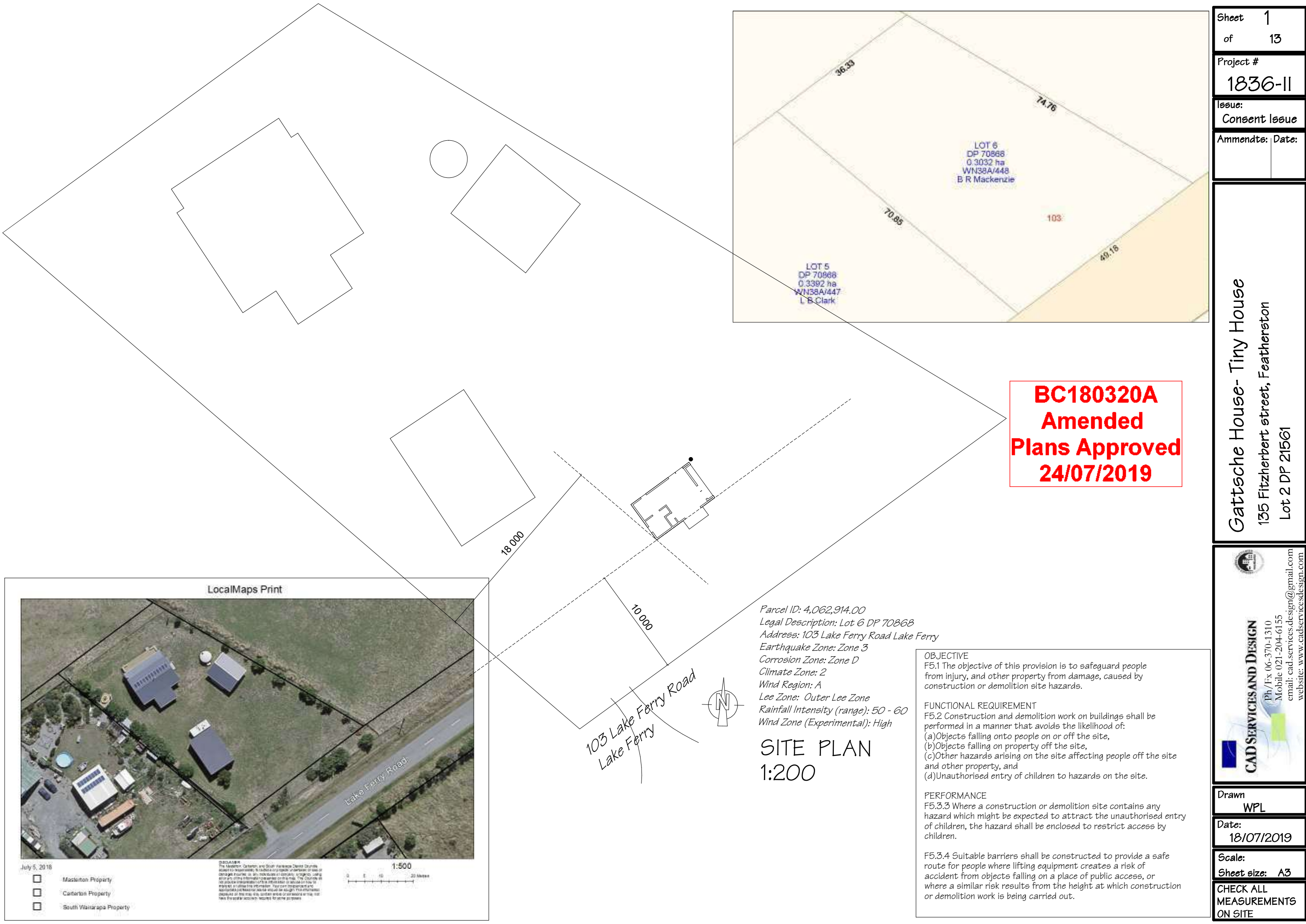


July 8, 2016

☐ Multifamily Property

☐ Commercial Property

☐ Single-Family and Property



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Gattsche House- Tiny House  
135 Fitzherbert street, Featherston  
Lot 2 DP 21561

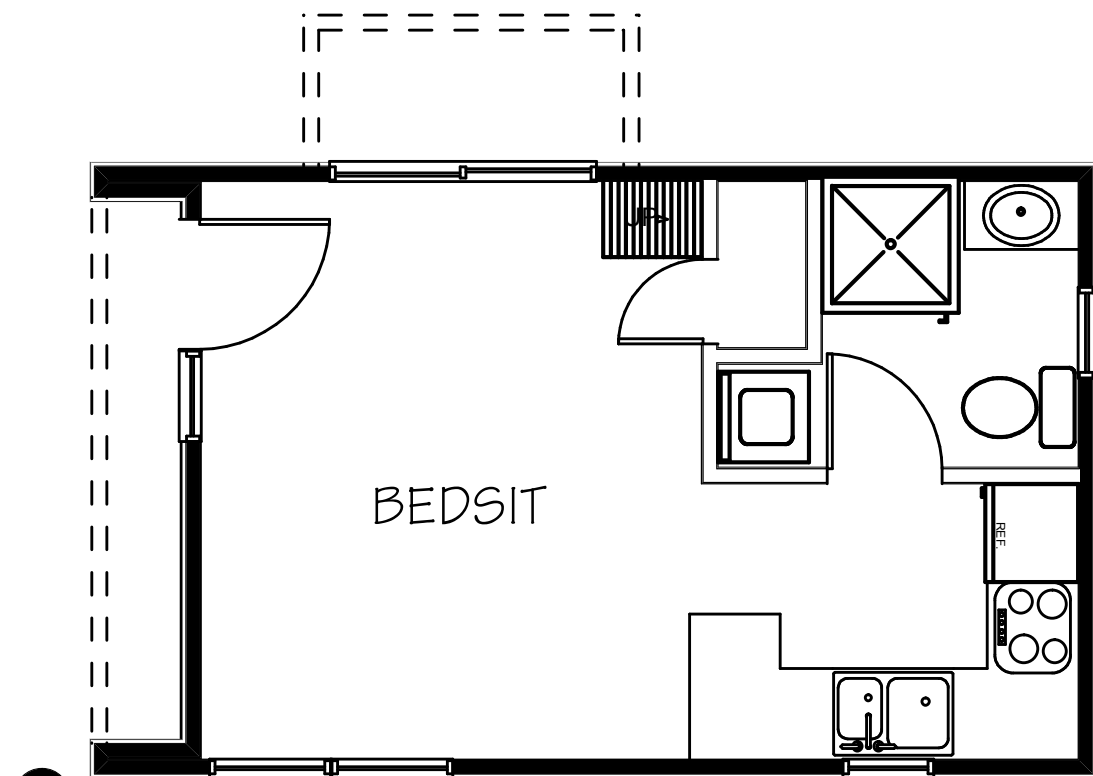


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R3	

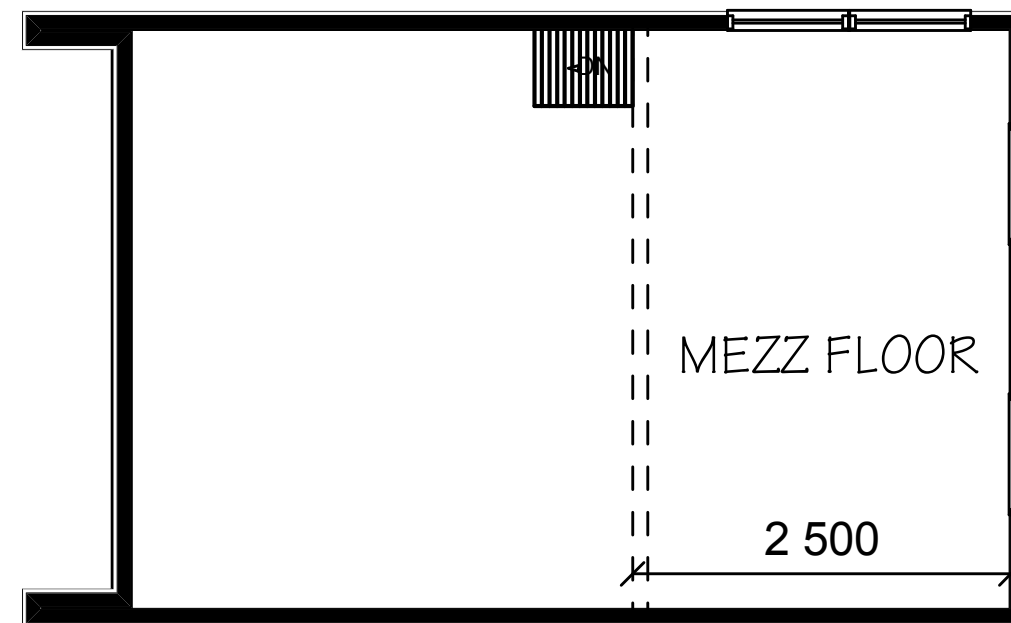


FLOOR PLAN  
1:50



ELEVATIONS

G4 and G7 compliance:  
 Floor area is <18m<sup>2</sup> therefor 10% daylight admission required is 1.7m<sup>2</sup>. D1 and D2 exceed this requirement.  
 Bathroom floor area is <3.7m<sup>2</sup> therefor 10% daylight admission required is 0.37m<sup>2</sup>. W1 exceeds this requirement.  
 For ventilation 5% floor area is required to comply. W2 and 3 alone exceed this requirement and W1 exceeds this requirement for the bathroom



FLOOR PLAN MEZZ FLOOR  
1:50

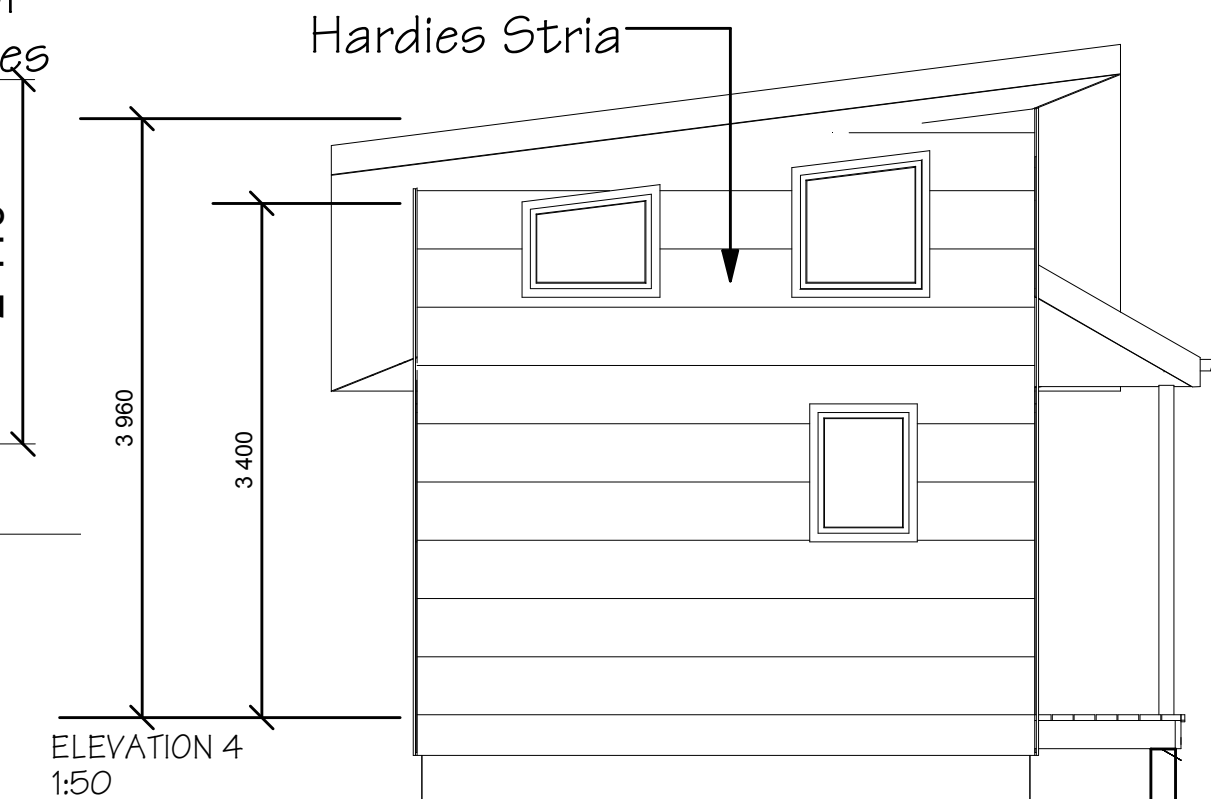
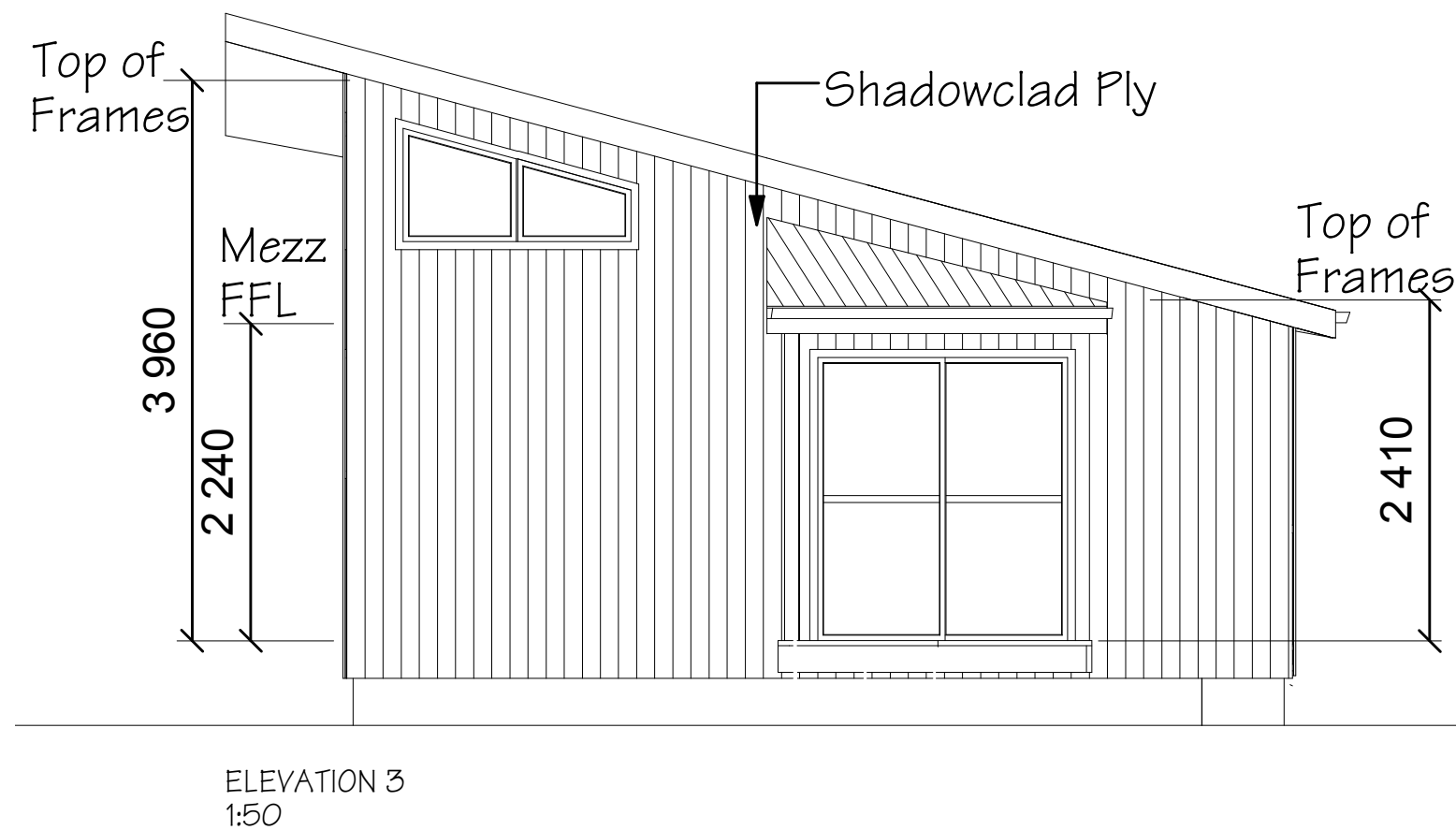
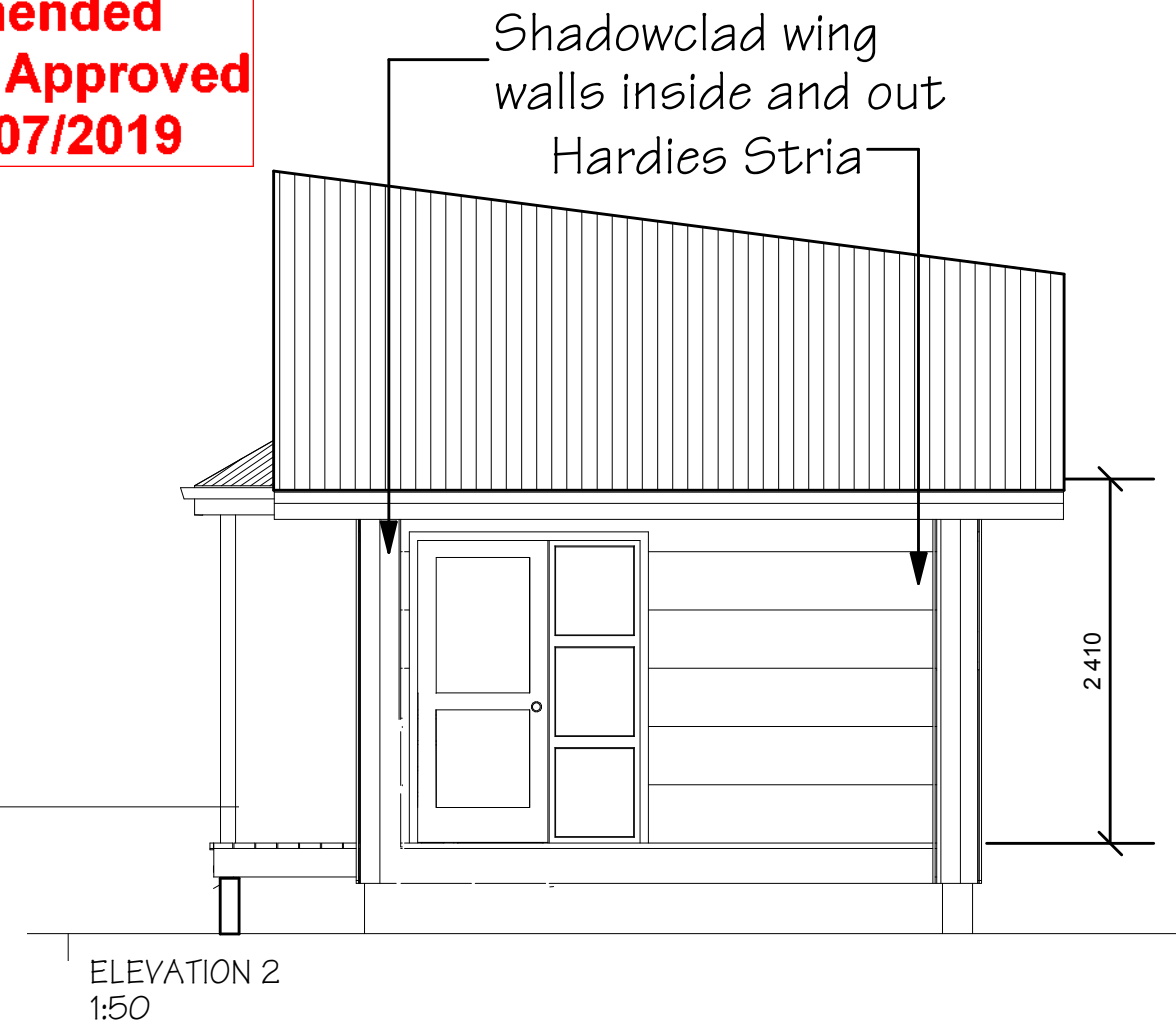
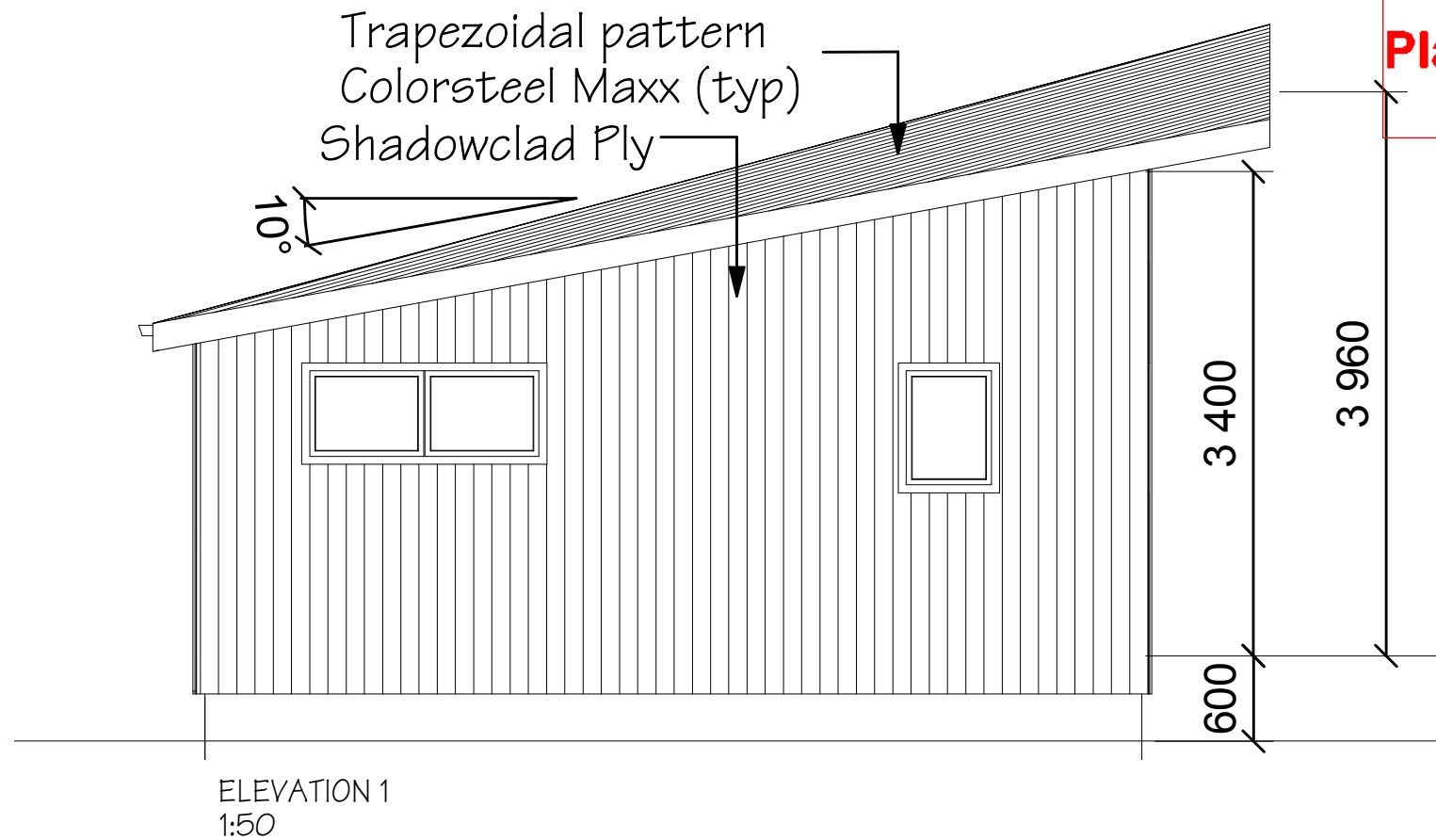
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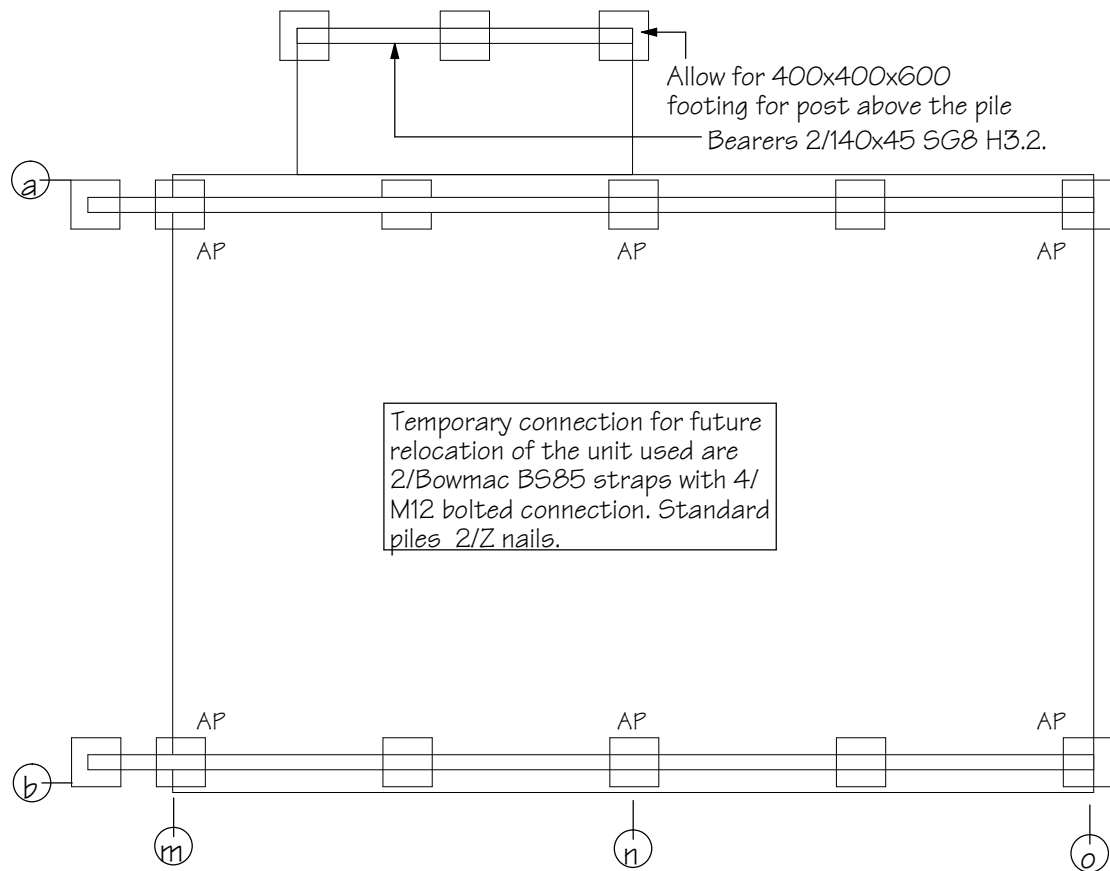


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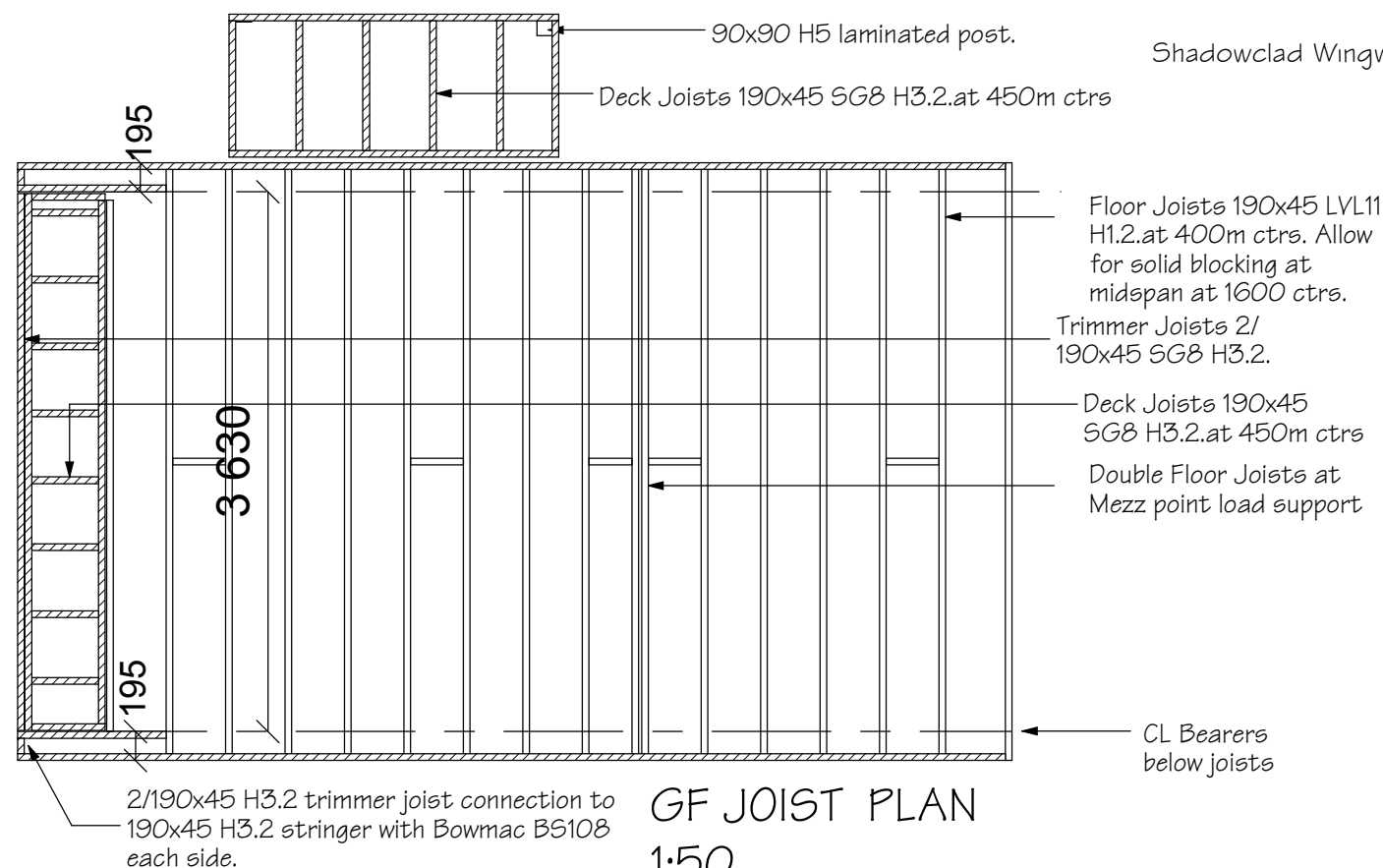
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FOUNDATION PLAN  
1:50

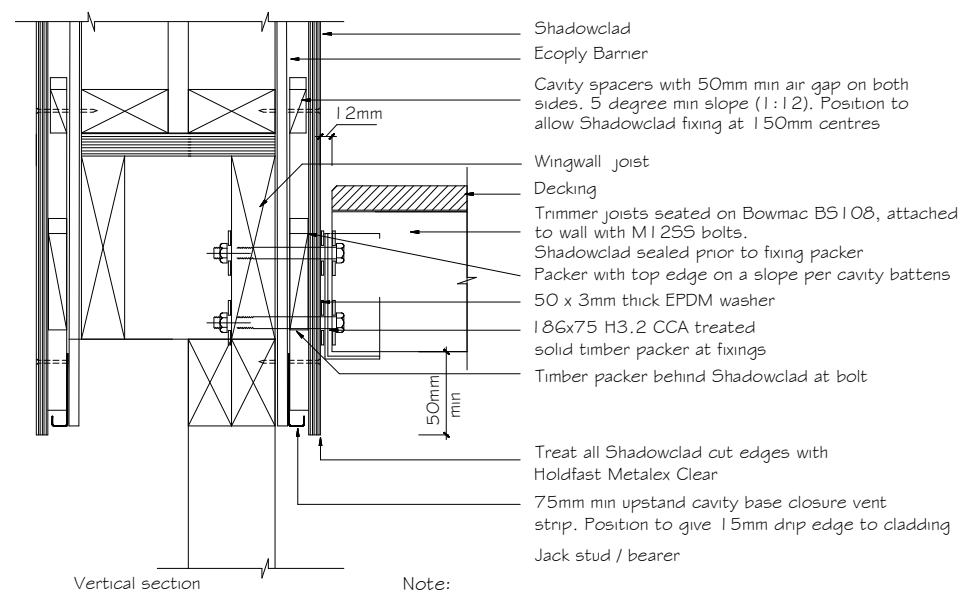


GF JOIST PLAN  
1:50

NOTE:  
All standard piles, 125x125 H5 set in 300x300 concrete, 17.5MPa minimum  
Pile to bearer fixing: Lumberlok ordinary pile fixing pack or equivalent.  
All anchor piles 125x125 H5 at 900 deep in 350x350 concrete, 17.5 MPa minimum.  
Anchor pile to bearer fixing: Lumberlok 12kN pile fixing pack or equivalent.  
(note: joist to bearer transferred connection of 12kN)  
All piles at 1500 centres except where noted.  
Nominal FFI=600 above ground.  
Foundation based on level site.

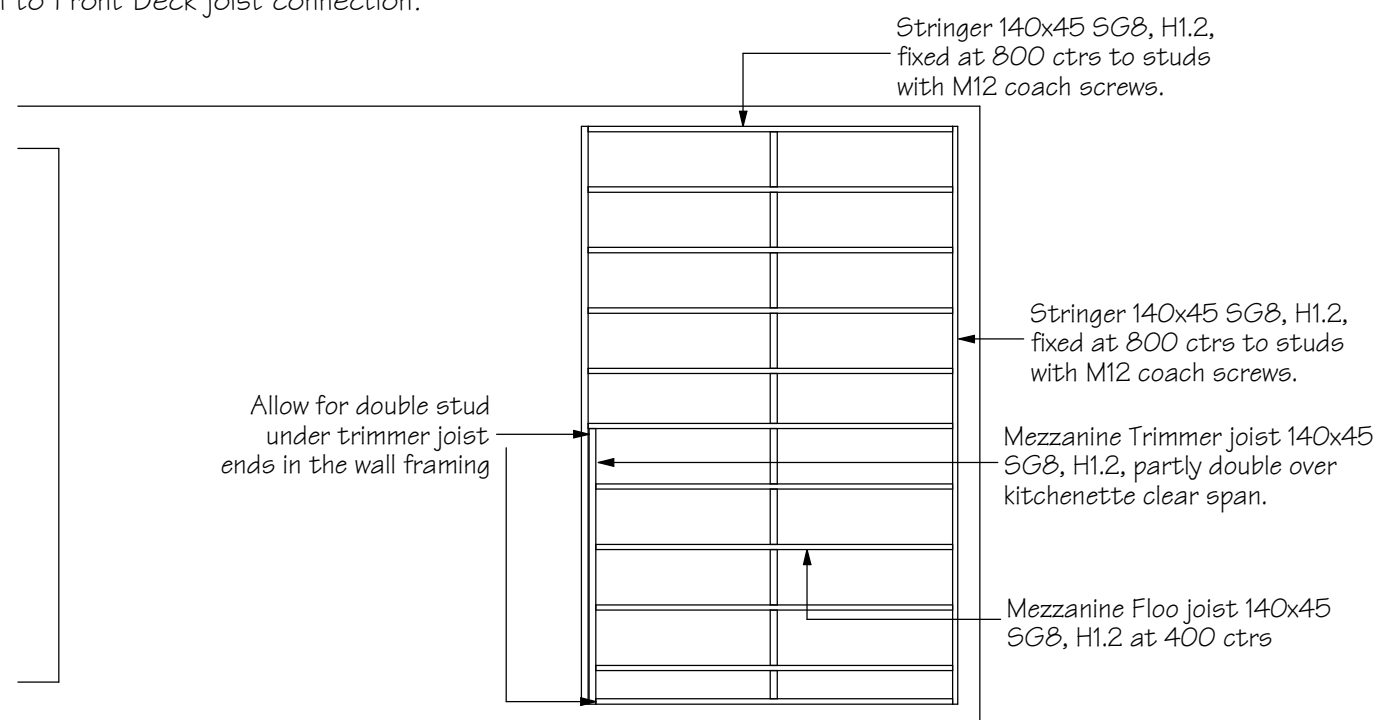
#### CORROSION HAZARD USE TABLE

Standard Pack (Std) All items Hot Dipped Galvanised	Outside geothermal areas Outside sea spray zones All sheltered fixing above 600mm from FGL
Medium Corrosion Pack (MC) Pile to bearer fixing T304 SS Joist to bearer fixing HDG	Outside geothermal areas Outside sea spray zones Only joist to bearer fixing above 600mm from FGL
High Corrosion Pack (HC) All items T304 SS	Sea spray zones All exposed fixings and below 600mm from FGL



Note:  
Cut edges should be placed at the top of the sheet to  
1. avoid rain drips soaking into cut end grains  
2. Treat all cut edges with Holdfast ® Metalex ® Clear

Shadowclad Wingwall to Front Deck joist connection.



MEZZ FLOOR JOIST PLAN  
1:50

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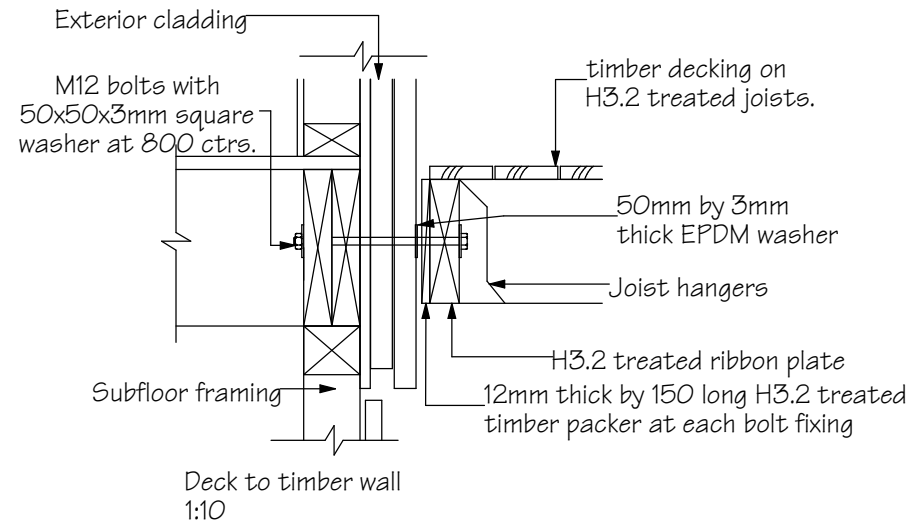
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**Gattsche House- Tiny House**  
135 Fitzherbert street, Featherston  
Lot 2 DP 21561

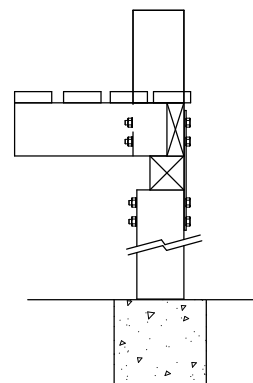
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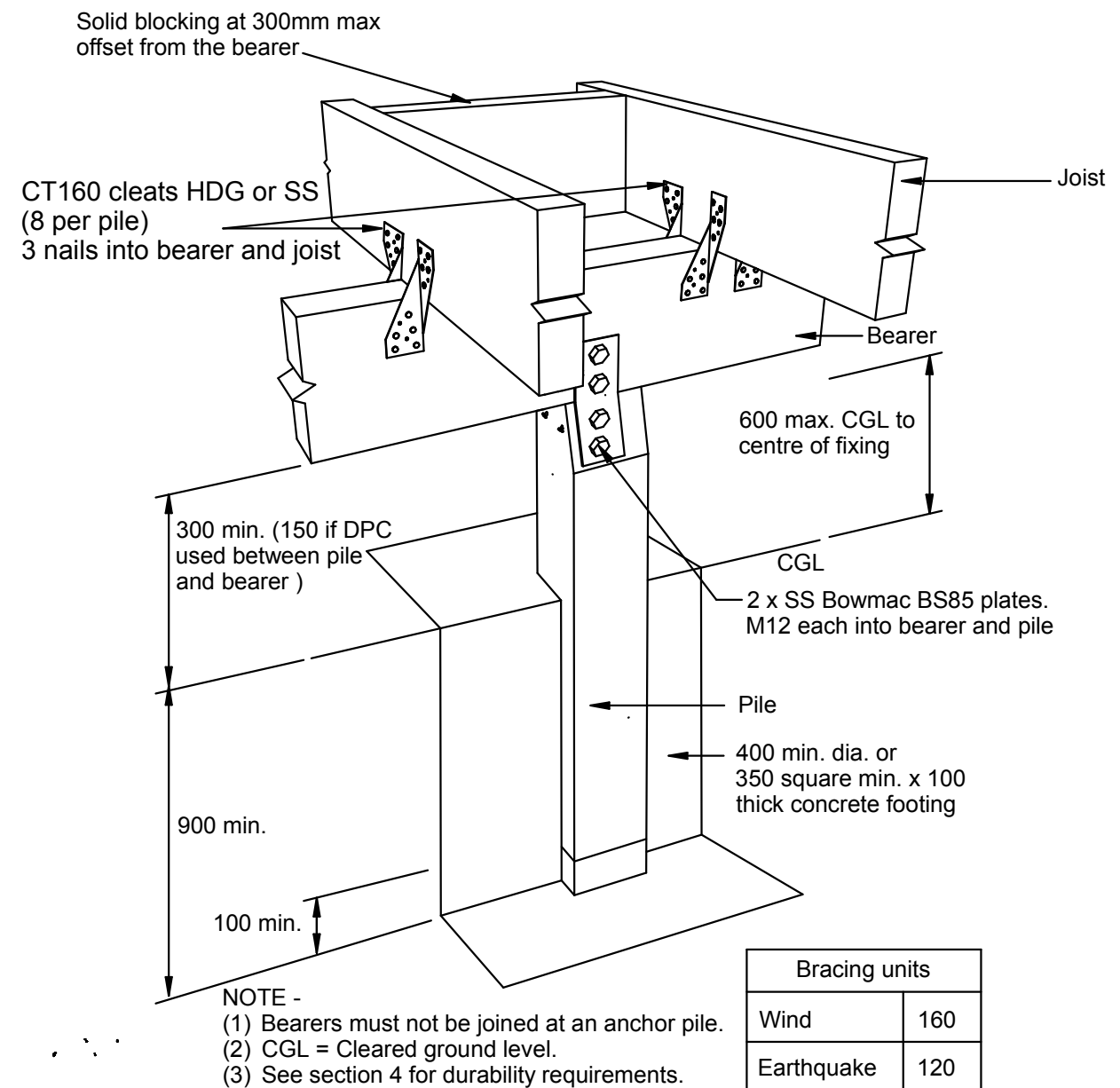
Post to bearer fixing  
 1:20

Post to bearer fixing:  
 (exposed and seaspray) Use Bowmac B88 T304 SS or galv plate and 4/M12 galve bolts, nuts and 50x3 square washers with additional 120mu min. paint protection. (sheltered)  
 Galvanised version.

#### FIXINGS:

NOTE: ALL FIXING ARE TO BE STAINLESS TO MEET ZONE D DEMANDS.

Trusses and rafters to top plate:	2/100 x 3.75 skewed nails plus two Lumberlok CT200 ceiling ties, or as recommended by roof truss manufacturer.
Top plate to studs (external walls):	2/100 x 3.75 nails end driven plus two wire dogs.
Top plate to studs (internal walls):	2/100 x 3.75 nails, end driven.
Studs to bottom plate, wall bracing element:	2/100 x 3.75 nails, end driven, plus one 6Kn strap.
Bottom plate to floor joists:	2/100 x 3.75 skewed nails at 600 crs.
Bottom plate to floor joists, wall bracing element:	GIB HandiBrac giving 15kN
Joists to bearer:	2/100 x 3.75 skewed nails.
Bearer to ordinary piles:	2/M12 SS bolts and Bowmac BS85 plates
Bearer to anchor piles:	2/M12 SS bolts and Bowmac BS85 plates
Deck joists to stringer:	Lumberlok joist hangers.
Verandah stringer to wal:	M12 coach bolts and washers at 1200 crs.
Verandah rafter to stringer and beam:	2/100 x 3.75 skewed nails plus one wire dog.



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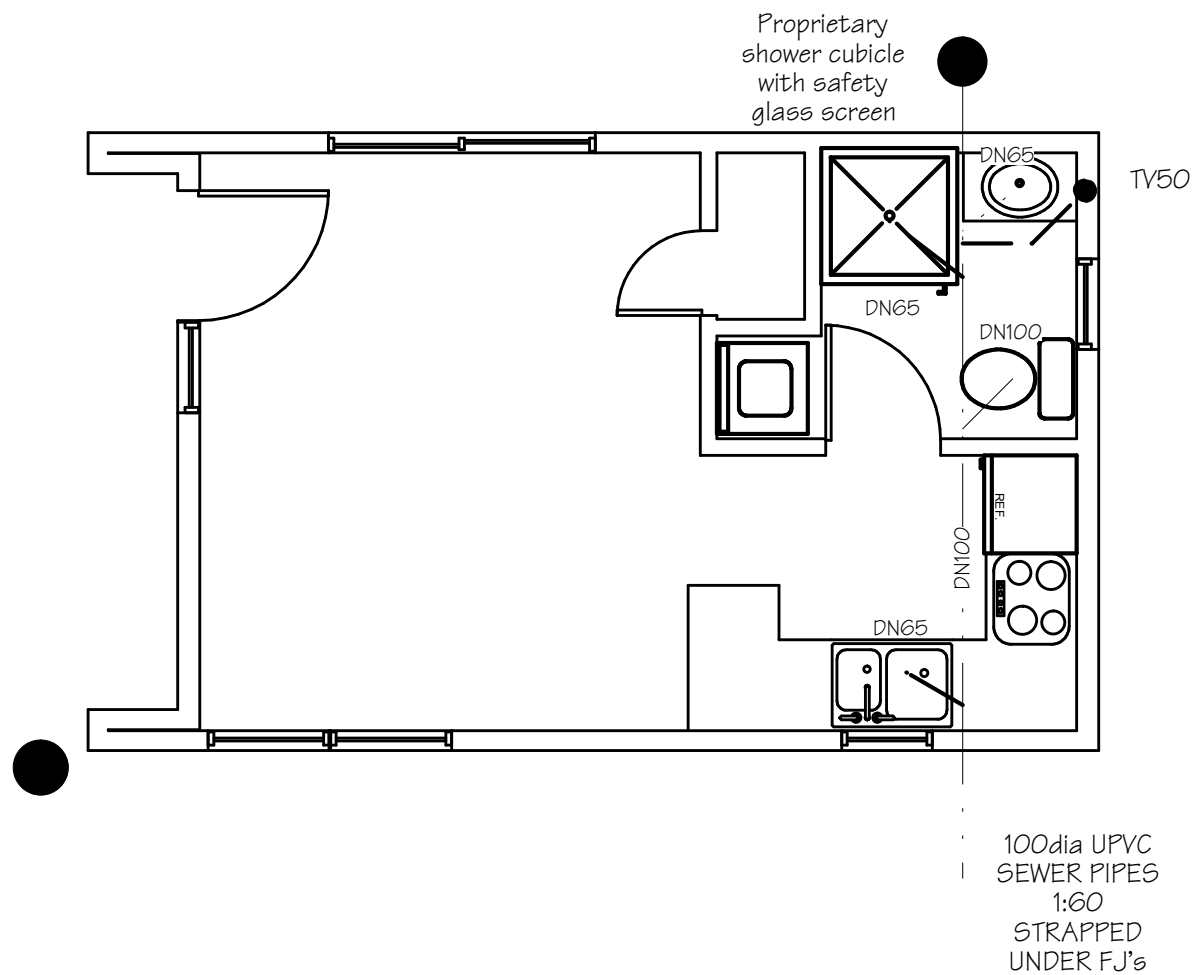
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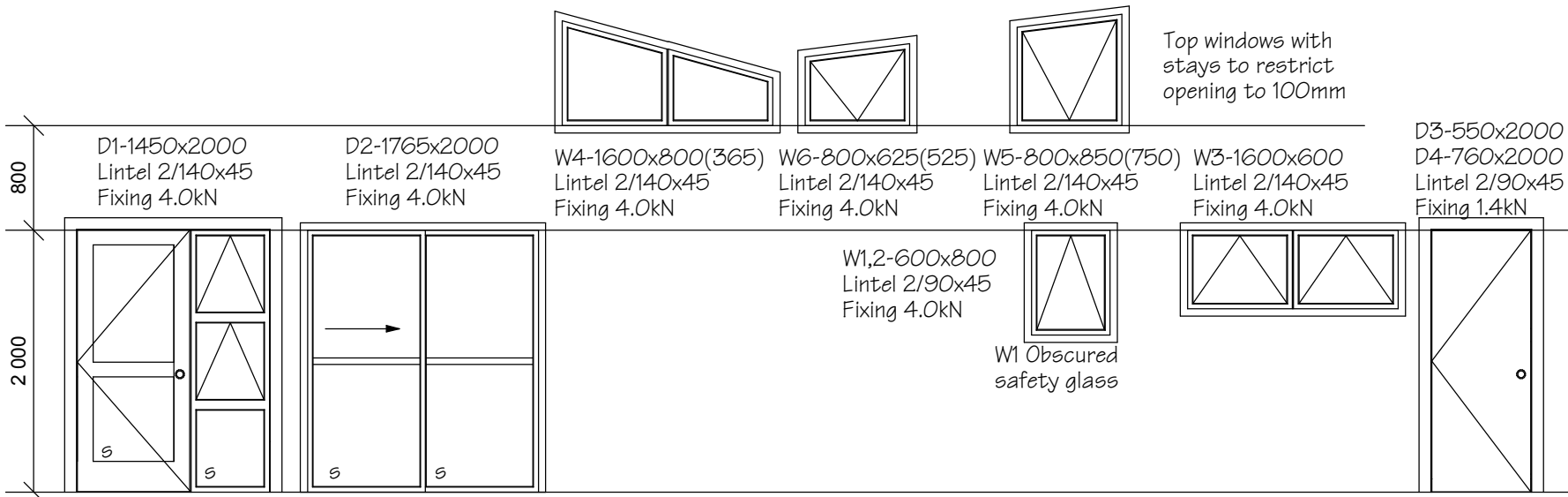
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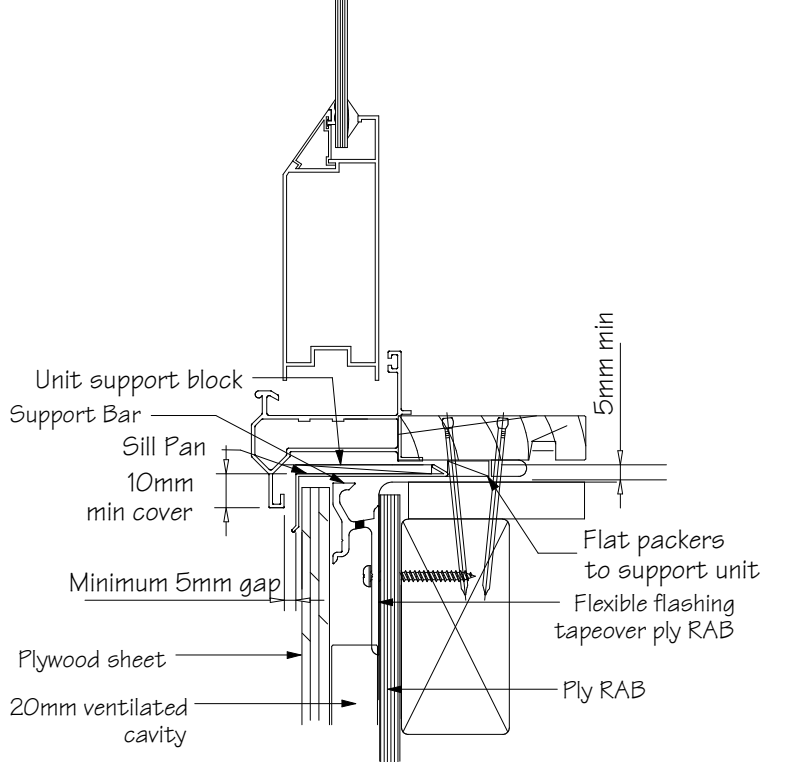
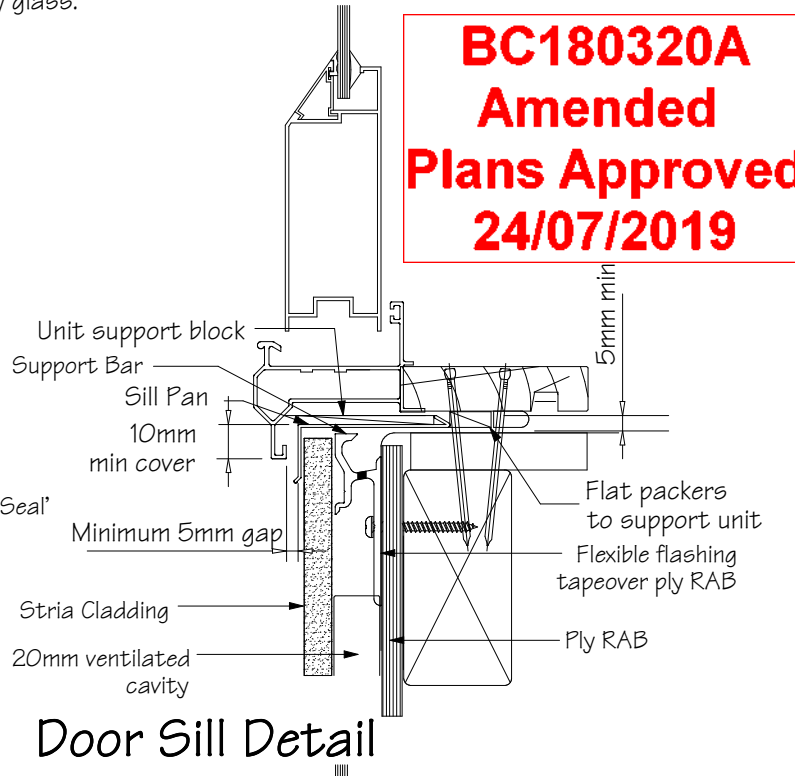
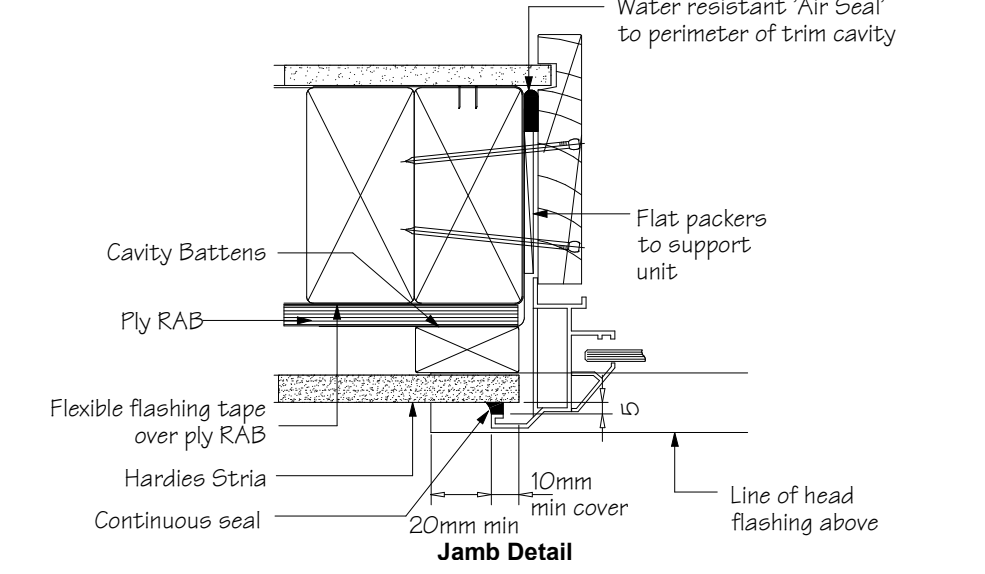
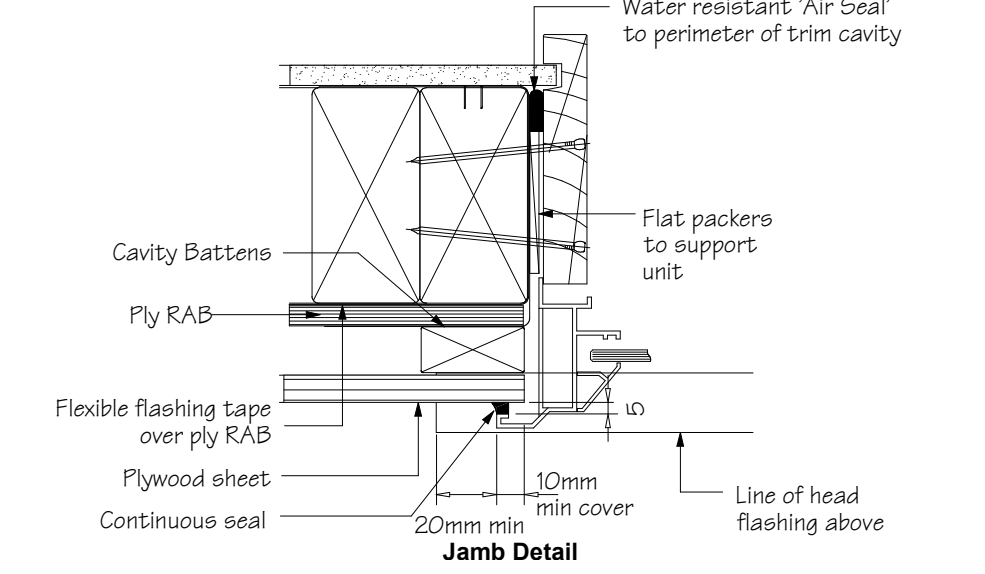
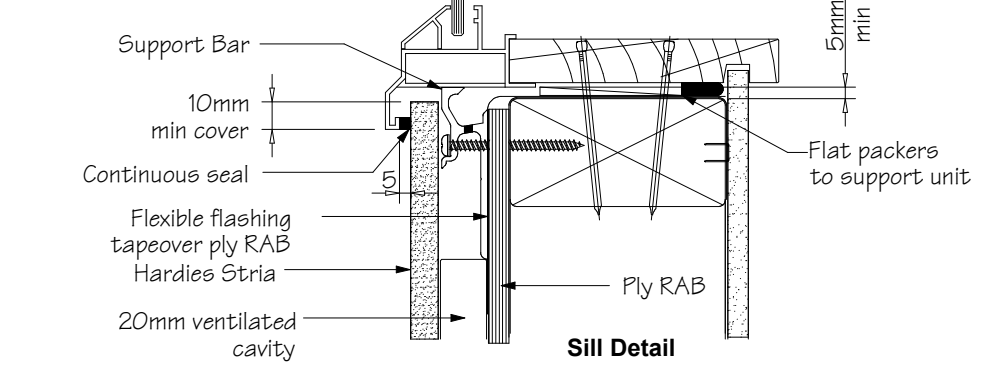
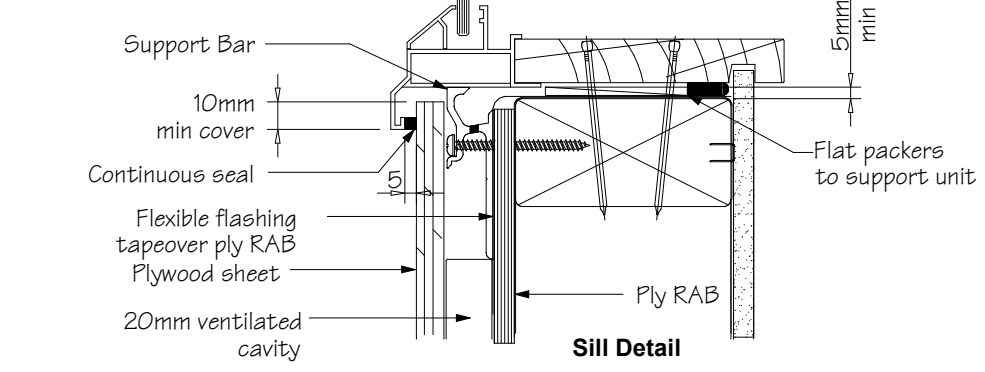
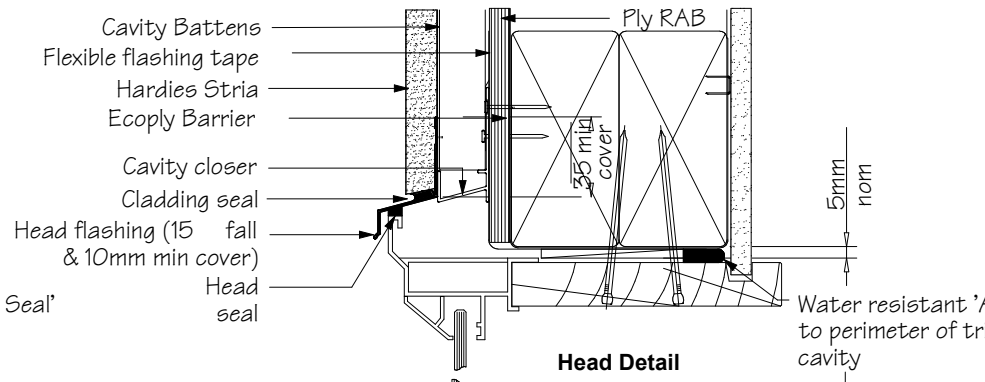
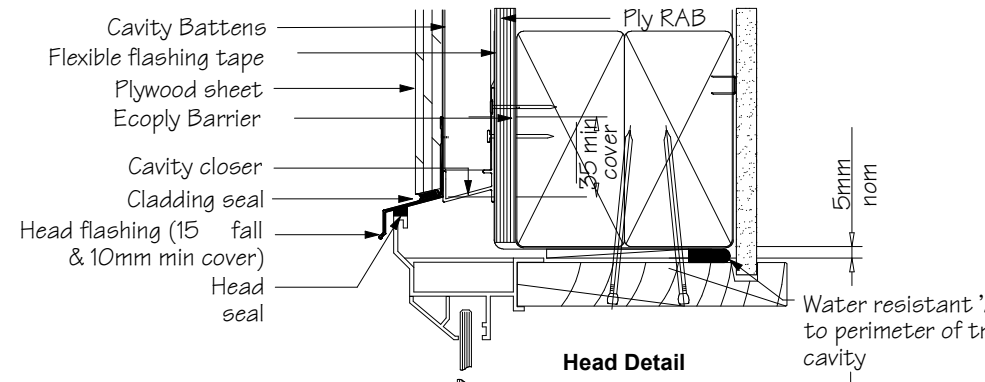
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- Exterior Window Notes:
1. Windows are to be fabricated to NZS 4211. Workmanship and materials shall comply with NZS 4223:1985 (Parts 1 & 2) and NZS 4223:2016 (Part 3).
  2. All glazing to be to NZ standards unless otherwise specified.
  3. All window frame measurements to be verified on site prior to fabrication. Dimensions shown are to the rough opening sizes
  4. All external window joinery to be double glazed & powder coated aluminum Residential Suite unless otherwise stated. Provide proprietary stays to opening sashes. All windows to be installed in accordance with manufacturer's recommendations unless otherwise specified.
  5. Avoid distortion of components during transit, handling and storage. Avoid pre-finished surfaces from rubbing together. Prevent contact with mud, cement and plaster.
  6. Before fixing, apply bituminous coatings, slips or underlays between aluminum in contact with concrete (if required). Fix frames rigidly in place without distortion, plumb, true to line and face, weather tight and with all openings operating freely. All glass to be held in aluminum beads and black PVC gaskets.
  7. Contractor is fully responsible to ensure all head, jamb and sill flashings are watertight. Allow to tape all window openings.
  8. Refer to Detail Sheets for general flashing details etc.
  9. All internal wall doors shall have 2/90x45 lintel and 1.4kN fixing (uso)
  10. All windows to be complete with catches and security stays
  11. "S" denotes safety glass.

## Door and Window schedule

1:50



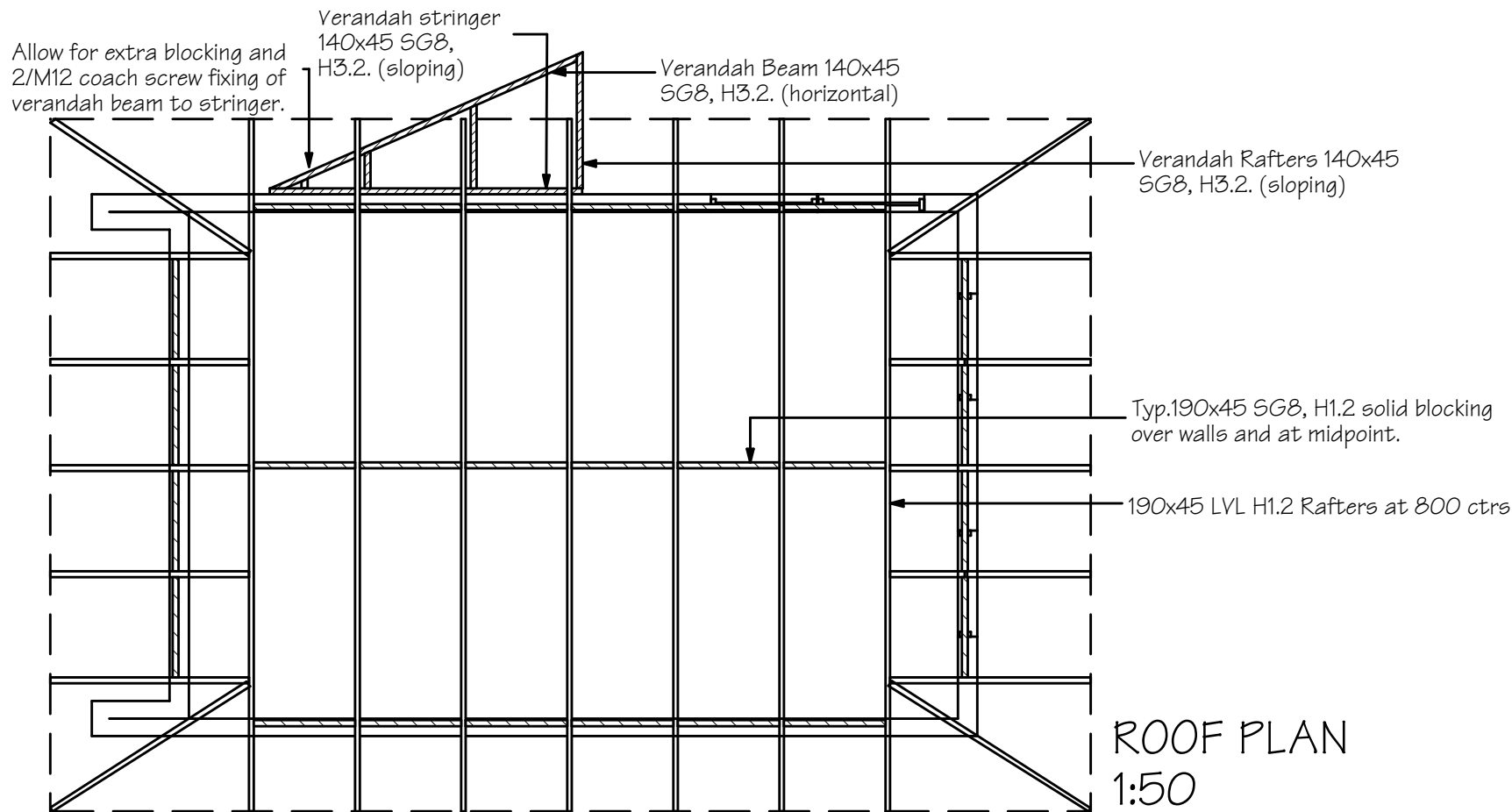
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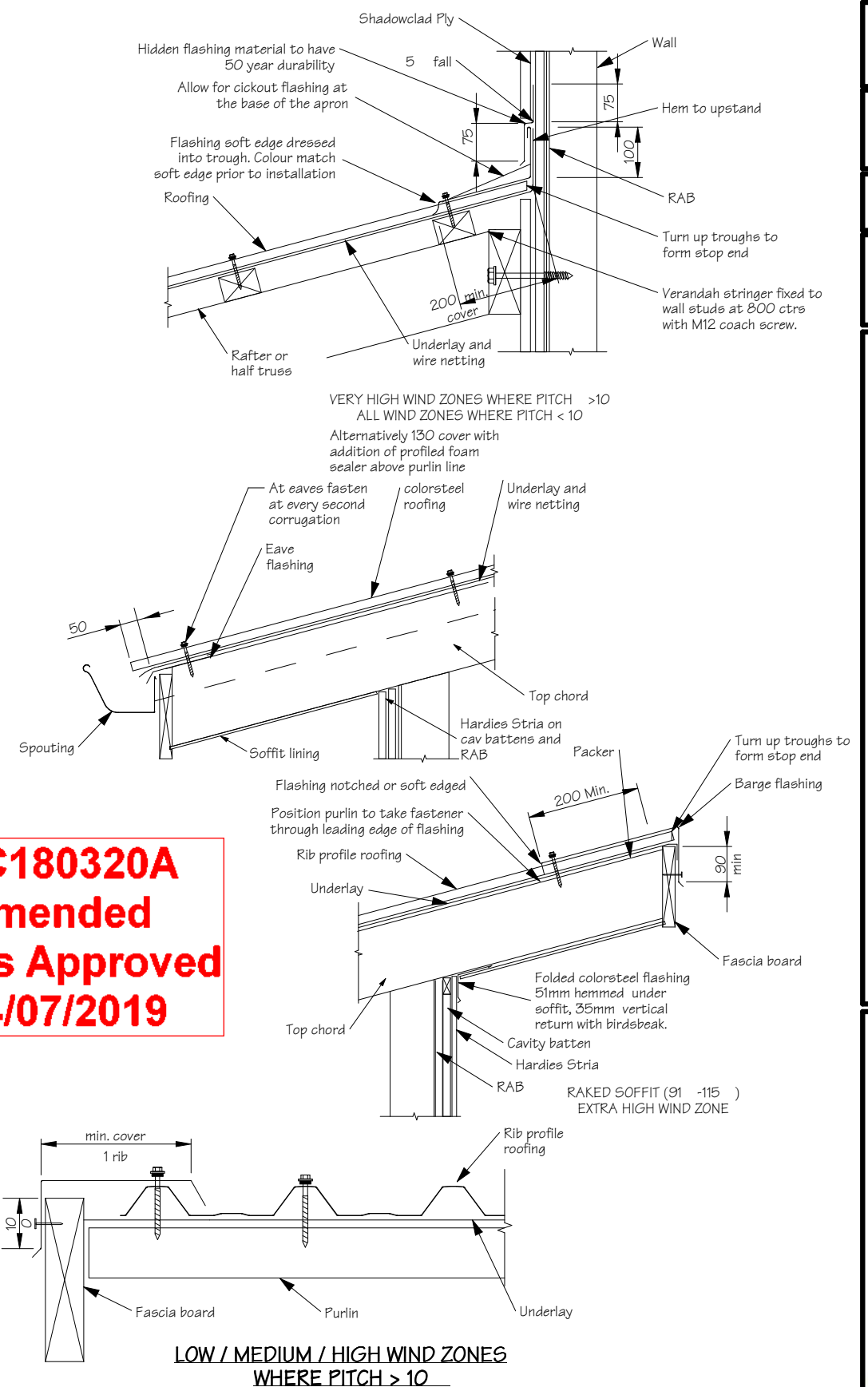
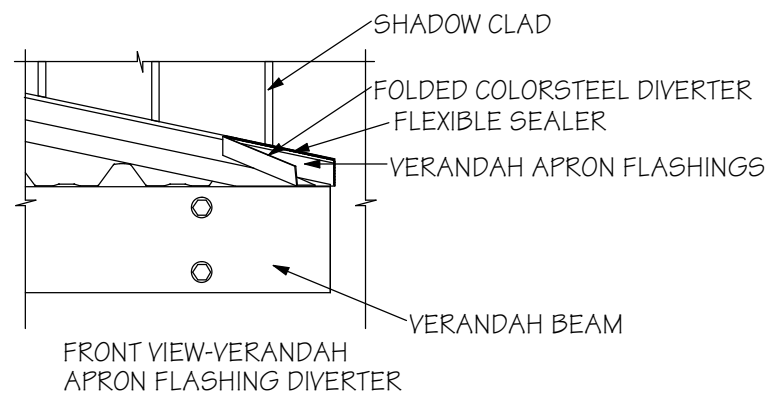
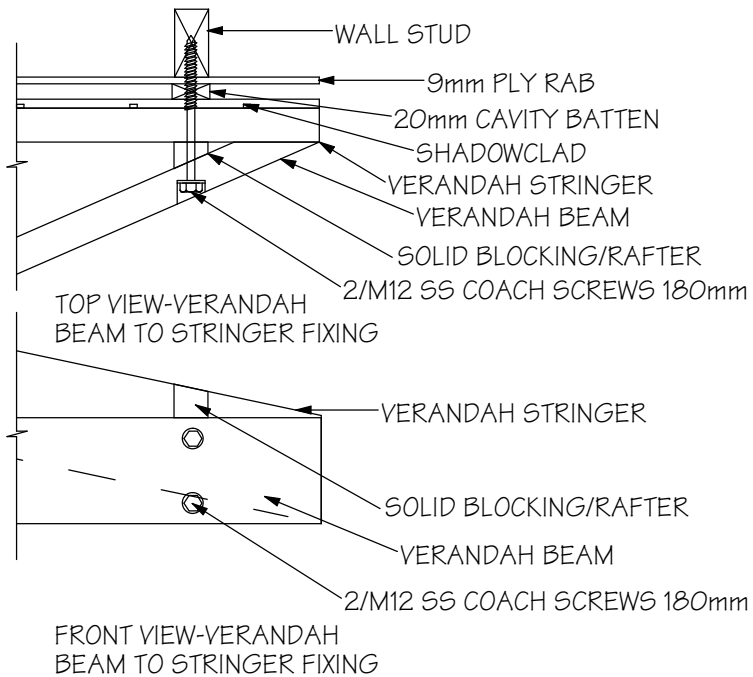
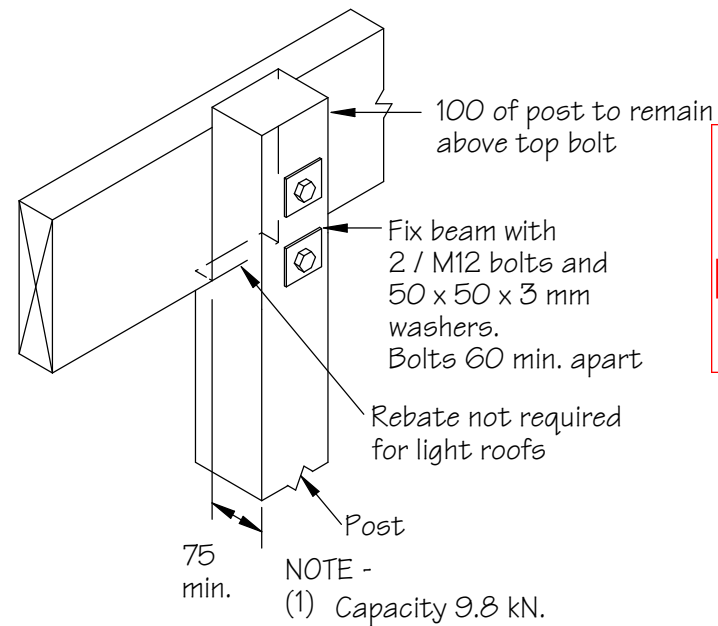
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**GENERAL ROOFING NOTE:**  
Roofing iron 0.4 on self supporting roofing underlay and wire netting. Fix to each purlin at every second crest with Type 17 woodfixx fastener or equivalent.



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**1836-II**

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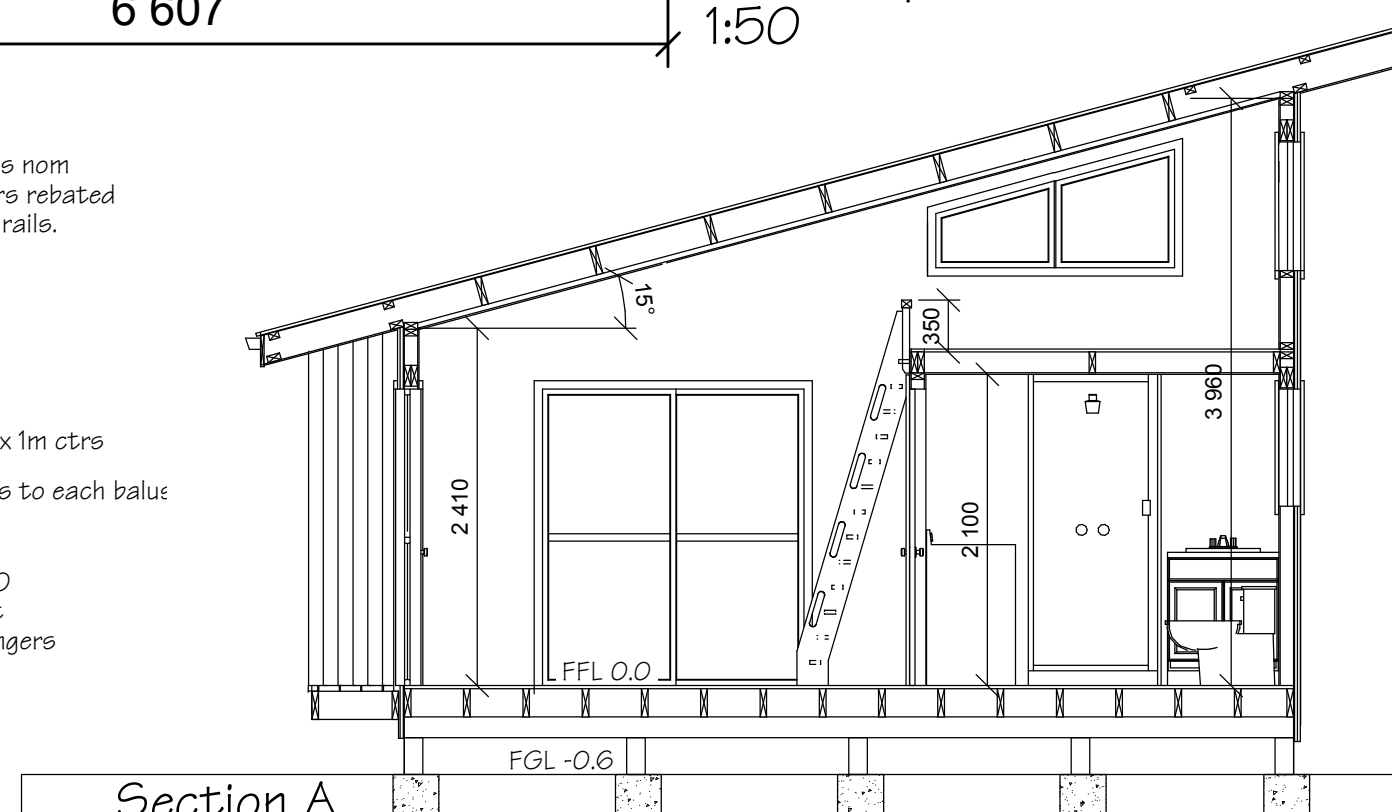
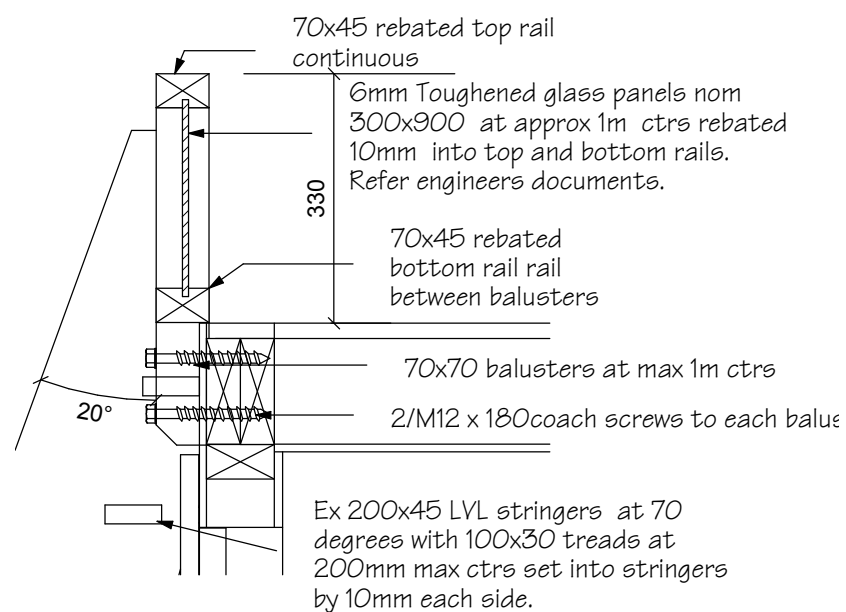
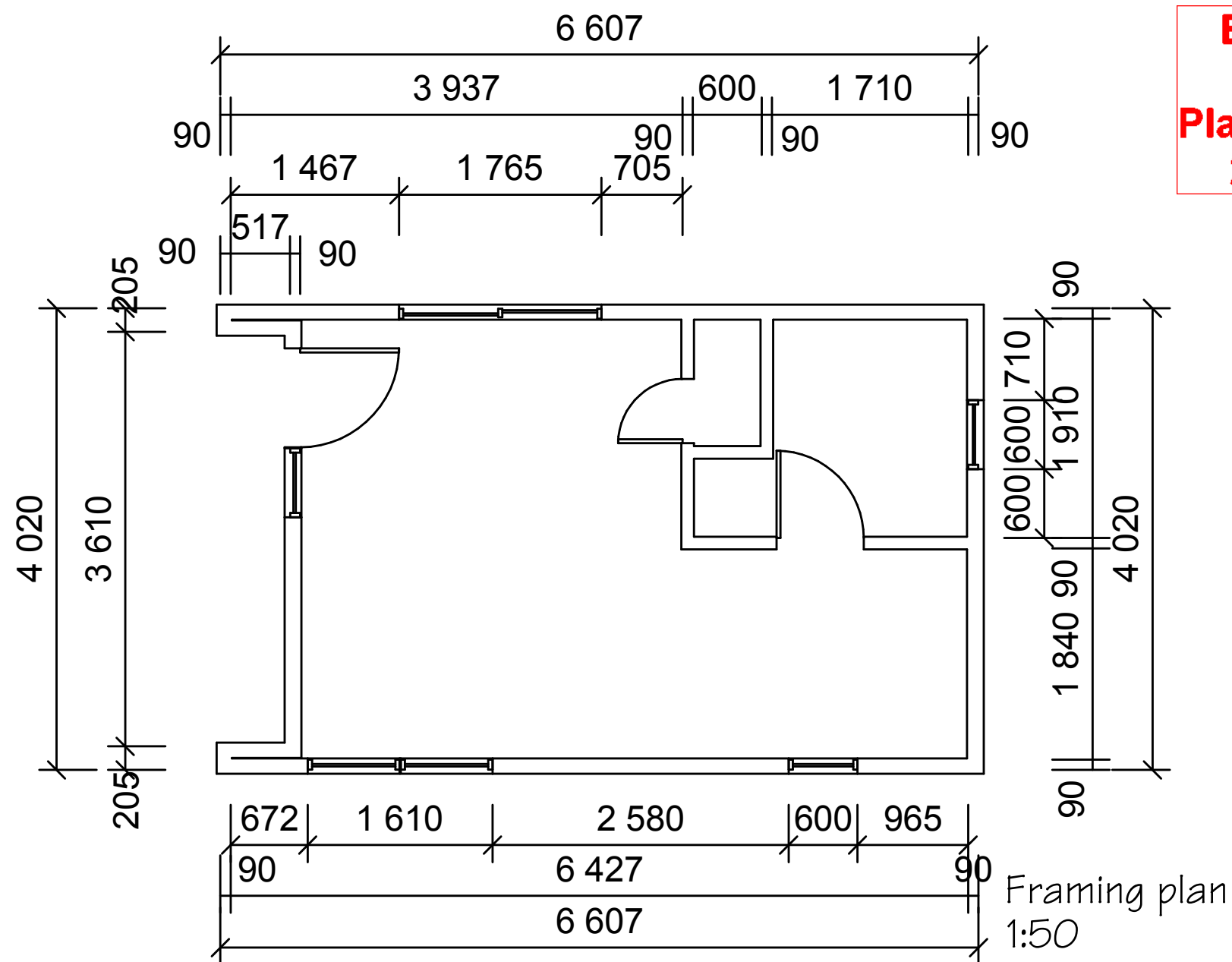
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Timber Foundation (ref foundation plan)  
Timber Subfloor construction in accordance with  
NZS3604:2011, s6 and 7. 20mm flooring H3 ply in all  
areas, fixed to floor joists in accordance with  
manufacturers specifications. Floor joists 190x45 LVL,  
H1.2 at 400 ctrs with solid blocking at 1600 ctrs over  
each bearer line. Bearers 2/140x45 H3.2 on 125 square  
H5 timber piles set in concrete footing. Use all SS fixings  
for zone D.  
Allow for 60mm Expol underfloor insulation.

External Walls  
90 x 45 SG8, H1,2 timber frame (H 3.2 bottom plates to wet areas) , all studs up to 2.7m studs at 400crrs,all studs upto 3.0m will be double 90x45 at 400 ctrs, dwangs at 800crrs nom. Allow to fit 90x45 SG8 double top plates to all the sloping frames (as a continuous lintel). Fit Ecoply Barrier RAB taken up to top plate. Fix bottom plate to base with 3 power driven nails at 600 ctrs.

Wall Cladding  
Side walls, Shadowclad ply on H3.2 cavity batten system at 400 ctrs in accordance with manufacturers specifications & NZBC: E2/AS1 External Moisture, over Ecoply Barrier RAB with Aluband proprietary flashing tape. End walls Hardie Stria to the same spec in accordance with manufacturers specifications & NZBC: E2/AS1 External Moisture, over Ecoply Barrier RAB with Aluband proprietary flashing tape

Internal Walls  
90 x 45 SG8, H1.2 timber frame (H3.2 bottom plates to wet areas). Double top plates, studs at 400cns max, nogs at 800cns nom. Standard 10mm clear ply linings throughout. Fixed to comply in accordance with manufacturers specifications

Wall Linings  
10mm clear ply linings. Wet area to be Fibo Mercato  
selected wet wall panels

**Ceilings**  
Timber battens fixed to trusses at 600crs. (12mm ply) with Pan head SS 40mm screws at 150 crs on perimeter of sheets and 300 crs internal of sheets in accordance with manufacturers specifications.


Wall Insulation  
R2.6 insulation to all exterior wall cavities. Friction  
fitted.

Ceiling Insulation  
R3.2 skillion insulation to all ceiling cavities. Friction fitted.

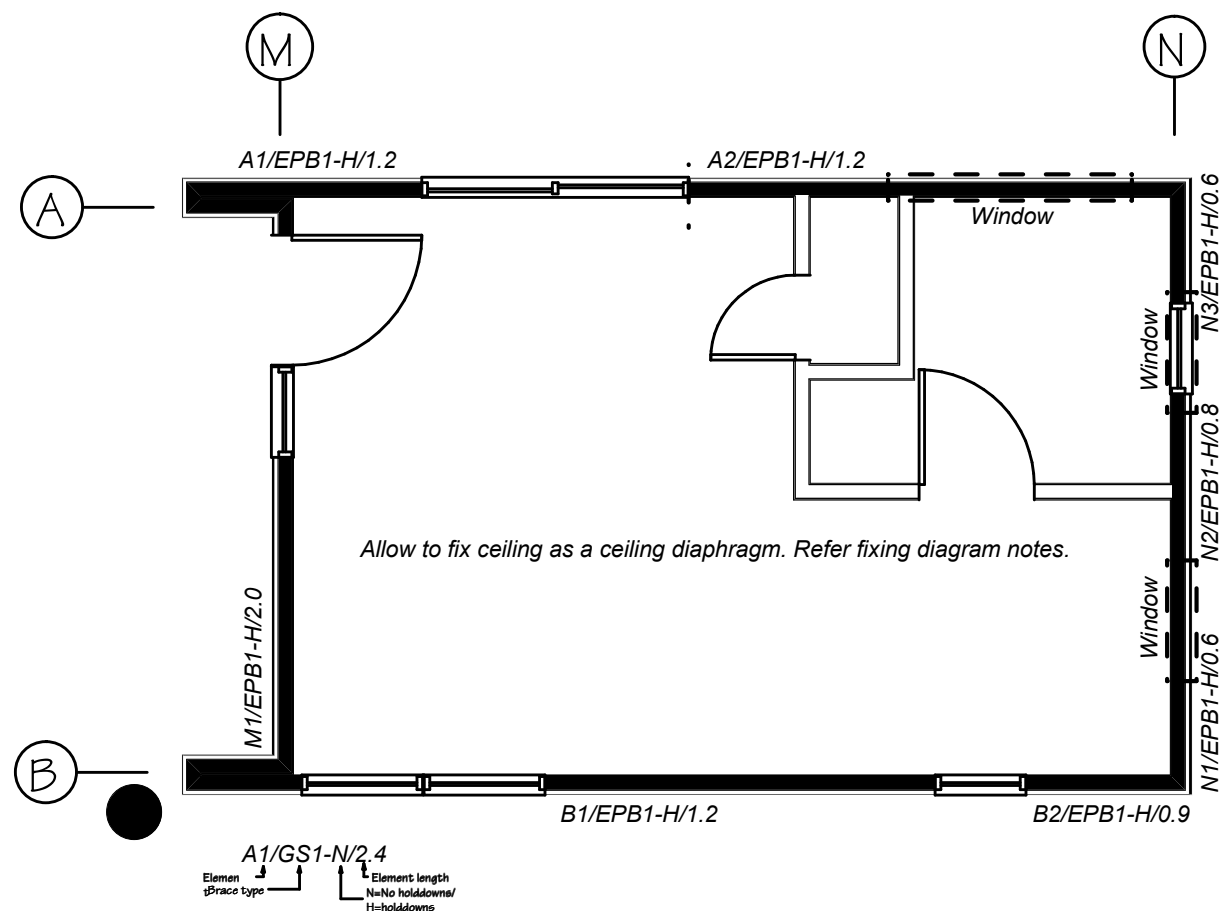
Roof Framing (ref Roof plan)  
Rafters 190x45 LVL at varying pitch (from 10-15 degrees), H1.2 at 800crrs - Thermakraft Covertect 407 with galvanized netting. 90x45 5G8, H1.2 nogs as required at 800 ctrs. Rafter outriggers 190x45 LVL at 900 ctrs at the top and bottom of the roof structure. Fixing for Med to E.High - Type T - 1/10g self-drilling screw, 80mm long purlin/truss connection (2.4KN fixing)

Roof Cladding  
Corrugated Coloursteel Maxx 0.40bmt roofing fixed with compatible roofing fasteners by suitiably qualified person. All flashings 0.55bmt.

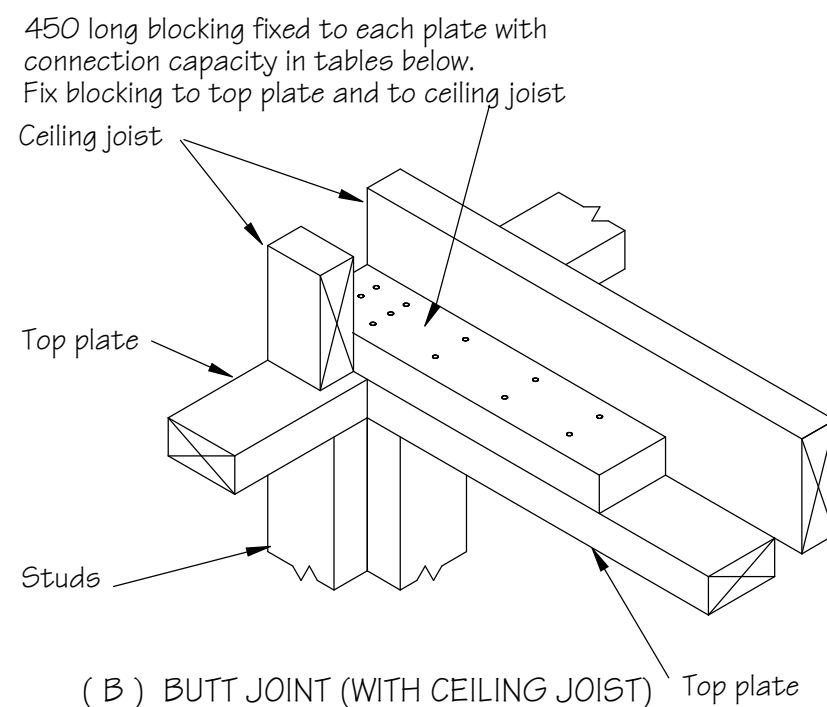
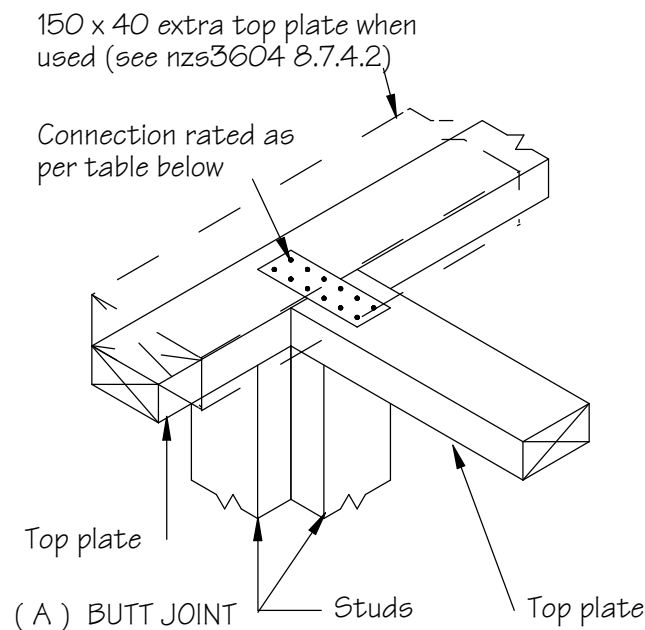
Soffit  
4.5mm Hardi groove soffit lining fixed to 90 x 45 soffit  
bearers & 90 x 45 stringer at wall.  
Nominal 600mm eaves. Marley downpipe system and  
gutter.

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R2	
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CHECK ALL MEASUREMENTS ON SITE	





HOUSE BRACING PLAN  
1:50



Capacities of metal plate joints	
Up to 3 kN	3 / 30 x 3.15 mm nails per side
Up to 6 kN	6 / 30 x 3.15 mm nails per side

Capacities of nailed joints	
Up to 3 kN	3 / 100 x 3.75 mm nails per side
Up to 6 kN	6 / 100 x 3.75 mm nails per side

Ply Bracing Type	Description	Nail Edge Spacing	Centre fixing spacing	Additional Requirement
EPB1(0.4)	Ecopy Barrier one side , 400mm wall.	150mm	300	Hold downs- see note
EPB1(0.6)	Ecopy Barrier one side , 600mm wall.	150mm	300	Hold downs- see note
EPB1(1.2)	Ecopy Barrier one side , 1200mm wall.	150mm	300	Hold downs- see note
EPBS(0.9)	Ecopy Barrier one side , 900mm wall.	150mm	300	No Hold downs required.
EPBG(0.4)	Ecopy Barrier and GIB Standard other side, 400mm wall.	150mm for ply - 50, 100, 150, 225, 300 from cnrs and 150 thereafter for GIB	300	Hold downs- see note
EPBG(1.2)	Ecopy Barrier and GIB Standard other side, 1200mm wall.		300	Hold downs- see note

Do NOT glue Ecopy Barrier sheets  
 Ecopy Barrier elements in Zone D, fasteners must be Annular grooved Stainless Steel.

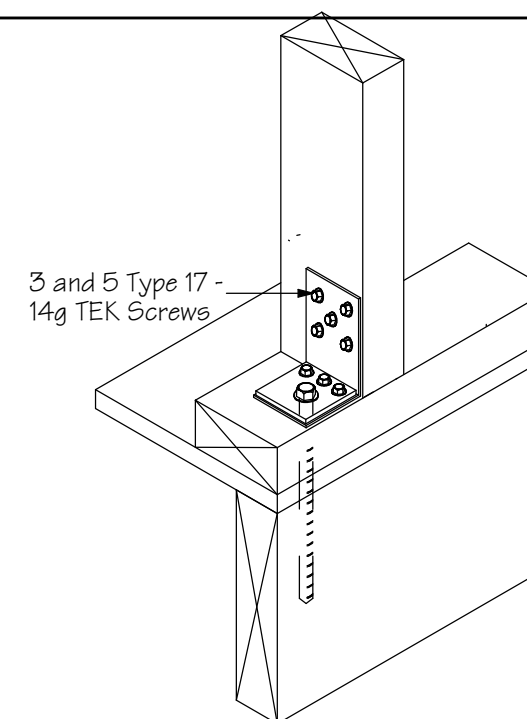
Note: - Hold down requirements. - Locate at each end of bracing element.  
 Concrete floor - GIB Handibrac with Ramset Anka Screw bolt external wall(AS12150H), internal wall(AS12120H)  
 Timber floor: GIB HandiBrac with 150mm galv coachscrew.

**Each wall that contains one or more bracing elements shall be connected at top plate level, either directly or through a framing member to the external wall.**

**<125 Bracing Units = One 6kN Connection**  
**>125 - <250 Bracing Units = Two 6kN Connections**  
**>250 Bracing Units = Two Connections 2.4kN/100BU.**

**BC180320A**  
**Amended**  
**Plans Approved**  
**24/07/2019**

Ceiling diaphragm- The fixing pattern must comply with CCH fixing specifications and can be found in every Ply installation specification Guide. Contractor is to add sundry nogging as required. Fasteners are placed at 100 ctrs around the diaphragm starting at 150ctr around the sheet edges. Each connecting wall element must have a minimum bracing value of 100BU.



Timber floor  
External Walls

Note: - Hold down requirements. - Locate at each end of bracing element.  
 Concrete floor - GIB Handibrac with Ramset Anka Screw bolt external wall(AS12150H), internal wall(AS12120H)  
 Timber floor: GIB HandiBrac with 150mm galv coachscrew.

Sheet 10  
of 13

Project #  
1836-II

Issue:  
Consent Issue

Ammdnts: Date:  
R1

Gattsche House- Tiny House  
 135 Fitzherbert street, Featherston  
 Lot 2 DP 21561

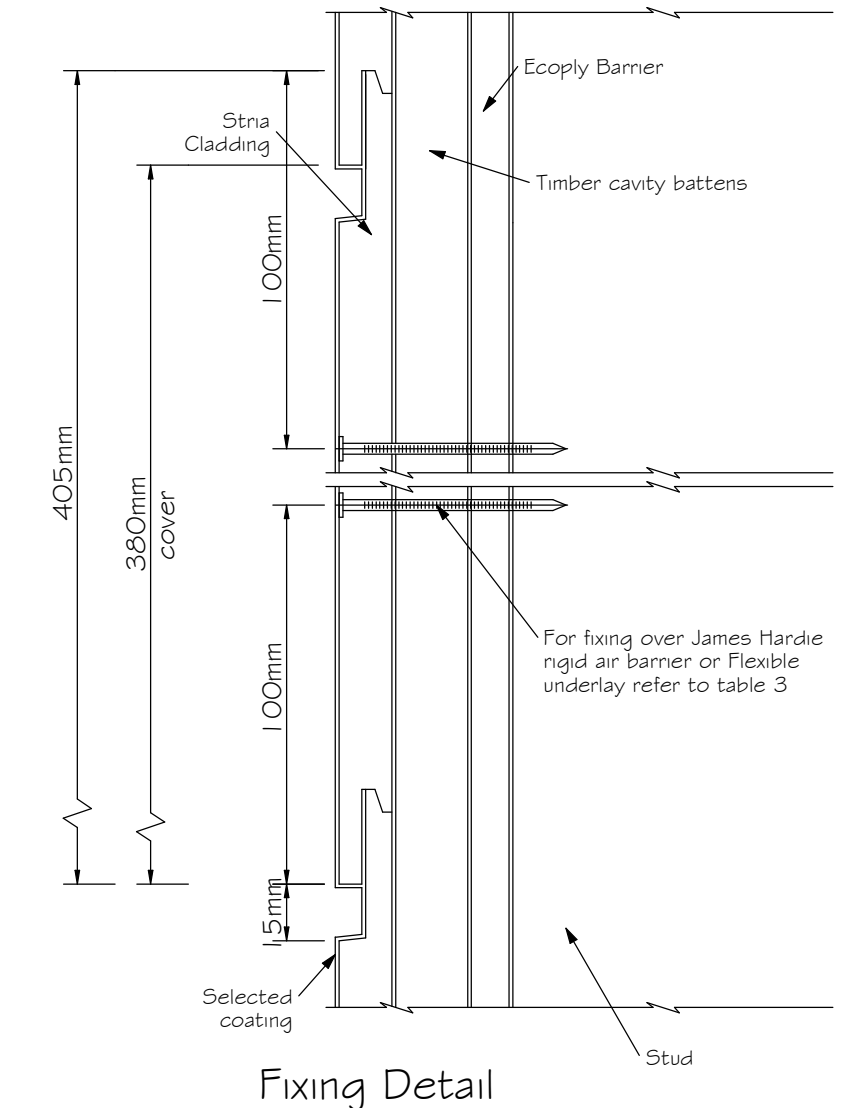
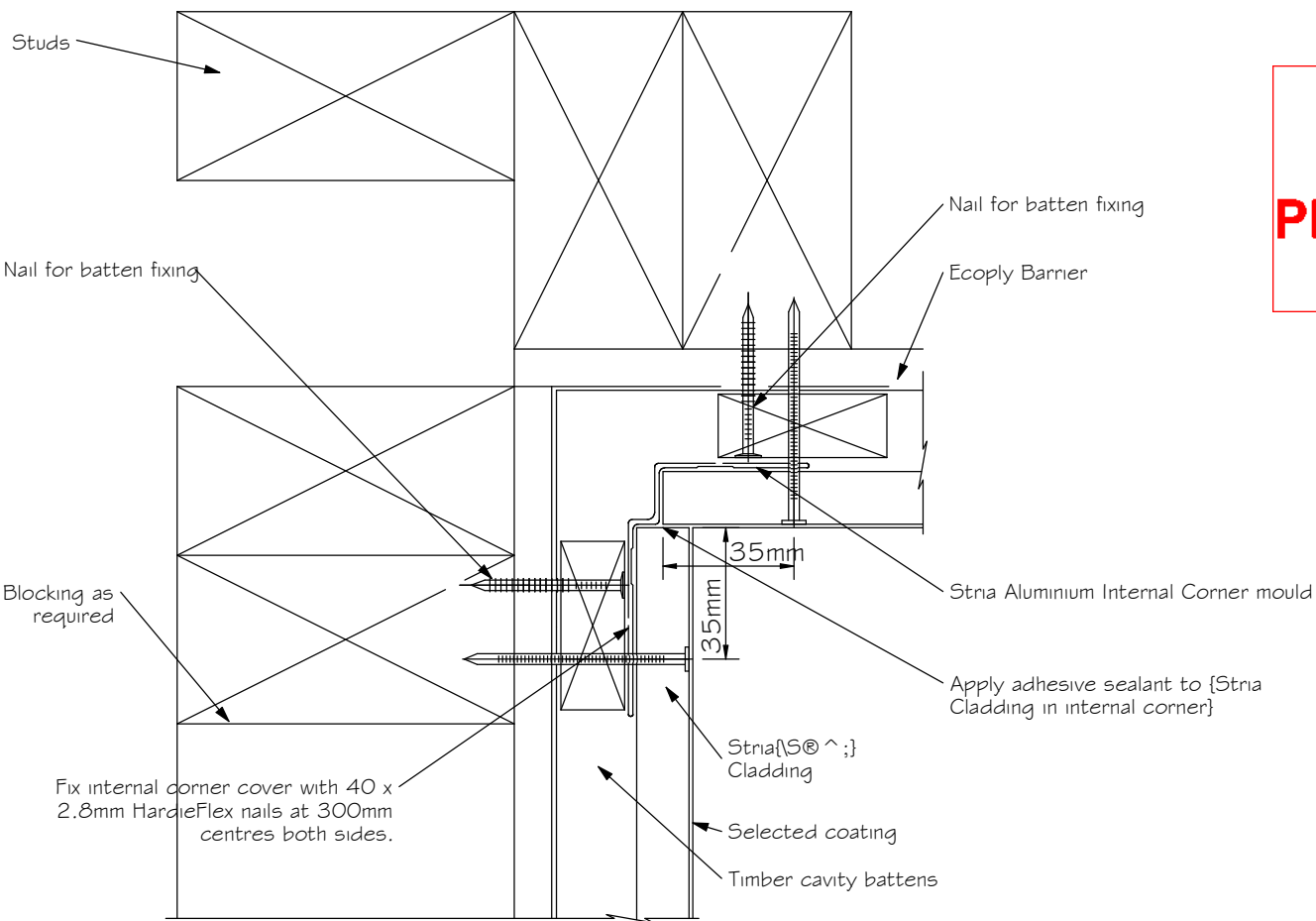
CAD SERVICES AND DESIGN  
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 Mobile 021-204-6155  
 email: cad.services.design@gmail.com  
 website: www.cadservicesdesign.com

Drawn  
WPL

Date:  
18/07/2019

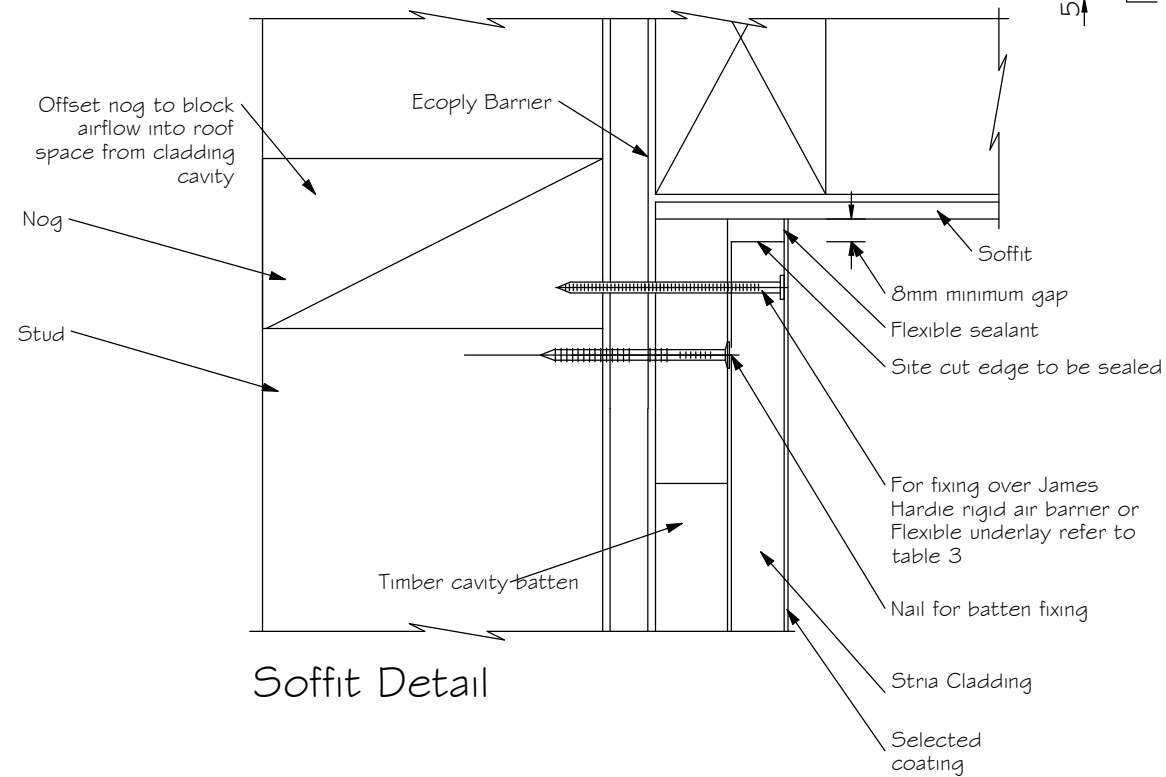
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CHECK ALL  
MEASUREMENTS  
ON SITE

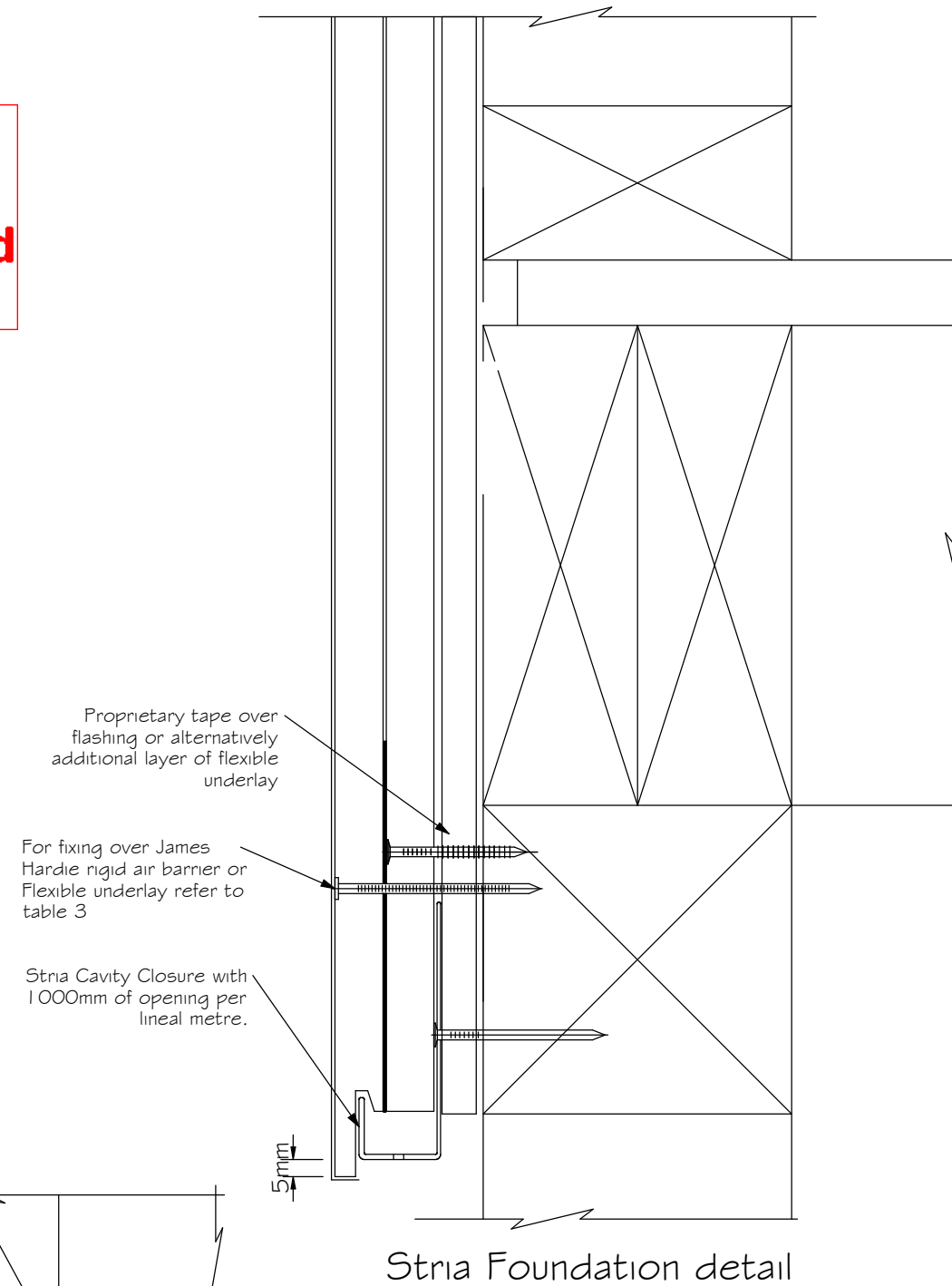


Fixing Detail

**BC180320A**  
**Amended**  
**Plans Approved**  
**24/07/2019**



Soffit Detail



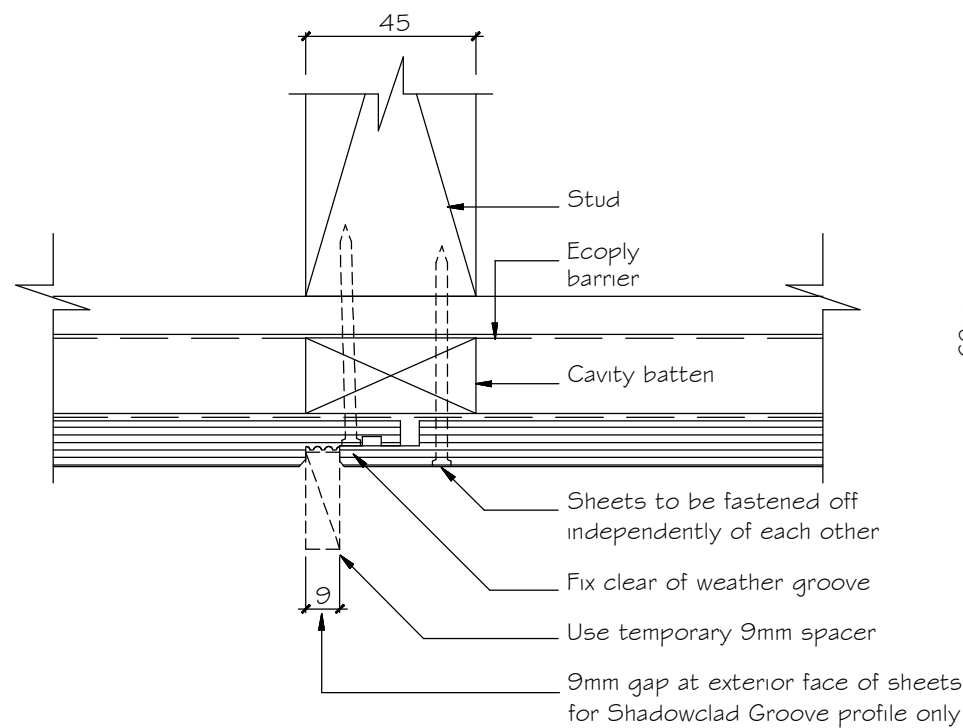
Stria Foundation detail

Sheet	11
of	13
Project #	1836-II
Issue:	Consent Issue
Amendments:	Date:

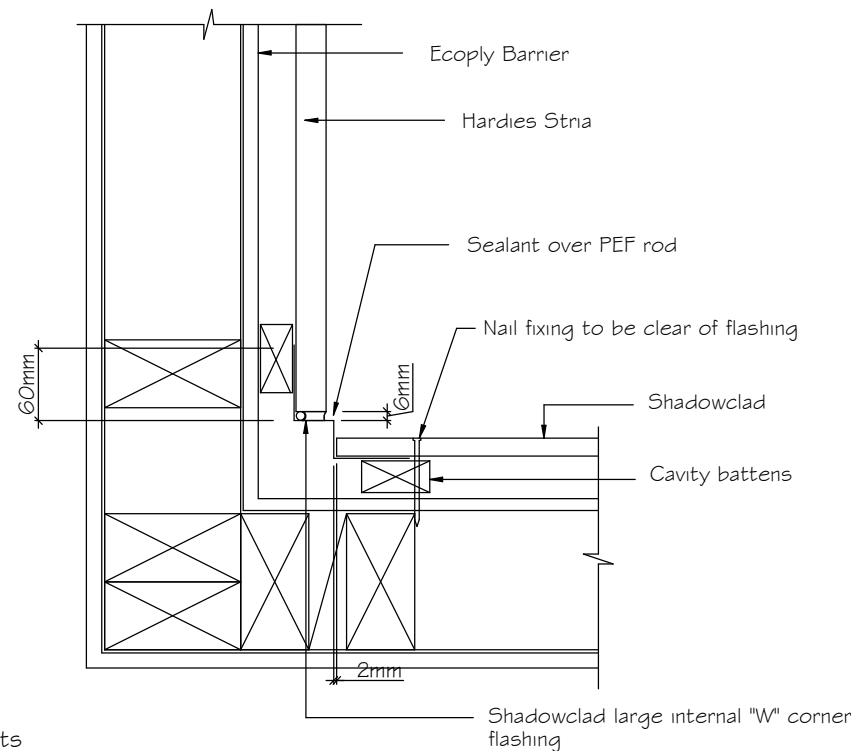
**Gattsche House- Tiny House**  
 135 Fitzherbert street, Featherston  
 Lot 2 DP 21561

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 Mobile 021-204-6155  
 email: cad.services.design@gmail.com  
 website: www.cadservicesdesign.com

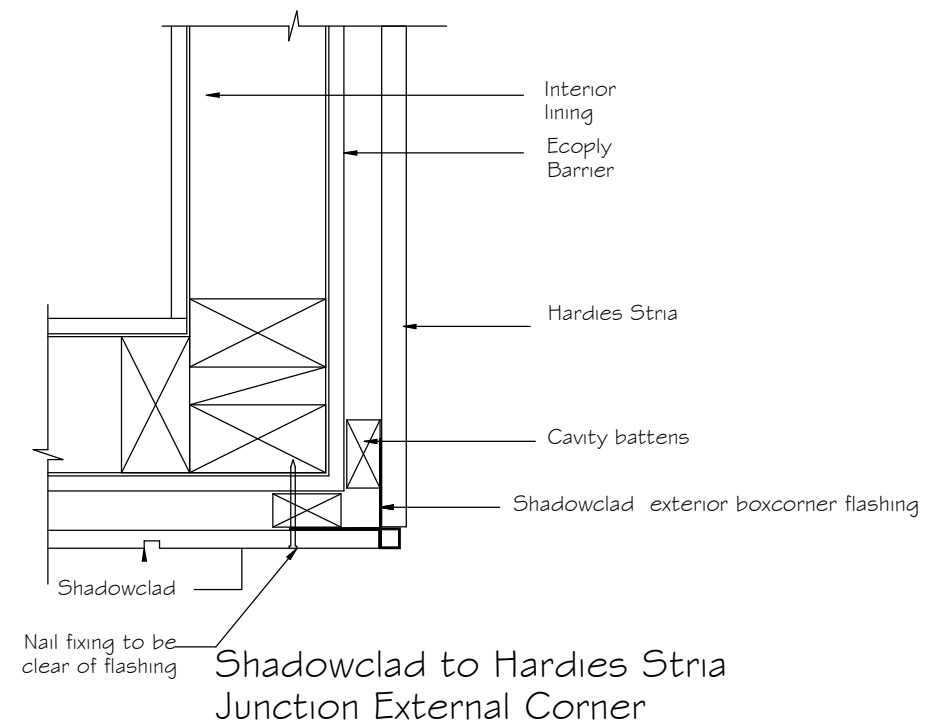
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Date:	18/07/2019
Scale:	Sheet size: A3
CHECK ALL MEASUREMENTS ON SITE	



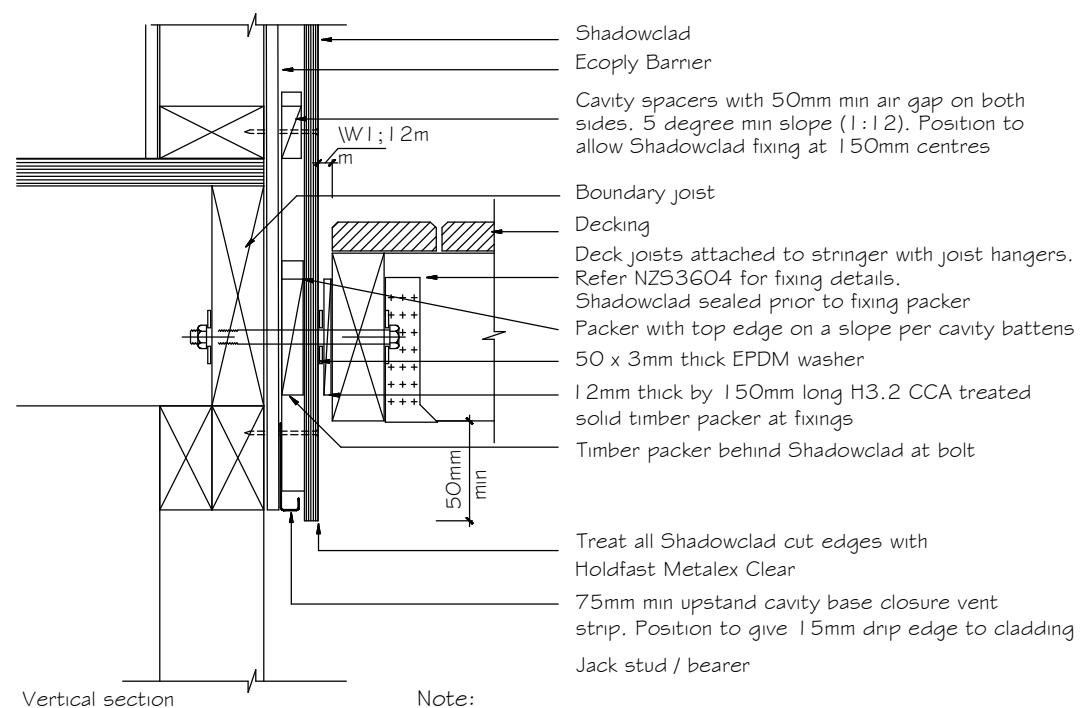
Shadowclad Groove Vertical Joint (Cavity)



Shadowclad to Hardies Stria Junction Internal Corner



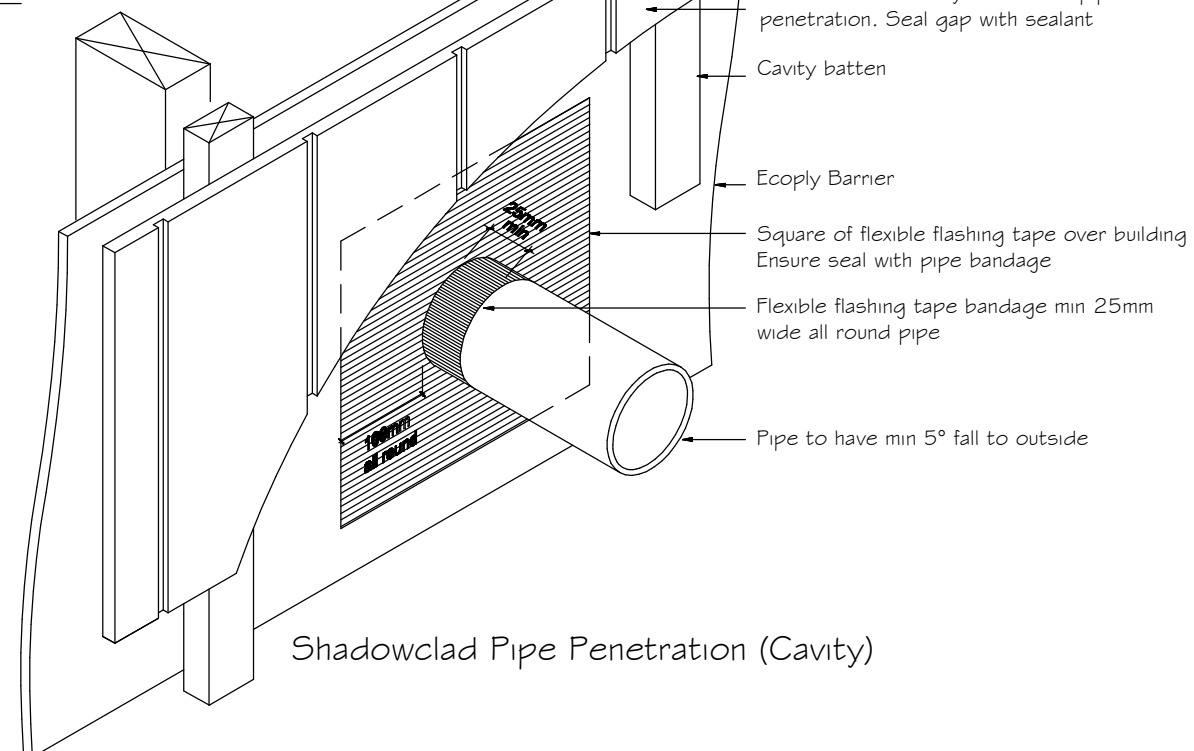
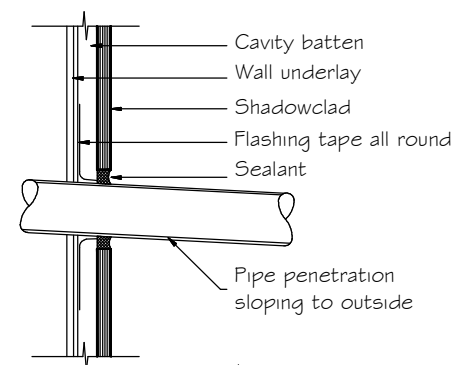
Shadowclad to Hardies Stria Junction External Corner



Vertical section

Note:  
Cut edges should be placed at the top of the sheet to  
1. avoid rain drips soaking into cut end grains  
2. Treat all cut edges with Holdfast © Metalex © Clear

Shadowclad Timber Ground Floor to Non-Cantilevered Deck (Cavity)



Shadowclad Pipe Penetration (Cavity)

**BC180320A**  
**Amended**  
**Plans Approved**  
**24/07/2019**

Sheet 12  
of 13

Project #  
1836-II

Issue:  
Consent Issue

Amendments: Date:

Gattsche House- Tiny House  
135 Fitzherbert street, Featherston  
Lot 2 DP 21561

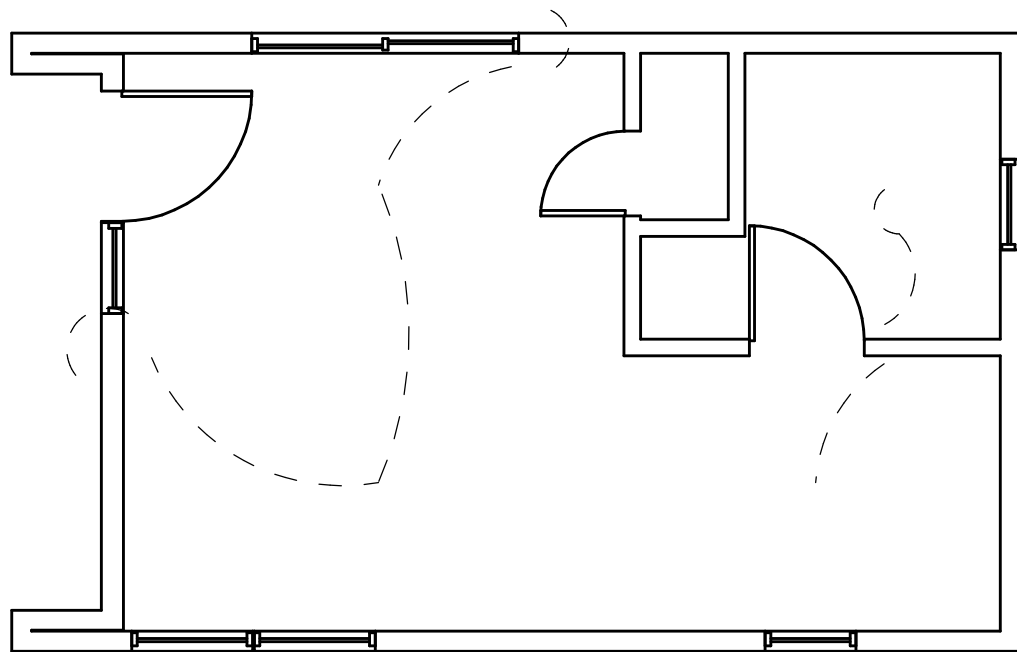
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WPL

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18/07/2019

Scale:  
Sheet size: A3

CHECK ALL  
MEASUREMENTS  
ON SITE



ELECTRICAL PLAN  
1:50

NOTE:  
Only electrical prewire completed. All  
final electrical work is to be connected  
to the mains supply on a future  
relocated new site.

Electrical Key	
	incandescent light
	down light
	halogen spot light
	wall light
	ventilation fan
	wall mounted exterior light
	exterior security light
	smoke detector
	light switch
	single power outlet
	double power outlet
	dishwasher power outlet
	protected power outlet
	phone outlet
	television outlet
	heated towel rail
	heater
	power distribution board
	meter board

Sheet	13
of	13
Project #	1836-II
Issue:	Consent Issue
Ammdts:	Date:
R2	

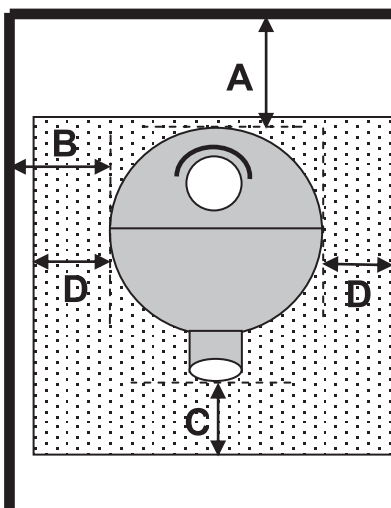
Gattsche House- Tiny House  
135 Fitzherbert street, Featherston  
Lot 2 DP 21561

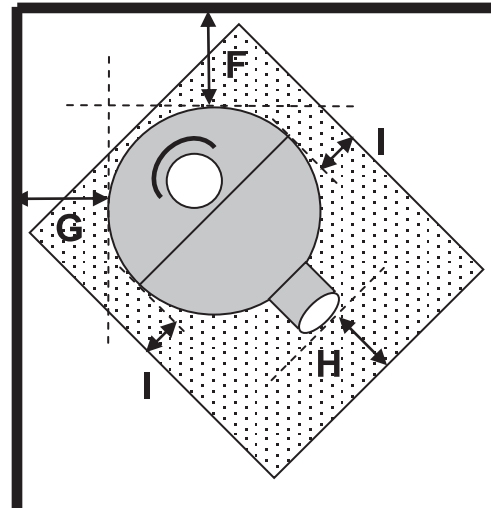


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Date:	18/07/2019
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CHECK ALL MEASUREMENTS ON SITE	

**Test Results for high/Flash fire:**

Parallel Position Clearance Distance	Position	Clearance (mm)	Max temp rise (°C)	
			High	Flash
	(A) Rear	150	Rear Wall	
			29.63	30.52
	(B) Side	400	Side Wall	
			60.68	58.81
	(C) Floor protector (front)	300	Floor	
			44.03	46.49
	(D) Floor protector (side)	200	Ceiling	
			41.31	44.42

Corner Position Clearance Distance	Position	Clearance (mm)	Max temp rise (°C)	
			High	Flash
	(F) Side	300	Rear Wall	
			29.74	30.23
	(G) Side	300	Side Wall	
			44.74	45.98
	(H) Floor protector (front)	300	Floor	
			44.13	44.06
	(I) Floor protector (side)	200	Ceiling	
			44.99	46.84

\* Note that this temperature passed within the laboratories margin of uncertainty.

**Technical Note:**

1. The clearance measurement A, B, F and G were taken from the distance between walls and closest point of the appliance, C and H was measured from the front of the air control/cleaning tube as this is the foremost opening, D and I was measured from each side of fuel-loading opening.
2. The flue was installed onto the flue spigot, extended centrally and vertically without bend before and after penetration of the ceiling plane.
3. Drawings shown above are not to scale.



# Insert ECO Flue System

## INSTALLATION MANUAL

**SUPERSEDED**  
**11/10/2018**



Important message to the installer .....	Page 1
Component checklist.....	Page 1
Installation.....	Page 2
Flue system minimum heights.....	Page 3

**PIONEER**  
M A N U F A C T U R I N G   L I M I T E D

Mamaku Street | PO Box 11 | Inglewood | New Zealand  
Phone 06-756 6520 | Fax 06-756 6540  
[www.metrofires.co.nz](http://www.metrofires.co.nz) | [info@metrofires.co.nz](mailto:info@metrofires.co.nz)

## IMPORTANT - PLEASE NOTE



- THIS ECO INSERT FLUE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH AS/NZS2918:2001 AND THE APPROPRIATE REQUIREMENTS OF THE RELEVANT BUILDING CODES.
- ANY MODIFICATION TO THIS FLUE SYSTEM THAT HAS NOT BEEN APPROVED IN WRITING BY THE TESTING AUTHORITY IS CONSIDERED TO BE IN BREACH OF ALL APPROVALS GRANTED.



- MIXING OF FLUE SYSTEM COMPONENTS FROM DIFFERENT SOURCES OR MODIFYING THE DIMENSIONAL SPECIFICATION OR COMPONENTS MAY RESULT IN HAZARDOUS CONDITIONS. WHERE SUCH ACTION IS CONSIDERED, THE MANUFACTURER SHOULD BE CONSULTED.
- PRIOR TO INSTALLING THE ASSEMBLED FLUE PIPE INTO THE MASONRY CHIMNEY CAVITY, TAKE CAREFUL NOTE TO ENSURE THERE ARE NO OVERHEAD POWER LINES IN CLOSE PROXIMITY.

## COMPONENT CHECKLIST

Please read these instructions fully prior to installation and familiarise yourself with all the various components as illustrated and listed below.

*Note: rivets and fire cement are not included as they are supplied by the installer.*

- (A) - 1 x Stainless steel weather butterfly
- (B) - 1 x Stainless steel ECO cowl housing
- (C) - 1 x 225mm x 200mm diameter stainless steel outer casing extension
- (D) - 1 x 480mm long stainless steel flue pipe extension with flashing cone
- (E) - 3 x 1200mm lengths of 150mm diameter stainless steel flue pipe
- (F) - 1 x 600mm length of 250mm diameter galvanised outer casing

**SUPERSEDED**  
**11/10/2018**

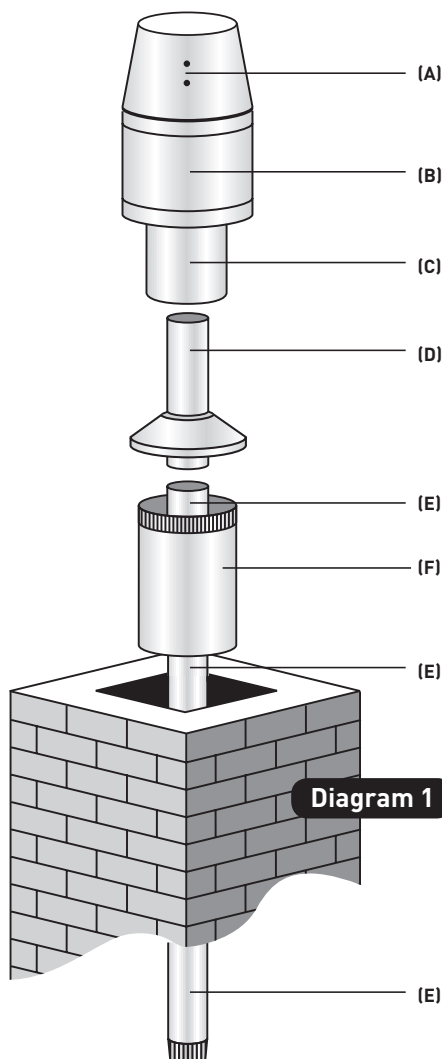


Diagram 1

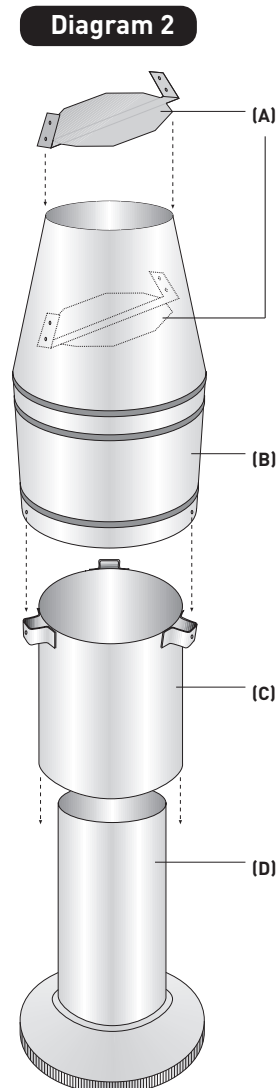


Diagram 2

## **INSTALLATION**

This flue system has been manufactured and complies with AS/NZS2918:2001. To ensure a safe and efficient installation, this flue system must be installed as detailed below by either a registered installer, or someone competent in installing solid fuel appliances.

1. Check the masonry chimney for structural soundness and make any repairs that are necessary.  
*Note: Most councils require the masonry chimney to be inspected prior to installation. The masonry chimney cavity must also be swept prior to installation.*
2. Once the fireplace insert has been installed correctly as per the manufacturers instructions, look directly down the chimney to ensure the wood fire flue spigot is in line with the masonry chimney.  
(A torch will be required).
3. If you cannot see the flue spigot, a fluepipe offset will be required. If so, install the fluepipe offset so the top of it can be clearly seen from the top of the masonry chimney.
4. If an offset is required, an adjustable telescopic type is recommended. Measure the amount of offset required and adjust the telescopic offset to suit, after smearing an adequate amount of Pioneer fire cement onto the slip section of the offset to ensure a good seal, then rivet the offset in three locations around its circumference. (If the offset is used in its fully compressed form, it will be necessary to modify the end of the female slip section otherwise it will restrict the internal diameter) Apply a liberal amount of Pioneer fire cement into the flue outlet of the fireplace insert, and fit the lower crimped end of the offset into position inside the flue outlet, and bolt into position.  
*Note: In some installations where it is not possible to fit offsets or rigid fluepipe due to the shape of the masonry chimney cavity, "Flexi flue" may be used.*
5. Secure the fluepipes together and ensure the flue seams are in line. Fluepipe joints must be fully compressed with a considerable amount of fire cement to ensure a good seal, and then riveted together at 3 even points around the flue join. Prior to installing the assembled fluepipe into the masonry chimney cavity, take careful note to ensure there are no overhead power lines in close proximity.
6. Lower the fluepipe into the masonry chimney, with the crimped end fitting into the fireplace insert flue outlet/offset, and securely attach with three rivets. (offset/bend must be riveted to the fluepipe) For installations where extra lengths of fluepipe are required, or when the weather is poor, it will be easier to assemble the fluepipe lengths as they are lowered into the masonry chimney.
7. Secure the outer casing to the masonry chimney with suitable fasteners and weatherproof/seal to the masonry chimney top with mortar or silicone. Note: The top of the outer casing must be "level" ( + or - 10mm) with the top of the 150mm stainless steel fluepipe. An optional masonry chimney flashing plate is available if required.
8. Assemble the ECO vertical discharge cowl as follows;
  - Take the stainless steel weather butterfly (A) so the angled sections are facing up and fold "up" both arms at the slot provided to just over 90 degrees as shown.
  - With both arms and angled sections of the stainless steel weather butterfly (A) facing up, fit it into the stainless steel cowl housing (B), and secure in position through the holes provided with stainless steel rivets.  
*Note: Once fitted the weather butterfly will be slightly angled within the cowl housing.*
  - Now fit the base of the cowl housing (B) over the brackets of the outer casing extension (C) ensuring the 3 x prepunched holes punched in its lower skirt align centrally over the 3 brackets attached to the casing extension as illustrated. Push the cowl housing down fully until its internal swage rests on the casing extension brackets (the brackets should be "just but fully" inside the base of the cowl housing). Drill through the 3 pre-punched holes in the cowl housing through the 3 brackets and secure with stainless steel rivets. The removable section of the ECO cowl is now fully assembled.
9. Making your way back onto the roof, fit the 480mm long fluepipe extension/flashing cone (D), with the flashing cone at the bottom, fit its short flue section inside the top of the already installed 150mm diameter flue pipe. Ensure the 3 brackets extended below the flashing cone fit "outside" the outer casing slip section. Drill through the pre-punched hole in all 3 brackets into the outer casing slip and secure with rivets.
10. Taking the "removable section of the ECO cowl" assembled in section 8 above, position it over the top of the stainless steel flue pipe extension, and slide it down fully. This removable section does not require riveting and therefore enables easy removal for future flue cleaning.

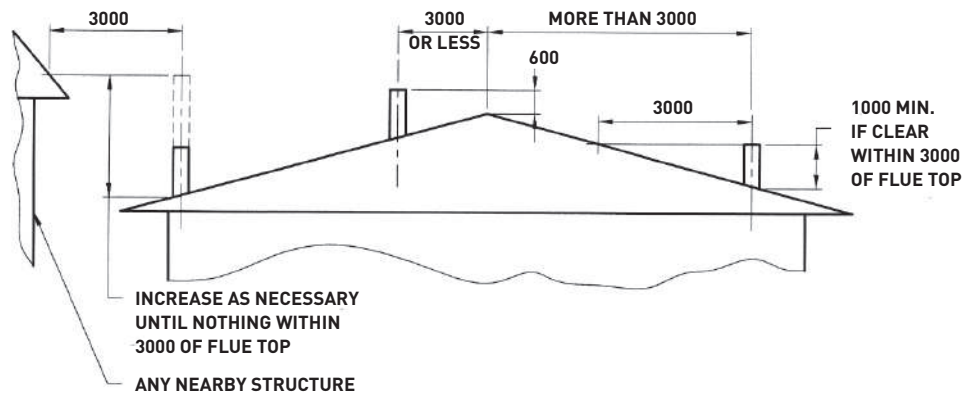
## FLUE SYSTEM MINIMUM HEIGHTS

In compliance with AS/NZS2918:2001.

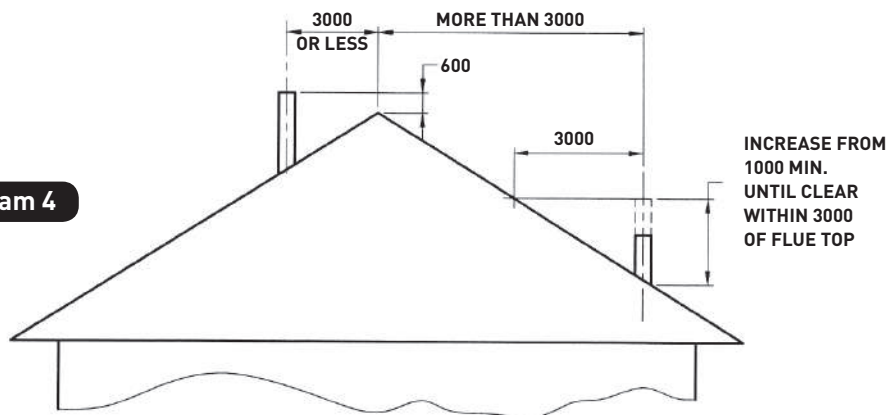
The Metro ECO Flue System complies with AS/NZS2918:2001 and its 4.6 metre height requirement (4.6 metre minimum from the top of the floor protector to the top of the fluepipe). However as external structures and the proximity of other buildings will differ for every installation, some situations will require additional flue height to comply with the standard. Refer Diagrams 3 and 4 below. (All measurements in mm)

*Note: AS/NZS2918:2001 Section 4, details flue system installation requirements in full.*

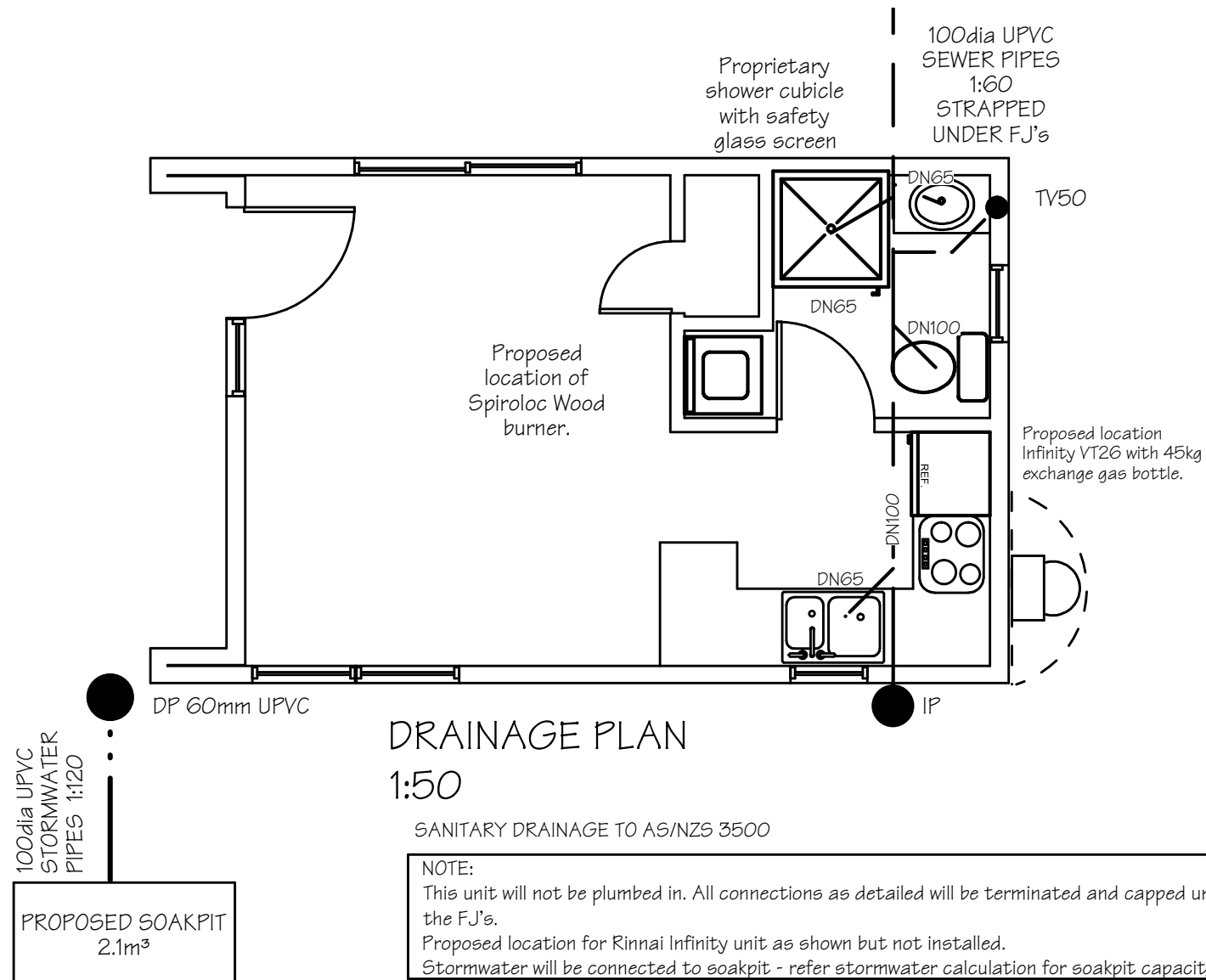
**Diagram 3**



**Diagram 4**



**SUPERSEDED**  
**11/10/2018**



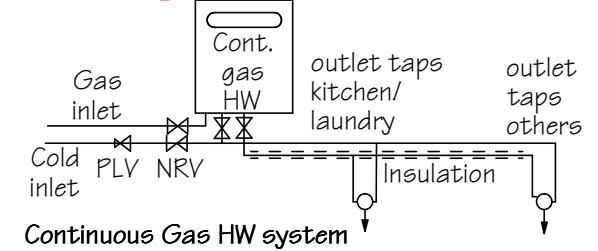
Water supply:  
12mm Polybutylene with crimped fittings.  
All HW and exposed pipes insulated with Isopipe  
All tapware must be approved in NZ for lead levels.

Wastes and grades:  
Sink and tub DN50 (1:40)  
WC DN100 (1:60)  
All others DN40 (1:40)

Kitchenette, laundry and bathroom floor coverings :Vinyl  
All walls and ceilings GIB Aqualine, sealed and two top coats.

Kitchenette, laundry, bathroom vented to the outside via window.

## SWDC Building Consent Document



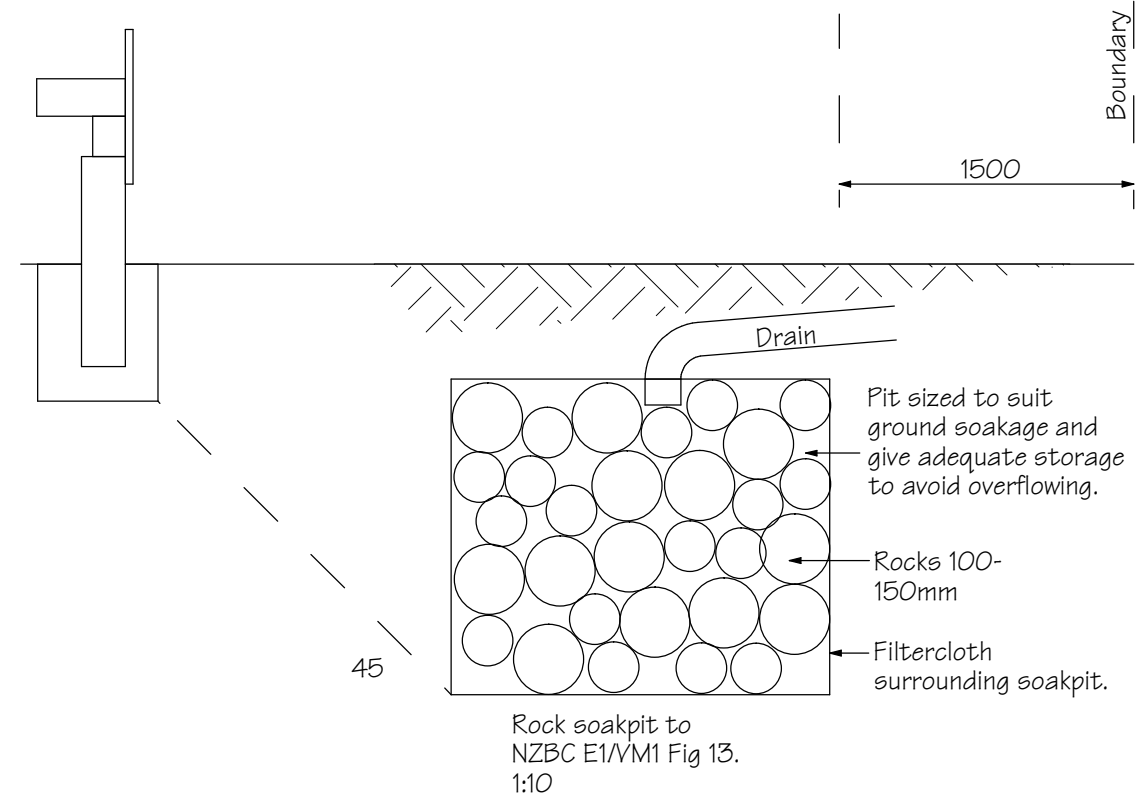
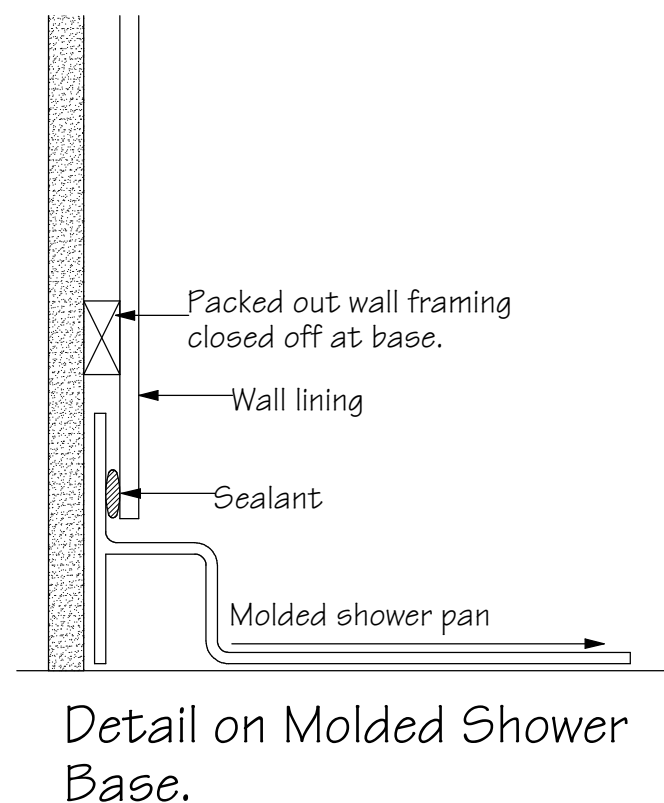
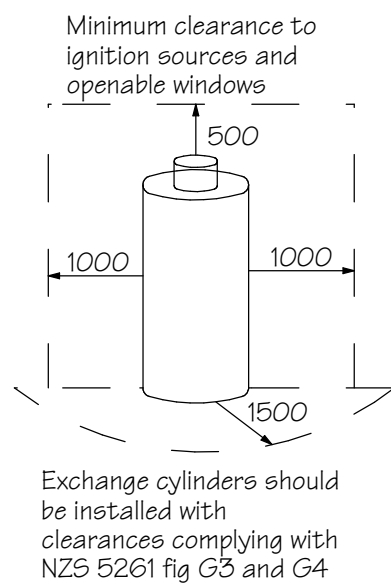
**SUPERSEDED**  
**11/10/2018**

Sheet	9
of	13
Project #	1836
Issue:	Consent Issue
Ammdnts:	Date:

Gattsche House- Tiny House  
103 Lake Ferry Road, Lake Ferry  
LOT 6 DP 70868 BLK VIII ONOKE SD

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Mobile 021-204-6155  
email: cad.services.design@gmail.com  
website: www.cadservicesdesign.com

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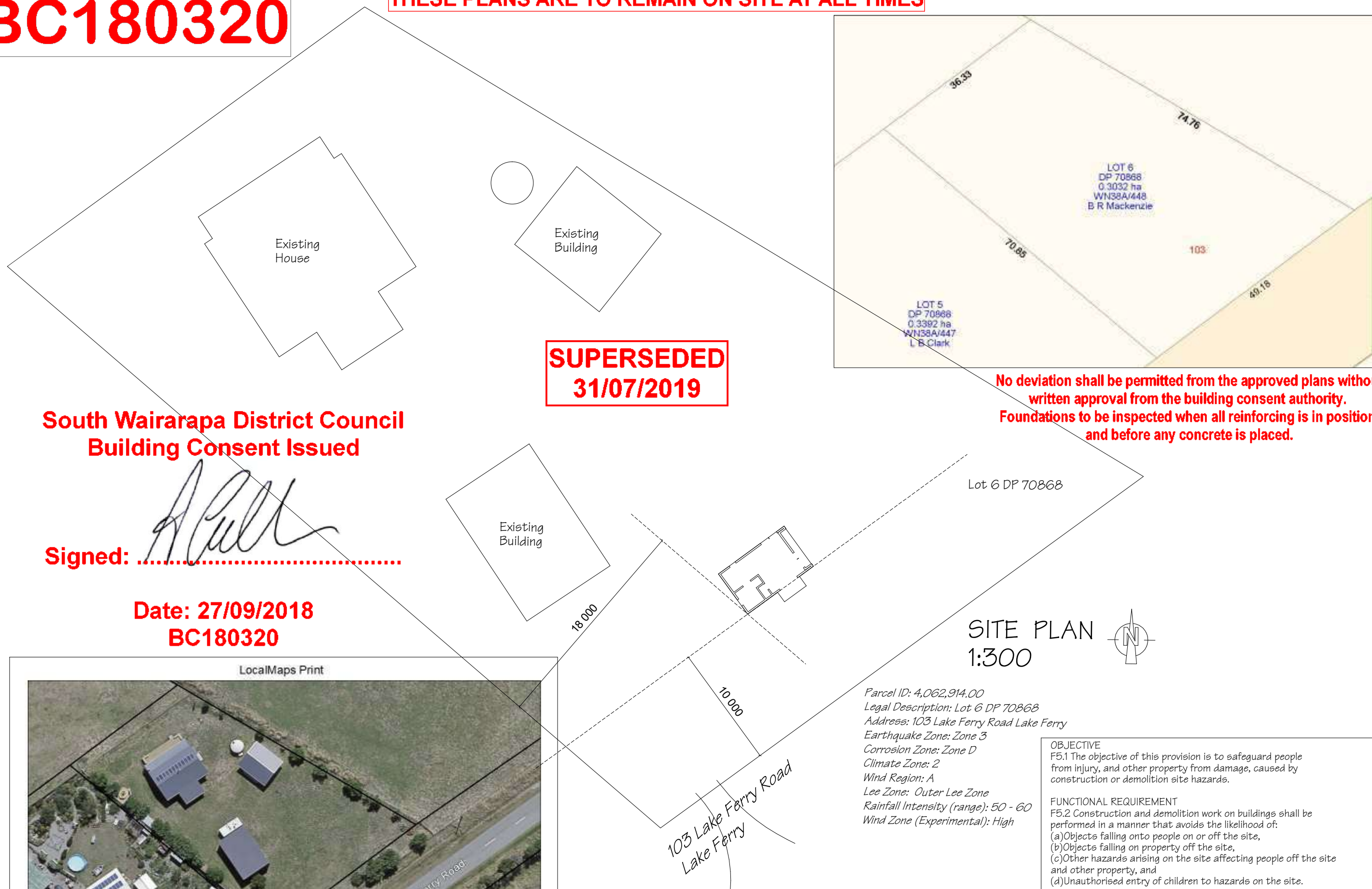




BC180320

THESE PLANS ARE TO REMAIN ON SITE AT ALL TIMES

Sheet	1
of	13
Project #	1836
Issue:	Consent Issue
Amendments:	Date:



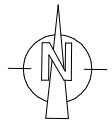
South Wairarapa District Council  
Building Consent Issued

Signed: 

Date: 27/09/2018  
BC180320

No deviation shall be permitted from the approved plans without written approval from the building consent authority.  
Foundations to be inspected when all reinforcing is in position and before any concrete is placed.

SITE PLAN  
1:300



Parcel ID: 4,062,914.00  
Legal Description: Lot 6 DP 70868  
Address: 103 Lake Ferry Road Lake Ferry  
Earthquake Zone: Zone 3  
Corrosion Zone: Zone D  
Climate Zone: 2  
Wind Region: A  
Lee Zone: Outer Lee Zone  
Rainfall Intensity (range): 50 - 60  
Wind Zone (Experimental): High

**OBJECTIVE**  
F5.1 The objective of this provision is to safeguard people from injury, and other property from damage, caused by construction or demolition site hazards.

**FUNCTIONAL REQUIREMENT**  
F5.2 Construction and demolition work on buildings shall be performed in a manner that avoids the likelihood of:  
(a) Objects falling onto people on or off the site,  
(b) Objects falling on property off the site,  
(c) Other hazards arising on the site affecting people off the site and other property, and  
(d) Unauthorised entry of children to hazards on the site.

**PERFORMANCE**  
F5.3.3 Where a construction or demolition site contains any hazard which might be expected to attract the unauthorised entry of children, the hazard shall be enclosed to restrict access by children.

F5.3.4 Suitable barriers shall be constructed to provide a safe route for people where lifting equipment creates a risk of accident from objects falling on a place of public access, or where a similar risk results from the height at which construction or demolition work is being carried out.



LocalMaps Print

July 5, 2018

☐ Masterton Property  
☐ Carterton Property  
☐ South Wairarapa Property

DISCLAIMER  
The Masterton, Carterton, and South Wairarapa District Councils accept no responsibility for the accuracy or completeness of the information contained in this map. The Councils do not provide information for the purpose of making any decisions or for any other purpose. The Councils do not warrant the accuracy or completeness of the information contained in this map. The Councils do not warrant the accuracy or completeness of the information contained in this map. The Councils do not warrant the accuracy or completeness of the information contained in this map.

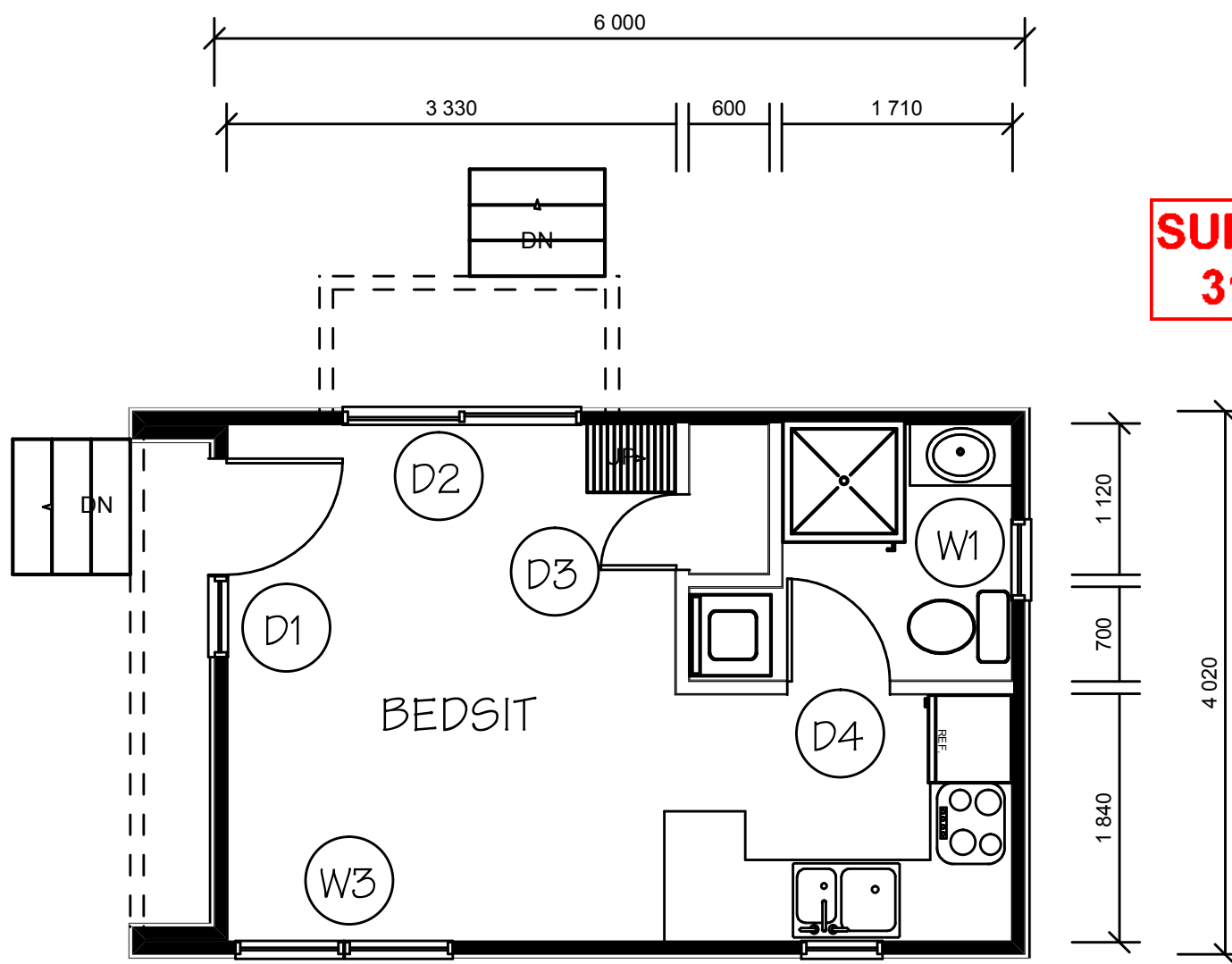
1:500

0 5 10 20 Meters

Gattsche House- Tiny House  
103 Lake Ferry Road, Lake Ferry  
LOT 6 DP 70868 BLK VIII ONOKE SD

  
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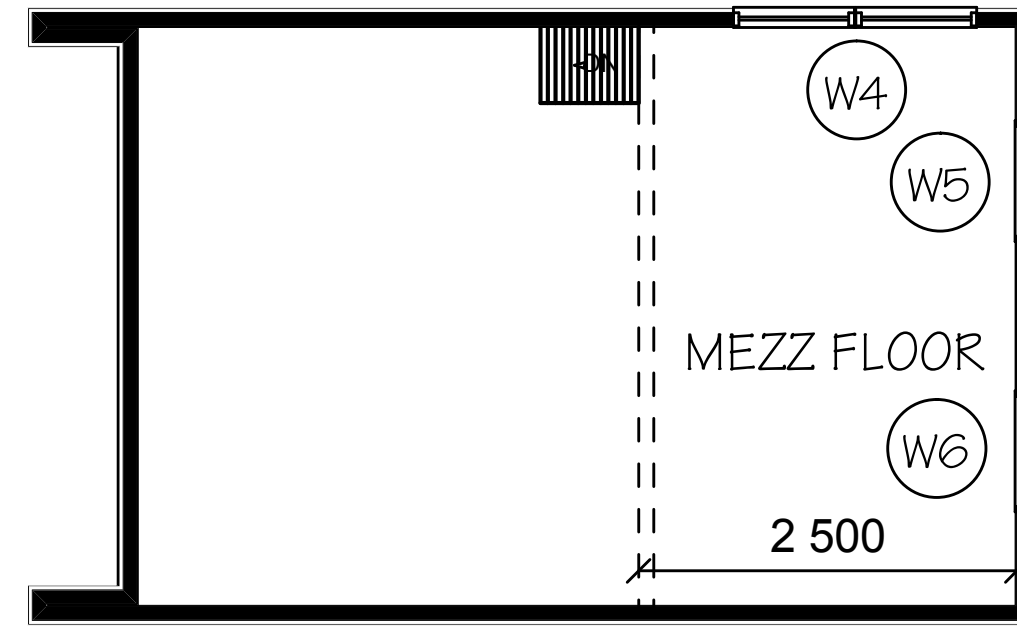
**SUPERSEDED**  
**31/07/2019**

FLOOR PLAN  
1:50

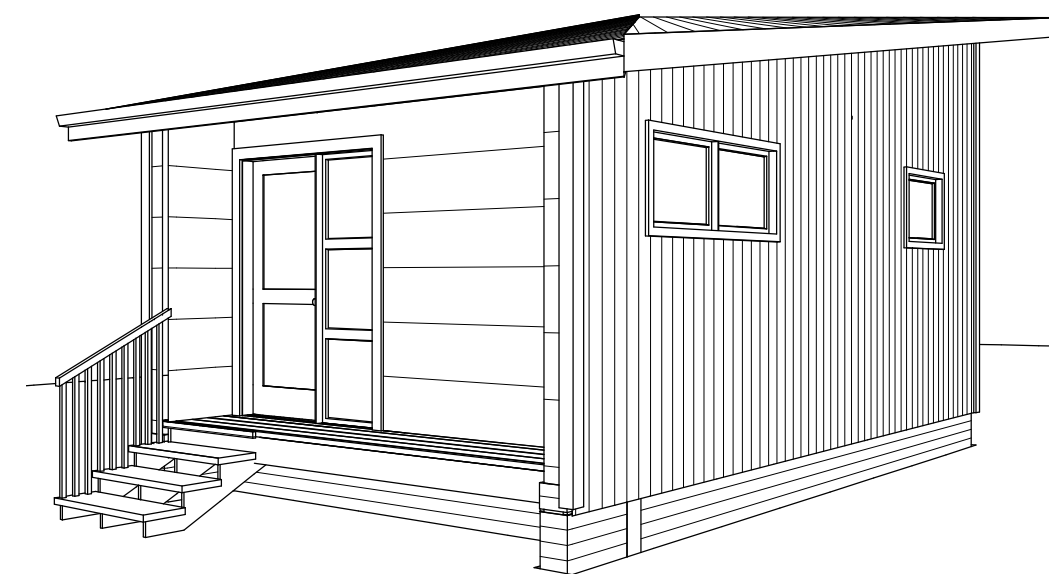
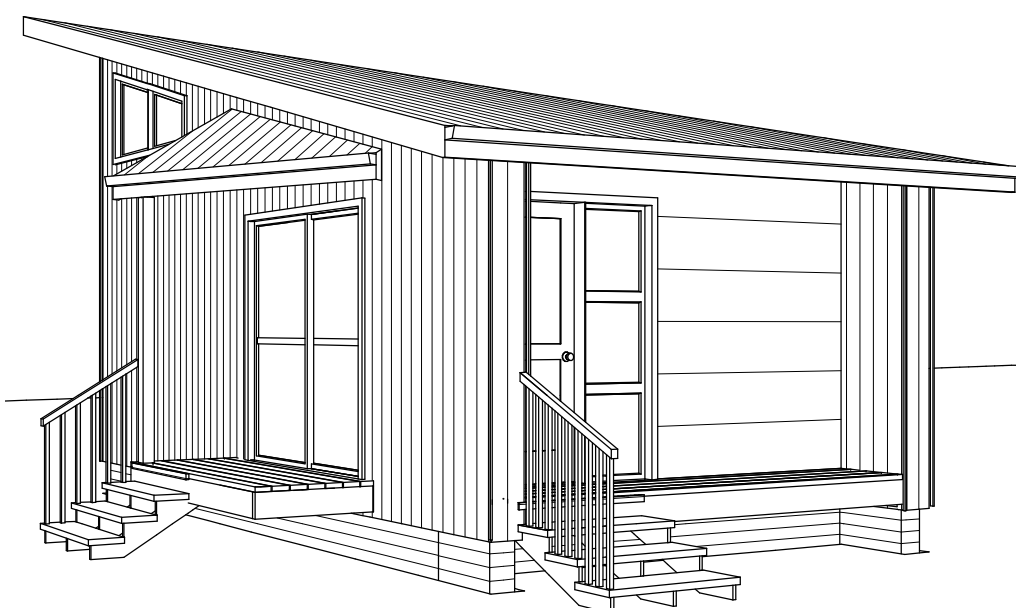


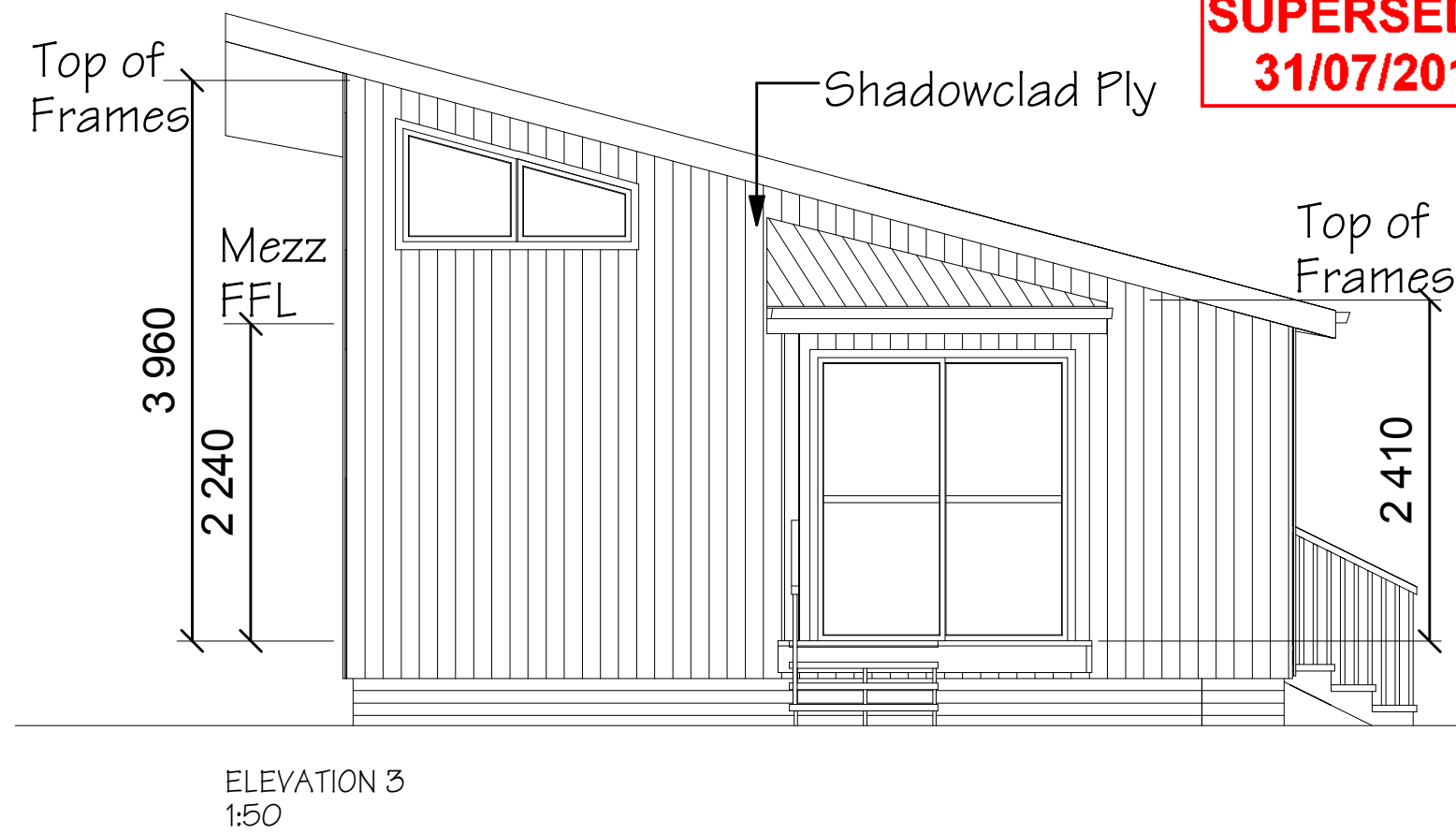
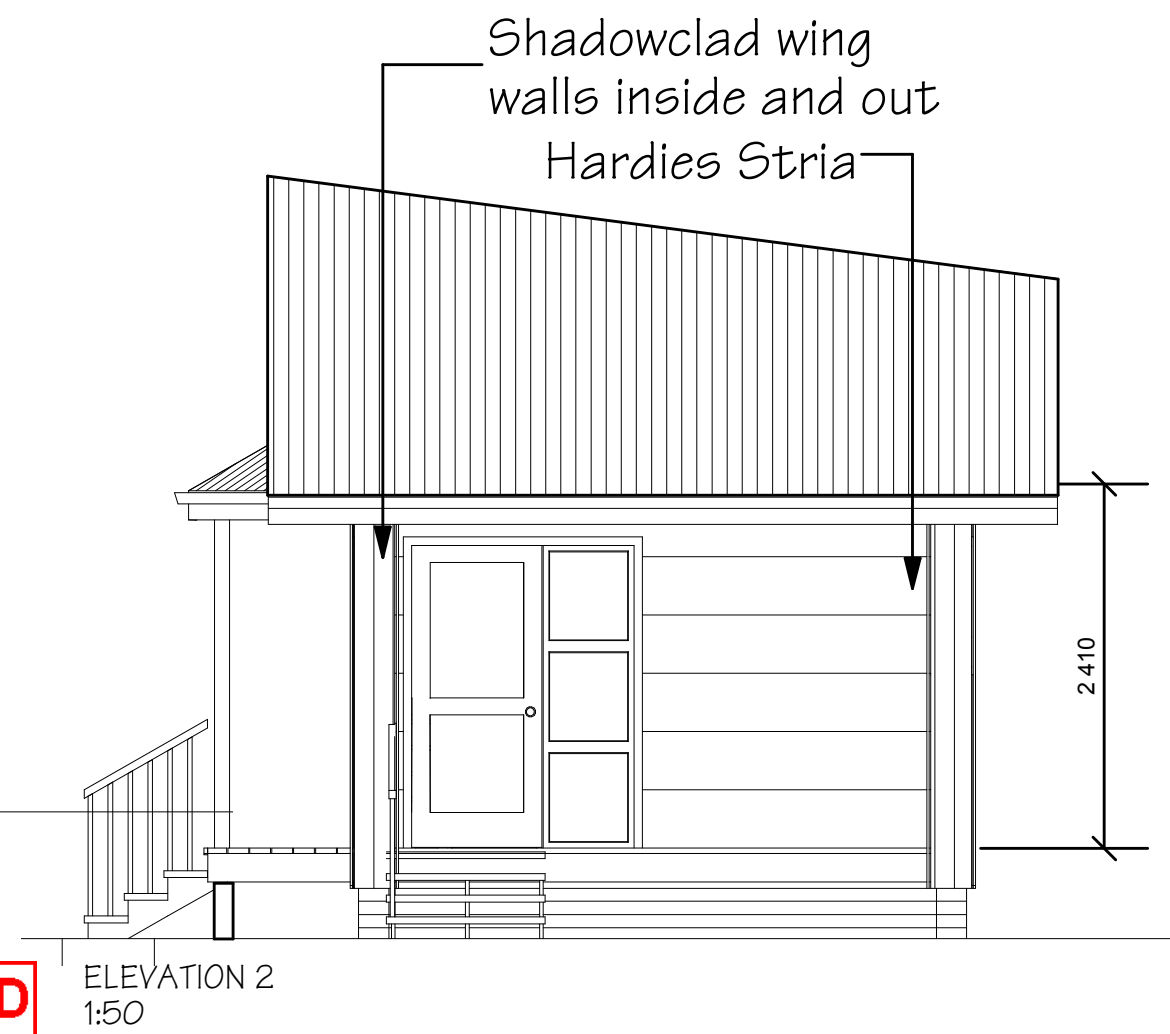
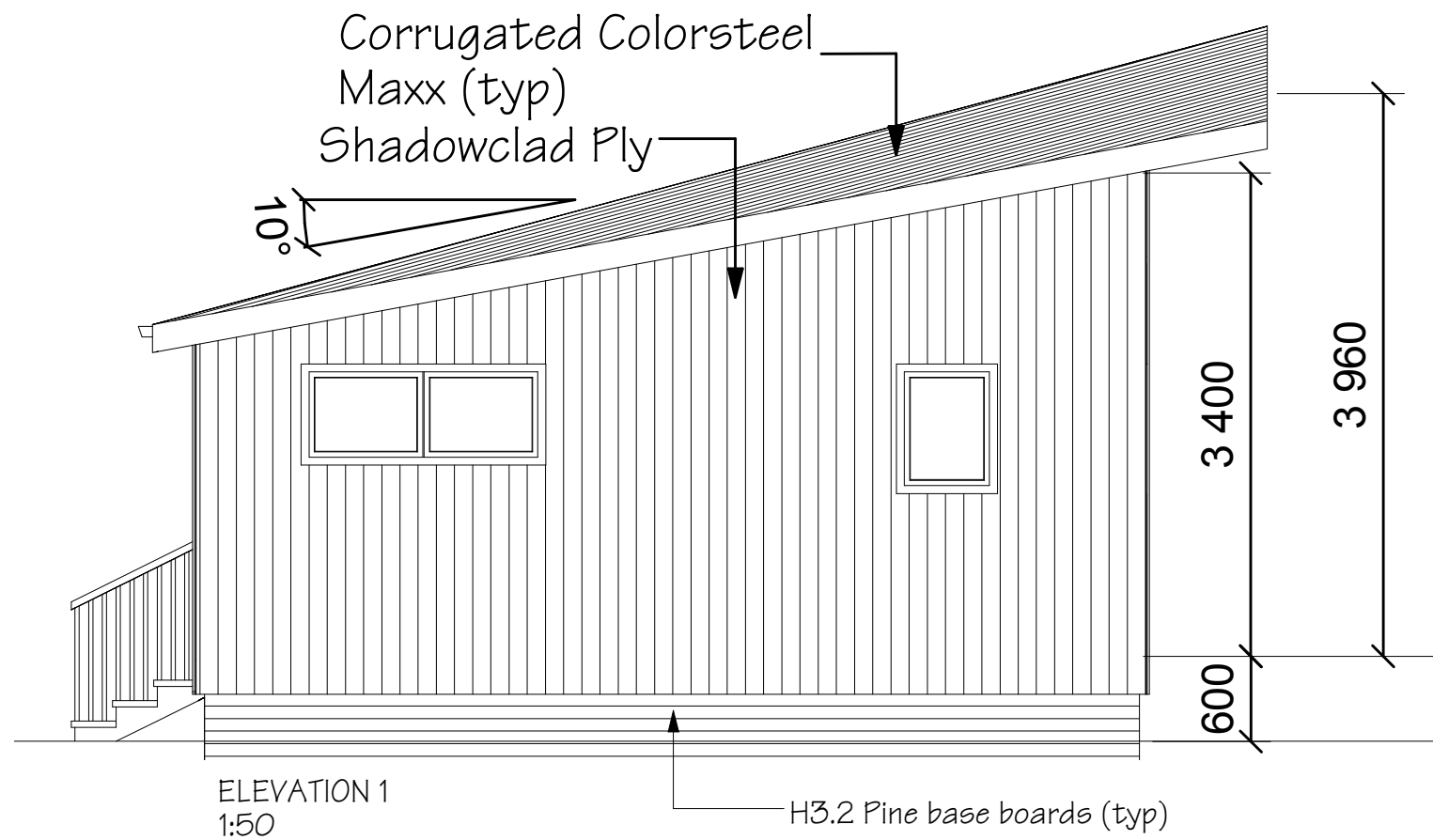
ELEVATIONS

G4 and G7 compliance:  
Floor area is <18m<sup>2</sup> therefor 10% daylight admission required is 1.7m<sup>2</sup>. D1 and D2 exceed this requirement.  
Bathroom floor area is <3.7m<sup>2</sup> therefor 10% daylight admission required is 0.37m<sup>2</sup>. W1 exceeds this requirement.  
For ventilation 5% floor area is required to comply. W2 and 3 alone exceed this requirement and W1 exceeds this requirement for the bathroom

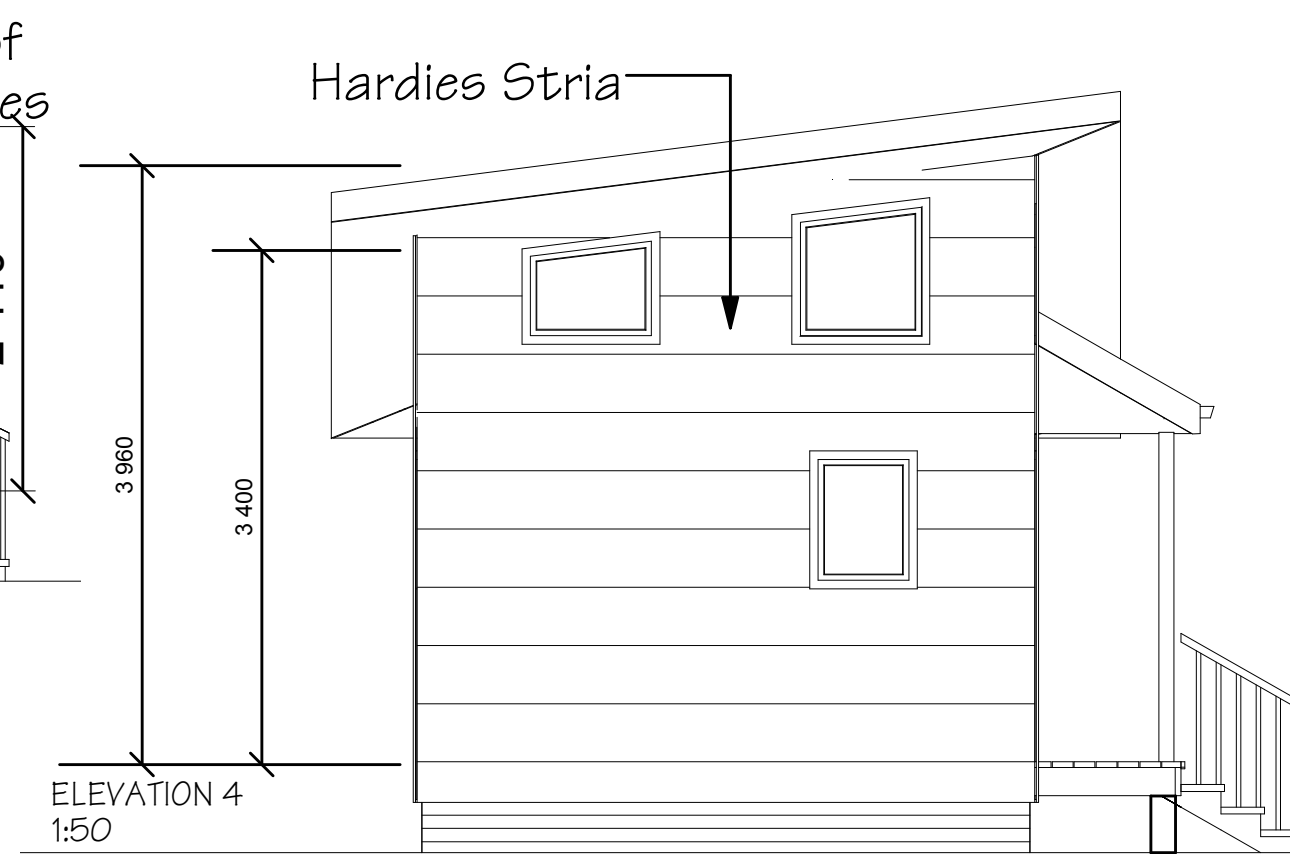


FLOOR PLAN MEZZ FLOOR  
1:50

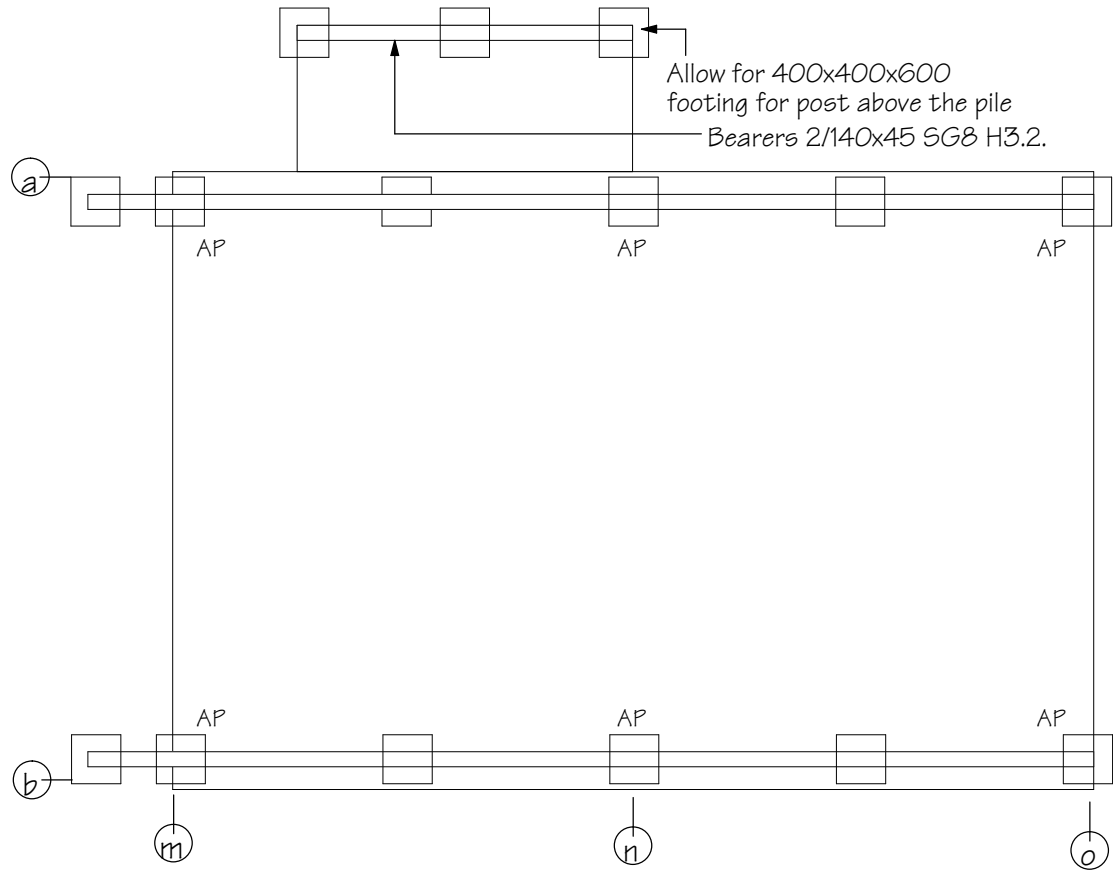




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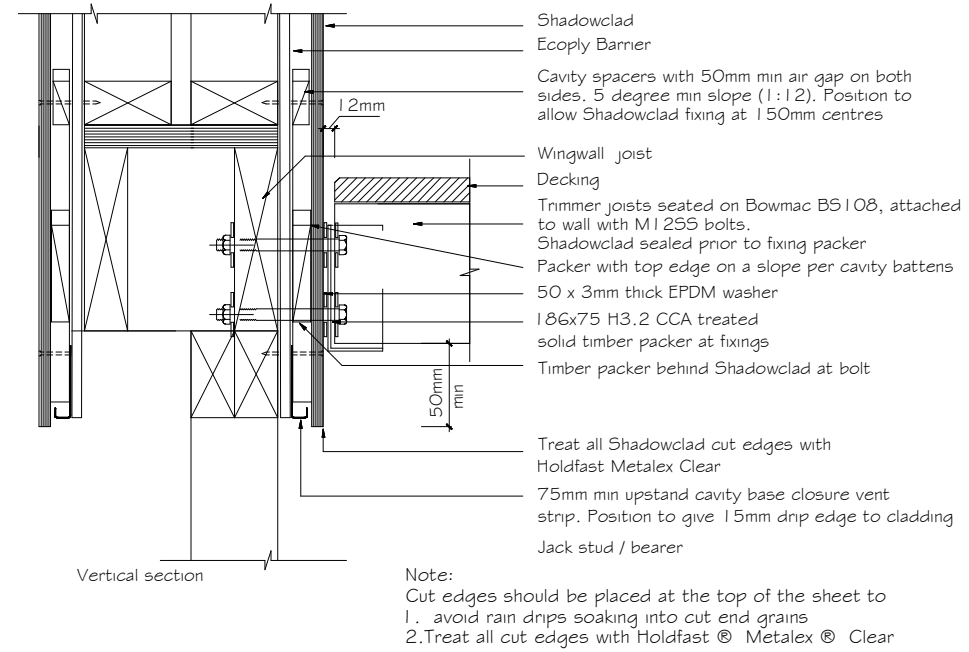




FOUNDATION PLAN  
1:50

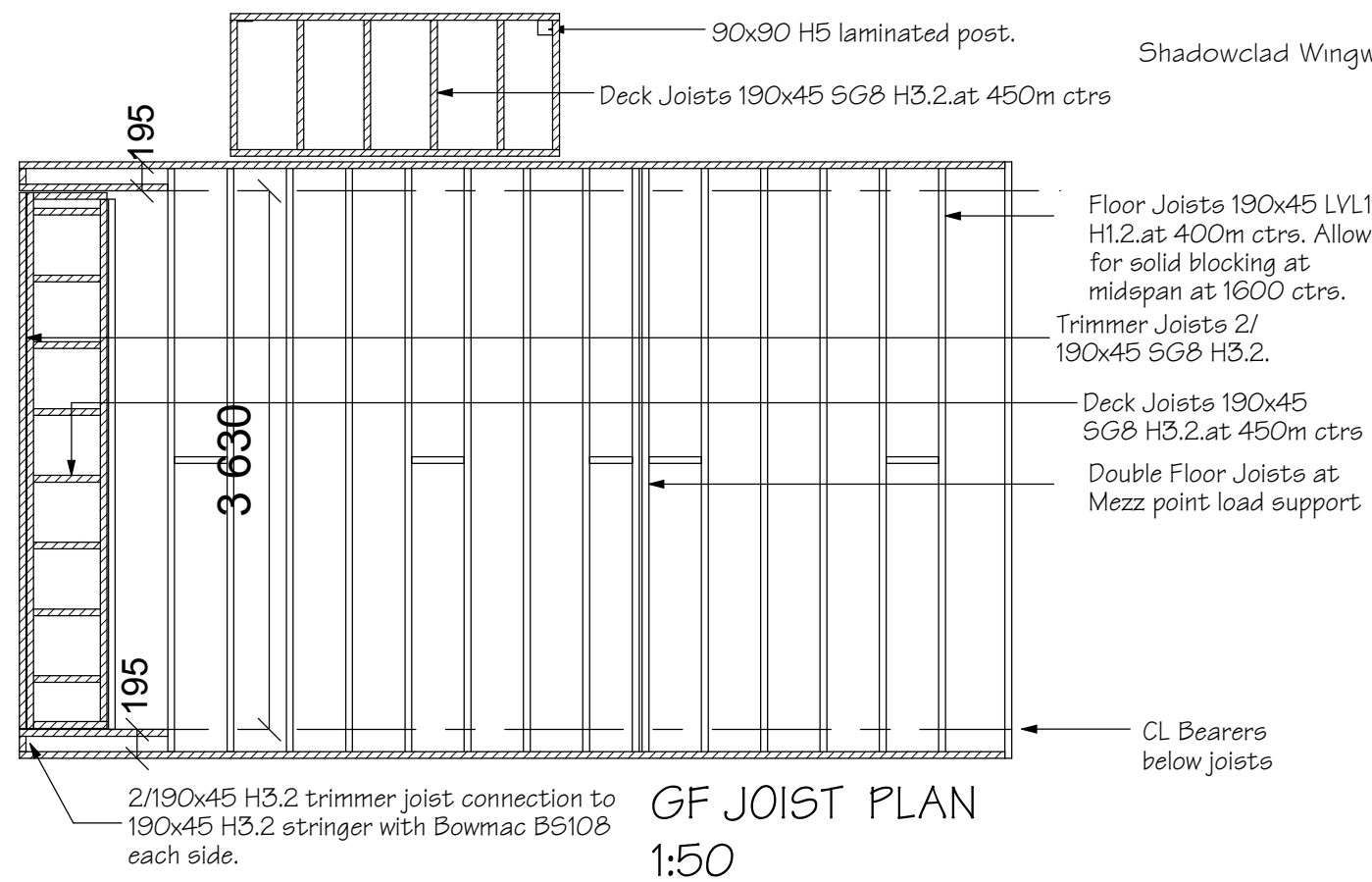
NOTE:  
All standard piles, 125x125 H5 set in 300x300 concrete, 17.5MPa minimum  
Pile to bearer fixing: Lumberlok ordinary pile fixing pack or equivalent.  
All anchor piles 125x125 H5 at 900 deep in 350x350 concrete, 17.5 MPa minimum.  
Anchor pile to bearer fixing: Lumberlok 12kN pile fixing pack or equivalent.  
(note: joist to bearer transferred connection of 12kN)  
All piles at 1500 centres except where noted.  
Nominal FFI=600 above ground.  
Foundation based on level site.

CORROSION HAZARD USE TABLE	
Standard Pack (Std) All items Hot Dipped Galvanised	Outside geothermal areas Outside sea spray zones All sheltered fixing above 600mm from FGL
Medium Corrosion Pack (MC) Pile to bearer fixing T304 SS Joist to bearer fixing HDG	Outside geothermal areas Outside sea spray zones Only joist to bearer fixing above 600mm from FGL
High Corrosion Pack (HC) All items T304 SS	Sea spray zones All exposed fixings and below 600mm from FGL

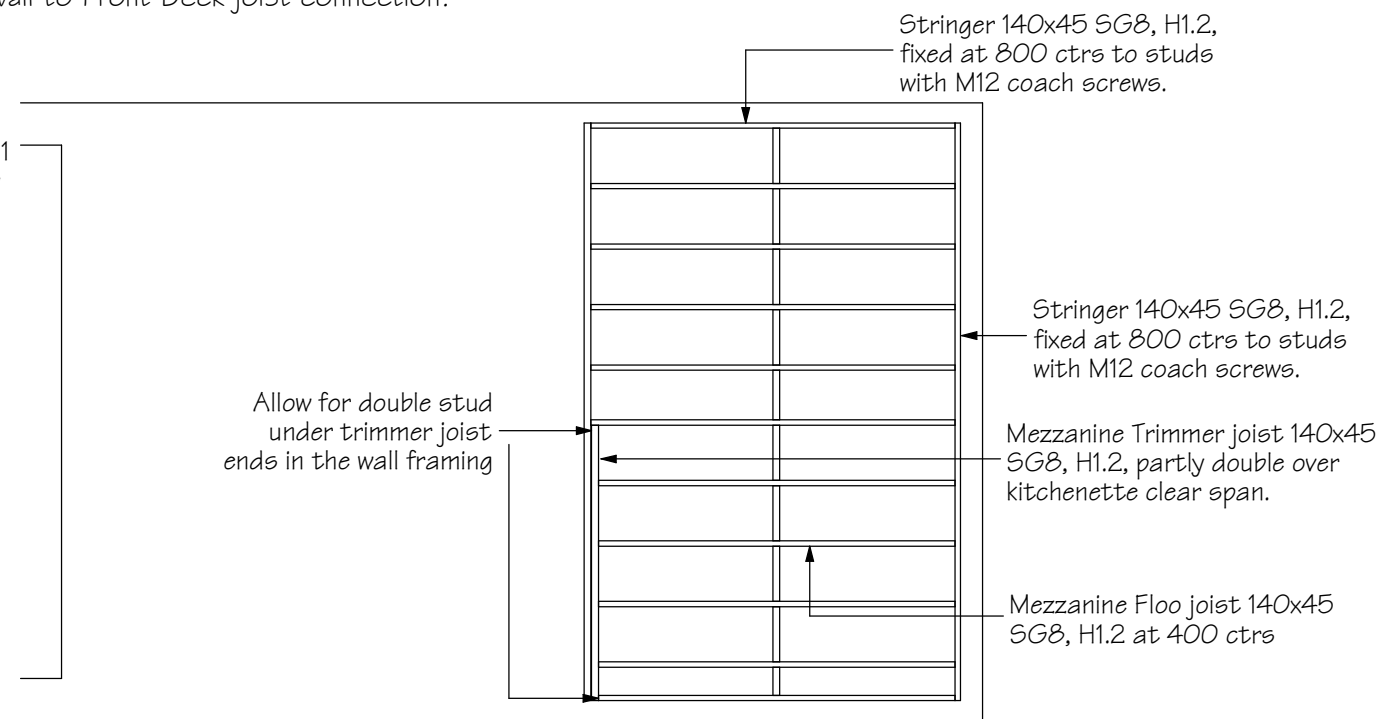


Shadowclad Wingwall to Front Deck joist connection.

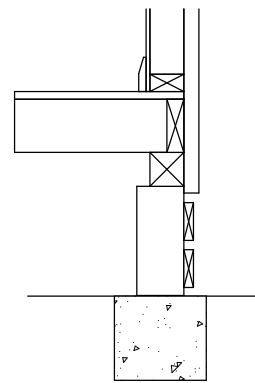
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**31/07/2019**



GF JOIST PLAN  
1:50

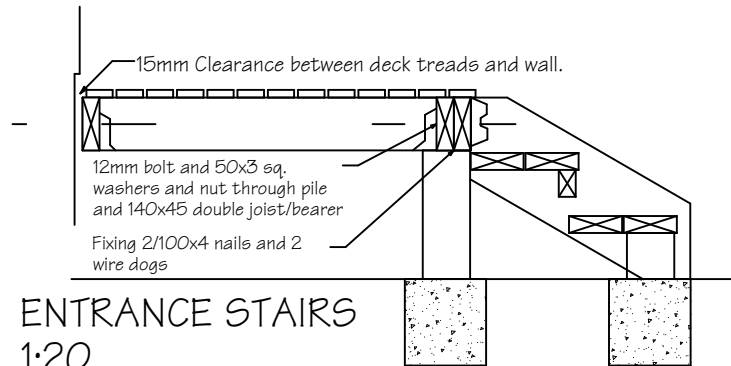
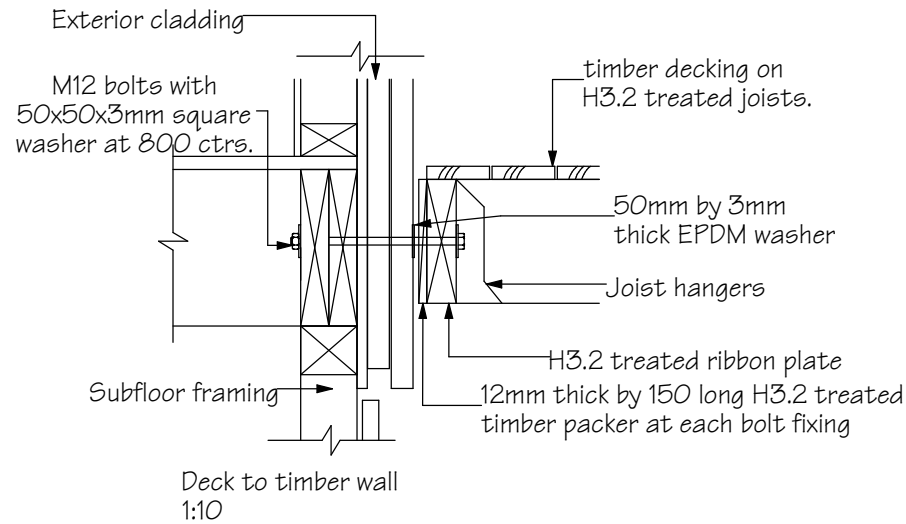


MEZZ FLOOR JOIST PLAN  
1:50



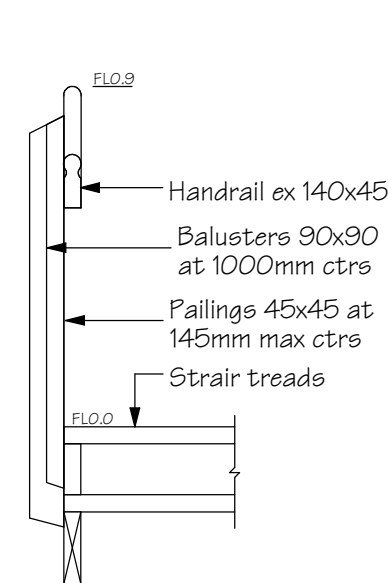
## SUBFLOOR VENTILATION 1:20

Subfloor ventilation will consist of 100x25 or 150x25 H3.2 boards with 25mm spacing between boards.

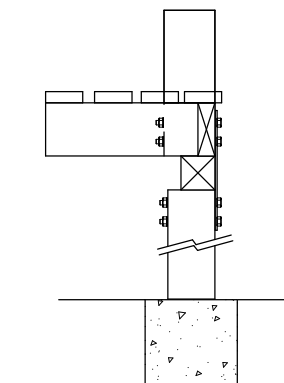


## ENTRANCE STAIRS 1:20

Entrance stairs to rear and front doors and decks. Nominal height 500mm, two treads 166 rise, 290 going. Stair treads 140x45 H3.2 with grooves cut to top of treads. 20x70 grip tread decking H3.2 for any landings. Set on 140 x45 H3.2 joists at 450 ctrs max and 125x125 H5 piles set in 275x275 concrete, 17.5MPa. Fixing to house or deck by M12 galv coach screws at 800 ctrs. (T304 Stainless fasteners for sea spray areas and below 600mm)



## TYPICAL STAIR BALUSTER AND HANDRAIL DETAIL 1:20



## Post to bearer fixing 1:20

Post to bearer fixing: (exposed and seaspray) Use Bowmac B88 T304 SS or galv plate and 4/M12 galv bolts, nuts and 50x3 square washers with additional 120mu min. paint protection. (sheltered) Galvanised version.

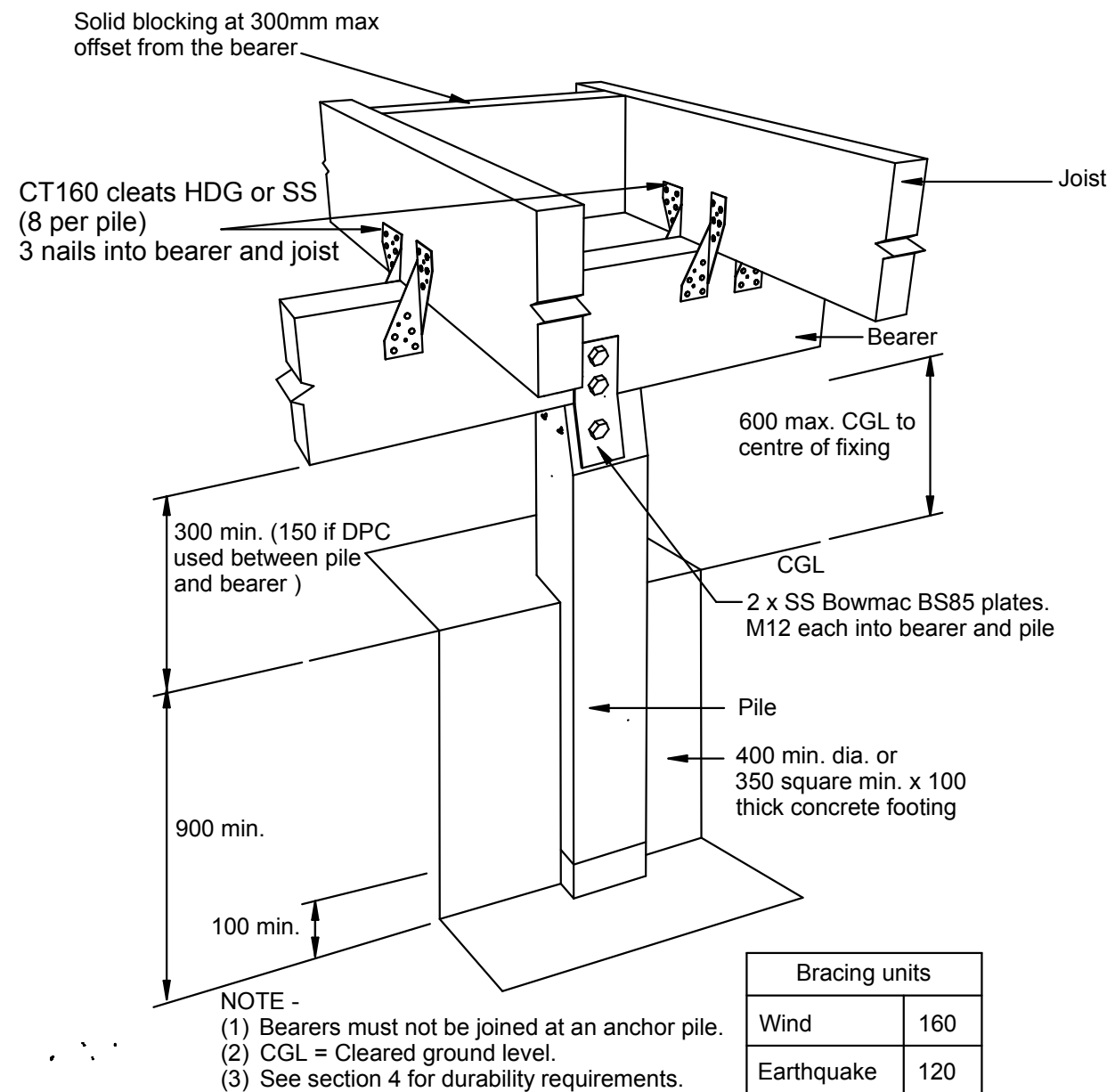
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31/07/2019**

### FIXINGS:

NOTE: ALL FIXING ARE TO BE STAINLESS TO MEET ZONE D DEMANDS.

**SWDC  
Building Consent Document**

Trusses and rafters to top plate:	2/100 x 3.75 skewed nails plus two Lumberlok CT200 ceiling ties, or as recommended by roof truss manufacturer.
Top plate to studs (external walls):	2/100 x 3.75 nails end driven plus two wire dogs.
Top plate to studs (internal walls):	2/100 x 3.75 nails, end driven.
Studs to bottom plate, wall bracing element:	2/100 x 3.75 nails, end driven, plus one 6Kn strap.
Bottom plate to floor joists:	2/100 x 3.75 skewed nails at 600 crs.
Bottom plate to floor joists, wall bracing element:	GIB HandiBrac giving 15kN
Joists to bearer:	2/100 x 3.75 skewed nails.
Bearer to ordinary piles:	2/M12 SS bolts and Bowmac BS85 plates
Bearer to anchor piles:	2/M12 SS bolts and Bowmac BS85 plates
Deck joists to stringer:	Lumberlok joist hangers.
Verandah stringer to wal:	M12 coach bolts and washers at 1200 crs.
Verandah rafter to stringer and beam:	2/100 x 3.75 skewed nails plus one wire dog.



NOTE -  
(1) Bearers must not be joined at an anchor pile.  
(2) CGL = Cleared ground level.  
(3) See section 4 for durability requirements.

Bracing units	
Wind	160
Earthquake	120

Sheet **5**  
of **13**

Project #  
**1836**

Issue:  
**Consent Issue**

Ammdnts: Date:  
**R1**

**Gattsche House- Tiny House**  
103 Lake Ferry Road, Lake Ferry  
LOT 6 DP 70868 BLK VIII ONOKE SD

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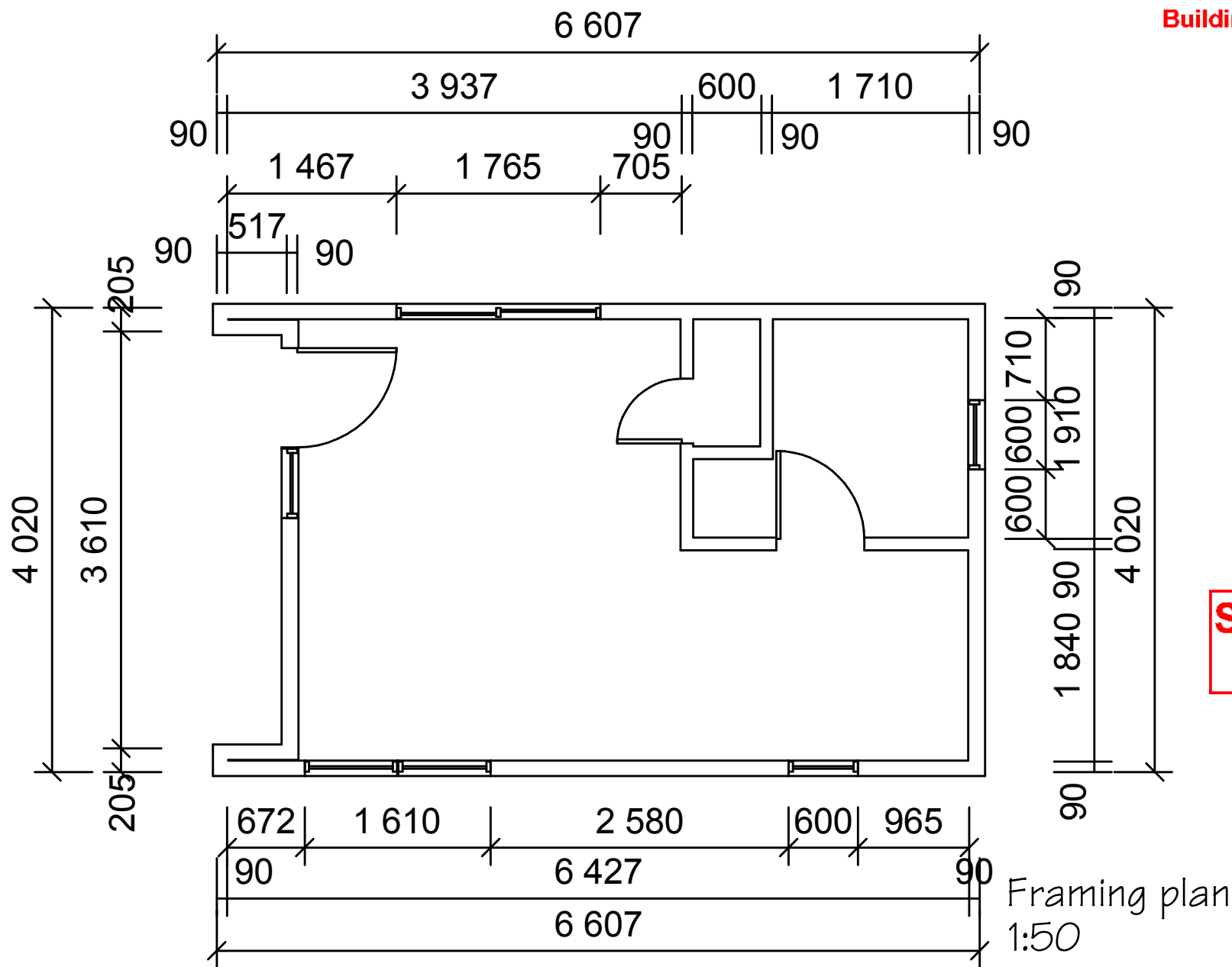
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Date:  
**20/09/2018**

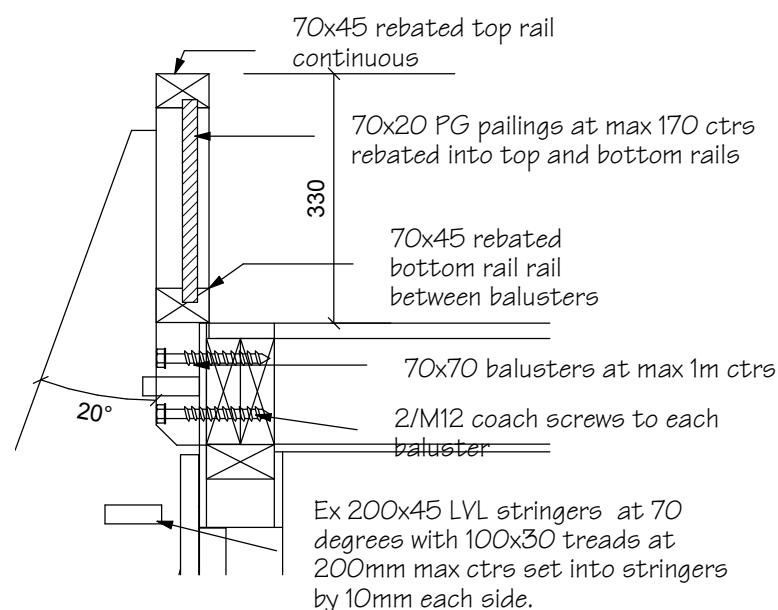
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**CHECK ALL  
MEASUREMENTS  
ON SITE**

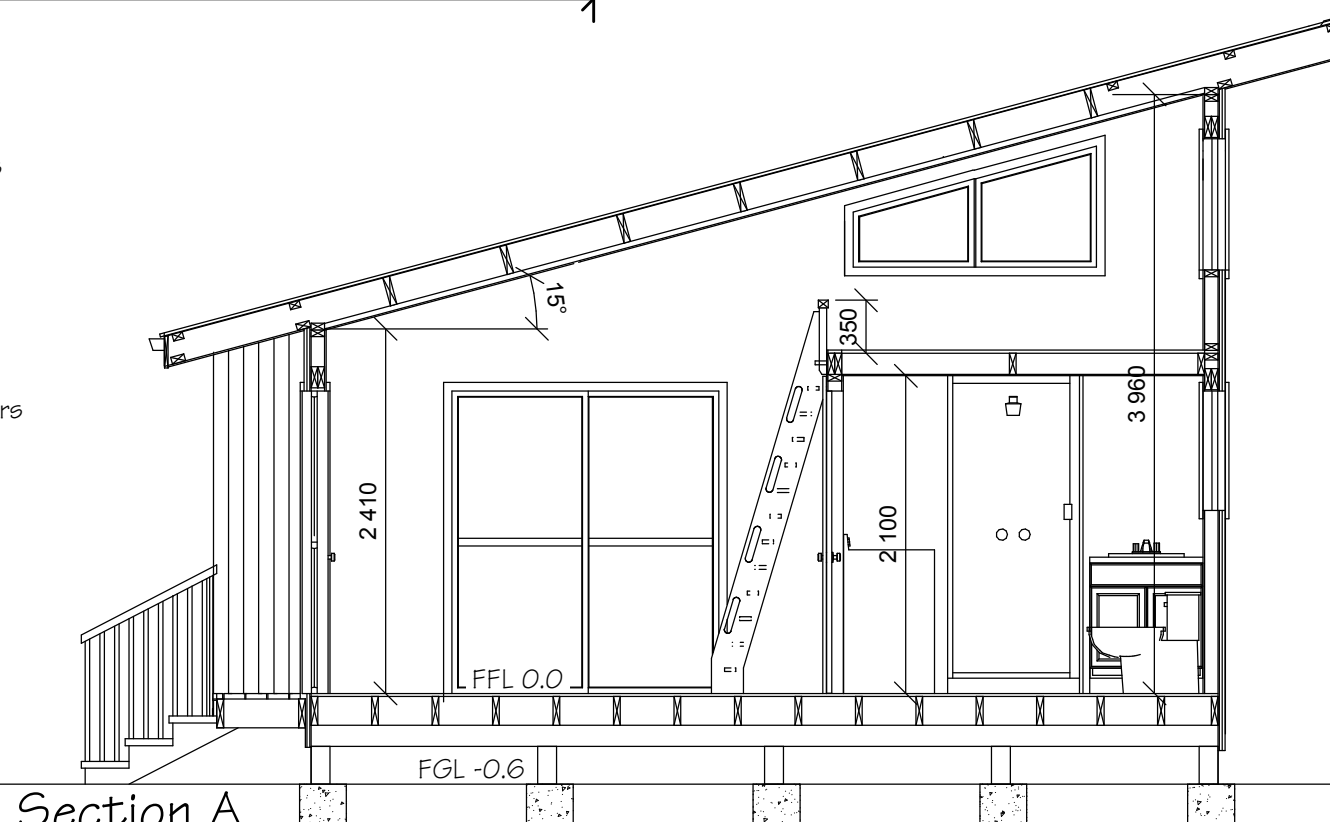




Framing plan  
1:50



Step type ladder detail



Section A  
1:50

Timber Foundation (ref foundation plan)  
Timber Subfloor construction in accordance with NZS3604:2011, s6 and 7. 20mm flooring H3 ply in all areas, fixed to floor joists in accordance with manufacturers specifications. Floor joists 190x45 LVL, H1.2 at 400 ctrs with solid blocking at 1600 ctrs over each bearer line. Bearers 2/140x45 H3.2 on 125 square H5 timber piles set in concrete footing. Use all SS fixings for zone D.  
Allow for 60mm Expol underfloor insulation.

External Walls  
90 x 45 SG8, H1.2 timber frame (H 3.2 bottom plates to wet areas), all studs up to 2.7m studs at 400crs, all studs upto 3.0m will be double 90x45 at 400 ctrs, dwangs at 800crs nom. Allow to fit 90x45 SG8 double top plates to all the sloping frames (as a continuous lintel). Fit Ecoply Barrier RAB taken up to top plate. Fix bottom plate to base with 3 power driven nails at 600 ctrs.

Wall Cladding  
Side walls, Shadowclad ply on H3.2 cavity batten system at 400 ctrs in accordance with manufacturers specifications & NZBC: E2/AS1 External Moisture, over Ecoply Barrier RAB with Aluband proprietary flashing tape. End walls Hardie Stria to the same spec in accordance with manufacturers specifications & NZBC: E2/AS1 External Moisture, over Ecoply Barrier RAB with Aluband proprietary flashing tape

Internal Walls  
90 x 45 SG8, H1.2 timber frame (H3.2 bottom plates to wet areas). Double top plates, studs at 400crs max, nogs at 800crs nom. Standard 10mm clear ply linings throughout. Fixed to comply in accordance with manufacturers specifications

Wall Linings  
10mm clear ply linings. Wet area to be Fibo Mercato selected wet wall panels

Ceilings  
Timber battens fixed to trusses at 600crs. (12mm grooved ply) with 40x2mm panel pins in accordance with manufacturers specifications.

Wall Insulation  
R2.6 insulation to all exterior wall cavities. Friction fitted.

Ceiling Insulation  
R3.2 skillion insulation to all ceiling cavities. Friction fitted.


Roof Framing (ref Roof plan)  
Rafters 190x45 LVL at varying pitch (from 10-15 degrees), H1.2 at 800crs - Thermakraft Covertex 407 with galvanized netting. 90x45 SG8, H1.2 nogs as required at 800 ctrs. Rafter outriggers 190x45 LVL at 900 ctrs at the top and bottom of the roof structure. Fixing for Med to E.High - Type T - 1/10g self-drilling screw, 80mm long purlin/truss connection (2.4KN fixing)

Roof Cladding  
Corrugated Coloursteel Maxx 0.40bmt roofing fixed with compatible roofing fasteners by suitiably qualified person. All flashings 0.55bmt.

Soffit  
4.5mm Hardi groove soffit lining fixed to 90 x 45 soffit bearers & 90 x 45 stringer at wall.  
Nominal 600mm eaves. Marley downpipe system and gutter.

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Gattsche House- Tiny House  
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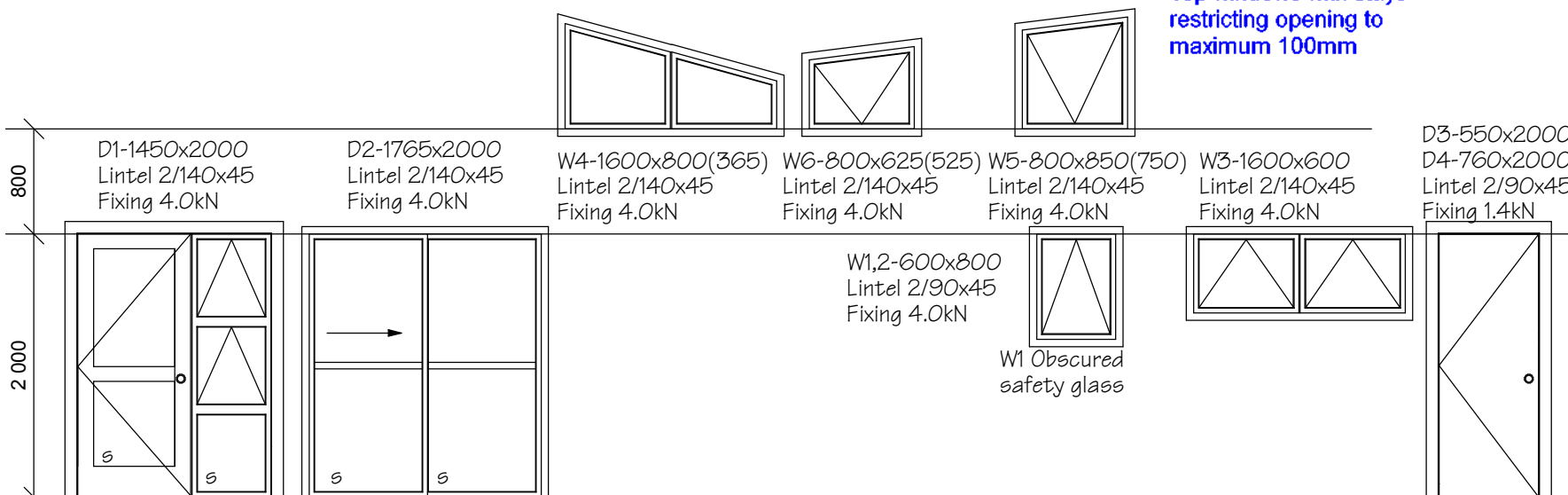
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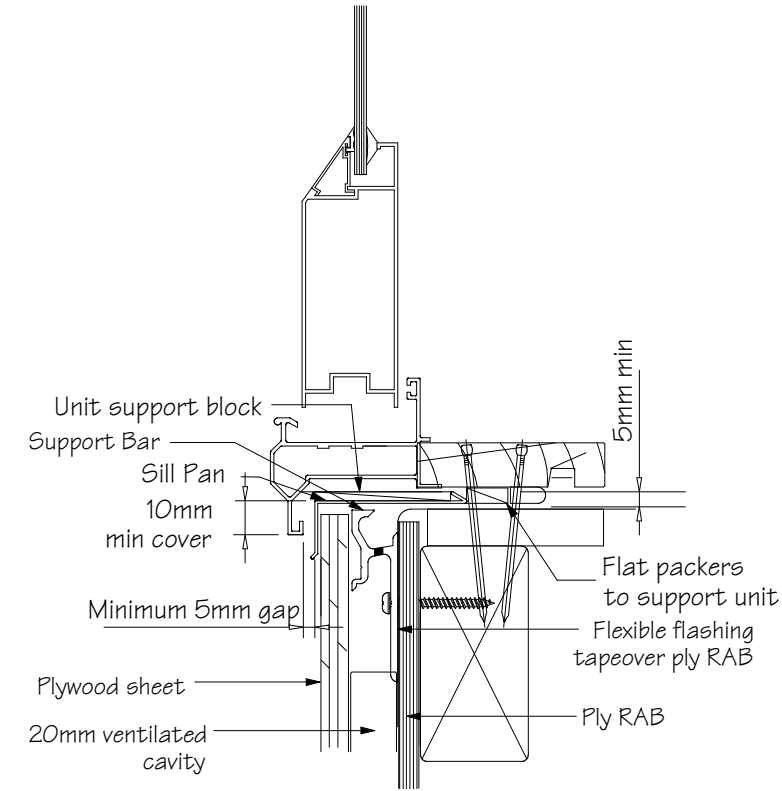
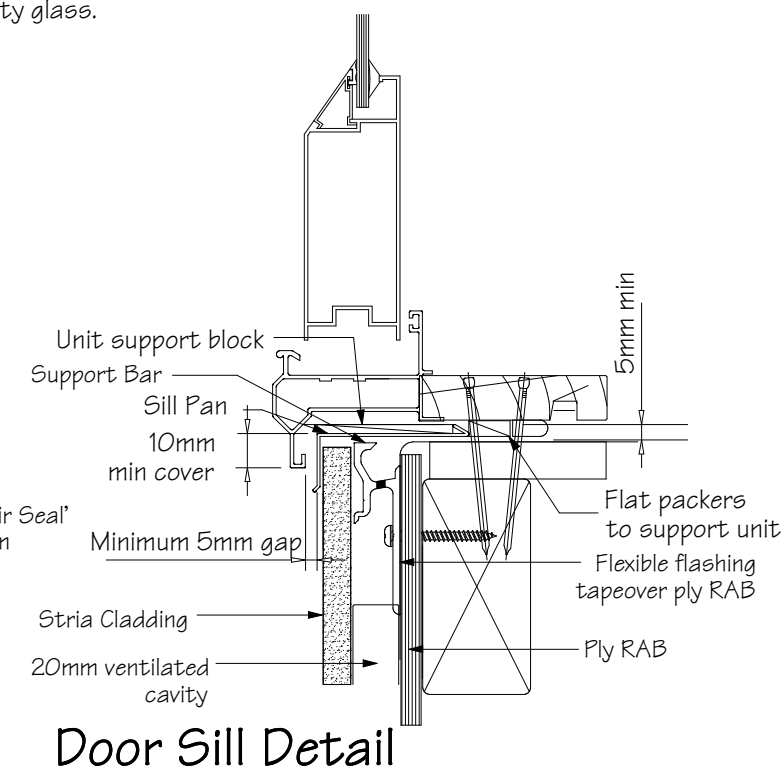
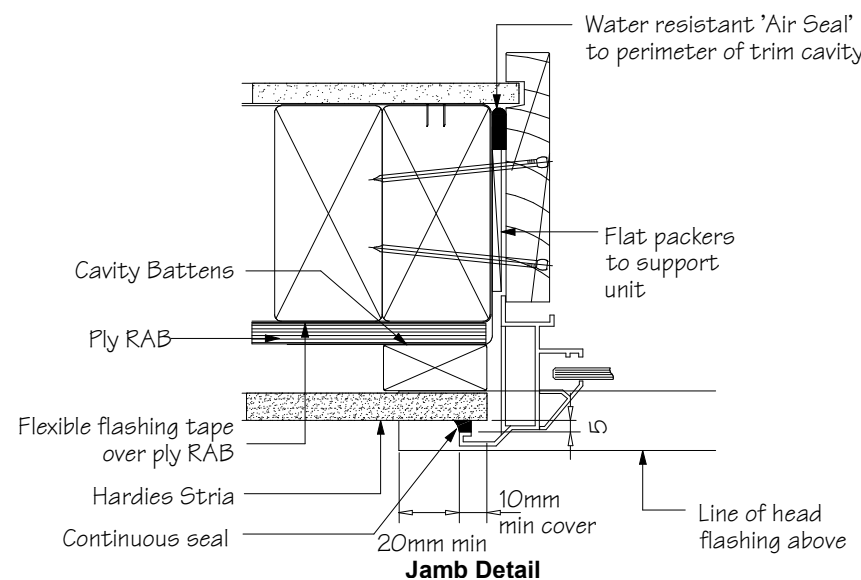
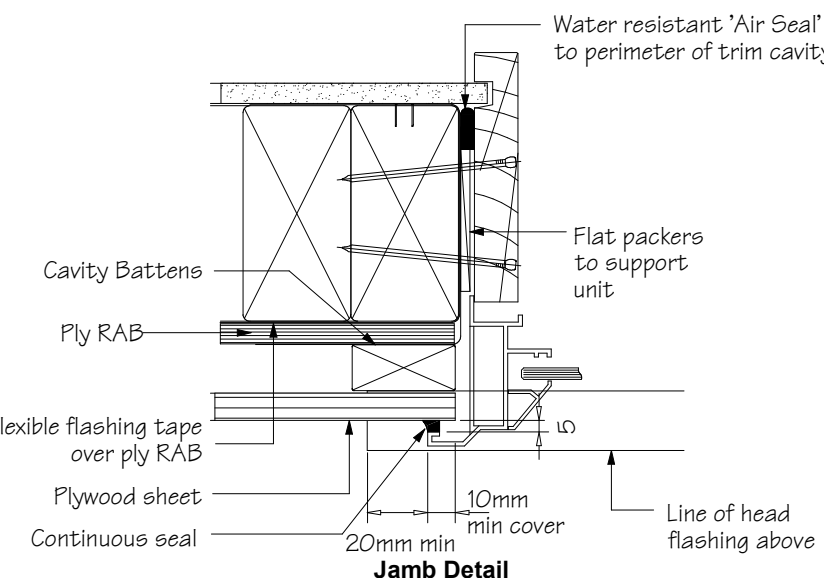
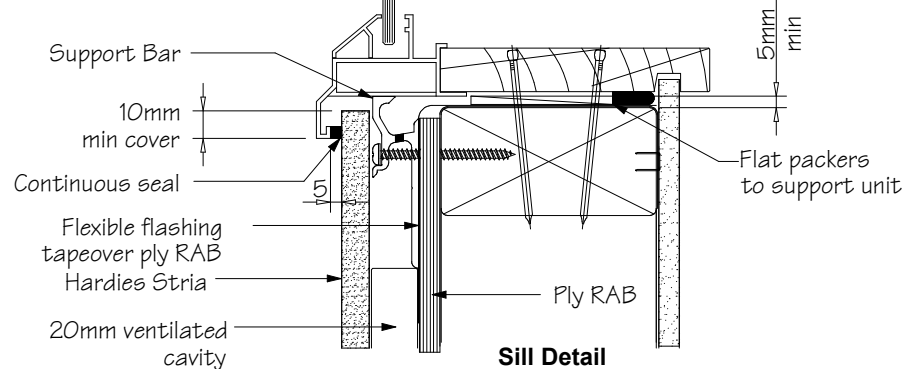
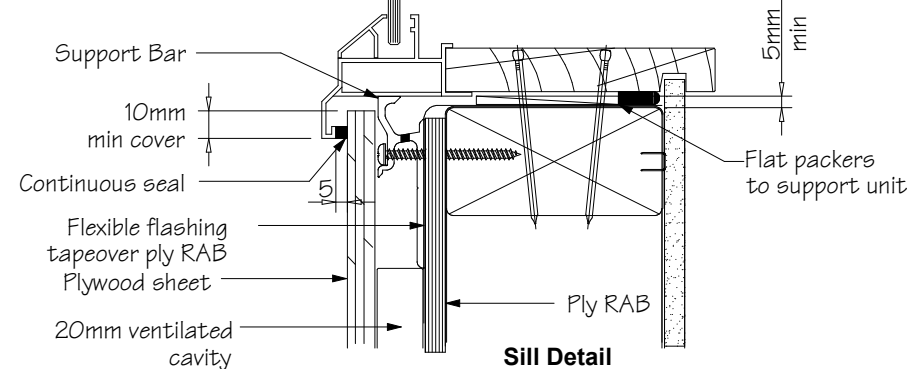
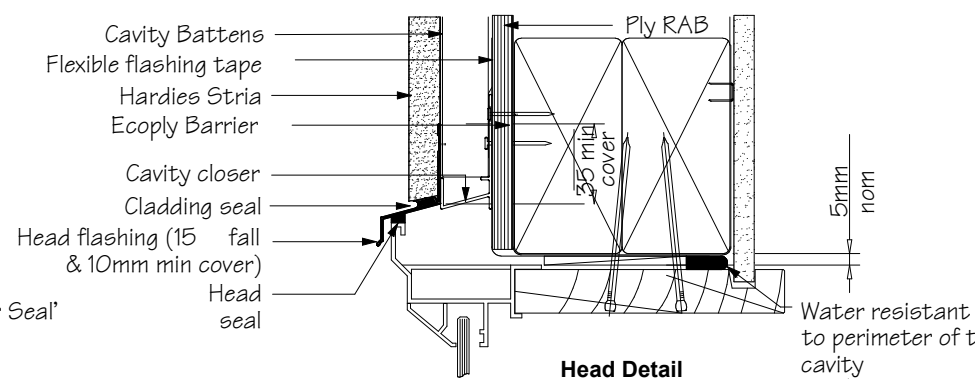
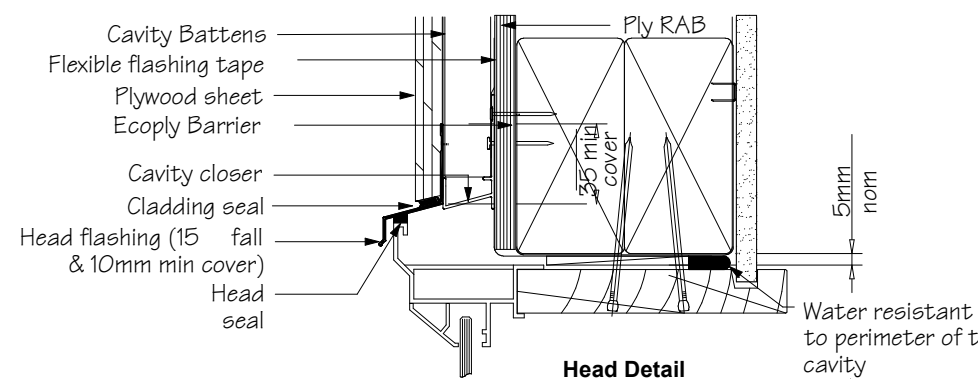
Top windows with stays  
restricting opening to  
maximum 100mm

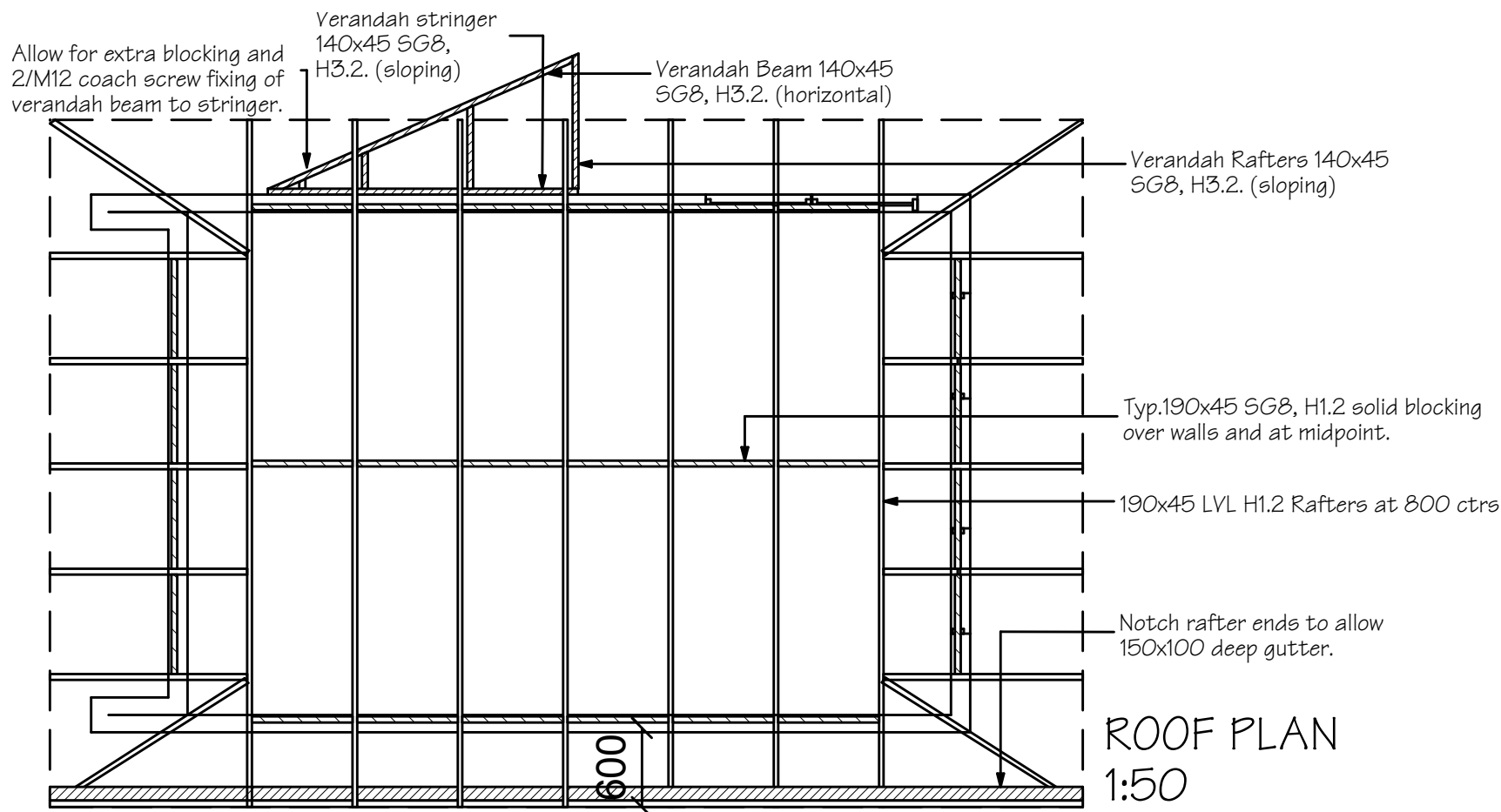
Exterior Window Notes:

1. Windows are to be fabricated to NZS 4211. Workmanship and materials shall comply with NZS 4223:1985 (Parts 1 & 2) and NZS 4223:2016 (Part 3).
2. All glazing to be to NZ standards unless otherwise specified.
3. All window frame measurements to be verified on site prior to fabrication. Dimensions shown are to the rough opening sizes
4. All external window joinery to be double glazed & powder coated aluminum Residential Suite unless otherwise stated. Provide proprietary stays to opening sashes. All windows to be installed in accordance with manufacturer's recommendations unless otherwise specified.
5. Avoid distortion of components during transit, handling and storage. Avoid pre-finished surfaces from rubbing together. Prevent contact with mud, cement and plaster.
6. Before fixing, apply bituminous coatings, slips or underlays between aluminum in contact with concrete (if required). Fix frames rigidly in place without distortion, plumb, true to line and face, weather tight and with all openings operating freely. All glass to be held in aluminum beads and black PVC gaskets.
7. Contractor is fully responsible to ensure all head, jamb and sill flashings are watertight. Allow to tape all window openings.
8. Refer to Detail Sheets for general flashing details etc.
9. All internal wall doors shall have 2/90x45 lintel and 1.4kN fixing (uso)
10. All windows to be complete with catches and security stays
11. "S" denotes safety glass.

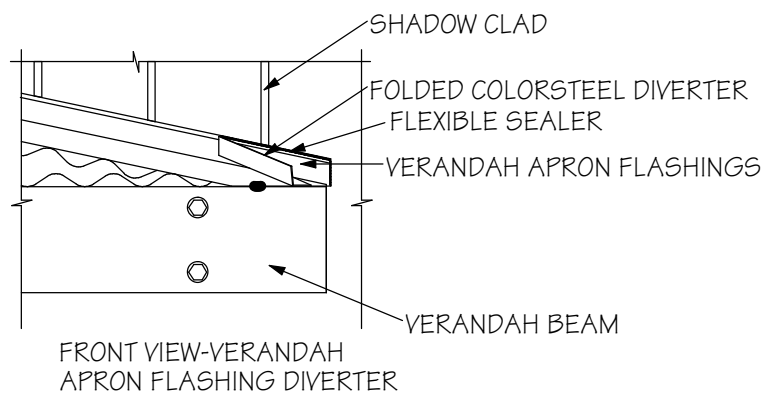
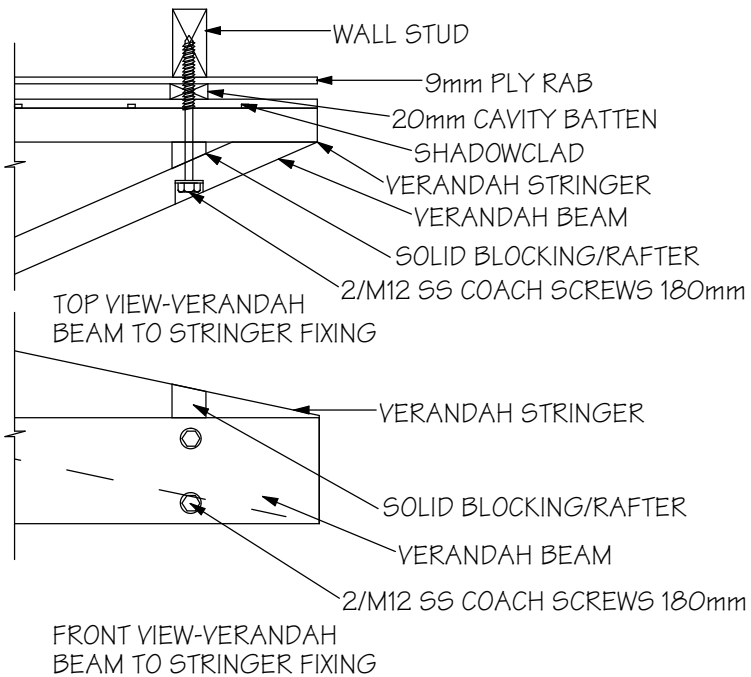
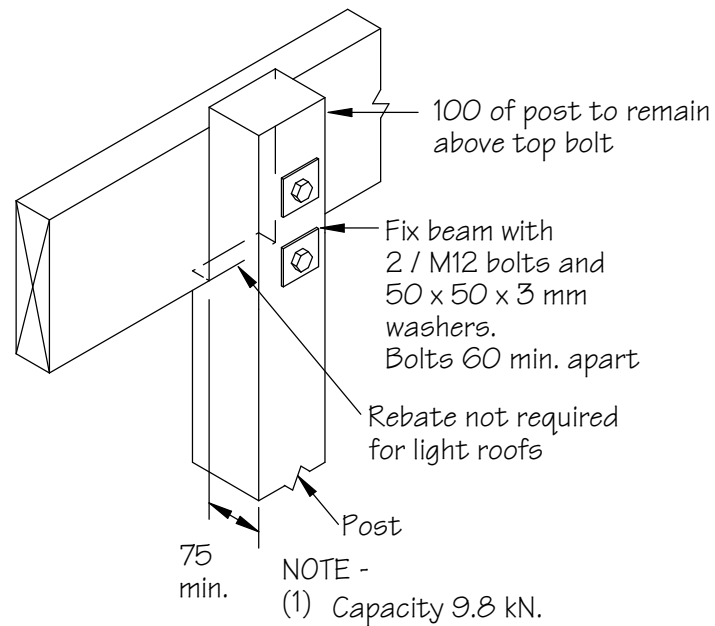


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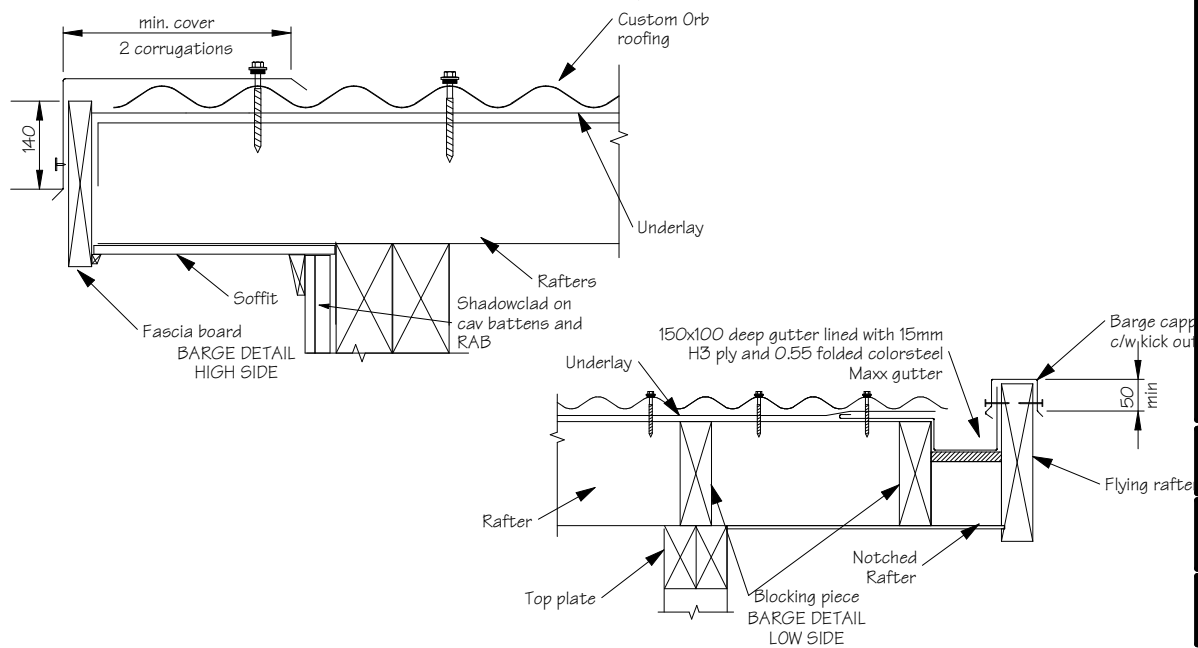




GENERAL ROOFING NOTE:  
Corrugated iron 0.4 on self supporting roofing underlay and wire netting. Fix to each purlin at every second crest with Type 17 woodfixx fastener or equivalent.



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31/07/2019**



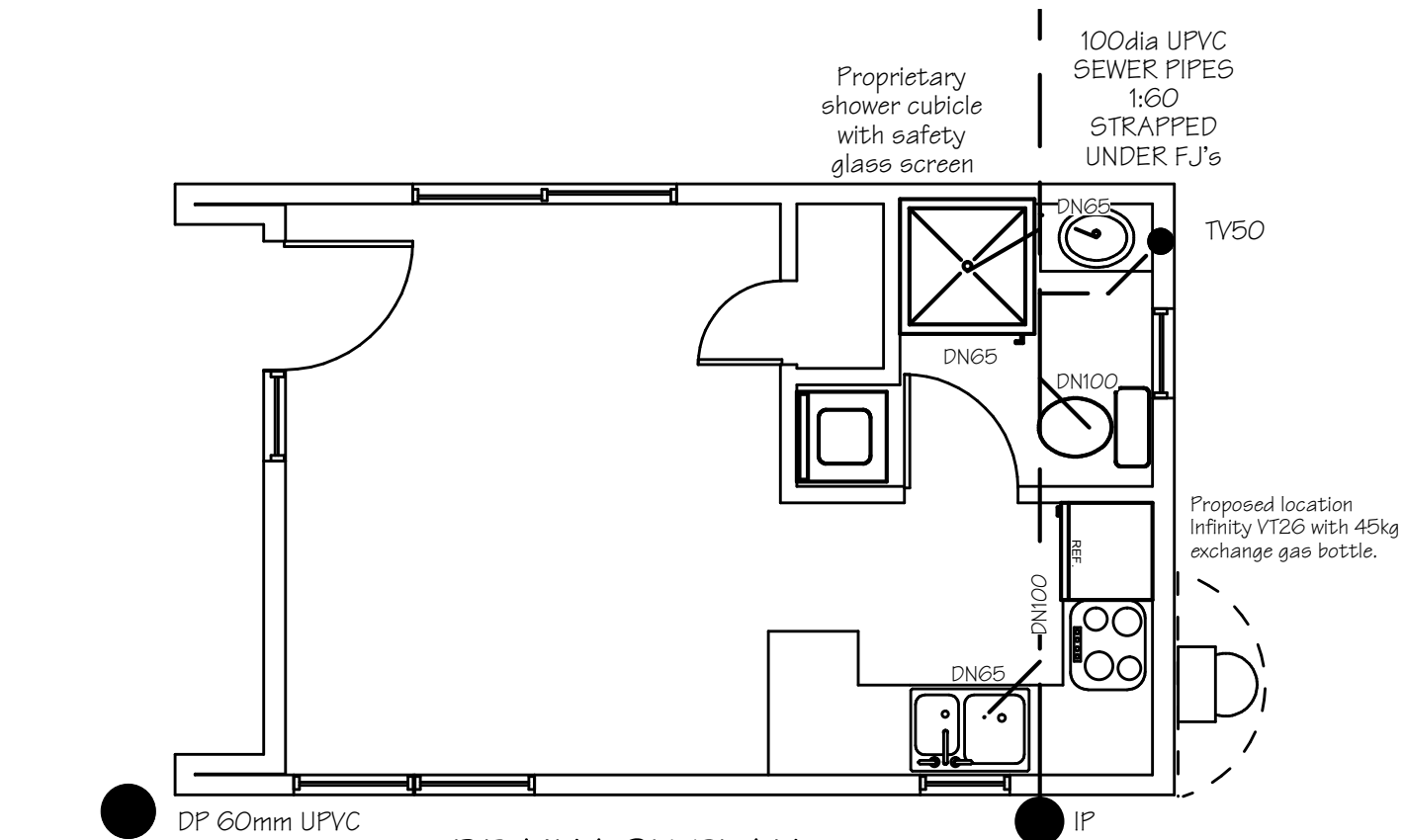
Sheet	8
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R3	

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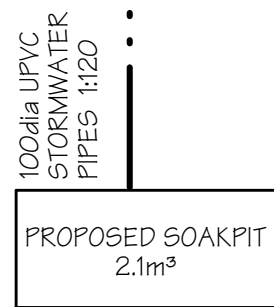
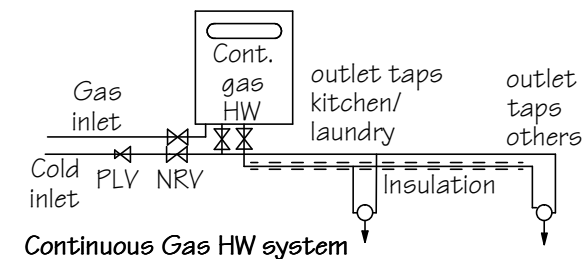


Water supply:  
12mm Polybutylene with crimped fittings.  
All HW and exposed pipes insulated with Isopipe  
All tapware must be approved in NZ for lead levels.

Wastes and grades:  
Sink and tub DN50 (1:40)  
WC DN100 (1:60)  
All others DN40 (1:40)

Kitchenette, laundry and bathroom floor coverings :Vinyl  
All walls and ceilings GIB Aqualine, sealed and two top coats.

Kitchenette, laundry, bathroom vented to the outside via window.



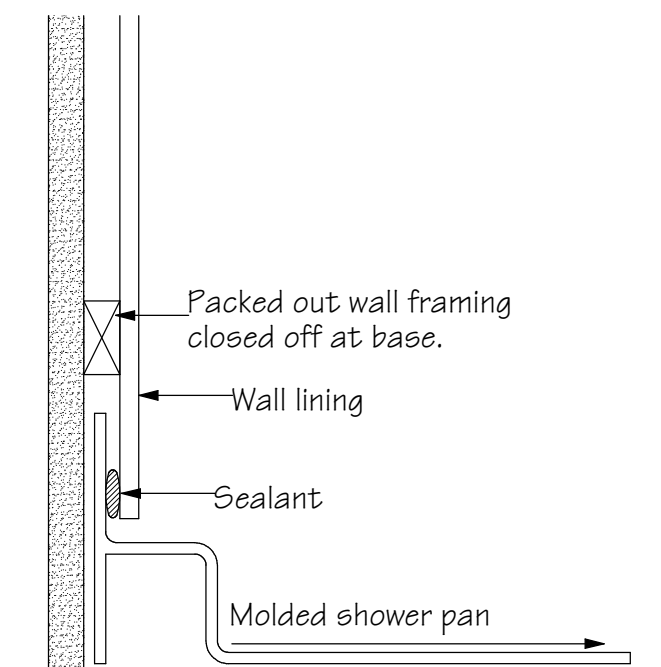
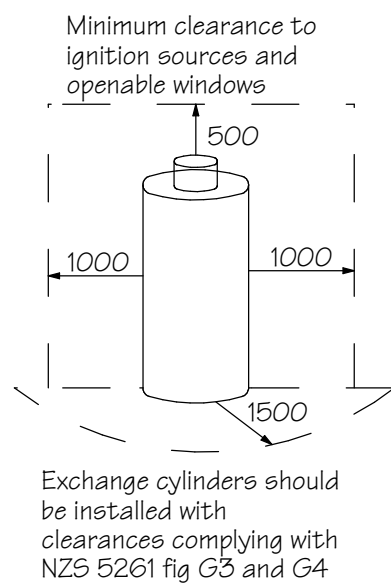
## DRAINAGE PLAN 1:50

SANITARY DRAINAGE TO AS/NZS 3500

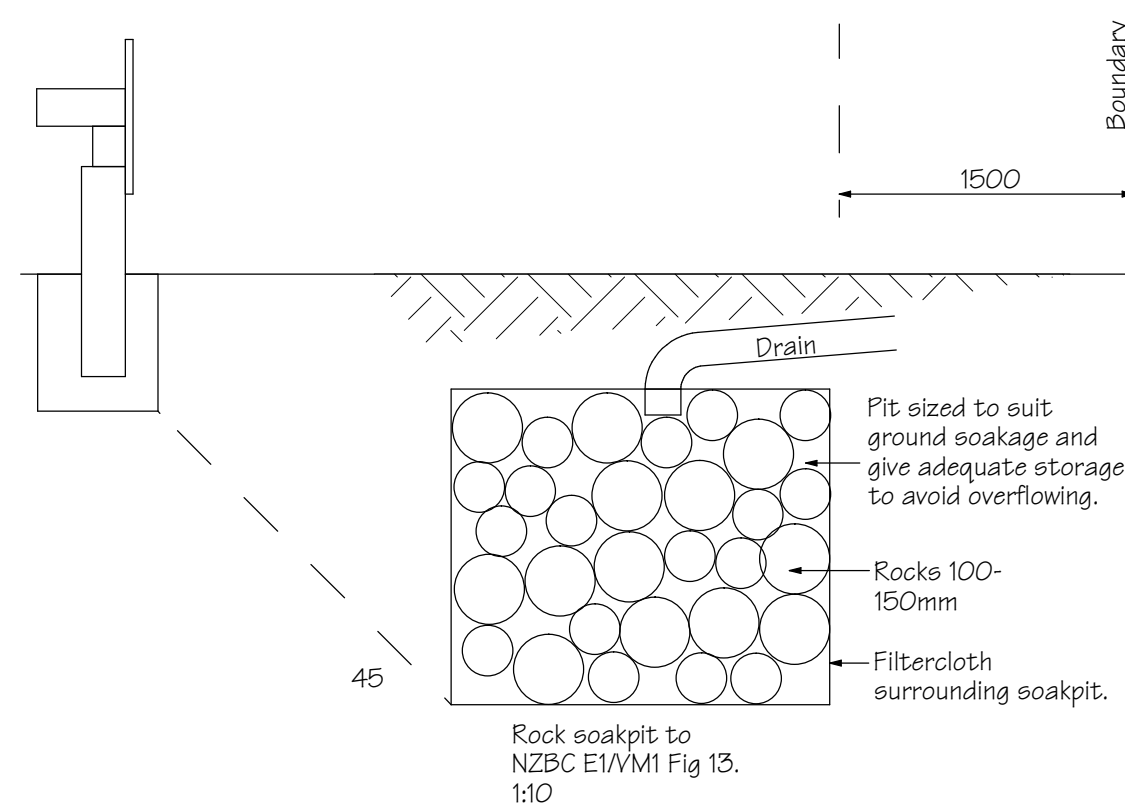
NOTE:  
This unit will not be plumbed in. All connections as detailed will be terminated and capped under the FJ's.  
Proposed location for Rinnai Infinity unit as shown but not installed.  
Stormwater will be connected to soakpit - refer stormwater calculation for soakpit capacity.

**BC180320  
Minor Variation  
Plans Approved  
11/10/2018**

**SUPERSEDED  
31/07/2019**



Detail on Molded Shower Base.



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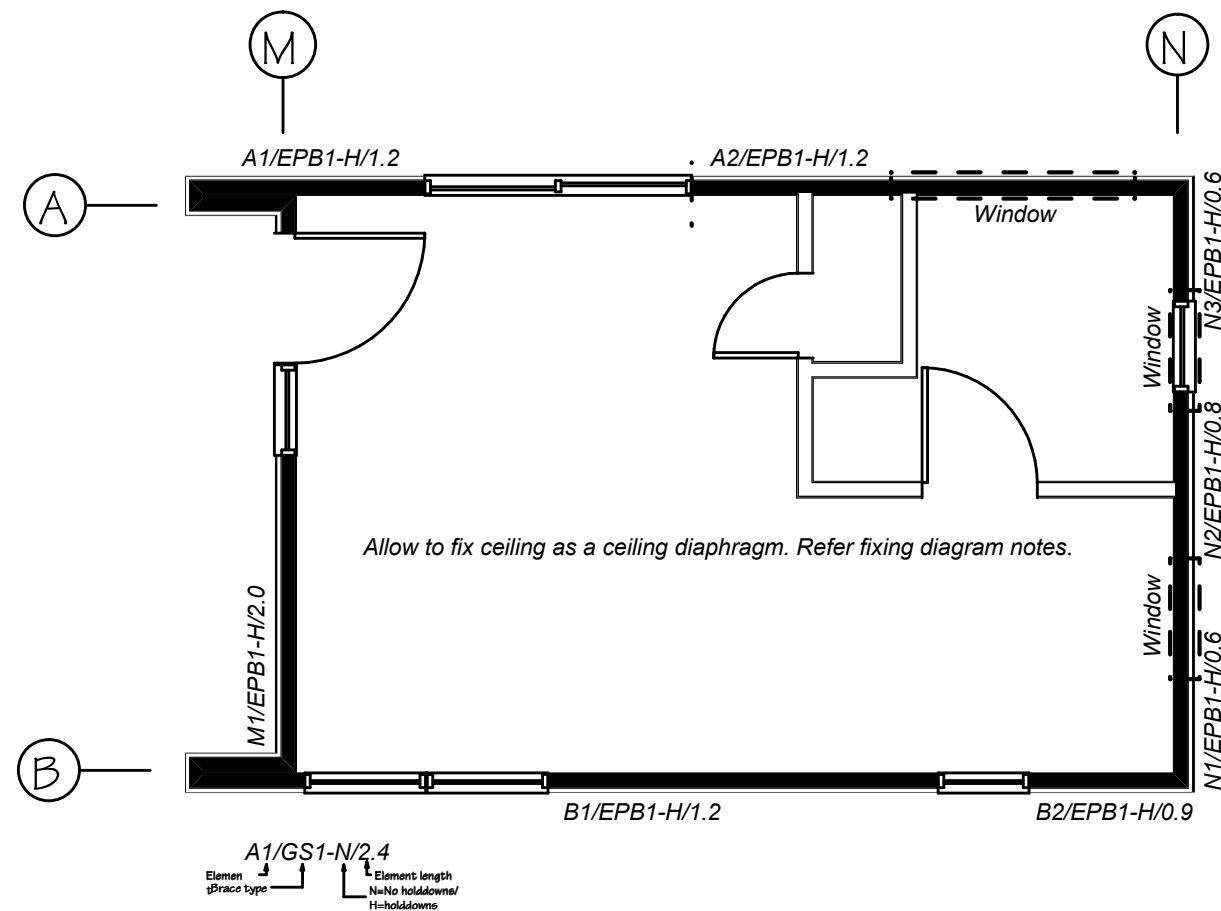
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HOUSE BRACING PLAN  
1:50

Ply Bracing Type	Description	Nail Edge Spacing	Centre fixing spacing	Additional Requirement
EPB1(0.4)	Ecoply Barrier one side , 400mm wall.	150mm	300	Hold downs- see note
EPB1(0.6)	Ecoply Barrier one side , 600mm wall.	150mm	300	Hold downs- see note
EPB1(1.2)	Ecoply Barrier one side , 1200mm wall.	150mm	300	Hold downs- see note
EPBS(0.9)	Ecoply Barrier one side , 900mm wall.	150mm	300	No Hold downs required.
EPBG(0.4)	Ecoply Barrier and GIB Standard other side, 400mm wall.	150mm for ply - 50, 100, 150, 225, 300 from cnrs and 150 thereafter for GIB	300	Hold downs- see note
EPBG(1.2)	Ecoply Barrier and GIB Standard other side, 1200mm wall.		300	Hold downs- see note
Do NOT glue Ecoply Barrier sheets Ecoply Barrier elements in Zone D, fasteners must be Annular grooved Stainless Steel.		Note: - Hold down requirements. - Locate at each end of bracing element. Concrete floor - GIB Handibrac with Ramset Anka Screw bolt external wall(AS12150H), internal wall(AS12120H) Timber floor: GIB HandiBrac with 150mm galv coachscrew.		

**Each wall that contains one or more bracing elements shall be connected at top plate level, either directly or through a framing member to the external wall.**

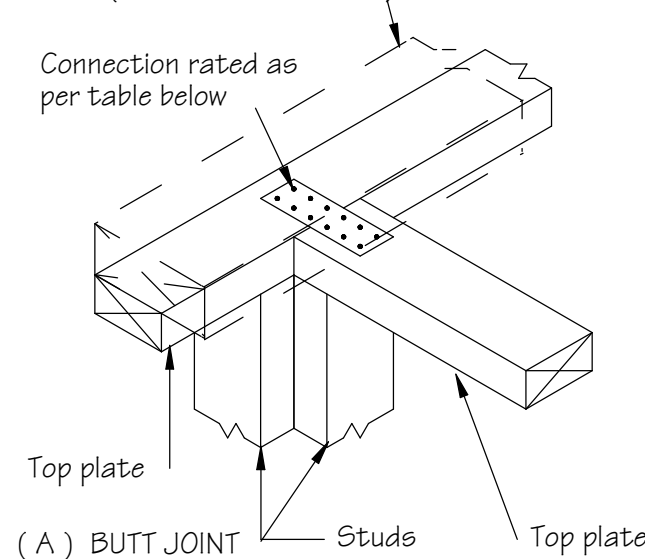
**<125 Bracing Units = One 6kN Connection**  
**>125 - <250 Bracing Units = Two 6kN Connections**  
**>250 Bracing Units = Two Connections 2.4kN/100BU.**

Ceiling diaphragm- The fixing pattern must comply with CCH fixing specifications and can be found in every Ply installation specification Guide. Contractor is to add sundry nogging as required. Fasteners are placed at 100 ctrs around the diaphragm starting at 150ctrs around the sheet edges. Each connecting wall element must have a minimum bracing value of 100BU.

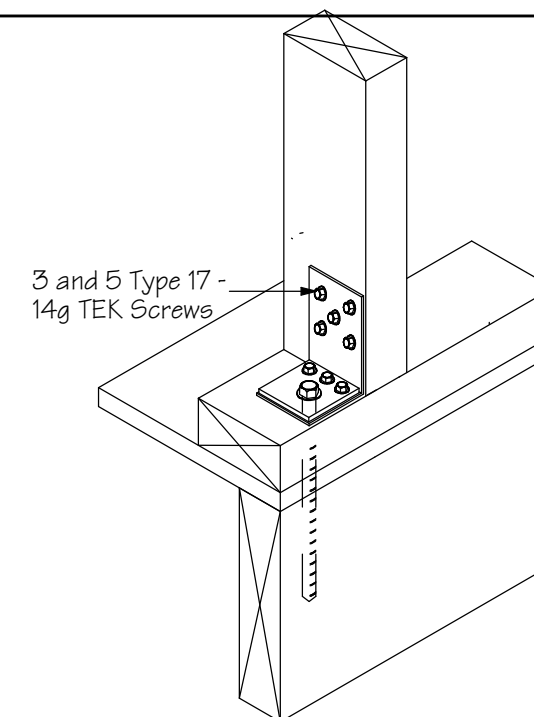
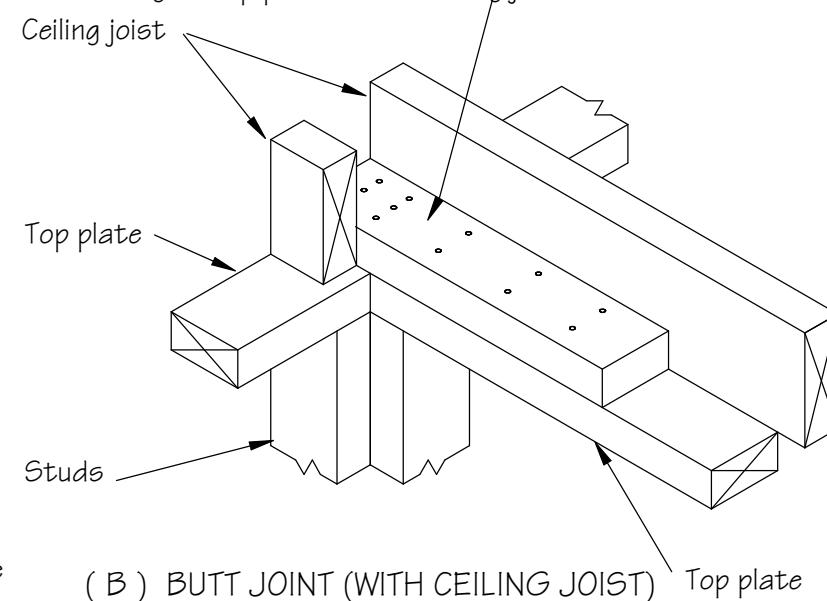
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**31/07/2019**

150 x 40 extra top plate when used (see nzs3604 8.7.4.2)

Connection rated as per table below



450 long blocking fixed to each plate with connection capacity in tables below.  
Fix blocking to top plate and to ceiling joist  
Ceiling joist



Timber floor  
External Walls

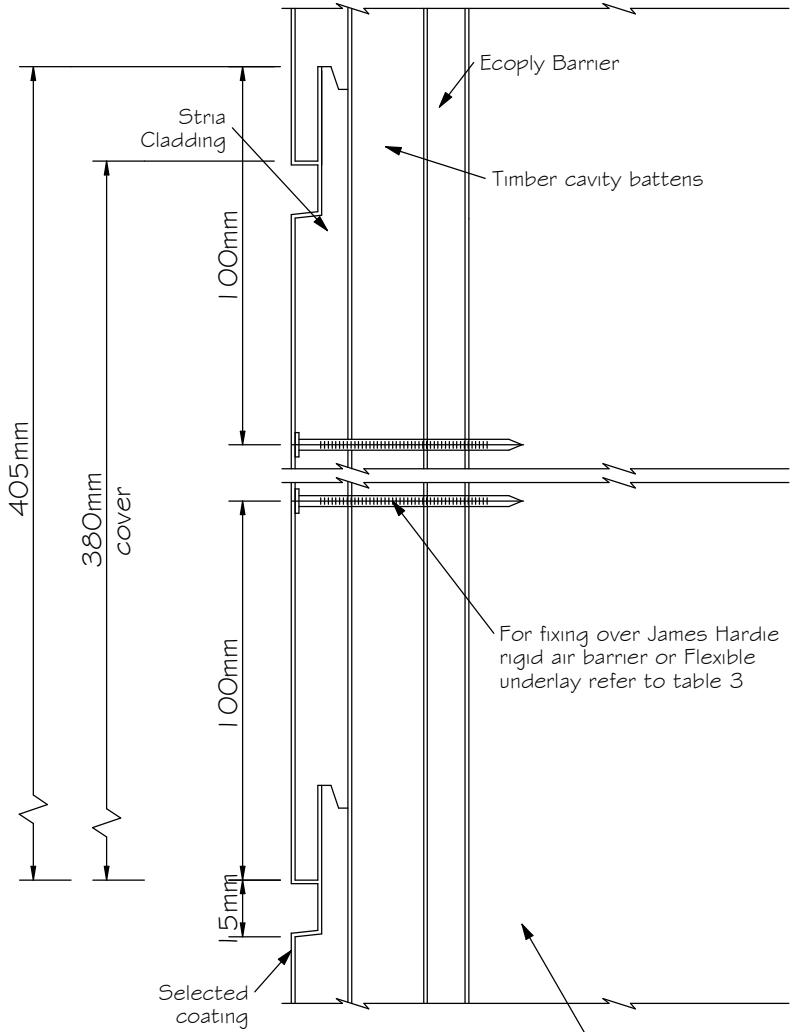
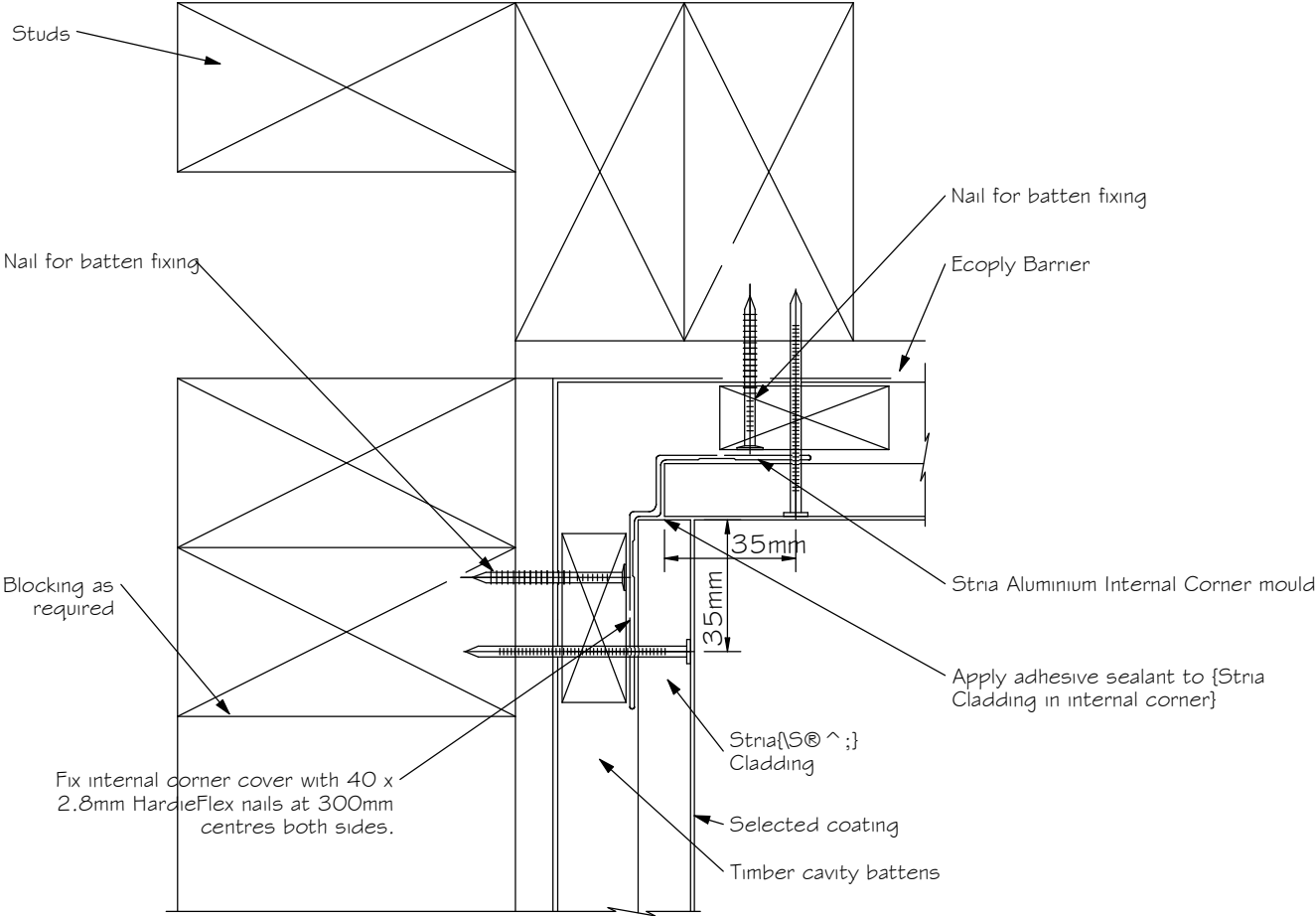
Capacities of metal plate joints	
Up to 3 kN	3 / 30 x 3.15 mm nails per side
Up to 6 kN	6 / 30 x 3.15 mm nails per side

Capacities of nailed joints	
Up to 3 kN	3 / 100 x 3.75 mm nails per side
Up to 6 kN	6 / 100 x 3.75 mm nails per side

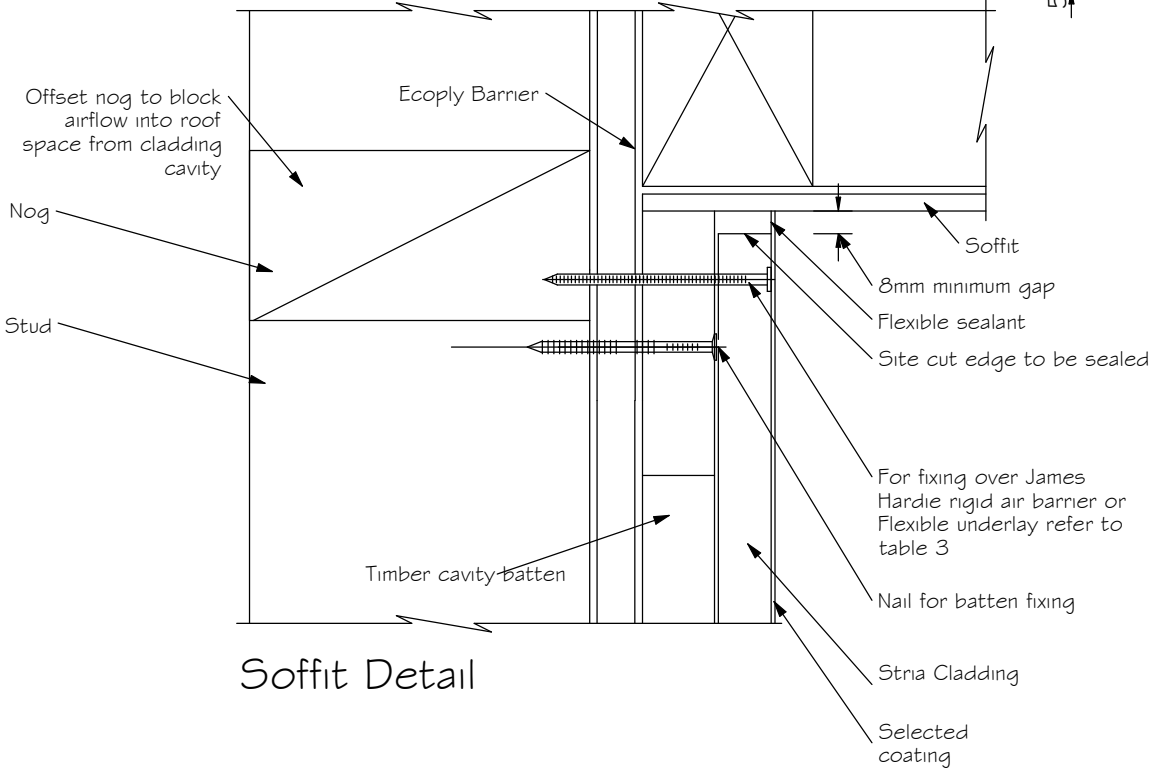
Note: - Hold down requirements. - Locate at each end of bracing element.  
Concrete floor - GIB Handibrac with Ramset Anka Screw bolt external wall(AS12150H), internal wall(AS12120H)  
Timber floor: GIB HandiBrac with 150mm galv coachscrew.



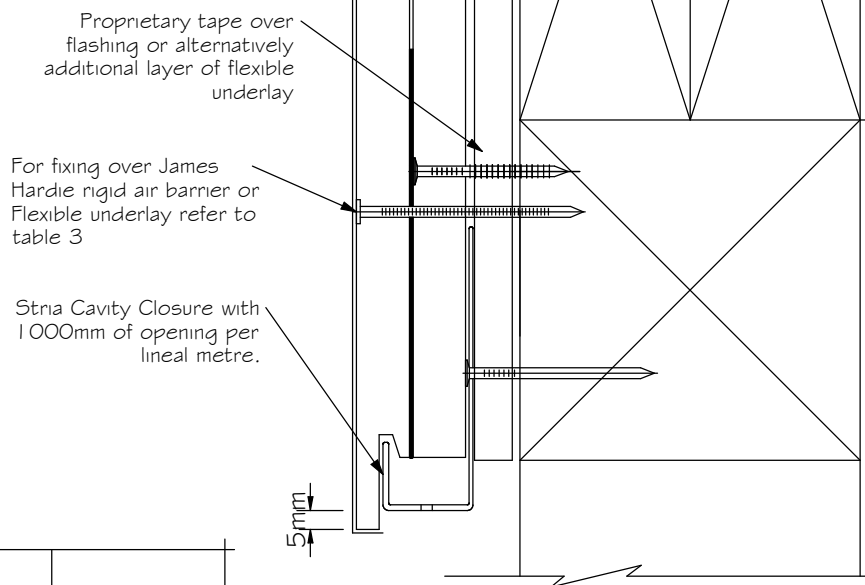
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Fixing Detail



Soffit Detail



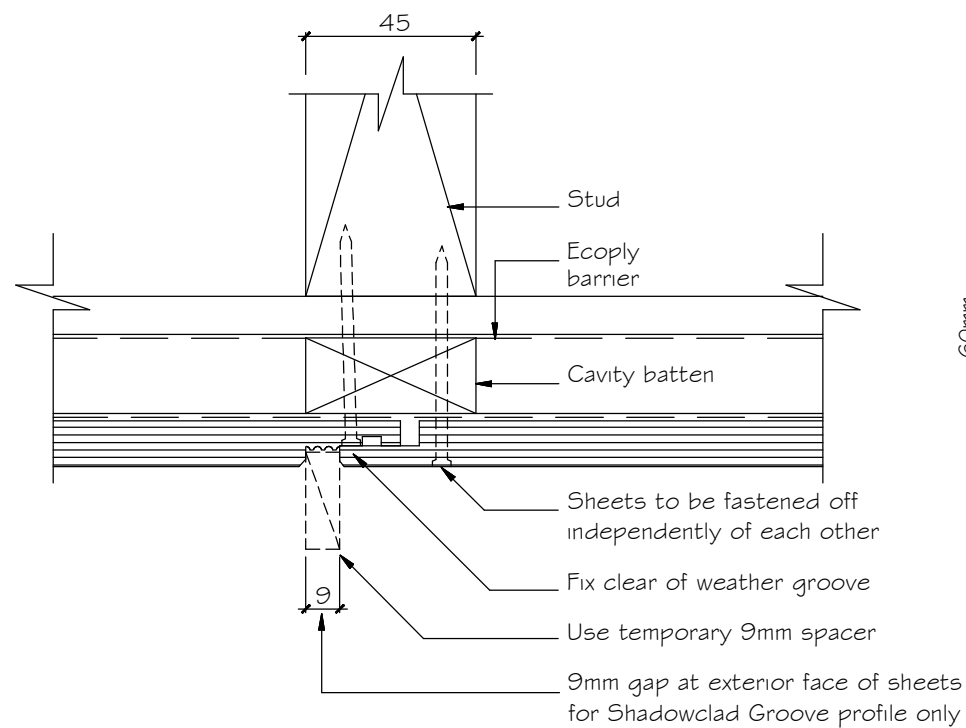
Stria Foundation detail

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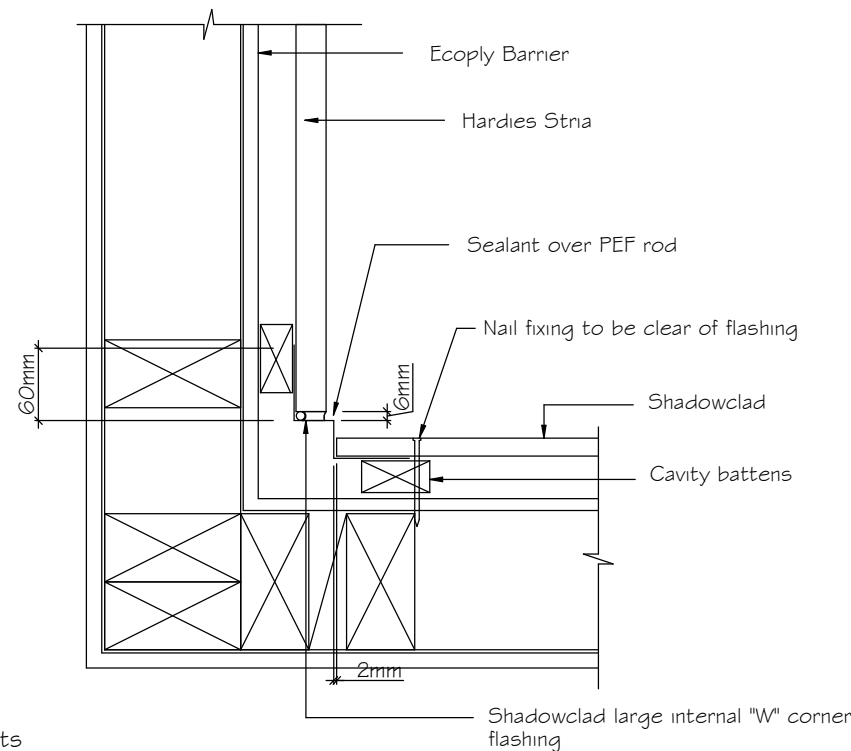
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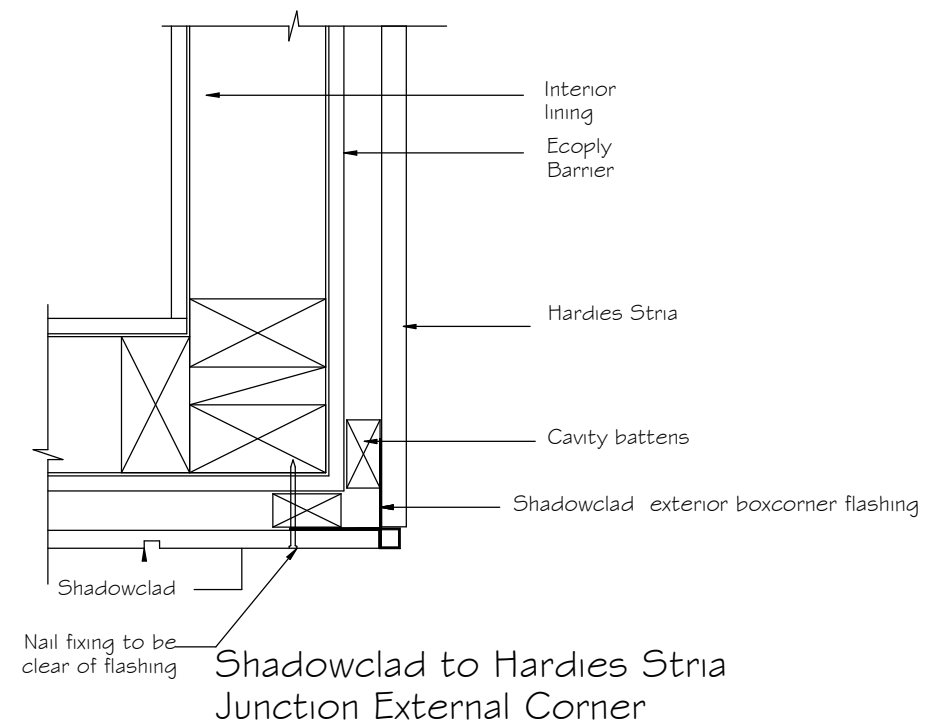
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Scale:	Sheet size: A3
CHECK ALL MEASUREMENTS ON SITE	



Shadowclad Groove Vertical Joint (Cavity)

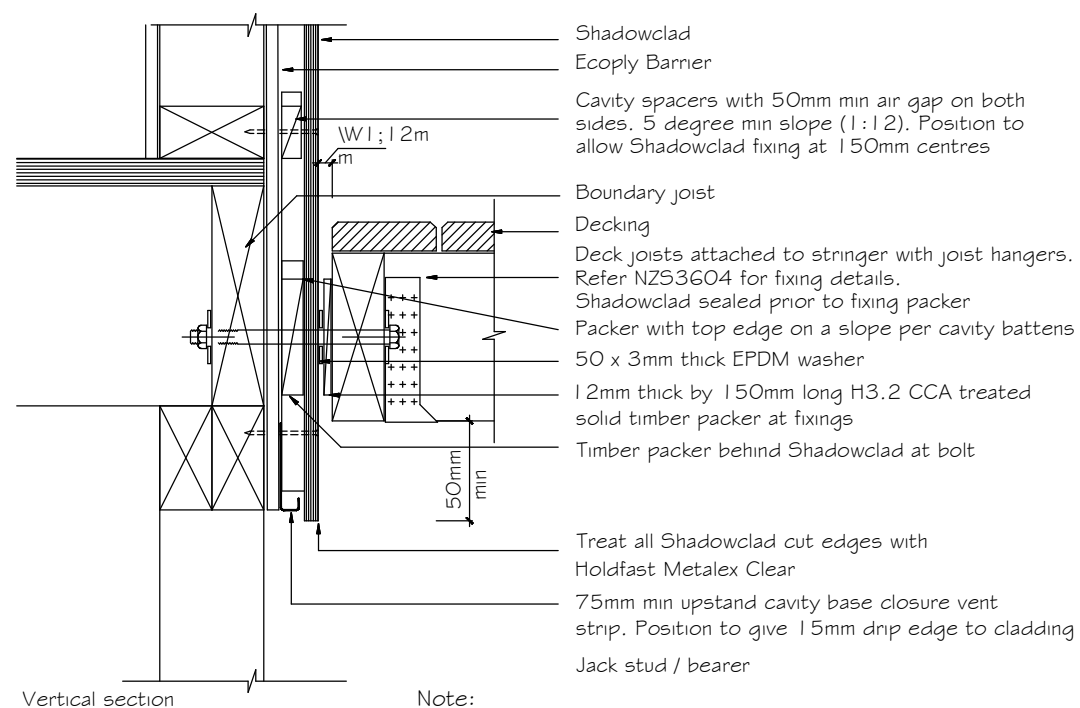


Shadowclad to Hardies Stria  
Junction Internal Corner



Shadowclad to Hardies Stria  
Junction External Corner

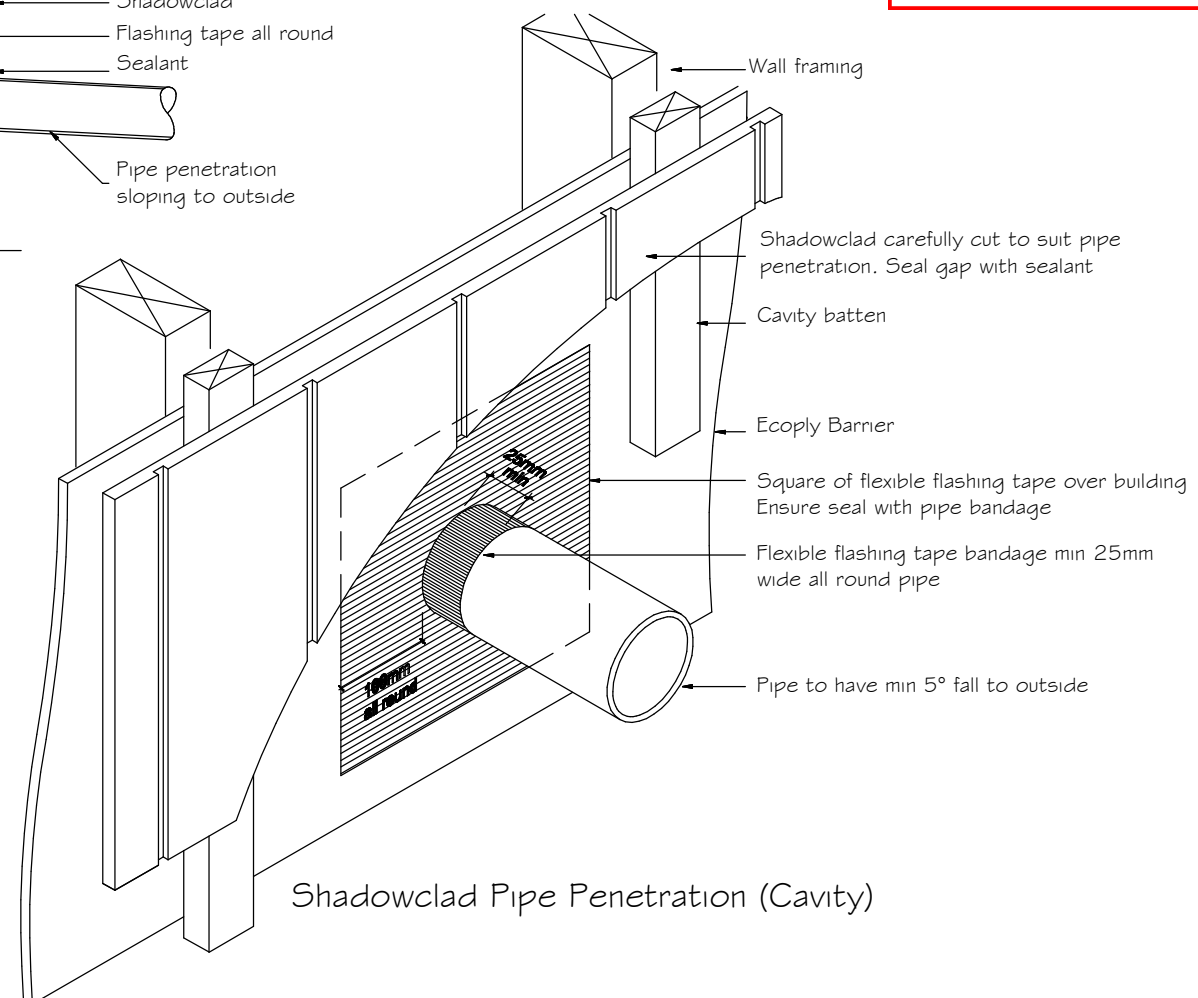
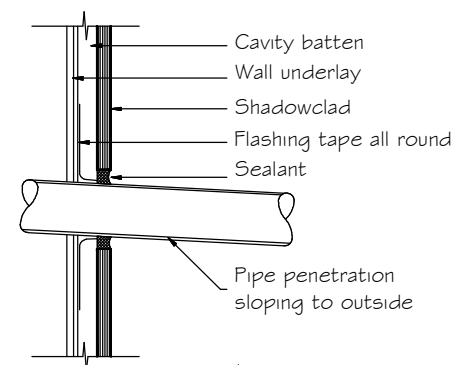
**SUPERSEDED**  
**31/07/2019**



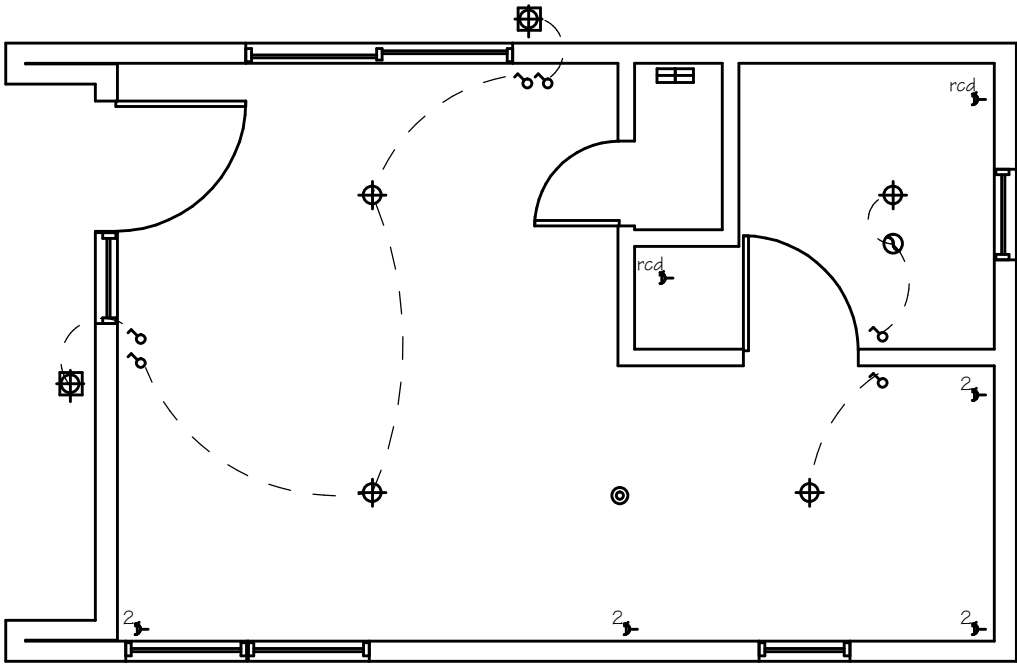
Vertical section

Note:  
Cut edges should be placed at the top of the sheet to  
1. avoid rain drips soaking into cut end grains  
2. Treat all cut edges with Holdfast © Metalex © Clear

Shadowclad Timber Ground Floor to Non-Cantilevered Deck (Cavity)



Shadowclad Pipe Penetration (Cavity)



ELECTRICAL PLAN  
1:50

**SUPERSEDED**  
**31/07/2019**

Electrical Key	
	incandescent light
	down light
	halogen spot light
	wall light
	ventilation fan
	wall mounted exterior light
	exterior security light
	smoke detector
	light switch
	single power outlet
	double power outlet
	dishwasher power outlet
	protected power outlet
	phone outlet
	television outlet
	heated towel rail
	heater
	power distribution board
	meter board

Sheet	13
of	13
Project #	1836
Issue:	Consent Issue
Amendts:	Date:

Gattsche House- Tiny House  
103 Lake Ferry Road, Lake Ferry  
LOT 6 DP 70868 BLK VIII ONOKE SD



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Drawn	WPL
Date:	20/09/2018
Scale:	
Sheet size:	A3
CHECK ALL MEASUREMENTS ON SITE	